First and preliminary frog records (Amphibia: Anura) from Quang Ngai Province, Vietnam

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Abstract. We present the first report of anuran species from Quang Ngai Province, central Vietnam. Based on a collection of 23 specimens, we record one species of Bufonidae, three species of Megophryidae, three species of Dicroglossidae, four species of Ranidae, and five species of Rhacophoridae.

Keywords. Anura, new provincial records, Quang Ngai Province, central Vietnam.

Introduction

In the most recent checklist of the Vietnamese herpetofauna, Nguyen et al. (2009) listed 174 species of amphibians, 168 of which belong to the order Anura. Since this publication, three new species have been described (Rowley and Cao, 2009; Bain et al., 2009a,b), and many areas remain poorly surveyed. Herein we present the first report on the amphibians of Quang Ngai Province in central Vietnam, and thereby extend the known range of a number of species.

Material and methods

Field work was conducted by Khoi Vu Le, Quyet Khac Le, and Thanh Ngoc Vu in evergreen forest in the vicinity of Mo Nit Village, Son Ky Town, Son Ha District, Quang Ngai Province, Vietnam (14°51’N, 108°31’E; 800 m a.s.l.), from 12–21 July 2008. The survey site is located in a transitional area between the Kon Tum Plateau and the lowlands (Fig. 1). Specimens were collected by hand between 19–23 h. After taking photographs, specimens were anaesthetized, fixed in 80% ethanol and subsequently stored in 70% ethanol. Specimens were deposited in the collections of the Zoological Museum, University of Natural Sciences, Vietnam National University (VNUH), Hanoi, Vietnam and the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), Bonn, Germany.

Taxonomic identification followed Boulenger (1882), Smith (1924), Bourret (1942), Inger et al. (1999), Ziegler and Köhler (2001), Ohler et al. (2002), Bain and Stuart (2003), Bain et al. (2003, 2005), Ohler (2003), Stuart et al. (2005, 2006), Hendrix et al. (2008), and Orlov et al. (2008). Measurements of specimens, taken to the nearest 0.1 mm using digital calipers were as follows: SVL (snout vent length): distance between tip of snout and vent; HW (head width): distance between angle of jaws; HL (head length): distance between angle of jaws and snout tip; nostril to snout tip distance: distance between middle of nostril and tip of snout; internarial distance: distance between nostrils; snout length: distance between anterior corner of the eye where the upper and lower lids meet together and the tip of snout; ED (eye diameter): the horizontal width of the eye at its widest point; TD (tympanum diameter): the horizontal width of the tympanum at its widest point; eye to tympanum distance: distance between posteriormost point of the eye and anteriormost edge of tympanum; upper eyelid width: greatest width of the upper eyelid; in-
terorbital distance: least distance between upper eyelids; finger or
toe length: distance between posterior margin of most proximal
subarticular tubercle or crease of articulation and tip of finger or
toe; width of disc on finger or toe: greatest width of terminal disc
on finger or toe; thigh length: from the center of knee to the center
of the hind limb insertion; foot length: from the base of the in-
ner metatarsal tubercle to the tip of fourth toe. Common names
and distribution records follow Nguyen et al. (2009), except for
the megophryid genera *Leptobrachium* and *Xenophrys*. Here we
suggest Eyebrow toad instead of the Spadefoot toad, because Me-
gophrys (Greek) means large eyebrow.

## Results

### Bufonidae

*Ingerophrynus galeatus* (Günther, 1864)

Cambodian toad / Coc rung (Figure 2: A)

Specimens examined: VNUH 14.7."08-1, ZFMK
89773 (males).

Diagnostic features: SVL 24.2–38.4 mm (n = 2), for
further measurements see Table 1; these specimens
agree with descriptions of Bourret (1942), Inger et
al. (1999), and Stuart et al. (2006) on the following
characters: snout short, slightly truncated; interorbital
space flat, as broad as upper eyelid; tympanum vertically
oval, distinct; parotoid gland prominent, subcircular and
connected with the eye by a bony ridge; an oblique row
of large and pointed tubercles extending from behind
the rictus to above the axilla; few similar but slightly
smaller tubercles along the sides, the largest of these in
a row from behind the paratoid to groin; first finger a
little longer than the second; two metatarsal tubercles
distinct, the inner much larger than the outer; tarsal fold
absent; limbs with dark bars; dark bars also present on
lips.

In Vietnam, this species has a wide range in upland
areas: Lao Cai, Thai Nguyen, Vinh Phuc, Thanh Hoa,
Nghe An, Ha Tinh, Quang Binh, Thua Thien-Hue,
Quang Nam, Kon Tum, Gia Lai, Dak Lak, Lam Dong,
Dong Nai provinces (Nguyen et al., 2009).

### Megophryidae

*Leptobrachium mouhoti* Stuart, Sok & Neang, 2006

Mouhot’s eyebrow toad / Coc may mou-hot

Specimen examined: VNUH 12.7."08-1 (female).

Diagnostic features: SVL 73.3 mm, for further
measurements see Table 1; head broad, slightly
wider than long; tympanum indistinct, diameter of
tympanum smaller than that of eye, and greater than
distance between the tympanum and the eye; heels not
overlapping when legs are held at right angles to body;
dorsum uniform dark grey; flank grey with small light
spots; venter grey with small light spots; axillary gland
on ventrolateral surface slightly posterior to insertion
of forelimb; femoral gland distinct, round, whitish, on
posteroventral surface of thigh, closer to knee than to
vent (determination after Stuart et al., 2006).

In Vietnam, *L. mouhoti* is known from Quang Nam
Province (Nguyen et al., 2009). Our finding is not only
the new provincial record for Quang Ngai but also the
southernmost record of this species in Vietnam.

Remarks. Our specimen differs from the original
description of Stuart et al. (2006) by having a vertical
oval tympanum instead of the rounded one.

*Ophryophryne hansi* Ohler, 2003

Hansi’s mountain toad / Coc nui han-x (Figure 2: B)

Specimen examined: VNUH 12.7."08-2 (male).

Diagnostic features: Large-sized *Ophryophryne* (SVL
41.0 mm); thigh long (21.7 mm); tympanum small
(TD 2.2 mm), nearly half (0.44) of eye diameter, for
further measurements see Table 1; dorsal coloration
dark, almost black; supraorbital horn forming a small
projection, dermal cloacal protuberance absent.

In Vietnam, *O. hansi* has been reported from several
provinces in the central part of the country: Ha Tinh, Quang Binh, Thua Thien-Hue, Quang Nam, Kon Tum, and Gia Lai (Nguyen et al., 2009). The occurrence of *O. hansi* in Quang Ngai fills a distribution gap of the species in Vietnam.

Remarks. Our specimen matches Ohler’s description (2003), except for two characters: the region of throat and chest smooth without folding (throat and chest with folds in Ohler’s description) and the first toe being longer than the inner metatarsal tubercle (first toe shorter than the inner metatarsal tubercle in description of *Ohler*). The specimen also differs from the Cambodian specimen mentioned by Stuart et al. (2006) in having the tympanum diameter being less than half (0.44) of the eye diameter (diameter of tympanum about 0.62 the eye diameter in the Cambodian specimen).

*Xenophrys major* (Boulenger, 1908)

Anderson’s eyebrow toad / Coc mat ben (Figure 2: C)

Specimen examined: ZFMK 89774 (male).

Diagnostic features: SVL 65.0 mm, for further...
measurements see Table 1; head depressed, wider than long; frenal region slightly oblique, concave; interorbital space flat; tympanum distinct, about half of eye diameter; supratympanic fold present from posterior region of the eye to the shoulder; tips of fingers and toes slightly dilated; webbings on toes forming lateral fringes; skin smooth; dorsum brown with darker symmetric marks and a triangular patch between the eyes; a dark band covering the tip of the snout to the nostril and extending along the temporal and frenal regions up to the shoulder present; transverse dark bars present on dorsal surface of limbs; thigh dark brown, with a round white spot closer to the knee than to cloaca (identification after Bourret, 1942).

In Vietnam, X. major has been reported from many localities in upland areas: Lao Cai, Ha Giang, Tuyen Quang, Cao Bang, Bac Kan, Lang Son, Bac Giang, Vinh Phuc, Son La, Hoa Binh, Ha Tay, Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Quang Nam, Kon Tum, Gia Lai, Dak Lak, and Dong Nai provinces (Nguyen et al., 2009).

### Dicroglossidae

**Limnonectes kuhlii** (Tschudi, 1838)

Kuhl’s creek frog, big–headed frog / Ech nheo, ech tron

Specimen examined: ZFMK 89784 (female).

Diagnostic features: SVL 55.1 mm, for further measurements see Table 1; head broader than long (HL/HW = 0.88); snout bluntly pointed in dorsal view, compressed and slightly exceeding the mouth in lateral view; snout length slightly longer than eye diameter; upper eyelid width nearly equal to space of interorbital and narrower than that of internarial; tympanum present but under skin, about half of its diameter; vomerine teeth in oblique rows, behind choanae; two tooth-like prominences in front of lower jaw present; tips of fingers swollen; length of the first finger equal to that of the second; dermal fringes present on lateral sides of the second and third fingers; subarticular tubercles on fingers and toes prominent and conspicuous; tips of toes with small discs; toes fully webbed; tarsal fold present; inner metatarsal tubercle elongated and prominent; outer metatarsal tubercle absent; upper eyelid skin with three small, white, round tubercles posteriorly; a dim light bar between the posterior edges of eye present (identification followed Boulenger, 1882 and Bourret, 1924).

**Limnonectes kuhlii** has been known from many places in Vietnam such as Lao Cai, Yen Bai, Ha Giang, Tuyen Quang, Cao Bang, Bac Kan, Lang Son, Thai Nguyen, Quang Ninh, Phu Tho, Vinh Phuc, Bac Giang, Hai Duong, Son La, Hoa Binh, Ha Tay, Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien–Hue, Da Nang, Quang Nam, Kon Tum, Gia Lai, Dong Nai,
and Kien Giang provinces (Nguyen et al. 2009).

Remarks. This specimen differs from the descriptions of Boulenger (1882) and Bourret (1942) by its rough dorsal skin with many ridges (versus smooth dorsal skin in latter descriptions). According to Evans et al. (2003), this species is almost certainly composed of several cryptic forms.

**Limnonectes poilani** (Bourret, 1942)

Poilan’s frog / Ech poi lan (Figure 2: D)

Specimen examined: ZFMK 89775 (female).

Diagnostic features: SVL 73.7 mm, for further measurements see Table 1; our specimen agrees with descriptions of *Rana kohchangae poilani* by Bourret (1942) as well as *Rana cf. blythii* by Inger et al. (1999) on the following characters: Ridges of skin on the medial border of the three outer fingers present, the widest on the second finger; all toes fully webbed to base of the swollen tips; dermal fringes along outside of the first and fifth toes present; upper half of tympanum and supratympanic fold are covered by a black streak; supratympanic fold extending from posterior edge of eye to shoulder.

The range of *L. poilani* in Vietnam extends from the central to the southern provinces: Quang Binh, Quang Tri, Thua Thien-Hue, Quang Nam, Kon Tum, Gia Lai, Dak Lak, Lam Dong, and Dong Nai (Nguyen et al., 2009). The new record of this species from Quang Ngai Province fills the distribution gap in Vietnam.

Remarks. This species was referred as a subspecies of *Rana kohchangae* by Bourret (1942); it was subsequently upgraded to *Limnonectes poilani* (Ohler et al., 2002; Stuart et al., 2005).

**Quasipaa spinosa** (David, 1875)

Giant spiny frog, spiny paa frog / Ech gai

Specimen examined: ZFMK 89785 (female).

Diagnostic features: Size large (SVL 99.3 mm), for further measurements see Table 1; this specimen agrees with the description of *Rana spinosa* by Bourret (1942) on the following characters: head broader than long; snout rounded in dorsal view and truncated in lateral view; snout length longer than eye diameter; nostril rounded, located somewhat closer to tip of snout than to the eye; tympanum distinct, small, 0.32 times the eye diameter; supratympanic fold distinct, extending to shoulder; vomerine teeth in oblique rows, closer to choanae than to each other; tips of fingers and toes swollen; subarticular tubercles conspicuous; webbing between fingers absent; first finger longer than the second; toes fully webbed, to bases of all toe discs; inner metatarsal tubercle elongated, about 0.75 times length of the first toe; outer metatarsal tubercle absent; heels overlapping when legs are held a right angles to body; ventral skin smooth; dorsal skin rough and granular, with many small warts and ridges.

The distribution range of *Q. spinosa* in Vietnam spreads from the northern to the central provinces: Lao Cai, Yen Bai, Ha Giang, Bac Kan, Lang Son, Bac Giang, Hoa Binh, Nghe An, Quang Nam, and Gia Lai (Nguyen et al., 2009). The range is further expanded by this new record from Quang Ngai Province.

**Ranidae**

**Amolops spinapectoralis** Inger, Orlov & Darevsky, 1999

Spinyback torrent frog / Ech bam da gai nguc (Figure 2: E)

Specimens examined: VNUH 14.7.’08-3 (male), ZFMK 89776 (female).

Diagnostic features: SVL 44.6–53.3 mm (n = 2), for further measurements see Table 1; anterior two-thirds of tympanum distinct; disc of first finger with circummarginal groove, distinctly larger than that of the second finger; male with nuptial pad consisting of whitish conical spines; outer metatarsal tubercle absent (identification after Inger et al., 1999).

Our new provincial record of *A. spinapectoralis* adds to the known distribution of the species in Vietnam: Da Nang, Quang Nam, Kon Tum, and Gia Lai provinces (Nguyen et al., 2009).

Remarks. Both specimens completely match the original description of Inger et al. (1999) except for the absence of dermal ridge on the tarsus (which is present in Inger’s description).

**Hylarana attigua** (Inger, Orlov & Darevsky, 1999)

Similar frog / Ech dong dang (Figure 2: F)

Specimen examined: VNUH 12.7.’08-5 (male).

Diagnostic features: The specimen completely agrees with the original description of Inger et al. (1999) by having the following characters: size larger than 40 mm (SVL 42.4 mm), for further measurements see Table 1; head slightly longer than wide (HL/HW = 1.19); snout bluntly pointed in dorsal view and exceeding the mouth in profile, its length being longer than eye diameter;
nostril lateral, closer to tip of snout than to the eye; upper eyelid width nearly equal to interorbital distance; tympanum distinct, 0.6 times the eye diameter; first finger longer than second; finger tips dilated into small discs, width of the third finger disc about 1.5 times that of its phalange base; discs of toes larger than those of fingers; inner metatarsal tubercle oval, prominent, about half of the first toe length; outer metatarsal tubercle round, distinct, much smaller than the inner metatarsal tubercle; dorso-lateral fold distinct and prominent, extending from posterior edge of the eye to hip; dorsal skin granular with numerous small tubercles; ventral skin smooth; a dark band which is lighter and not very clear at temporal region extending from snout to eye present; ventral surface of thigh white; nuptial pad covering dorsal and lateral surfaces of the first finger, from its base to proximal end of the penultimate phalanx; ventral margin of the nuptial pad straight.

This is the first report of *H. attigua* from Quang Ngai Province. Previously known locations of this species include Ha Tinh, Quang Binh, Quang Tri, Thua Thien-Hue, Da Nang, Quang Nam, Kon Tum, Gia Lai, and Dak Lak provinces (Nguyen et al., 2009).

Remarks. The specimen differs from the description of Inger et al. (1999) by the tubercles on dorsal skin being larger than those on flanks (versus larger flank tubercles in Inger et al., 1999). According to Inger et al. (1999) and Stuart et al. (2006), *H. attigua* is very similar to *H. milleti*, with which it is co-occurring.

**Hylarana nigrovittata** (Blyth, 1856)

Black-striped frog / Ech suoi
Specimen examined: VNUH 12.7.08-6 (male).
Diagnostic features: SVL 40.2 mm; head longer than wide (HL/HW = 1.13), for further measurements see Table 1; snout bluntly pointed in dorsal view and projecting in lateral view, its length nearly equal to that of eye; nostril lateral, closer to tip of snout than to the eye; internarial space slightly broader than interorbital distance; the latter is slightly narrower than upper eyelid width; tympanum distinct; tips of fingers and toes with small discs; discs of fingers smaller than those of toes; first finger longer than second; third finger longer than snout length; subarticular tubercles on fingers and toes conspicuous and prominent; inner metatarsal tubercle oval, prominent, about 0.47 times the length of first toe; outer metatarsal tubercle small, distinct; skin grainy on dorsum and flanks, smooth on venter; dorso-lateral fold from posterior edge of the eye to hip, distinct; a large and pigmented gland present on proximal upper arm, about one third of upper arm length; a dark band stretches along snout sides, through the eye, the temporal region

Figure 3. A: Buonluoi bubble-nest frog (*Philautus abditus*); B: Morafka’s frog (*Odorrana morafkai*); C: Annam flying frog (*Rhacophorus annamensis*); D: Vietnam flying frog (*Rhacophorus calcaneus*); all specimens from Quang Ngai Province.
nearly until groin having; this dark band is broken up by lighter colouration at the posterior flank region (determination after Bourret, 1942; Inger et al., 1999, and Stuart et al., 2006).

The presence of *H. nigrovittata* in Vietnam has been reported from the following provinces: Cao Bang, Lang Son, Phu Tho, Quang Ninh, Son La, Hoa Binh, Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien-Hue, Da Nang, Quang Nam, Kon Tum, Gia Lai, Dak Lak, Dak Nong, Lam Dong, Ninh Thuan, Binh Phuoc, Dong Nai, and Kien Giang. By this new record, its distribution is herein expanded to Quang Ngai Province.

Remarks. Although the SVL of our specimen is a bit smaller than the size range of *H. nigrovittata* given by Inger et al. (1999) and Stuart et al. (2006), i.e., from 43.3 mm to 61.8 mm in males and from 45.0 mm to 65.3 mm in females, its ratios of HL/SVL = 0.38 and TD/SVL = 0.084 agree with the description provided by Inger et al. (1999): HL/SVL: 0.37–0.45 and TD/SVL: 0.074–0.109. The ratio of tympanum diameter/eye diameter (TD/ED = 0.56) of our specimen is smaller than that given in Bourret (1942): TD/ED: 0.75–0.80. Further research is required to identify distinct cryptic taxa within the *H. nigrovittata* species complex (e.g., Matsui et al., 2002).

*Odorrana morafkai* (Bain, Lathrop, Murphy, Orlov & Ho, 2003)

Morafka’s frog / Ech mo-rap-ka (Figure 3: B)
Specimen examined: ZFMK 89777 (female).

Diagnostic features: SVL 84.4 mm, for further measurements see Table 1; tympanum hidden under skin; webbings on the toes extensive; dermal fringe and tubercle on limbs absent; dorsum with a dark mark between shoulders, bifurcating and ending with a large spot on the flank, before the groin; large black spots present on anterior and posterior thigh (determination after Inger et al., 1999).

In Vietnam, *P. abditus* was previously known only from Kon Tum Plateau (Kon Tum and Gia Lai provinces) (Nguyen et al., 2009).

**Rhacophoridae**

*Philautus abditus* Inger, Orlov & Darevsky, 1999

Buonluoi bubble-nest frog / Nhai cay dom an (Figure 3: A)
Specimens examined: ZFMK 89778 (male), ZFMK 89779, and ZFMK 89789 (females).

Diagnostic features: Small-sized treefrogs (SVL 23.4–23.9 mm, n = 3), for further measurements see Table 1; tympanum hidden under skin; webbings on the toes extensive; dermal fringe and tubercle on limbs absent; dorsum with a dark mark beginning between shoulders, bifurcating and ending with a large spot on the flank, before the groin; large black spots present on anterior and posterior thigh (determination after Inger et al., 1999).

In Vietnam, *P. abditus* was previously known only from Kon Tum Plateau (Kon Tum and Gia Lai provinces) (Nguyen et al., 2009).

*Philautus banaensis* Bourret, 1939

Bana bubble-nest frog / Nhai cay ba na
Specimens examined: VNUH 15.7.’08-1 (male), ZFMK 89781 (female).

Diagnostic features: Small-sized treefrogs (SVL 15.9–28.8 mm, n = 2); dermal fringes along outside of forearm and tarsus very distinct; head wider than long; snout rounded; nostril closer to tip of snout than to eye; interorbital distance larger than that of intermaxial and upper eyelid width; supratympanic fold distinct; vomerine teeth absent; choanae very small, round and prominent; finger tips with discs, disc on the third finger on dorsum and flanks smooth; dorsum green with black spots; forelimbs and hindlimbs brown with transverse bars (identification after Bain et al., 2003 and Bain & Stuart, 2005)

According to Nguyen et al. (2009) and Bain & Stuart (2005), *Odorrana morafkai* has been recorded from Ha Tinh, Thua Thien-Hue, Quang Nam, and Gia Lai provinces. Its distribution in Vietnam is expanded by this new provincial record from Quang Ngai.

Remarks. Our specimen differs from the original description by having a whitish stripe on lip extending across upper lip, terminating in glandule above insertion of arm instead of a yellow stripe and robust hindlimbs which have tibia length about 0.59 of SVL and foot length about 0.62 of SVL (the ratio of tibia length/SVL 0.62 and ratio of foot length/SVL 0.82, according to Bain et al., 2003).
almost half of the eye diameter; webbings of fingers extremely low; toe discs slightly smaller than those of fingers (determination after Bourret, 1942).

This species is currently known from northern and central provinces of Vietnam: Thanh Hoa, Quang Binh, Quang Tri, Thua Thien-Hue, Da Nang, Quang Nam, Kon Tum, and Gia Lai provinces (Hendrix et al., 2009; Nguyen et al., 2009).

Remarks. Our specimens differ from the description of Bourret (1942) by having the tympanum being visible (versus tympanum invisible in Bourret’s description), as was also remarked by Hendrix et al. (2008) for their specimens from central Vietnam. Our specimens also disagree with Bourret’s description by having the snout length longer than the eye diameter (versus snout length shorter than eye diameter in Bourret, 1942), and by the presence of cloacal tubercles (versus dermal fringe above cloaca according to Bourret’s description).

**Rhacophorus annamensis** Smith, 1924

Annam flying frog / Ech cay trung bo (Figure 3: C)
Specimens examined: VNUH 12.7.’08-3, ZFMK 89782 (females).

Diagnostic features: Size large (SVL 62.2–72.9 mm, n = 2), for further measurements see Table 1; head slightly longer than wide; snout pointed in dorsal view, sloping in front of nostril; tympanum distinct, about half of eye diameter and separated from the eye by less than half (about 0.33) of its own diameter; supratympanic fold distinct and extending to axilla; discs of fingers rounded, that of the third finger wider than the tympanum diameter; all fingers and toes fully webbed; subarticular tubercles conspicuous; inner metatarsal tubercle low; outer metatarsal tubercle absent; skin of back smooth with sparsely scattered flat tubercles; belly and venter of thighs coarsely granular; a broad dermal fringe along outside of forearm and hand, and a similar, but narrower dermal fringe along outside of the tarsus present; heel with a small blunt projection; a series of tubercles present below the vent. In preservative, the back is grey to dark grey; ventrally, white, with few small dark spots on throat and chest; limbs with obscure dark crossbars, front and rear of thighs brown with irregular lighter markings (determination after Smith, 1924; Inger et al., 1999; and Orlov et al., 2008). The specimens also agree with remarks of Stuart et al. (2006) concerning the presence of 2–3 small papillae on each side just above the cloaca.

The new record of *R. annamensis* from Quang Ngai Province is located within the distribution region of this species in Central Vietnam, including Quang Binh, Quang Tri, Thua Thien-Hue, Quang Nam, Kon Tum, Gia Lai, Dak Lak, Lam Dong, and Ninh Thuan provinces (Nguyen et al., 2009).

**Rhacophorus calcaneus** Smith, 1924

Vietnam flying frog / Ech cay cua (Figure 3: D)
Specimens examined: VNUH 14.7.’08-2 (female), ZFMK 89783 (male).

Diagnostic features: SVL 35.6–53.2 mm (n = 2), for further measurements see Table 1; dorsum red brown or grey brown; webbings between fingers not fully developed, first finger webbed to subarticular tubercle, second finger to just below disc, third finger laterally to distal edge of distal subarticular tubercle, fourth finger to midway between disc and tubercle; a very pointed projection at tibiotarsal joint and a low supra-cloacal projection being present (determination after Smith, 1924; Inger et al., 1999; and Orlov et al., 2008).

This species is known from northern to central provinces in Vietnam: Vinh Phuc, Ha Tinh, Thua Thien-Hue, Da Nang, Quang Nam, Kon Tum, Gia Lai, Dak Lak, and Lam Dong (Nguyen et al., 2009).

**Rhacophorus orlovi** Ziegler & Köhler, 2001

Orlov’s treefrog / Ech cay ooc-lop
Specimen examined: VNUH 12.7.’08-4 (female).

Diagnostic features: SVL 41.0 mm, for further measurements see Table 1; head width subequal to its length; snout slightly truncated in dorsal view and rounded in lateral view; tympanum distinct, less than half of eye diameter; supratympanic fold distinct, ending above arm insertion; vomerine teeth in slightly oblique rows, arising from anterior corner of choanae; slender limbs without distinct dermal fringe; folds along outer edges of fourth finger and fifth toe weakly developed; finger tips enlarged into discs with circum-marginal grooves; width of the third finger disc slightly narrower than the tympanum diameter; fingers not fully webbed, webbing between second and third fingers nearly reaching up to base of disc of second finger and base of distal subarticular tubercle of third finger; webbing between third and fourth fingers to above distal subarticular tubercle; subarticular tubercles on fingers and toes round; inner palmar tubercle oval; tips of toes with flattened discs, which are smaller than those of fingers; webbings between first and fourth toes from the base of discs of the first, second and third toes to between distal subarticular tubercles and discs of the second,
third and fourth toes; webbing between the fourth and fifth toes from above the distal subarticular tubercle of the fourth toe to disc of the fifth toe; inner metatarsal tubercle longish oval; skin smooth dorsally and laterally; skin beneath cloacal opening and on posterior end of thigh with few small whitish tubercles; a light patch on the temporal region present (determination after Ziegler & Köhler, 2001 and Orlov et al., 2008).

Frog records from Quang Ngai province, Vietnam

References


