

THE SRI LANKAN SHRUB-FROGS OF THE GENUS *PHILAUTUS* GISTEL, 1848 (RANIDAE: RHACOPHORINAE), WITH DESCRIPTION OF 27 NEW SPECIES

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ABSTRACT. – All 30 nominal species assigned to the shrub-frog genus *Philautus* Gistel, 1848 (Anura: Ranidae: Rhacophorinae) in Sri Lanka are reviewed, and their name-bearing types redescribed. Twenty-seven new species of *Philautus* endemic to Sri Lanka are described, together with diagnoses and illustrations, and a key provided to all valid species in the island. As presently understood, the genus *Philautus* in Sri Lanka contains 57 nominal species, of which 52 are valid, four are junior subjective synonyms and one is incerte sedis. A conservation assessment using the IUCN's global Red List criteria shows that 17 species are Extinct; seven Critically Endangered; 19 Endangered; one Vulnerable; four Near Threatened; four Least Concern; and one data deficient. The extant new species described here are a part of those discovered in an amphibian survey of Sri Lanka from 1993–2003, selected for reasons of conservation priority, distribution, the availability of molecular data and colour photographs in life. A neotype is designated for *Polypedates schmarida* Kelaart, 1854; and lectotypes designated for *Ixalus temporalis* Günther, 1864; *Ixalus oxyrhynchus* Günther, 1872; and *Ixalus hypomelas* Günther, 1876.

KEY WORDS. – Taxonomy, Sri Lanka, Rhacophoridae, *Philautus*, new species, conservation.

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INTRODUCTION

Despite the Amphibia of Sri Lanka having received significant attention in the literature during the past century and a half (e.g. Kelaart, 1854a; Günther, 1864; Boulenger, 1882a, b; Kirtisinghe, 1957; Dutta & Manamendra-Arachchi, 1996; Bossuyt & Dubois, 2001), the species richness of the island's amphibian fauna continues to be far from well understood. Although new-species discoveries have been reported sporadically during the past decade (e.g. Fernando et al., 1994; Fernando et al., 1994; Manamendra-Arachchi & Gabadage, 1996; Manamendra-Arachchi & Pethiyagoda, 1998,

2001a, b), a general survey of the island's amphibians has until now not been attempted. Between 1994 and 2003 we conducted an extensive survey that included many of the remaining forest fragments of Sri Lanka's biodiversity-rich south-western 'wet zone'. It quickly became clear that the island was home to a hitherto unsuspected rhacophorine fauna of significant proportions (Pethiyagoda & Manamendra-Arachchi, 1998; Meegaskumbura et al., 2002).

Although 34 nominal species of rhacophorines had been described from Sri Lanka in the period 1852–1940, Kirtisinghe (1957) recognised as valid only eight species-group taxa, while

Kotagama et al. (1981) recognized only six species referable to *Philautus* (see also De Silva, 1995, 1996). Following a partial examination of the type material, Dutta & Manamendra-Arachchi (1996) considered 17 species referable to *Philautus* to be valid. Having in the course of the present study examined all the available name-bearing types and evaluated also larger series of the extant species, we concur with Meegaskumbura et al. (2002) that the number of valid species is far higher than previously estimated. Added to this is a still larger number of previously undescribed species our survey served to uncover, which together is likely to take the total Sri Lankan anuran fauna to over 140 species (Meegaskumbura et al., 2002), with species of *Philautus* accounting for ~ 70 percent of this.

In this paper, in addition to redescribing the available taxa for which material exists, we describe 27 new species. We make no excuse for the descriptions being brief: the function of this treatment is to clarify the taxonomy of the Sri Lankan representatives of *Philautus* through a review of all existing type material; make names available for new species of high conservation priority (thereby facilitating conservation assessments for the IUCN Red List process); provide a simple, field-orientated key to the species; present concise, 'picture-driven' diagnoses and descriptions based on external morphology; map distributions; and propose conservation guidance for this remarkable group of frogs.

We have reviewed all 30 nominal species hitherto assigned to *Philautus* in Sri Lanka (see also Bossuyt & Dubois, 2001) and examined and described the available name-bearing type material for these: we consider 25 to be valid; 4 to be junior synonyms; and one incertae sedis (see Table 1). Of the 30 species, a name-bearing type was not designated for only one (*Polypedates stellata* Kelaart, 1853). The name-bearing types of a further four species (*Ixalus sarasinorum* Müller, 1887; *Rhacophorus pleurotaenia* Boulenger, 1904; *Ixalus stictomerus* Günther, 1876a; and *Ixalus semiruber* Annandale, 1913) have been recently lost or misplaced. As these types have disappeared only during the past two decades, we hold out a hope that they will be rediscovered: in the interests of 'nomenclatural parsimony' (see Bossuyt & Dubois, 2001), we have, except in one case, tentatively matched 'new' species consistent with the original descriptions to these names, so as not to risk creating unnecessary new names.

The Rhacophorinae have benefitted from several investigations into higher level relationships following Liem (1970), whose data were reanalyzed (with contradictory conclusions) by Channing (1989) and Wilkinson & Drewes (2000). The range of the genus, as presently understood, extends from the Philippines (Brown & Alcalá, 1994) across tropical continental Asia to India and Sri Lanka. Meegaskumbura et al. (2002) demonstrated that the Sri Lankan *Philautus* represent a monophyletic radiation, while Bossuyt et al. (2004) showed that biotic interchange between Sri Lanka and India has been much more restricted than previously assumed, despite several extended periods of land connections during the past 500,000 yr. For these reasons, we have in this paper considered it unnecessary to diagnose Sri Lankan species of *Philautus* against the Indian fauna.

The 27 new species described (see Table 2) represent only a part of the novelties awaiting description from our surveys. We selected new species for inclusion here based on several criteria: (1) species treated under the Global Amphibian Assessment (Stuart et al., 2004); and (2) species for which DNA sequences were available from Meegaskumbura et al. (2002) and Bossuyt et al. (2004). These include several species occurring around the WHT field station at Agarapatana (thus facilitating reports on their conservation and biology: e.g. Bahir et al., 2005); and several species that warrant urgent conservation attention, especially those those occurring in eastern Sinharaja and the Knuckles. All the species discussed in this paper have been assessed for the IUCN Red List of threatened species (Table 2), for which purpose too, published species names are necessary. The remaining novel species will be described in forthcoming papers of different authorship.

It has not escaped our attention that the description of 27 new species of anurans in a single paper (an act perhaps without precedent in the past century), especially from an apparently 'well-studied' country such as Sri Lanka, could be grounds for scepticism with regard to our understanding of these species. This is especially so given that twice as many new species yet remain to be described.

The sampling of anuran species for taxonomic purposes poses a variety of challenges, such as ethical limits on sample size, especially given that many of these species are critically endangered, cryptic or found above the lowest 2–3 m of the forest understorey, in which sampling is difficult. Given the limited series of preserved specimens available for many species therefore, we thought it prudent to test our 'species concept' by molecular means. Meegaskumbura et al. (2002) did so for ~ 30 species, confirming the diagnoses we had already established using morphometric and acoustic data (we stress that the discovery of this diversity was not a result of the phylogenetic analysis based on mitochondrial DNA, as suggested by Mace et al., 2003).

Although we here diagnose and describe these species entirely on morphometric criteria, we follow the General Lineage concept of species (Queiroz, 1998), which emphasizes the central theme common to all species concepts, viz., that species are demonstrably independent evolutionary lineages. We have studied also the reproductive biology (Bahir et al., 2005) and bioacoustics (Meegaskumbura et al., in prep.) of a majority of the extant species, which data provide additional reassurance as to their validity.

A further development that helped facilitate our work was the publication by Bossuyt & Dubois (2001) of a review of the genus *Philautus* Gistel, 1848 (sensu lato), in which is included a complete listing and nomenclatural discussion of the Sri Lankan rhacophorines. Bossuyt & Dubois (2001) also catalogued the extant type material and in many cases designated lectotypes, effectively simplifying our work; this partial revision is therefore intended to supplement rather than replace, insofar as the Sri Lankan *Philautus* are concerned, their extremely useful review.

Dutta & Manamendra-Arachchi (1996) had followed earlier authors in allocating Sri Lanka's rhacophorines into the genera *Philautus* (type species: *Hyla aurifasciata* Schlegel, 1837, type locality: Java, Indonesia); *Polypedates* (type species: *Hyla leucomystax* Gravenhorst, 1829, type locality: Java, Indonesia); *Rhacophorus* Kuhl & van Hasselt, 1822 (type species: *Rhacophorus moschatus* Kuhl & van Hasselt, 1822 = *Hyla reinwardtii* Schlegel, 1840, type locality: Java, Indonesia; see also Wolf, 1936); and *Theلودerma* Tschudi, 1838 (type species: *Theلودerma leporosa* Tschudi, 1838, type locality: Padang, Sumatra, Indonesia). Of these, only *Philautus* shows endotrophic (direct) development on land (Dring, 1980, 1987), while the other genera all display exotrophic development in foam nests or lentic habitats (Siedlecki, 1909; Van Kampen, 1909, 1923; Inger, 1985; see also Bossuyt & Dubois, 2001 for a more detailed discussion). Richards & Moore (1998) and Meegaskumbura et al. (2002) have demonstrated however, that the Sri Lankan Rhacophorinae comprise only two clades: the direct-developing *Philautus* and the foam-nesting *Polypedates* (considered by Bossuyt & Dubois, 2001, to be a subgenus of *Rhacophorus*).

Two other nominal rhacophorine genera are based on type species endemic to Sri Lanka. Laurent (1943) proposed the genus *Pseudophilautus* (type species *Ixalus temporalis* Günther, 1864: type locality 'Ceylon'; now apparently extinct) on the erroneous premise that its type species belonged to Ranidae: Mantellinae. Inger, Duellman & Dutta (in Frost 1985: 439) stated however, that the type species was probably a *Philautus*, which it is also within our understanding of that genus (this is supported by Bossuyt & Milinkovitch, 2000, who show that the resemblance between the Asian Rhacophorinae and Madagascan Mantellinae are largely the result of convergence). For the present, we therefore consider *Pseudophilautus* to be a subjective synonym of *Philautus*.

The subgenus *Philautus* (*Kirtixalus*) Dubois, 1987 (type species, *Polypedates microtympanum* Günther, 1859; type locality "Ceylon"), was erected by reason of its exhibiting aerial direct development, as reported by (Günther, 1876b; Ferguson, 1876; Kirtisinghe, 1946, 1957). Material of *Philautus* (*Kirtixalus*) *microtympanum* was included in the analysis of Meegaskumbura et al. (2002) however, which showed that it is nested within the clade to which the Sri Lankan (and south Indian) direct-developing rhacophorines belong. We therefore consider the genus-group name *Kirtixalus* Dubois, 1987 to be a junior subjective synonym of *Philautus* Gistel, 1848.

It is of concern that only nine of the 25 valid previously-described species (i.e. 38 percent) were recorded in our survey. We believe however, that this suggestion of an extinction of 62 percent of the then-known *Philautus* is in fact an underestimate, given that it is likely that the collections on which they were based were casual, and probably from gardens. Only ~ 750 km² of the former ~ 16,000 km² of Sri Lanka's rainforest survives at present (i.e. 4.7 percent), and a massive extirpation of restricted-range species is therefore likely to have occurred.

All but one of the 35 extant species we recognize in this paper are restricted to the wet-zone 'rainforest' quarter of Sri Lanka; of these, 12 are known from extremely small ranges (< 30 km²). The large-scale clearing of some 4,200 km² of rainforest for the plantation of tea and rubber alone, could therefore have resulted in the extirpation of dozens of restricted-range species. This catastrophe underlines the urgent need to conserve Sri Lanka's remaining rainforest estate, which is already heavily fragmented. Nevertheless, there is hope that some of the species we label as 'extinct' could indeed still be alive, given that we describe five extant species as new in this paper from a single specimen each—some of these frogs are extremely cryptic and hard to find.

The discovery and description of so large a number of species, although remarkable for an age that is witnessing a cataclysmic crash in global biodiversity (and in particular, inexplicable declines in amphibian populations worldwide), is not unparalleled recently in Asia. Comparable discoveries have been published recently with regard to the freshwater crabs of Sri Lanka (Ng & Tay, 2001; Bahir & Ng, 2005), the freshwater fishes of Laos (Kottelat, 2000) and the amphibian fauna of Kerala (Biju, 2001). Our unearthing the remarkable speciosity of Sri Lankan *Philautus* was accidental, and occurred as we explored the diversity of freshwater fishes and crabs in the early 1990s.

This discovery was indeed serendipitous—coincidentally a word coined by Horace Walpole in 1754 from Serendip, the classical name for Sri Lanka, based on an original (1557) allusion by Christoforo Armeno in his "Peregrinaggio di tre giovani figlivioli del Re di Serendippo" [published in English as "The travels and adventures of three princes of Serendip", 1722] (Merton & Barber, 2004). No word could better describe the discovery of the wealth of amphibian novelties recently discovered in Sri Lanka, though the evidence we present of a large-scale extinction is indeed sobering.

MATERIALS AND METHODS

The material referred to is deposited in The Natural History Museum, London, UK (BMNH); the Museum of Comparative Zoology, Cambridge, Massachusetts, USA (MCZ); Naturhistorisches Museum, Basel, Switzerland (NHMB); Wildlife Heritage Trust of Sri Lanka (WHT); Zoologisches Museum, Berlin, Germany (ZMB); and Zoological Survey of India, Kolkata (ZSI).

The new type material designated in this paper is deposited for the present in WHT because Sri Lanka lacks a national institution competent to serve as a repository of zoological type specimens. We entertain grave doubts with regard to the long-term security of this material. We hope that the repressive nationalism the Convention on Biological Diversity (CBD) has engendered in many developing nations such as Sri Lanka, with the descent of an 'iron curtain' across not just international scientific linkages but across scientific research itself, will one day be reversed. It is essential that type material be deposited in truly international institutions of proven

competence, to which the international scientific community has unfettered access. Likewise, it is important to realize that such material bears no relevance to the unrealistic expectation of commercial benefits from biodiversity that the Convention raised in many biodiversity rich, developing nations (Pethiyagoda, 2004). The accelerating loss of biodiversity in Sri Lanka, together with the continuing discovery of previously unknown species, makes further taxonomic effort both urgent and important; we hope the day is not far off when governments will recognize that science, especially when related to conservation, must transcend illusions of sovereignty.

“Other material” referred to each species represents specimens identified from different locations but whose measurements are not included in the Tables: they are listed purely for the purpose of recording distribution and documenting available material.

A total of ~ 350 locations in Sri Lanka were sampled at points of convenient access (e.g. beside roads, streams and jungle tracks) during 1994–2003, involving a sampling effort of ~ 950 person days (see also Pethiyagoda & Manamendra-Arachchi, 1998). The species represented in this paper are from 61 sites sampled in the course of 124 days. Each site was sampled at least twice and 13 sites were sampled on between three and eight occasions (collection data are provided in the Material Examined sections of each species description).

Sex was determined by the presence of nuptial pads, inner vocal slits or a gular vocal sac in males (which characters, however, may not definitively indicate gender in all species), and in some cases, by dissection. The presence or absence of vomerine ridges was also determined; when present, the acute angle between the extremities of the ridge and body axis was measured.

We used a standard template (Manamendra-Arachchi & Pethiyagoda 2001a, b) to indicate the extent of webbing: the nodes in these diagrams represent the position of subarticular tubercles. Because of intraspecific variation the degree of webbing is expressed as one of three categories, as follows: toes free (webbing absent); toe/s fully webbed (webbing extends to disc on either or both sides of the toe/s mentioned); toes medially webbed (web does not extend to the disc in any toe).

Colour photographs of extant species were taken in life, in the natural habitat or exceptionally in a vivarium, within 24 hours of capture (the one exception being *Philautus papillosus*, which was photographed shortly after preservation).

Geographical coordinates are derived both from GPS readings (geodetic datum WGS-84: World Geodetic System of 1984) and from 1:10,000 topographical maps. Unless otherwise specified, all material is from Sri Lanka.

Measurements were taken with dial vernier callipers with a resolution of ± 0.05 mm. Nomenclature of external anatomy referred to in the text and external measurements taken are indicated in Fig. 1.

- DBE Distance between back of eyes (Fig. 1*b*).
- DFE Distance between front of eyes (Fig. 1*b*).
- DL Length of disk of third finger— taken from anterior edge of circum-marginal groove to posterior edge of disk (Fig. 1*e*).
- DW Width of disk of third finger— measured over both inner and outer edges of circum-marginal groove (Fig. 1*e*).
- ED Eye diameter— horizontal diameter of eye (Fig. 1*a*).
- EN Eye to nostril distance— measured between anterior-most point of eye and middle of nostril (Fig. 1*a*).
- ES Eye to snout (snout length)— distance between anterior-most point of eye and tip of snout (Fig. 1*a*).
- FEL Thigh (femur) length— distance between vent and knee with both thigh and shank flexed (Fig. 1*d*).
- FL Finger length— distance between posterior margin of most proximal subarticular tubercle or crease of articulation and tip of disc (Fig. 1*e*).
- FOL Foot length— distance between heel and tip of fourth toe with both foot and shank flexed (Fig. 1*d*).
- HL Head length— distance between angle of jaws and snout tip (Fig. 1*a*).
- HW Head width— measured across angle of jaws (Fig. 1*b*).
- IML Inner metatarsal tubercle length (Fig. 1*f*).
- IN Internarial distance— least distance between the inner margins of nares (Fig. 1*b*).
- IO Interorbital width— least distance between the upper margins of orbits (Fig. 1*b*).
- LAL Lower arm length— taken from elbow to posterior-most margin of inner palmar tubercle (Fig. 1*d*).
- LPH Height of lingual papilla (Fig. 1*g*).
- LPW Width of lingual papilla (Fig. 1*g*).
- MBE Mandible–back of eye distance— distance between angle of jaws and posterior-most point of eye (Fig. 1*a*).
- MFE Mandible–front of eye distance— taken as distance between angle of jaws and anterior-most point of eye (Fig. 1*a*).
- MN Mandible–nostril distance— taken as distance between angle of jaws and middle of nostril (Fig. 1*a*).
- NS Nostril–snout distance— taken as distance between middle of nostril and tip of snout (Fig. 1*a*).
- PAL Palm length, taken from posterior-most margin of inner palmar tubercle to tip of disk of third finger (Fig. 1*e*).
- SVL Snout–vent length— measured from tip of snout to vent (Fig. 1*c*).

TAD Tympanum–back of eye distance— distance between anterior-most point of inner margin of inner rim of tympanum and posterior-most point of eye (Fig. 1a).

TBL Shank (tibia) length— distance between knee and heel with both shank and foot flexed (Fig. 1d).

TL Toe length— distance between posterior margin of most proximal subarticular tubercle or crease of articulation and tip of disk (Fig. 1f).

TND Tympanum–nostril distance— distance between anterior-most point of inner margin of inner rim of tympanum and middle of nostril (Fig. 1a).

TPD Tympanum–front of eye distance— taken as distance between anterior-most point of inner margin of inner rim of tympanum and anterior-most point of eye (Fig. 1a).

TYE Tympanum diameter— greatest diameter of inner rim (Fig. 1a).

UAW Upper arm length— distance between axilla and elbow (Fig. 1d).

UEW Upper eyelid width—measured from bony edge of supraorbital to outer edge of upper eyelid (Fig. 1b).

Measurements of name-bearing types are provided in the individual species accounts, and together with paratypes, also in Tables 3–10. Diagnoses are based essentially on the consistent presence or absence of characters, metrics being provided only by way of augmentation, as argued by Hayek et al. (2001). Discriminant analysis was used to verify metric differentiation of species, which is further elaborated against similar species in the Remarks section in each species description.

Using a scaled drawing, the angle of the snout in dorsal view was determined by measuring the angle from the tip of the snout to the posterior edges of the eyes and categorized as 0 (70°–74°), 1 (75°–79°), 2 (80°–84°), 3 (85°–89°), 4 (90°–94°), 5 (95°–99°), 6 (100°–104°), 7 (105°–109°), 8 (110°–114°) and 9 (115°–119°).

We have noted such habitat characteristics as would be useful for relocating the various species in future monitoring activity. Habitat types are broadly categorized using canopy cover as the main criterion. Open-canopy habitats include naturally open areas (e.g. montane grasslands, lowland grasslands, shrub forests, rocky habitats, streams) and disturbed areas (habitats degraded by recent or continuing anthropogenic activity and natural phenomena). Closed-canopy habitats include both primary and secondary forests, shaded streams, rocky areas, and some anthropogenic habitats (e.g. orchards, home gardens with dense vegetation). Vertical distribution and the microhabitat within each habitat are also noted for each species. We also comment on the range and crudely assess abundance (e.g. common, uncommon). We use the term ‘habitat generalist’ for species that use more than one major habitat type during any part of their life cycle; and ‘habitat specialist’ for those that occupy only one major habitat. However, the forest floor and low vegetation < 0.3 m is the preferred habitat of most early juveniles.

Details of DNA analysis are provided in the supplementary material to Meegaskumbura et al. (2002) and Bossuyt et al. (2004).

Conservation status was assessed according to the IUCN’s 2001 Red List Categories and Criteria, Version 3.1 (<http://www.iucn.org/themes/ssc/redlists/RedListGuidelines.pdf>). As current population trends have not been assessed for any Sri Lankan amphibian species, assessments are based on purely on spatial criteria and level of threat— i.e. estimated Extent of Occurrence, number of locations, degree of fragmentation, and threat to habitat. Extent of Occurrence (B1: the smallest convex polygon enclosing all the locations at which the species has been recorded) was chosen over Area of Occupancy because our survey involved sampling at convenient points rather than along transects or in quadrats according to standard methods (e.g. Heyer et al., 1994). All sites smaller than 100 km² were, regardless of their protection status, considered threatened because of edge effects, pesticide influx, erosion and invasive species, which lead to loss of habitat quality (Hewawasam et al., 2003).

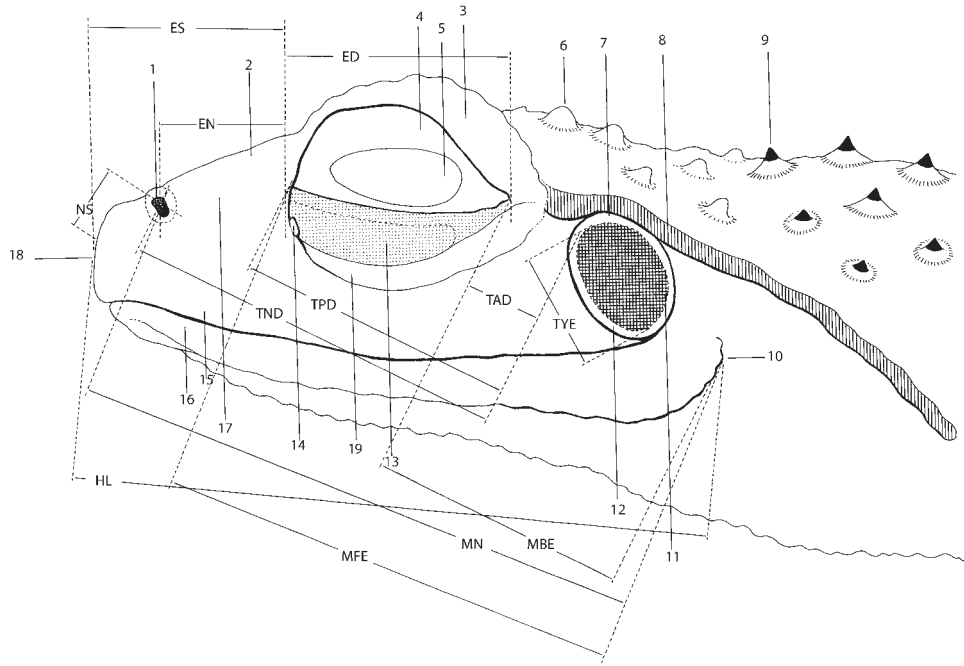
TAXONOMY

Philautus Gistel, 1848

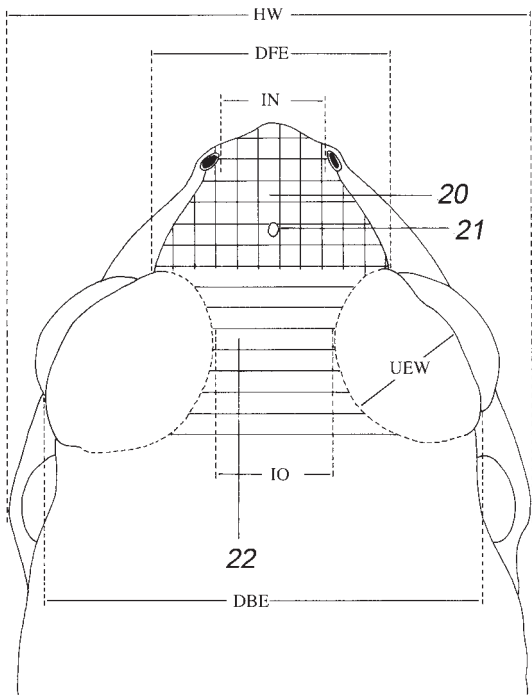
Character set common to Sri Lankan *Philautus*. – Nostrils rounded or oval, lacking a lateral dermal flap. Pupil oval, horizontal. Vomerine ridge present or absent. Tongue oval, emarginate, with or without a papilla. Arms short, slender. Digits slender, with intercalary cartilage, terminating in wide, well-differentiated, grooved, disks. Fingers with or without a lateral dermal fringe. Fingers free, rarely (poorly) webbed. Subarticular tubercles rounded or oval, single. Prepollex oval. Two palmar tubercles. Supernumerary tubercles absent or present. Thigh and shank slender. Webbing present on toes, rarely absent. Dermal fringe along toe 5 poorly developed or absent. Inner metatarsal tubercle distinct, oval, not shovel-shaped. Outer metatarsal tubercle absent. Dorsolateral dermal fold absent. Macroglands (parotid, femoral, brachial, rectal, humeral and supra-brachial) absent. Vocal sacs and/or gular slits present and nuptial pads present or absent in mature males. All species undergo direct development.

Etymological note. – The etymology of *Philautus* has been speculated on frequently by herpetologist colleagues (in conversation) and we felt an explanatory note would be apt here. The Greek ‘philautos’ means one who loves himself— “phileo” = to love, “autos” = self. The name appears first to have entered the literature as Phylautus, a literary character, in John Lyly’s “Euphues: the anatomy of wit” (1578). It was subsequently used (as Philautus) in several subsequent literary works including Robert Greene in his “Menaphon Camillas Alarum to Slumbering Euphues” (1587); Barnaby Rich in his Anathomy of Ireland (1615), and John Eachard’s (1672) “Mr Hobbs’s State of Nature”. *Philautus* is often lionized in these and subsequent literary works as a reliable “friend and confidant” (see also Hadfield, 2001).

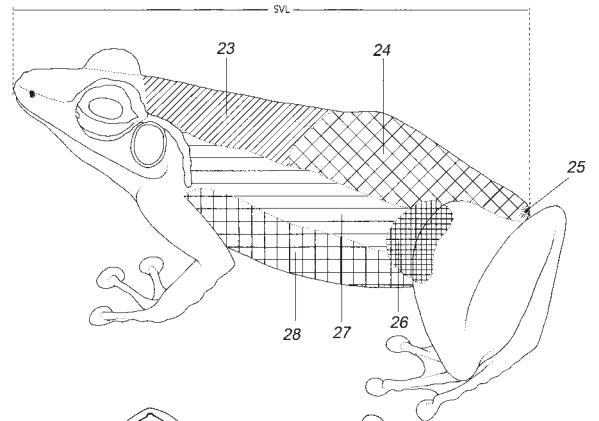
a



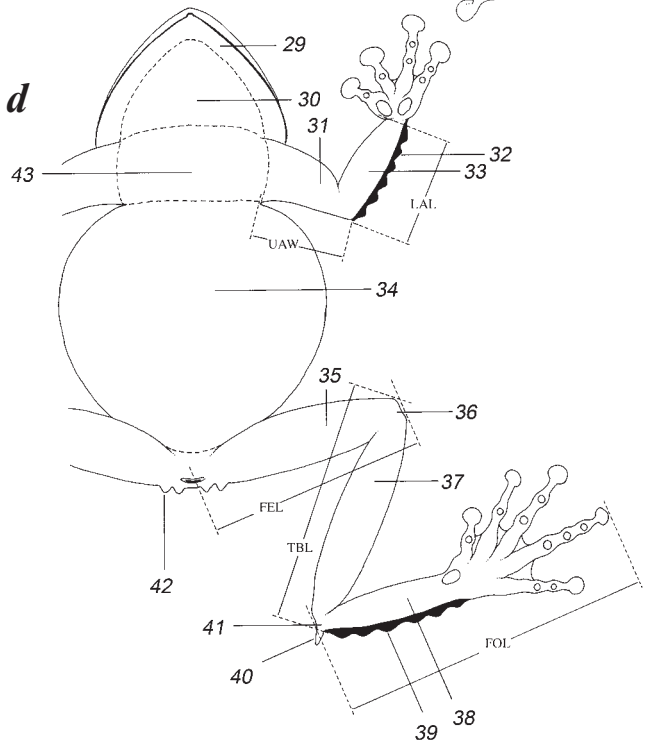
b



c



d



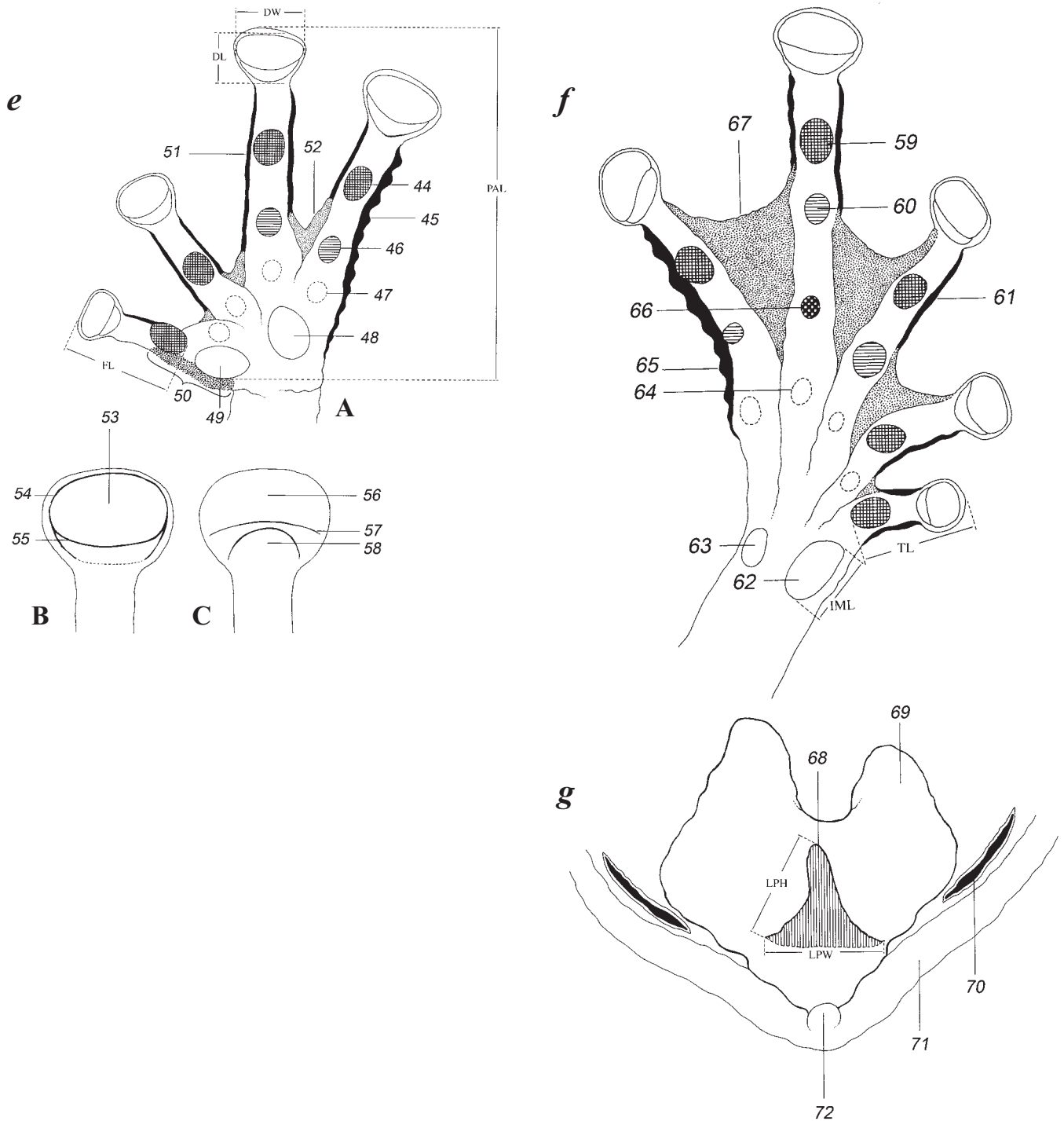


Fig. 1. *a*, lateral aspect of head; *b*, dorsal aspect of head; *c*, dorsolateral aspect; *d*, ventral aspect; *e*, (A) ventral aspect of palm, (B) ventral aspect of disk and (C) dorsal aspect of disk; *f*, ventral aspect of foot; and *g*, tongue and lower jaw. 1, nares (*a*); 2, canthal edge (*a*); 3, upper eyelid (*a*); 4, iris (*a*); 5, pupil (*a*); 6, tubercle (*a*); 7, tympanum, including both edge of tympanic membrane and outer rim of tympanum (*a*); 8, supratympanic fold (*a*); 9, horn-like spinules (*a*); 10, angle of mouth (*a*); 11, edge of tympanic membrane (*a*); 12, outer rim of tympanum (*a*); 13, nictitating membrane (*a*); 14, eye notch (*a*); 15, upper lip (*a*); 16, lower lip (*a*); 17, loreal region (*a*); 18, anterior most point of snout (*a*); 19, lower eyelid (*a*); 20, dorsal snout (*b*, squared area); 21, pineal ocellus (*b*); 22, inter-orbital area (*b*); 23, anterior part of back (*c*); 24, posterior part of back (*c*); 25, vent (*c*); 26, inguinal zone (*c*); 27, upper part of flank (*c*); 28, lower part of flank (*c*); 29, margin of throat (*d*); 30, throat (*d*); 31, upper arm (*d*); 32, dermal fringe along lower arm (*d*); 33, lower arm (*d*); 34, belly (*d*); 35, thigh (*d*); 36, knee (*d*); 37, shank (*d*); 38, foot (*d*); 39, dermal fringe along foot (*d*); 40, calcar (*d*); 41, tibio-tarsal articulation (*d*); 42, tubercles around vent (*d*); 43, chest (*d*); 44, distal subarticular tubercle on finger (*e*, A); 45, dermal fringe along finger 4 (*e*, A); 46, penultimate subarticular tubercle on finger (*e*, A); 47, supernumerary tubercle on hand (*e*, A); 48, outer palmar tubercle (*e*, A); 49, inner palmar tubercle (*e*, A); 50, nuptial pad [stippled area] (*e*, A); 51, lateral dermal fringe [black edge] (*e*, A); 52, finger web (*e*, A); 53, disk pad (*e*, B); 54, circum-marginal groove (*e*, B); 55, basal groove (*e*, B); 56, disk cover (*e*, C); 57, dermal fold on disk (*e*, C); 58, terminal knuckle (*e*, C); 59, distal subarticular tubercle on toe (*f*); 60, penultimate subarticular tubercle on toe (*f*); 61, lateral dermal fringe on toe [black edge] (*f*); 62, inner metatarsal tubercle (*f*); 63, outer metatarsal tubercle (*f*); 64, supernumerary tubercle on foot (*f*); 65, dermal fringe along toe 5 (*f*); 66, antepenultimate subarticular tubercle (*f*); 67, toe web (*f*); 68, lingual papilla (*g*); 69, tongue (*g*); 70, internal vocal slit (*g*); 71, lower lip (*g*); 72, symphyseal knob (*g*).

KEY TO SRI LANKAN SPECIES OF *PHILAUTUS*

1	Tarsal fold present	2
–	Tarsal fold absent	4
2	Toes fully webbed	<i>P. cavirostris</i>
–	Toes not fully webbed	3
3	Crossbars on limbs absent, lingual papilla absent, tarsal fold tuberculated; restricted to central hills	<i>P. schmarida</i>
–	Crossbars on limbs present, tarsal fold wavy, not tuberculated; lingual papilla present; restricted to Rakwana hills	<i>P. decoris</i>
4	Tympanum discernible	7
–	Tympanum not discernible	5
5	Supratympanic fold absent, canthal edges rounded	<i>P. femoralis</i>
–	Supratympanic fold present, canthal edges sharp	6
6	Lingual papilla present, supernumerary tubercles on palm absent, crossbars on limbs present	<i>P. extirpo</i>
–	Lingual papilla absent, supernumerary tubercles on palm present, crossbars on limbs absent,	<i>P. adpersus</i>
7	Skin on head co-ossified with skull	<i>P. limbus</i>
–	Skin on head not co-ossified with skull	8
8	Toe webbing absent	<i>P. hypomelas</i>
–	Toe webbing present	9
9	Toes fully webbed	10
–	Toes not fully webbed	16
10	Dermal fringe on fingers absent	<i>P. sarasinorum</i>
–	Dermal fringe on fingers present	11
11	Fingers not webbed, supernumerary tubercles on palm absent, supernumerary tubercles on foot present	<i>P. fulvus</i>
–	Fingers webbed, supernumerary tubercles on palm present, supernumerary tubercle on foot absent	12
12	Supratympanic fold present, lingual papilla absent	<i>P. pleurotaenia</i>
–	Supratympanic fold absent, lingual papilla present	13
13	Tarsal tubercle present, canthal edges sharp	14
–	Tarsal tubercle absent, canthal edges rounded	15
14	Lingual papilla large	<i>P. papillosus</i>
–	Lingual papilla small	<i>P. reticulatus</i>
15	A white or yellow patch on infra-orbital area present, species restricted to south-western lowlands	<i>P. abundus</i>
–	No white or yellow patch on infra-orbital area, species restricted to Knuckles range	<i>P. macropus</i>
16	Supernumerary tubercles on palm absent	17
–	Supernumerary tubercles on palm present	18
17	Tarsal tubercle and lateral black band from tip of snout to tympanum present, blue pigments on inguinal zone absent	<i>P. oxyrhynchus</i>
–	Tarsal tubercle and lateral black band from tip of snout to tympanum absent, blue pigments on inguinal zone present	<i>P. caeruleus</i>
18	Tarsal tubercle absent	26
–	Tarsal tubercle present	19
19	Lingual papilla present	<i>P. lunatus</i>
–	Lingual papilla absent	20
20	Dermal fringe on fingers present	21
–	Dermal fringe on fingers absent	22
21	Canthal edges sharp, supratympanic fold prominent, no black band from tip of snout to tympanum in lateral view	<i>P. zimmeri</i>
–	Canthal edges rounded, supratympanic fold not prominent, a black band from tip of snout to tympanum in lateral view	<i>P. alto</i>
22	Supernumerary tubercles on foot present, supratympanic fold prominent	23
–	Supernumerary tubercles on foot absent, supratympanic fold not prominent	25
23	A back band from tip of snout to tympanum, crossbars on limbs present	24
–	No back band from tip of snout to tympanum, crossbars on limbs absent	<i>P. nasutus</i>
24	Snout angle category 1	<i>P. malcolmsmithi</i>
–	Snout angle category 3	<i>P. zorro</i>
25	Crossbars on limbs present, canthal edges sharp	<i>P. cuspis</i>
–	Crossbars on limbs absent, canthal edges rounded	<i>P. ocularis</i>
26	Canthal edges sharp	27
–	Canthal edges rounded	32
27	Lingual papilla absent	29
–	Lingual papilla present	28
28	Supernumerary tubercles on foot absent, snout angle category 5, webbing on fingers absent	<i>P. silvaticus</i>
–	Supernumerary tubercles on foot present, snout angle category 9, webbing on fingers present	<i>P. eximius</i>
29	Dermal fringe on fingers present	36
–	Dermal fringe on fingers absent	30
30	Supernumerary tubercles on foot present, supratympanic fold prominent	<i>P. rugatus</i>
–	Supernumerary tubercles on foot absent, Supratympanic fold not prominent	31
31	No black band from tip of snout to tympanum in lateral view, snout angle category 7	<i>P. leucorhinus</i>
–	A black band from tip of snout to tympanum in lateral view, snout angle category 4	<i>P. folicola</i>
32	Webbing on fingers present, a black band on snout	<i>P. dimbullae</i>

– Webbing on fingers absent, no black band on snout	33
33 Supernumerary tubercles on foot absent	<i>P. zal</i>
– Supernumerary tubercles on foot present	34
34 Crossbars on limbs absent, supratympanic fold prominent	<i>P. halyi</i>
– Crossbars on limbs present, supratympanic fold not prominent	<i>P. silus</i>
36 Supernumerary tubercles on foot present	37
– Supernumerary tubercles on foot absent	42
37 Dermal fringe on fingers present	38
– Dermal fringe on fingers absent	39
38 Webbing on fingers present, crossbars on limbs absent	<i>P. silvaticus</i>
– Webbing on fingers absent, crossbars on limbs present	<i>P. microtympanum</i>
39 Supratympanic fold not prominent, snout angle category 3	<i>P. temporalis</i>
– Supratympanic fold prominent, snout angle category over 4	40
40 Snout–vent length large (34.8 mm)	<i>P. nanus</i>
– Snout-vent length small (17.7–21.3 mm)	41
41 Snout angle category 7	<i>P. regius</i>
– Snout angle category 5	<i>P. popularis</i>
42 Web on fingers present	47
– Web on fingers absent	43
43 Lingual papilla present	<i>P. hoipolloi</i>
– Lingual papilla absent	44
44 Crossbars on limbs present	45
– Crossbars on limbs absent	46
45 Dermal fringe on fingers present	<i>P. fergusonianus</i>
– Dermal fringe on fingers absent	<i>P. simba</i>
46 Dermal fringe on fingers present	<i>P. auratus</i>
– Dermal fringe on fingers absent	<i>P. asankai</i>
47 Dermal fringe on fingers present	48
– Dermal fringe on fingers absent	50
48 Crossbars on limbs absent	<i>P. viridis</i>
– Crossbars on limbs present	49
49 Snout angle category 5	<i>P. procax</i>
– Snout angle category 7	<i>P. sordidus</i>
50 Supratympanic fold prominent	<i>P. rus</i>
– Supratympanic fold not prominent	51
51 Snout angle category 5	<i>P. stictomerus</i>
– Snout angle category 4	<i>P. nemus</i>

SPECIES ACCOUNTS

Philautus schmarda (Kelaart, 1854)

(Figs. 2, 3; Table 3)

Original name. – *Polypedates* (?) *schmarda* Kelaart, 1854: 407–408.

Synonymy. – *Ixalus poecilopleurus* Lichtenstein, Weinland & Von Martens, 1856: 36 — junior subjective synonym (here designated).

Material examined. – No type material designated or known. Neotype (here designated): male, 24.5 mm SVL, WHT 3353, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 7 Jun.1999.

Others - Female, 19.9 mm SVL, ZMB 3058, 'Ceylon', coll. Hoffmist., holotype by monotypy of *Ixalus poecilopleurus*. Male, 20.4 mm SVL, WHT 3348; male, 21.3 mm SVL, WHT 3349; male, 20.6 mm SVL, WHT 3350; male, 20.9 mm SVL, WHT 3351; male, 23.3 mm SVL, WHT 3352; male, 20.7 mm SVL, WHT 3354, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 7 Jun.1999. Male, 26.5 mm SVL, WHT 5404, above WHT Agra Arboretum, Torrington Estate, near Agarapatana, alt. 1700 m (06°50'N, 80°40'E), coll. 28 Nov.2001. Males, 21.7 mm SVL, WHT 5368; 24.1 mm SVL, WHT 5369; 17.7 mm SVL, WHT 5370; 24.7 mm SVL, WHT 5371; 21.1 mm SVL, WHT 5372; 25.0 mm SVL,

WHT 5373; 19.6 mm SVL, WHT 5374; 24.1 mm SVL, WHT 5375, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 16 Mar.1999. Males, 21.4 mm SVL, WHT 2505; 24.4 mm SVL, WHT 2509; 22.9 mm SVL, WHT 2504; 22.7 mm SVL, WHT 2508; 23.0 mm SVL, WHT 2501; 20.5 mm SVL, WHT 2506; 24.3 mm SVL, WHT 2503; 19.5 mm SVL, WHT 2507; 24.5 mm SVL, WHT 2502; female, 30.0 mm SVL, WHT 2500, Bogawanthalawa-Balangoda road (near Udugama), alt. 810 m (06°44'N, 80°41'E), coll. 30 Aug.1999. Male, 26.1 mm SVL, WHT 2073, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 07 Oct.1997.

Juvenile, 17.1 mm SVL, WHT 975, Kirigalpota, alt. 2300 m (06°48'N, 80°46'E), coll. 22 Dec.1994. Juvenile, 14.0 mm SVL, WHT 1278, Pidurutalagala (near Nuwara Eliya), alt. 2200 m (06°59'N, 80°46'E), coll. 22 Dec.1994. Juvenile, 13.9 mm SVL, WHT 1161, Adam's Peak, alt. 1850 m (06°49'N, 80°30'E), coll. 17 Mar.1995.

Diagnosis. – (See Fig. 2). Mature specimens 17.7–30.0 mm SVL; tympanum discernible; snout angle category 5; dorsal surface heavily tuberculated; a fringe of distinctly separated tubercles on posterior margin of lower arm and foot; vomerine teeth absent; lingual papilla absent; supernumerary tubercles present on palm and foot; calcar prominent; toes medially webbed; males without exposed nuptial pads; belly granular.

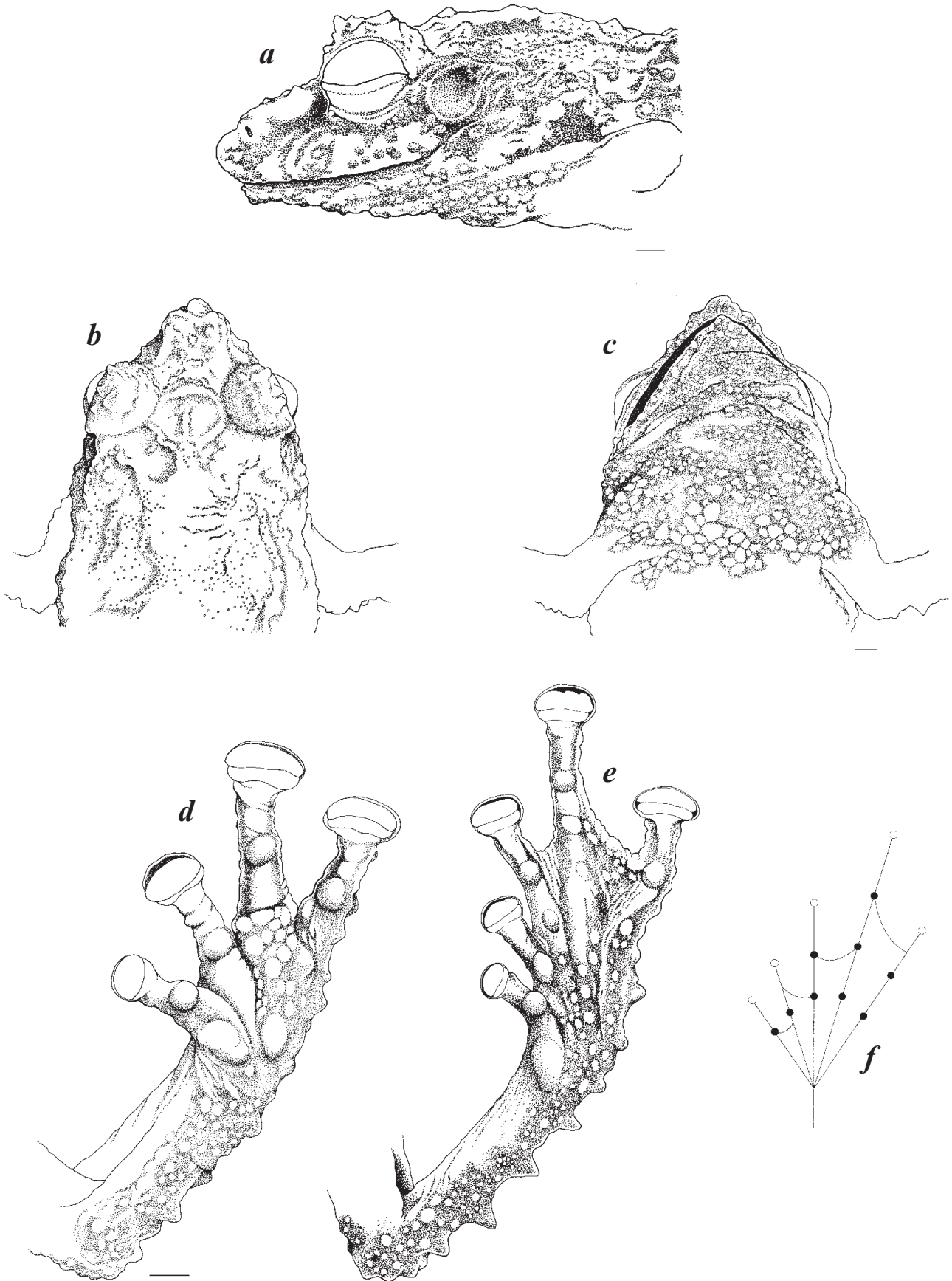


Fig. 2. *Philautus schmarda*: a–c, lateral, dorsal and ventral aspects respectively, of head; d, ventral aspect of left hand; e, ventral aspect of left foot; and f, semi-diagrammatic representation of the left-foot webbing pattern, of neotype, male, WHT 3353, 24.5 mm SVL. Scale bars: 1 mm.



Fig. 3. *Philautus schmarda*: male, WHT 2073, 26.1 mm SVL.

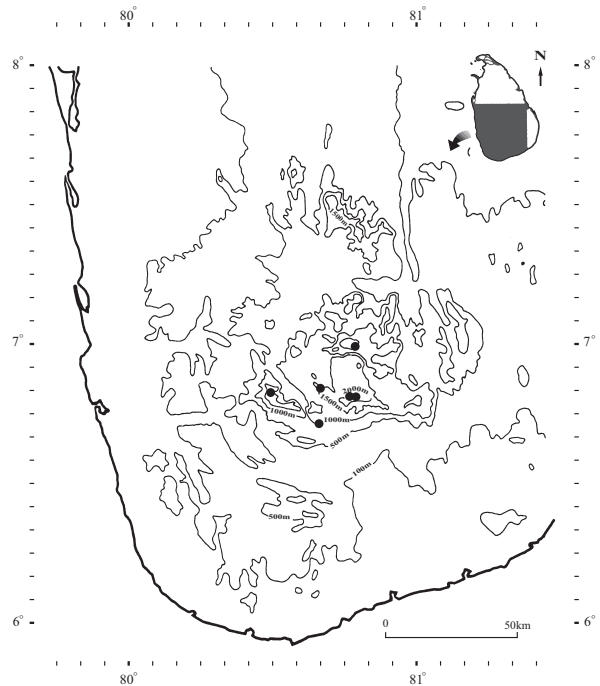


Fig. 4. Distribution of *Philautus schmarda* in Sri Lanka.

Description. – (See Fig. 2). Snout–vent length of mature males 17.7–26.5 mm; mature female 30.0 mm. Body stout. Head convex dorsally. Snout obtusely pointed in lateral view and snout angle category 5 (angle of snout ~ 95°). Canthal edges sharp. Loreal region concave. Interorbital space convex. Internarial space concave. Tympanum distinct, oval, vertical. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Fingers with lateral dermal fringe and rudimentary webbing. Outer edge of lower arm with a tuberculated dermal fold. Toes medially webbed. Tarsal fold tuberculated. Tarsal tubercle present. Snout with glandular warts. Interorbital area, dorsum and upper flank with glandular folds, glandular warts and horn-like spinules. Side of head with glandular warts. Lower flank with glandular warts and horn-like spinules. Throat and dorsal part of forelimb, thigh, shank and foot with glandular warts. Chest, belly and underside of thigh granular. Males with inner vocal slits; nuptial pad absent (subdermal nuptial pad present in some males, e.g. WHT 5372).

Colour in life: (based on WHT 2715; see also Fig. 3) dorsal part of head and body dark green and red-brown. Upper flank yellow; mid-flank dark brown; lower flank and inguinal zone light brown. Loreal region dark green; canthal edge red-brown. Tympanic region and tympanum red-brown. Both upper and lower lips brown with yellow spots. Dorsal side of limbs with red-brown patches. Tubercles on outer edge of lower arm, dorsal side of fingers 1, 2 and 4, outer edge of dorsal side of foot and toe 5 yellow. Anterior thigh yellow with brown ‘tube’-like bands. Fingers and palm ventrally pale yellow. Foot ashy brown or ashy yellow. Chest and abdomen yellow with bright-yellow spots. Lower area of vent and lower thigh with bright-yellow tubercles.

Colour in alcohol: (based on neotype WHT 3353), dorsal part of head and body dark brown with red-brown and black spots. Both upper and lower flank dark brown with white patches and spots. Inguinal zone dark brown. Loreal region dark brown with black spots. Tympanic region dark brown with black and white spots. Tympanum red-brown above ash below. Upper lip dark brown with black and white spots. Dorsal and lateral parts of forelimb dark brown with black crossbars and white spots. Dorsal part of thigh barred in light and dark brown. Dorsal part of shank dark brown with black spots. Dorsal part of foot dark brown with black and white spots. Posterior part of thigh dark brown with white patches. Throat pale yellow with black and ash patches; margins of throat and vocal sacs black with white patches. Chest, belly and thigh pale yellow with dark-brown patches. Webbing ashy brown.

Measurements of neotype (WHT 3353) in mm: DBE, 9.4; DFE, 5.8; DL, 0.8; DW, 2.1; ED, 3.7; EN, 3.2; ES, 5.1; FEL, 12.0; FL I, 1.8; FL II, 2.9; FL III, 5.1; FL IV, 4.2; FOL, 18.5; HL, 11.2; HW, 10.0; IML, 1.0; IN, 2.5; IO, 2.9; LAL, 5.8; MBE, 3.7; MFE, 6.7; MN, 9.4; NS, 1.8; PAL, 8.6; SVL, 24.5; TBL, 13.6; TLI, 2.1; TL II, 2.7; TL III, 4.4; TL IV, 7.4; TL V, 4.9; TYD, 0.7; TYE, 1.6; UAW, 4.8; UEW, 3.1.

Etymology. – The species name has been variously spelt *schmadana* (Kelaart, 1854b: 22), *schmardae* (Peters, 1860: 186), *schmardanus* (Boulenger, 1882a: 99) and *schmardanum* (Frost, 1985: 550). These are all incorrect subsequent spellings as the species epithet was originally applied *schmarda* (see Pethiyagoda & Manamendra-Arachchi, 1997; Bossuyt & Dubois, 2001).

Remarks. – *Philautus schmarda* (Figs. 2, 3) most resembles *P. cavirostris* (Figs. 32–36), *P. decoris* (Figs. 153, 154) and *P. extirpo* (Figs. 140, 141) from which it is distinguished as

follows. It differs from *P. cavirostris* by its smaller size (mature specimens 17.7–30.0 mm SVL), absence of vomerine teeth, less webbed toes, and limbs with blotches, vs. mature specimens 38.4–48.9 mm SVL, presence of vomerine teeth, fully webbed toes and limbs with cross bars in *P. cavirostris*. It is distinguished from *P. decoris* by the presence of a row of distinct tubercles on posterior margin of lower arm and foot, snout angle category 5, absence of lingual papilla, presence of horny spinules on dorsum in males and presence of blotches on limbs, vs. a sheath-like wavy fold (not distinct tubercles) present on posterior margin of lower arm and foot, snout angle category 4, presence of lingual papilla, absence of horny spinules on males and presence of crossbars on limbs in *P. decoris*. It differs from *P. extirpo* by having the tympanum discernible, snout angle category 5, absence of lingual papilla, presence of webbing on fingers, presence of tarsal tubercle, presence of tarsal fold, presence of lower-arm fold, presence of blotches on limbs and smaller size (17.7–30.0 mm SVL) vs. tympanum not discernible, snout angle category 7, presence of a lingual papilla, absence of webbing on fingers, absence of tarsal tubercle, absence of tarsal fold, absence of lower-arm fold, presence of crossbars on limbs and larger size (up to 43.5 mm SVL).

Distribution. – Recorded only from the central hills (type locality ‘Adam’s Peak’, 06°49’N, 80°30’E, now in the Peak Wilderness Sanctuary) at elevations in the range 810–2300 m (Fig. 4). Both adults and juveniles were seen only in closed canopy cloud forests. At night, adults were usually observed 1–2 m above ground, perched on leaves. Throughout the day, juveniles were observed on the forest floor, on wet (marshy) ground, in undisturbed forest. Adults were observed to rest on lichen and moss covered branches and tree trunks during the day. Adult males are group callers, and show a patchy distribution within the forest. In many locations *P. schmarda* is sympatric with *P. femoralis* sensu lato. In Horton Plains the species was seen mainly in undisturbed forest patches, but on the Bogawantalawa–Balangoda road (near Udugama), it was observed in disturbed habitats and the understorey of a pine plantation, but rarely in abandoned tea plantations (where the succession is usually by the invasive alien species, *Eupatorium riparium*: Compositae).

Conservation status. – Extent of Occurrence: 2,000 km² — Peak Wilderness, Agra Bopath, Horton Plains, Pedro— all of which are protected areas. The quality of much of this habitat is threatened however, by illegal firewood collection. Outcome: Endangered (criteria B1, a, b (iii)).

***Philautus leucorhinus* (Lichtenstein, Weinland
& Von Martens, 1856)**
(Figs. 5–7; Table 9)

Ixalus leucorhinus Lichtenstein, Weinland & Von Martens 1856: 36.

Material examined. – Holotype by monotypy of *Ixalus leucorhinus*, immature female, 19.8 mm SVL, ZMB 3057, ‘Ceylon’, coll. Hoffmeister.

Diagnosis. – (Based on holotype: see Figs. 5–7). Immature female 19.8 mm SVL; tympanum not discernible; snout angle category 7; dorsal surface smooth except for a few scattered, glandular warts; canthal edges sharp. Vomerine teeth absent. Supratympanic fold feebly defined, abbreviated. Supernumerary tubercles present on palm. Calcar absent. Toes medially webbed. Lingual papilla absent. Belly granular.

Description. – (Based on holotype, ZMB 3057, 19.8 mm SVL see Figs. 5–7.) Body elongate. Head dorsally flat. Snout angle category 7 (angle of snout ~ 105°), oval in lateral aspect. Canthus rostralis sharp. Loreal region concave. Interorbital and internarial space concave. Tympanum not discernible. Pineal ocellus, vomerine ridge and lingual papilla absent. Supratympanic fold feebly defined, abbreviated. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Supernumerary tubercles present on palm. Toes medially webbed. Tarsal fold and tarsal tubercle absent. Snout, interorbital area and side of head smooth. Dorsum smooth with a few scattered glandular warts. Upper flank smooth with glandular warts; lower flank granular with glandular warts. Dorsal part of forelimb and shank smooth, with a few scattered glandular warts. Thigh and foot dorsally smooth. Chest and throat granular, but not rough. Belly and underside of thigh granular, rough. Immature ovary creamy white.

Colour in alcohol: (based on holotype, ZMB 3057, Fig. 6), head and mid-body dorsally pale brownish-yellow, with a narrow darker brown interorbital bar. Head and body laterally dark brown. Upper lip pale brownish-yellow. Upper flank dark brown, lower flank and inguinal zone pale brownish-yellow. Dorsal and lateral parts of forelimb, thigh, shank and foot pale brown or pale brownish-yellow with dark-brown crossbars; posterior part of thigh dark brown. Throat, margin of throat, chest, belly and underside of thigh and webbing pale brown-yellow.

Measurements of holotype: (ZMB 3057, in mm): DBE, 8.0; DFE, 4.6; DL, 0.7; DW, 1.0; ED, 3.5; EN, 2.0; ES, 3.1; FEL, 10.1; FL I, 1.6; FL II, 2.0; FL III, 3.2; FL IV, 2.7; FOL, 13.6; HL, 8.9; HW, 8.6; IML, 0.9; IN, 1.9; IO, 2.4; LAL, 4.5; MBE, 3.8; MFE, 6.2; MN, 7.9; NS, 1.3; PAL, 6.1; SVL, 19.8; TBL, 10.2; TLI, 1.5; TL II, 1.7; TL III, 2.7; TL IV, 4.3; TL V, 3.3; TYD, (tympanum indistinct); TYE, (tympanum indistinct); UAW, 4.8; UEW, 2.5.

Remarks. – *Philautus leucorhinus* (Figs. 5–7) resembles *P. folicola* (Figs. 87, 87) and *P. limbus* (Figs. 93, 94). It differs from *P. folicola* by having snout angle category 7 dorsum smooth with few scattered glandular warts and absence of black band from tip of snout to tympanum in lateral view, vs. snout category 4 and presence of black band from tip of snout to tympanum in lateral view in *P. folicola*. It is distinguished from *P. limbus* by the presence of sharp canthal edges, absence of lingual papilla, indistinct supratympanic fold, skin on fronto-parietal not co-ossified with skull, presence of supernumerary tubercles on palm, absence of supernumerary tubercles on foot, absence of tarsal tubercle, absence of vomerine ridge,

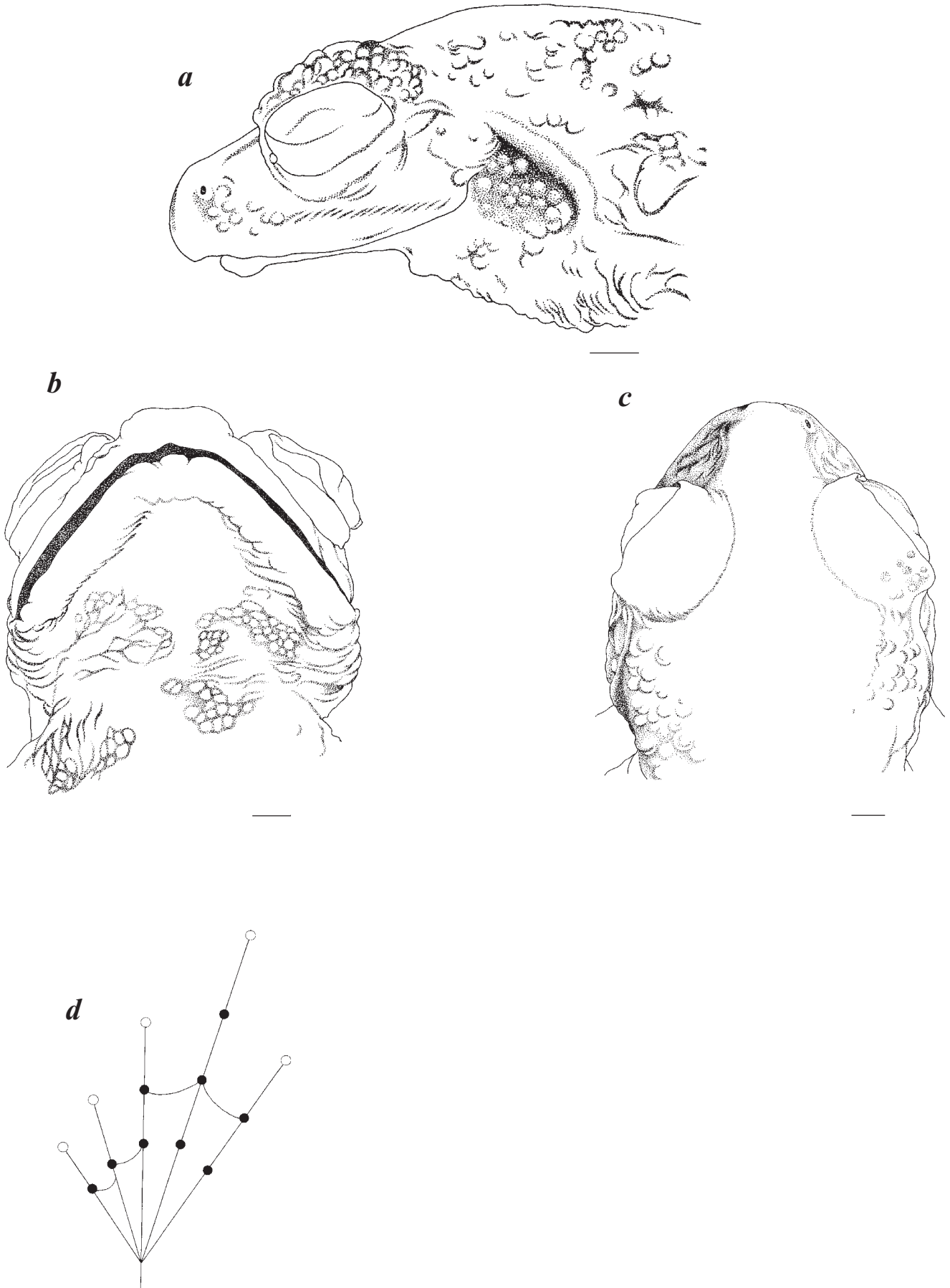


Fig. 5. *Philautus leucorhinus*: a–c: lateral, ventral and dorsal aspects respectively, of head; and d, semi-diagrammatic representation of the left-foot webbing pattern, of holotype, immature female, ZMB 3057, 19.8 mm SVL. Scale bars: 1 mm.

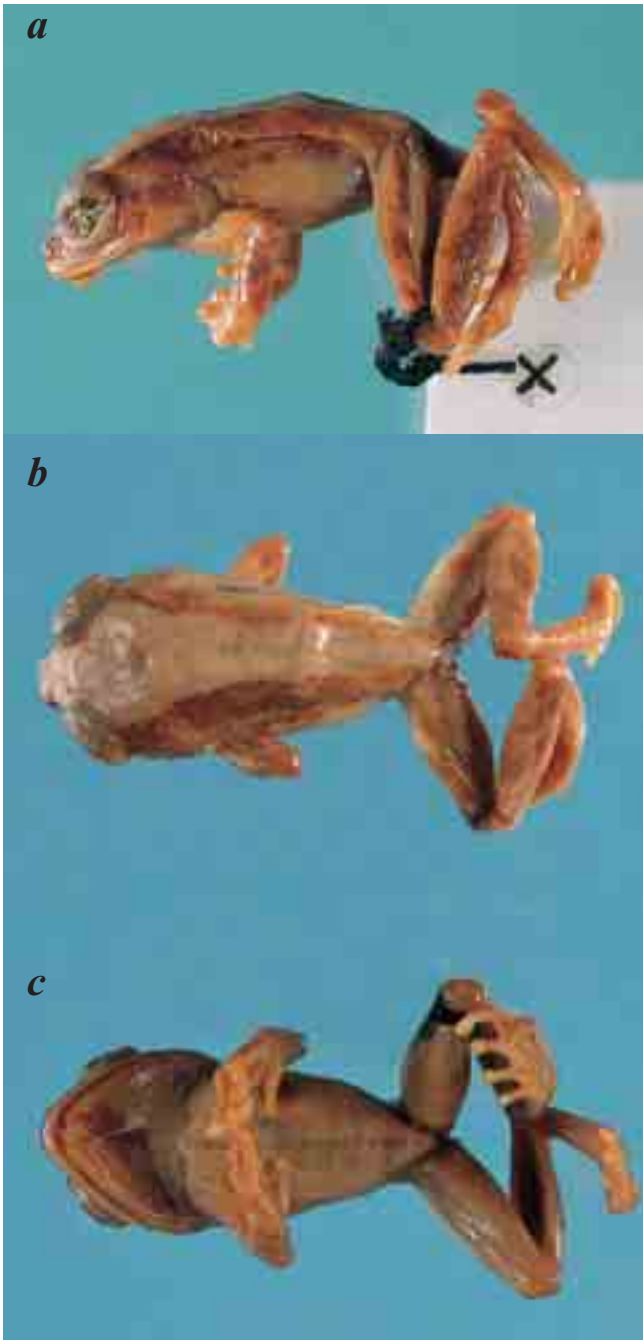


Fig. 6. *Philautus leucorhinus*, holotype, immature female, ZMB 3057, 19.8 mm SVL: *a*, lateral aspect; *b*, dorsal aspect; and *c*, ventral aspect.

and having snout angle category 7, vs. presence of rounded canthal edges, snout angle category 4, presence of lingual papilla, presence of prominent supratympanic fold, skin on fronto-parietal co-ossified with skull, absence of supernumerary tubercles on palm, presence of supernumerary tubercles on foot, presence of tarsal tubercle and presence of vomerine ridge in *P. limbus*.

Distribution. – The species is known only from the holotype, type locality ‘Ceylon’, = Sri Lanka.

Conservation status. – Extinct.

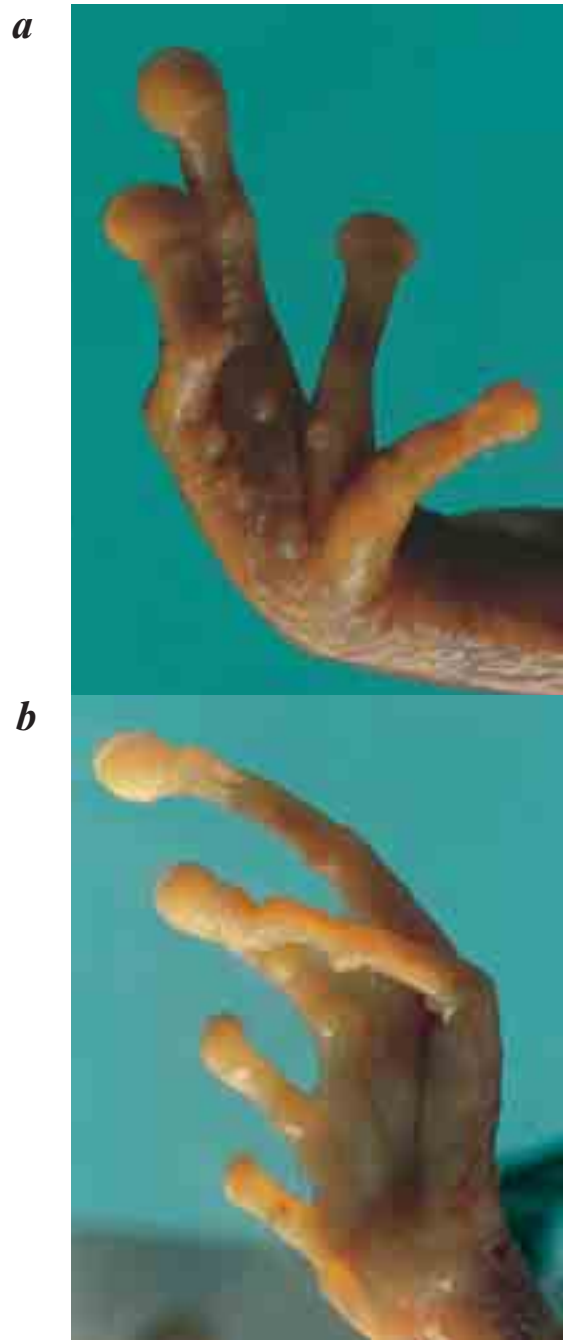


Fig. 7. *Philautus leucorhinus*, holotype, immature female, ZMB 3057, 19.8 mm SVL: *a*, ventral aspect of right hand; *b*, ventral aspect of left foot.

***Philautus variabilis* (Günther, 1859)**

(Figs. 8, 9; Table 5)

Ixalus variabilis Günther, 1859: xii, 74.

Material examined. – Lectotype of *Ixalus variabilis* (designated by Bossuyt & Dubois, 2001), mature female, 35.7 mm SVL, BMNH 1947.2.7.87, ‘Ceylon’, being the specimen figured in Günther (1859: pl. 4 Fig. B).

Diagnosis. – (Based on lectotype: see Figs. 8, 9). Tympanum discernible, feebly defined. Snout angle category 8. Dorsal

surface smooth. Canthal edges rounded. Vomerine teeth absent. Supratympanic fold distinct. Supernumerary tubercles on palm and on foot present. Toes medially webbed, toe 4 webbing to distal subarticular tubercle on both inner and outer sides. Lingual papilla absent. Throat, chest and belly granular.

Description. – (Based on lectotype, BMNH 1947.2.7.87, mature female, 35.7 mm SVL: see Figs. 8, 9). Body slender. Head dorsally flat. Snout angle category 8 (angle of snout 110°), truncate in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital space flat; internarial space concave. Tympanum discernible, feebly defined. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe and a rudimentary web present on fingers. Toes medially webbed. Tarsal fold and tarsal tubercle absent. Dorsal and lateral parts of snout, interorbital, side of head, and anterior and posterior back smooth. Upper and lower flank granular. Dorsal part of lower arm smooth. Upper arm granular. Thigh dorsally smooth. Area around vent granular; shank and foot smooth. Throat, chest, belly and underside of thigh granular.

Colour in alcohol: (based on lectotype, BMNH 1947.2.7.87; Fig. 8) head and body dorsally yellow and ashy brown. Upper lip pale yellow. Loreal and tympanic regions, inguinal zone, upper and lower flanks yellow and ashy brown. Dorsal and lateral parts of forelimb, dorsal part of thigh, dorsal part of shank and dorsal part of foot brown and ash. Posterior part of thigh white with brown patches. Throat and chest white with light-brown patches. Margins of throat white. Belly, underside of thigh and webbing pale yellow.

Measurements of lectotype: (BMNH 1947.2.7.87, in mm): DBE, 12.6; DFE, 7.2; DL, 1.6; DW, 1.5; ED, 5.2; EN, 3.5; ES, 5.8; FEL, 18.5; FL I, 3.0; FL II, 3.9; FL III, 6.6; FL IV, 4.7; FOL, 25.1; HL, 13.3; HW, 14.8; IML, 1.5; IN, 3.2; IO, 4.4; LAL, 8.0; MBE, 5.8; MFE, 9.3; MN, 12.1; NS, 2.7; PAL, 10.5; SVL, 35.7; TBL, 17.6; TL I, 2.9; TL II, 3.5; TL III, 5.6; TL IV, 8.1; TL V, 6.1; TYD, TYE (tympanum indistinct); UAW, 7.4; UEW, 2.9.

Remarks. – *Philautus variabilis* (Figs. 8, 9) superficially resembles *P. eximius* (Figs. 61, 62), from which it differs by having canthal edges rounded, snout angle category 8, lingual papilla absent, crossbars on limbs absent and internarial area concave, vs. canthal edges sharp, snout angle category 9, lingual papilla present, crossbars on limbs present and internarial area flat.

Distribution. – The species is known only from the lectotype, type locality ‘Ceylon’, = Sri Lanka.

Conservation status. – Extinct.

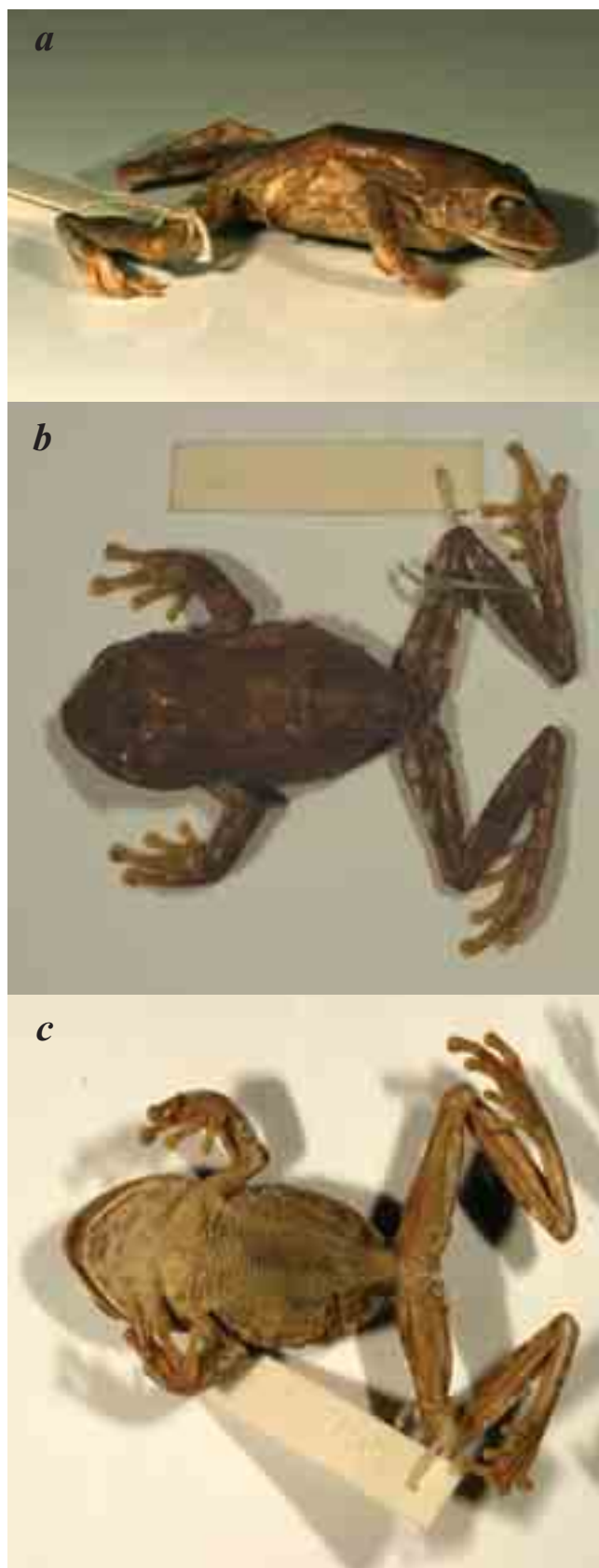


Fig. 8. *Ixalus variabilis*, lectotype, female, BMNH 1947.2.7.87, 35.7 mm SVL: a, lateral aspect; b, dorsal aspect; and c, ventral aspect.



Fig. 9. *Philautus variabilis*: a–c: lateral, dorsal and ventral aspects respectively, of head; and d, semi-diagrammatic representation of the left-foot webbing pattern, of lectotype, female, BMNH 1947.2.7.87, 35.7 mm SVL. Scale bars: 1 mm.

***Philautus microtypanum* (Günther, 1859)**

(Figs. 10–12; Table 4)

Polypedates microtypanum Günther, 1859: xii, 77.

Material examined. – Lectotype of *Polypedates microtypanum* (designated by Bossuyt & Dubois, 2001), mature female, 49.0 mm SVL, BMNH 1947.2.8–48, ‘Ceylon’; being the specimen figured in Günther (1859: pl. 6 fig. A).

Others - Female, 34.5 mm SVL, WHT 2708; female, 28.6 mm SVL, WHT 2712; male, 23.9 mm SVL, WHT 2713; Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 20 Sep. 1999. Male, 37.1 mm SVL, WHT 3260, Agra Arboretum, near Agarapatana, alt. 1555 m (06°51'N, 80°41'E), coll. 14 Jul. 2001. 10 ex, females, 38.5 mm SVL, WHT 3436; 35.6 mm SVL, WHT 3437; 33.3 mm SVL, WHT 3438; 32.2 mm SVL, WHT 3439; 34.7 mm SVL, WHT 3440; 32.2 mm SVL, WHT 3441; 32.0 mm SVL, WHT 3442; 31.0 mm SVL, WHT 3443; 29.7 mm SVL, WHT 3444; 35.1 mm SVL, WHT 3446, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 16–27 Nov. 1996. Female, 39.2 mm SVL, WHT 2710, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 20 Sep. 1999.

Diagnosis. – (See Figs. 10–12). Mature individuals 23.9–49.0 mm SVL. Tympanum discernible; snout angle category 7; dorsal surface glandular, warty. Supratympanic fold distinct. Canthal edges rounded. Nuptial pad present in males. Lingual papilla absent. Calcar absent. Vomerine teeth present. Supernumerary tubercles present on palm and foot. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Figs. 10–12). Mature males 23.9–37.1 mm SVL, mature females 28.6–49.0 mm SVL. Body stout. Head dorsally convex. Snout angle category 7 (angle of snout ~ 105°), oval in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital space flat; internarial space concave. Tympanum discernible. Pineal ocellus absent. Vomerine ridge present, with few small teeth angled at ~ 45° to body axis, shorter than distance between them. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold and tarsal tubercle absent. Snout and interorbital area smooth or tuberculated. Side of head shagreened. Dorsum smooth above, shagreened and with glandular warts scattered on dorsolateral area. Both upper and lower flank granular. Dorsal part of forelimb, thigh, shank and foot shagreened, with a few scattered glandular warts. Throat, chest, belly and underside of thigh granular. Males with horn-like spinules on dorsum, inner vocal slits and nuptial pad (inner and dorsal surfaces of prepollex and first finger) present in males. Dorsum granular, warty, in females.

Colour in life: (based on WHT 2708; see also Fig. 12), snout dorsally light brown with a black interorbital bar. Canthal edges dark brown. Loreal region brown. Temporal area dark brown. Tympanum dark brown, its outer rim a lighter brown. Edges of both upper and lower lips dark brown. Body dorsally brown. Flank ash with marbling on black. Inguinal zone ash with black spots. Anterior thigh ash with light-ash spots; posterior thigh ash with marbling in black, dark brown and light brown. Posterior shank ash with dark-brown patches. Fingers, toes

and disks dorsally ashy brown. Throat and chest ashy dark-brown, abdomen ashy light-brown. Limbs dorsally brown with dark-brown crossbars. Both upper and lower arms, thigh, and shank ventrally ash. Palm, fingers, foot and toes dark ashy-brown. Posterior margin of thigh with pale-brown patches on dark-brown background. Flank light green in some individuals.

Colour in alcohol: (based on lectotype, BMNH 1947.2.8–48, Fig. 10). Background colour of head, body, upper and lower flank light brown with dark-brown markings. Two dorsal longitudinal bands from rear of eye to inguinal area. Two dark-brown patches between occipital area and mid-dorsum. Canthal edges and upper loreal region dark brown. Lower

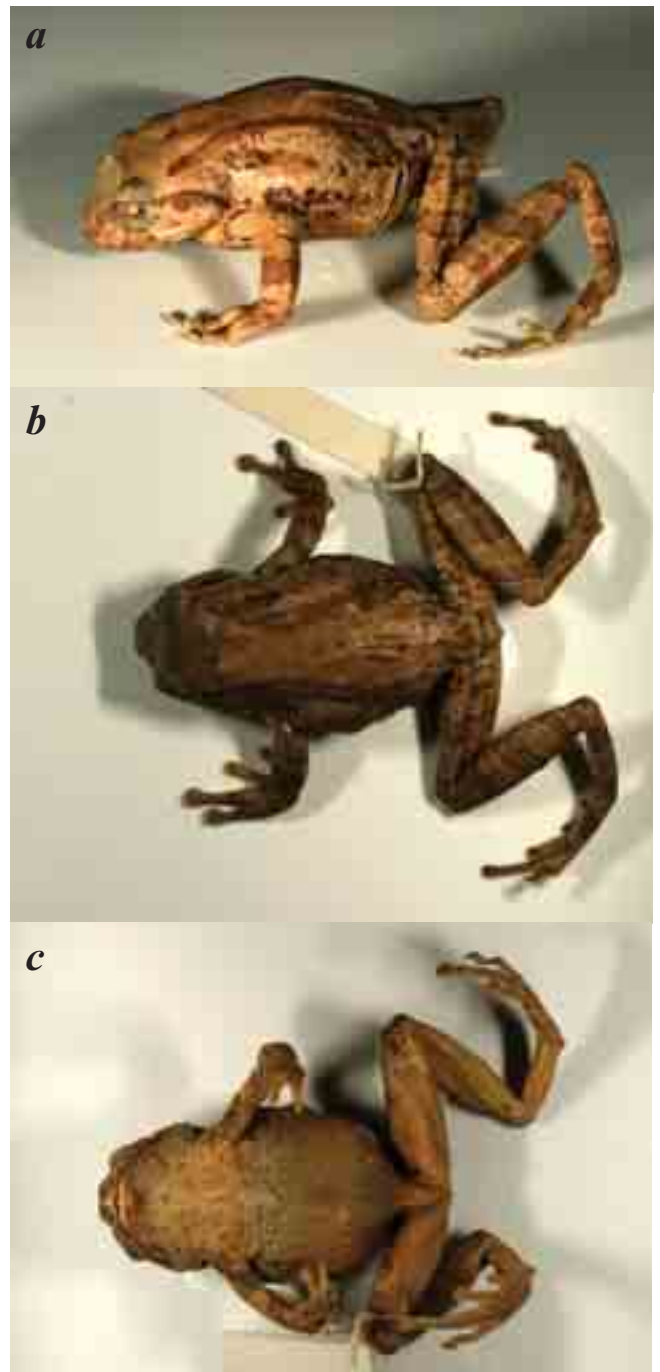


Fig. 10. *Philautus microtypanum*, lectotype, female, BMNH 1947.2.8–48, 49.0 mm SVL: a, lateral aspect; b, dorsal aspect; and c, ventral aspect.

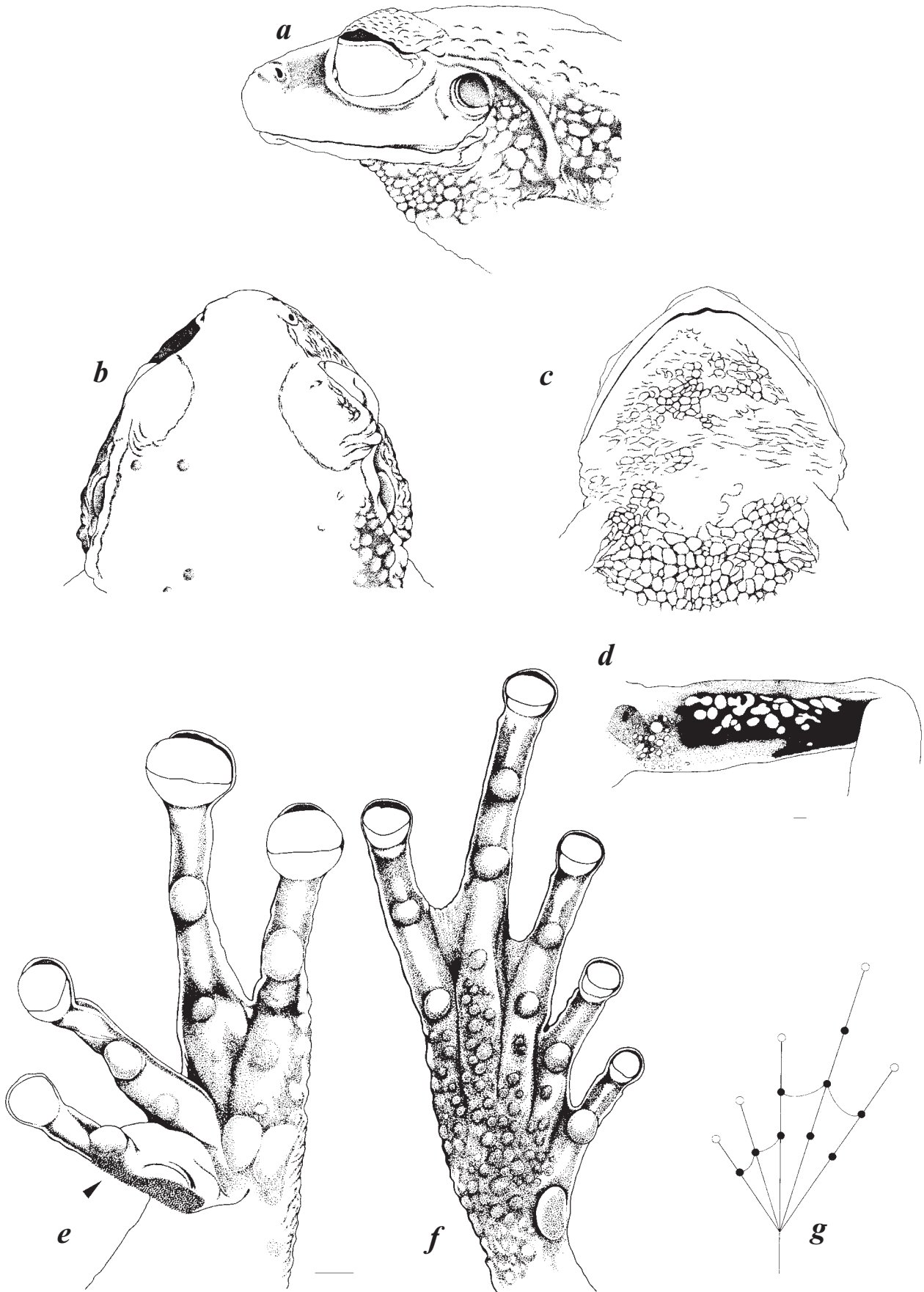


Fig. 11. *Philautus microtympanum*: *a-c*, lateral, dorsal and ventral aspects of head of lectotype, female, BMNH 1947.2.8–48, 49.0 mm SVL; *d*, posterior right thigh; *e*, ventral aspect of left hand (arrow indicates nuptial pad); *f*, ventral aspect of right foot of male, WHT 3260, 37.1 mm SVL; and *g*, semi-diagrammatic representation of the left-foot webbing pattern, lectotype, female, BMNH 1947.2.8–48, 49.0 mm SVL. Scale bars: 1 mm.



Fig. 12. *Philautus microtympenum*, female, WHT 2710, 39.2 mm SVL.



Fig. 13. Distribution of *Philautus microtympenum* in Sri Lanka.

loreal region light brown. Tympanic region light brown. Tympanum and lower supratympanic fold dark brown; lower rim of tympanum light brown. Upper lip light brown with dark-brown patches. Inguinal zone brownish yellow with dark-brown markings. Dorsal and lateral area of forelimb, thigh, shank, foot and posterior part of thigh light brown with dark-brown crossbars. Throat, margins of throat and chest light brown with dark-brown spots. Belly and underside of thigh brownish yellow with dark-brown spots. Webbing pale yellow.

Measurements of holotype: (BMNH 1947.2.8–48, in mm): DBE, 15.2; DFE, 9.4; DL, 2.4; DW, 2.5; ED, 5.7; EN, 4.0; ES, 7.6; FEL, 27.5; FL I, 4.6; FL II, 5.8; FL III, 8.3; FL IV, 6.9; FOL, 36.5; HL, 18.3; HW, 19.0; IML, 2.3; IN, 5.0; IO, 5.5; LAL, 11.5; MBE, 7.4;

MFE, 11.9; MN, 15.4; NS, 3.6; PAL, 15.5; SVL, 49.0; TBL, 26.3; TLI, 4.4; TL II, 4.9; TL III, 8.0; TL IV, 12.7; TL V, 9.1; TYD, 2.4; TYE, 2.3; UAW, 10.3; UEW, 3.8.

Remarks. – *Philautus microtympenum* (Figs. 10–12) resembles *P. silus* (Figs. 163–165), from which it is distinguished, however, by having canthal edges rounded, less webbing on toes, internarial region concave and a light- and dark-brown colour pattern on posterior edge of thigh, vs. canthal edges sharp, more extensive webbing on toes, internarial region flat and absence of light- and dark-brown colour pattern on posterior edge of thigh.

Distribution. – The species occurs only in montane cloud-forest habitats at elevations of 1555–2135 m in the central hills Sri Lanka (Fig. 13). It is a habitat generalist, occupying both closed and open canopy habitats, including grasslands. Most sub-adults and juveniles were found in grassland and disturbed habitats, while mature males and the larger females were usually found in closed canopy habitats. Adults were observed perched on branches 0.5–3.5 m above ground level.

Conservation status. – Extent of Occurrence: 200 km²—Agra Bopath, Horton Plains, both of which are protected areas. Agra Bopath Forest Reserve is threatened by illegal firewood collection. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus reticulatus* (Günther, 1864)**

(Figs. 14–18; Table 3)

Polypedates reticulatus Günther, 1864: xxvi, 431.

Material examined. – Holotype by monotypy of *Polypedates reticulatus*: mature female, 58.3 mm SVL, BMNH 1947.2.8.60, ‘Ceylon’, H. H. Cuming.

Others - 2 ex. females, 57.9 mm SVL, WHT 2286; 54.7 mm SVL, WHT 2287, Kosmulla (near Nellsuwa), alt. 320 m (06°24’N, 80°23’E), coll. 21 Oct.1998. 2 ex. females, 57.2 mm SVL, WHT 2288; 52.2 mm SVL, WHT 2289, Dediyaigala Forest Reserve, Akuressa, alt. 150 m (06°10’N, 80°26’E), coll. 17 Oct.1998. 2 ex. females, 57.2 mm SVL, WHT 2290; 51.0 mm SVL, WHT 2291, Kosmulla (near Nellsuwa), alt. 320 m (06°24’N, 80°23’E), coll. 22 Oct.1998. Male, 44.1 mm SVL, WHT 2344, Yagirala, alt. 30 m (06°22’N, 80°10’E), coll. 01 May 1999. Female, 61.1 mm SVL, WHT 3230, Induruwa, (Ratnapura), alt. 150 m (06°45’N, 80°26’E), coll. 30 Jun.2001. Female, 42.5 mm SVL, WHT 2520, Check Poleat Gap (near Norton Bridge), alt. 900 m (06°56’N, 80°30’E), coll. 31 Aug.1999. Female, 51.8 mm SVL, WHT 2521, Check Poleat Gap (near Norton Bridge), alt. 800 m (06°56’N, 80°30’E), coll. 31 Aug.1999. Male, 42.8 mm SVL, WHT 3366, Haycock (Hiniduma), alt. 660 m (06°20’N, 80°18’E), coll. 01 Jun.1999.

Diagnosis. – (See Figs. 14–18). Mature individuals 42.5–61.1 mm SVL. Tympanum discernible. Snout angle category 6. Dorsal surface glandular, warty. Supratympanic fold distinct. Canthal edges sharp. Males with a nuptial pad. Lingual papilla and calcar, present. Supernumerary tubercles present on palm. Toes 2, 3 and 5 fully webbed. Posterior surface of thigh with a dark-brown reticulated pattern.

Description. – (See Figs. 14–18). Mature males 42.8–44.1 mm SVL; mature females 42.5–61.1 mm SVL. Body elongate. Head convex or flat dorsally. Snout angle category 6 (angle of snout $\sim 100^\circ$ – 104°), truncate or oval in lateral aspect. Canthal edges sharp. Loreal region concave. Interorbital and internarial space convex or concave. Tympanum discernible, oval (vertical or oblique). Pineal ocellus absent. Vomerine ridge present, bearing 7 or 8 small teeth, angled at $\sim 45^\circ$ – 60° relative to body axis, approximately as long as the distance between them. A rounded lingual papilla present, pointed in single male specimen (WHT 2344); lingual papilla base diameter 0.5–1.1 mm, height 0.5–1.0 mm. Supratympanic fold distinct or prominent. Cephalic ridges absent. Skin on head not ossified with skull. Fingers with a lateral dermal fringe. Some mature individuals with a smooth palm; some with a granulated palm. Toes 2, 3 and 5 fully webbed. Tarsal fold absent. A small calcar present on tibio-tarsal articulation. Dorsal surface of holotype finely tuberculated. Chin smooth. Chest granular, not rough. Ventral side of upper arm, abdomen and ventral and posterior thighs rough, granular. Snout, interorbital, side of head, dorsum, and upper part of flank shagreened with a few scattered glandular warts. Lower flank granular. Dorsal part of forelimb shagreened; thigh, shank and foot smooth. Throat, chest smooth or granular; belly and underside of thigh granular.

Colour in life: (based on WHT 3230 and WHT 2344, Figs. 17, 18), dorsum and dorsal part of head red-brown with indistinct, dark-brown patches. Flank ashy brown, marbled in dark brown. Canthal edges, edge of upper eyelid and supratympanic fold orange-brown. Loreal region and tympanic region dark brown. Tympanum pale brown. Both upper and lower lips, chin and chest ashy brown with dark-brown patches. Limbs dorsally red-brown with indistinct dark-brown crossbars. Anterior thigh ashy-brown; posterior thigh ashy brown marbled in dark brown. Fingers and toes dorsally dark red-brown with indistinct crossbars. Dorsal side of disks, palm, fingers, foot and toes ashy-brown. Lateral fringes on both fingers and toes pale orange.

Colour in alcohol: (based on holotype, BMNH 1947.2.8.60; Fig. 14), head and body dorsally light brown. Flank marbled with brown. A brown reticulation on posterior thigh. Limbs with crossbars. Venter brownish-yellow.

Measurements of holotype: (BMNH 1947.2.8.60, in mm): DBE, 18.4; DFE, 11.8; DL, 2.0; DW, 1.8; ED, 6.2; EN, 7.0; ES, 10.5; FEL, 29.7; FL I, 4.3; FL II, 5.3; FL III, 9.2; FL IV, 7.8; FOL, 40.7; HL, 21.2; HW, 24.2; IML, 2.1; IN, 5.5; IO, 5.5; LAL, 13.2; MBE, 9.0; MFE, 14.5; MN, 19.7; NS, 3.3; PAL, 17.8; SVL, 58.3; TBL, 32.1; TL I, 4.1; TL II, 5.0; TL III, 8.4; TL IV, 12.8; TL V, 9.2; TYD, 3.2; TYE, 3.5; UAW, 11.6; UEW, 4.7.

Remarks. – *Philautus reticulatus* (Figs. 14–18) resembles *P. papillosus* (Figs. 128–130), from which it is distinguished by having snout angle category 6, head dorsally flat, internarial area concave and lingual papilla almost rounded (base 0.5–1.1 mm, height 0.5–1.0 mm), vs. snout angle category 8, head

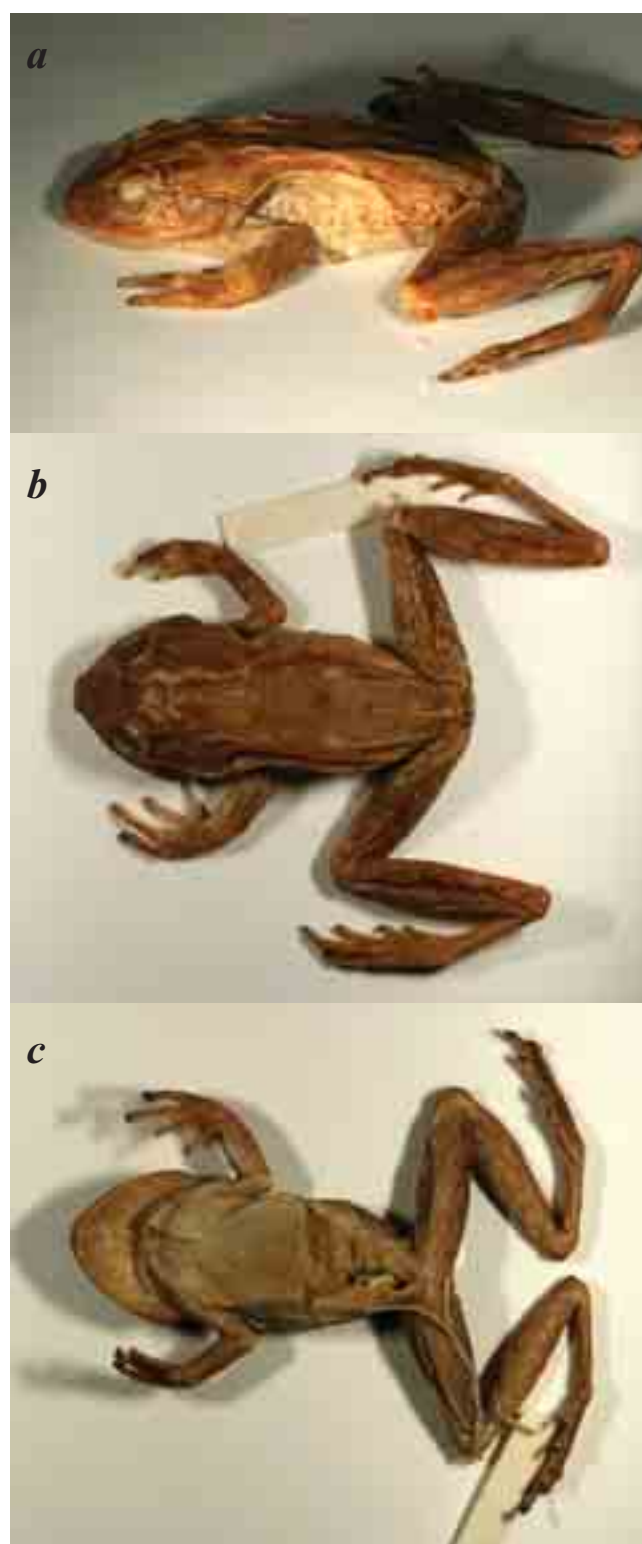


Fig. 14. *Philautus reticulatus*, holotype, female, BMNH 1947.2.8.60, 58.3 mm SVL: a, lateral aspect; b, dorsal aspect; and c, ventral aspect.

dorsally convex, internarial area flat and lingual papilla conical (base 1.8 mm, height 3.6 mm) in *P. papillosus*.

Distribution. – The species (a habitat specialist, found only in closed canopy habitats) has been recorded from forests of

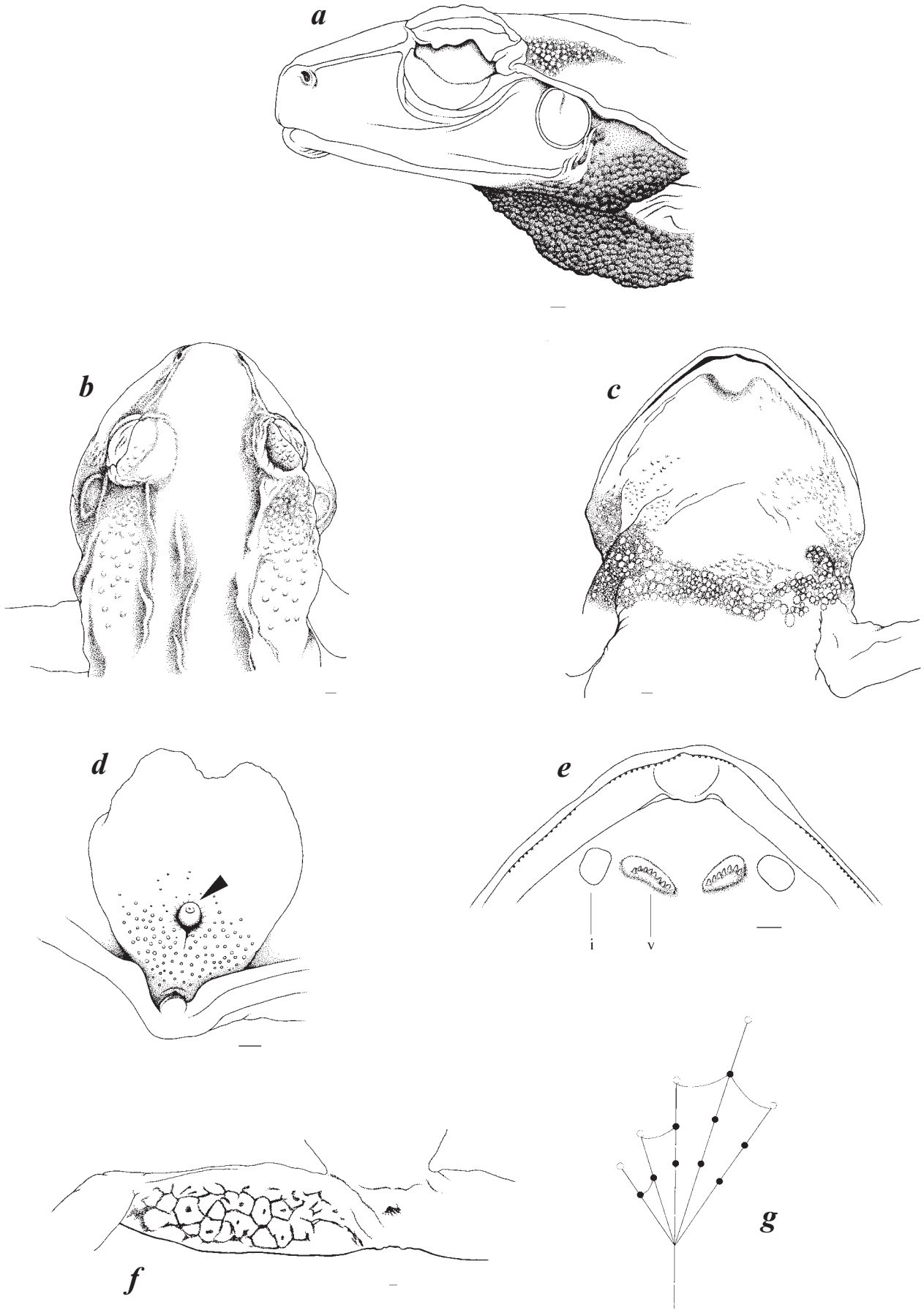


Fig. 15. *Philautus reticulatus*: a–c: lateral, dorsal and ventral aspects respectively, of head; d, dorsal aspect of tongue (arrow indicates lingual papilla); and e, ventral aspect of palate (i, cornae, v, vomerine teeth); f, reticulated colour pattern on posterior left thigh; and g, semi-diagrammatic representation of the left-foot webbing-pattern of holotype, female, BMNH 1947.2.8.60, 58.3 mm SVL. Scale bars: 1 mm.

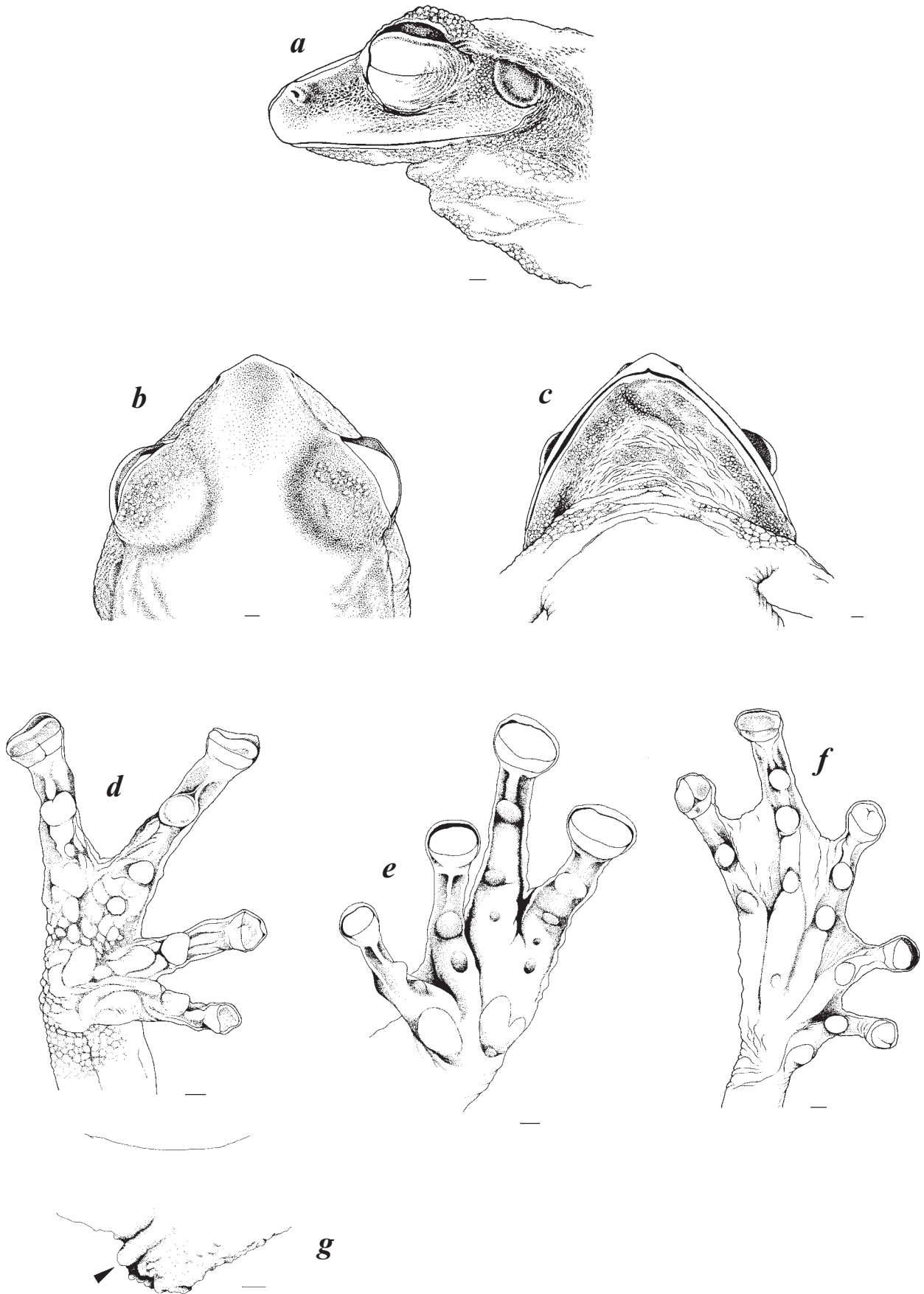


Fig. 16. *Philautus reticulatus*: *a-d*: lateral, dorsal and ventral aspects of head and ventral aspect of right hand respectively, of female, WHT 2520, 42.5 mm SVL; *e*, ventral aspect of left hand of female, WHT 2287, 54.7 mm SVL; *f*: ventral aspect of right foot of female, WHT 2521, 51.8 mm SVL; *g*, dorsal aspect of left tibio-tarsal articulation of female, WHT 2287, 54.7 mm SVL (arrow indicates tarsal tubercle). Scale bars: 1 mm.



Fig. 17. Lateral aspect of *Philautus reticulatus*, male, WHT 2344, 44.1 mm SVL.



Fig. 18. *Philautus reticulatus*, female, WHT 3230, 61.1 mm SVL.

the south-western 'rainforest' quarter of Sri Lanka (Fig. 19), at elevations of 30–900 m. It is generally found in the upper forest storey, but was also observed perched on tall shrubs and occasionally on the forest floor, assumed to have descended to breed. It often calls from the canopy (10–20 m), even during the daytime. Despite its wide distribution, it is relatively uncommon.

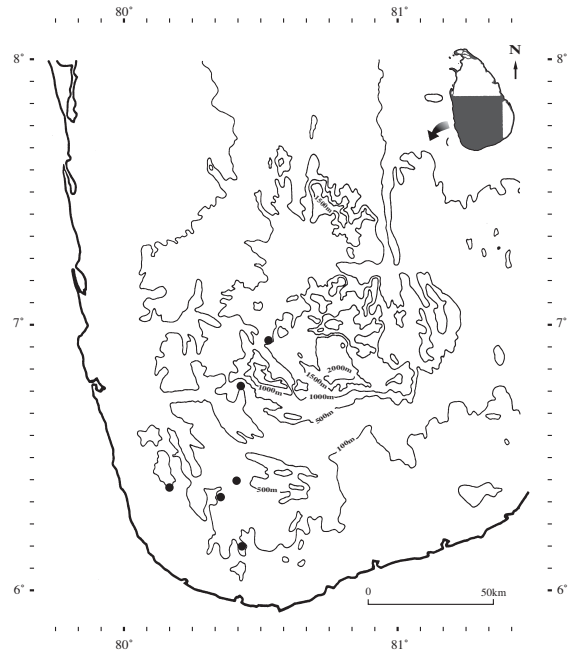


Fig. 19. Distribution of *Philautus reticulatus* in Sri Lanka.

Conservation status. – Extent of Occurrence: 4,000 km²—Kosmulla, Dediyaigala, Yagirala, Induruwa, Norton Bridge, Haycock. Habitat severely fragmented and diminishing due to encroachment and land use change. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus femoralis* (Günther, 1864)**

(Figs. 20–22; Table 7)

Ixalus femoralis Günther, 1864: xxvi, 434.

Ixalus fergusonii Günther, 1876b: 379, Pl. 20, fig. C—junior subjective synonym (here designated).

Ixalus pulchellus Günther, 1872a: 88—junior subjective synonym (here designated).

Material examined. – Holotype by monotypy of *Ixalus femoralis*, mature female, 28.3 mm SVL, BMNH 1947.2.26.89, 'Ceylon', coll. H. H. Cuming.

Lectotype and 2 paralectotypes of *Ixalus fergusonii*, female, 24.0 mm SVL, BMNH 1947.2.26.91; young female, 18.2 mm SVL, BMNH 1947.2.26.92; juvenile, 13.6 mm SVL, BMNH 1947.2.26.93, 'Ceylon', coll. H. H. Cuming.

Holotype by monotypy of *Ixalus pulchellus*, male, 22.8 mm SVL, BMNH 1947.2.26.90, 'Ceylon', G. H. K. Thwaites.

Others - male, 26.3 mm SVL, WHT2701; male, 23.4 mm SVL, WHT2702; male, 27.5 mm SVL, WHT2703; male, 26.5 mm SVL, WHT2704; female, 25.1 mm SVL, WHT2705; female, 28.4 mm SVL, WHT2706; male, 25.8 mm SVL, WHT2707, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 20 Sep.1999. Males, 26.2 mm SVL, WHT3540, coll. 15–21 Mar.1999; 25.6 mm SVL, WHT3537, 15–21 Mar.1999; 28.8 mm SVL, WHT3538, 7 Oct.1997; 25.6 mm SVL, WHT3539, 7 Oct.1997; 26.3 mm SVL, WHT2478, 7 Jun.1999; 25.5 mm SVL, WHT2479, 7 Jun.1999, Horton Plains National Park, alt. 2135 m (06°46' N, 80°47' E).

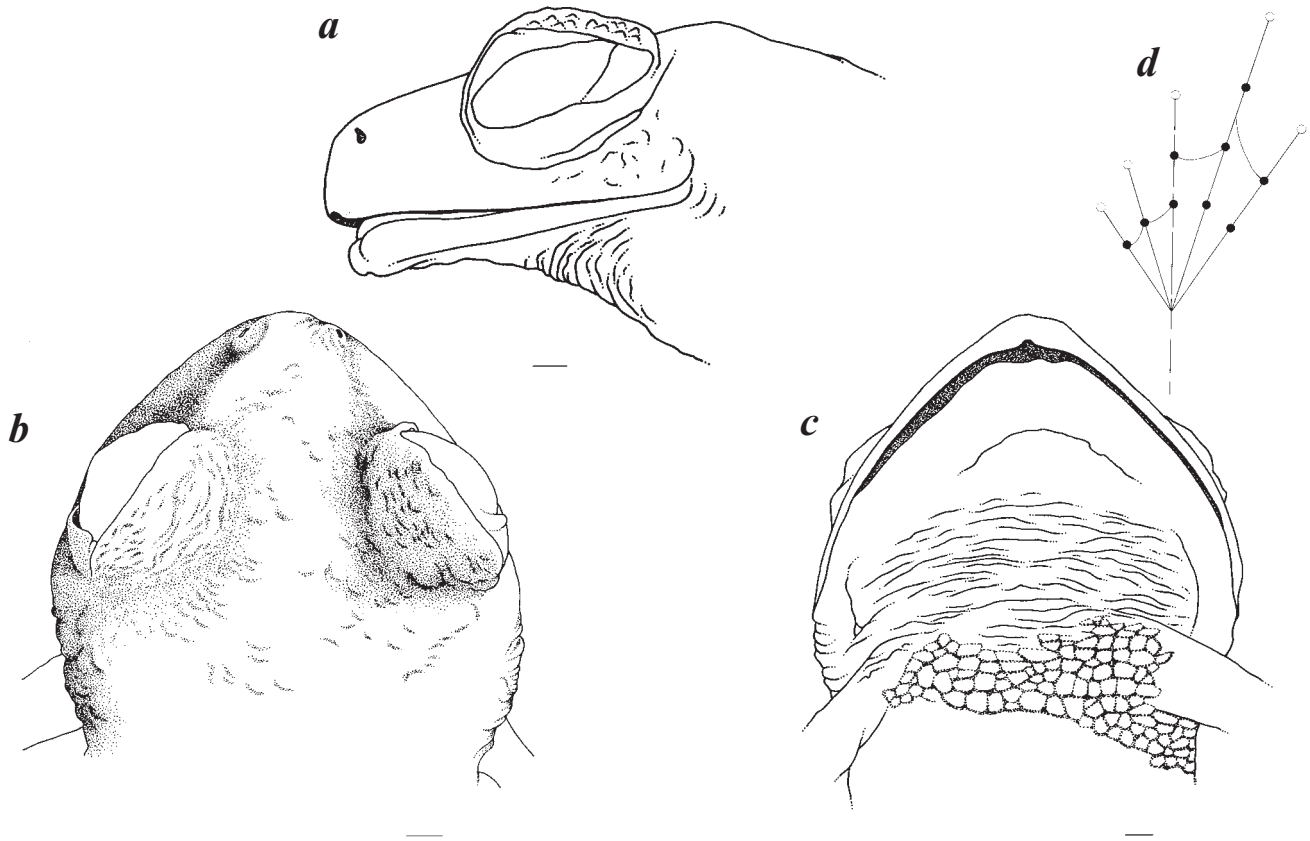


Fig. 20. *Philautus femoralis*: a–c, lateral, dorsal and ventral aspects respectively, of head of holotype, female, BMNH 1947.2.26.89, 28.3 mm SVL; d, semi-diagrammatic representation of the left-foot webbing pattern, of holotype, female, BMNH 1947.2.26.89, 28.3 mm SVL. Scale bars: 1 mm.

Diagnosis. – (See Figs. 20–22). Mature individuals 23.4–28.8 mm SVL. Tympanum absent. Snout angle category 8. Dorsal surface of body finely granular. Canthal edges rounded. Lingual papilla, vomerine teeth, supratympanic fold, supernumerary tubercles and calcar absent. Toes medially webbed. Belly granular.

Description. – (see Figs. 20–22). Body stout. Head dorsally flat. Snout angle category 8 (angle of snout $\sim 108^\circ$), truncate in lateral aspect. Canthal edges rounded. Loreal concave. Interorbital space flat. Internarial space concave. Tympanum absent (subdermal). Pineal ocellus, vomerine ridge, supratympanic fold, cephalic ridges, calcar, lingual papilla and co-ossified skin on skull absent. A lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Snout, interorbital space, side of head and dorsum finely granular. Lower part of flank granular. Dorsal part of forelimb, thigh and foot smooth. Shank with horn-like spinules. Throat smooth, chest with smooth granules. Belly rough, granular. Underside of thigh rough and granular.

Colour in life: (based on WHT 2701 and WHT 2705, see Fig. 22), dorsum, flanks and dorsal parts of limbs light green. Upper lip bordered in yellow. Venter white or fleshy-pink, edged in yellow, merging into green on flanks. Toes green or whitish, disks dorsally white. Dorsum with scattered yellow or red spots (Fig. 22b) or markings (Fig. 22c) in some specimens.

Colour in alcohol: (based on holotype, BMNH 1947.2.26.89) dorsum purplish-grey; venter pale yellow (Fig. 21). Upper flank dark brown and ashy-light blue; lower flank, inguinal zone and upper lip, yellow. Dorsal and lateral parts of forelimb and shank ashy light-blue with brown spots and patches. Thigh dorsally dark brown. Foot dorsally dark brown and ashy-blue. Posterior thigh yellow. Throat, margins of throat, chest, belly, thigh and webbing yellow.

Measurements of holotype: (BMNH 1947.2.26.89, in mm), DBE, 10.4; DFE, 5.5; DL, 1.1; DW, 1.3; ED, 4.8; EN, 3.1; ES, 4.7; FEL, 14.8; FL I, 2.1; FL II, 2.5; FL III, 4.4; FL IV, 3.7; FOL, 19.5; HL, 11.5; HW, 12.1; IML, 1.1; IN, 2.4; IO, 3.2; LAL, 6.0; MBE, 4.7; MFE, 8.1; MN, 10.5; NS, 1.4; PAL, 8.2; SVL, 28.3; TBL, 14.2; TL I, 1.8; TL II, 2.4; TL III, 3.5; TL IV, 5.7; TL V, 4.2; TYD, TYE (tympanum indistinct); UAW, 6.5; UEW, 2.7.

Remarks. – *Philautus femoralis* (Figs. 20, 21) resembles *P. viridis* (Figs. 83, 84, 86), from which it differs by having tympanum indiscernible, supratympanic fold absent, and supernumerary tubercles on palm and internarial region concave, vs. tympanum discernible, supratympanic fold present and supernumerary tubercles on palm and internarial region flat, in *P. viridis*.

We here treat *P. femoralis* sensu stricto as a species known only from the central hills. However, we have observed evidently



Fig. 21. *Philautus femoralis*, holotype, female, BMNH 1947.2.26.89, 28.3 mm SVL: *a*, lateral aspect; *b*, dorsal aspect; and *c*, ventral aspect.

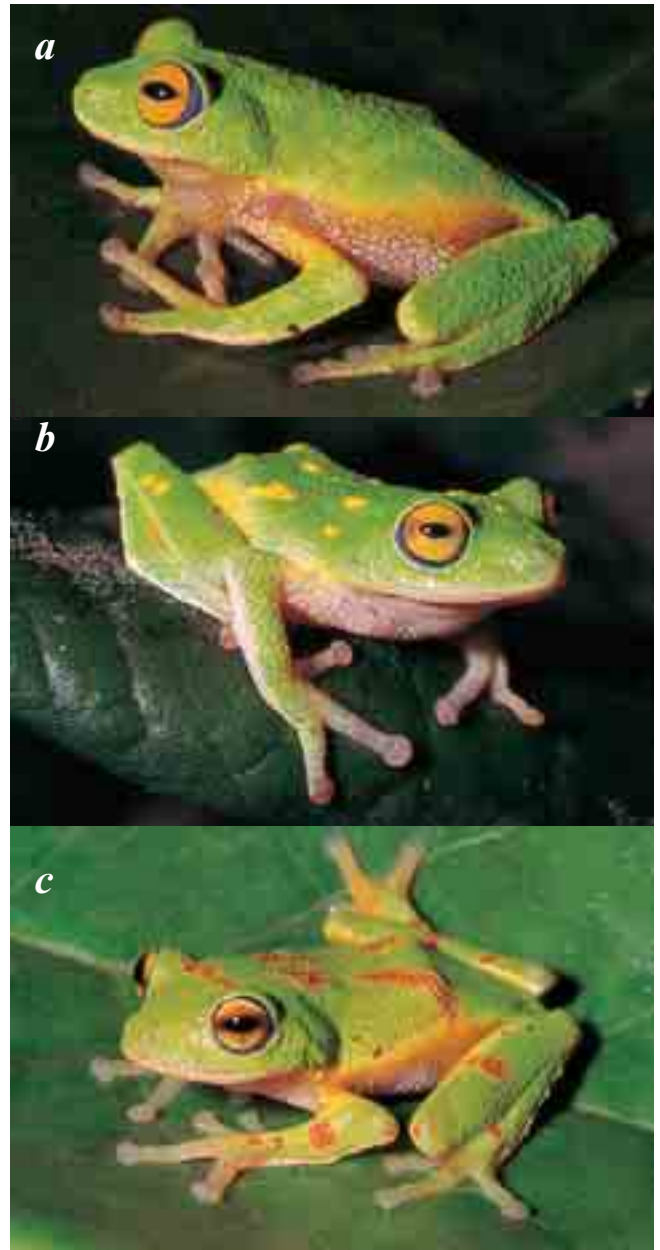


Fig. 22. *Philautus femoralis*, *a*, male, WHT 2701; *b*, female, WHT 2705; and *c*, not preserved: Horton Plains National Park.

closely related populations in Rakwana (Morningside and Handapan Ella Forest Reserves) and the southern Knuckles Range (Corbett's Gap) (material not listed here). The status of these populations are discussed in a separate study (Meegaskumbura & Manamendra-Arachchi, 2005: this volume). Bahir et al. (2005) describe reproduction in this species.

Distribution. – The species is known from the higher areas of the Central Highlands, including Horton Plains, Agra-Bopath and Adam's Peak.

Conservation status. – Pending further taxonomic review of the various populations, for conservation purposes we have for the present assessed all populations resembling *P. femoralis* as representing a single species. Extent of Occurrence: 4,000 km² — Rakwana, Knuckles, Agra-Bopath, Horton Plains. Habitat fragmented and diminishing due to

encroachment and land use change. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus temporalis* (Günther, 1864)**
(Figs. 23, 24; Table 4)

Ixalus temporalis Günther, 1864: xxvi, 434.

Material examined. – Lectotype of *Ixalus temporalis* (here designated), mature female, 31.0 mm SVL, BMNH 1947.2.6.9, 'Ceylon', coll. H. Cuming. Paralectotypes (females), 28.5 mm SVL, BMNH 1947.2.6.8; 28.5 mm SVL, BMNH 1947.2.6.10; 28.4 mm SVL, BMNH 1947.2.6.11–12 (the other two syntypes referred to by Bossuyt & Dubois, 2001 were not seen in this study).

Diagnosis. – (See Figs. 23, 24). Mature females 28.4–31.0 mm SVL. Tympanum discernible; snout angle category 3. Supratympanic fold distinct. Canthal edges rounded. Lingual

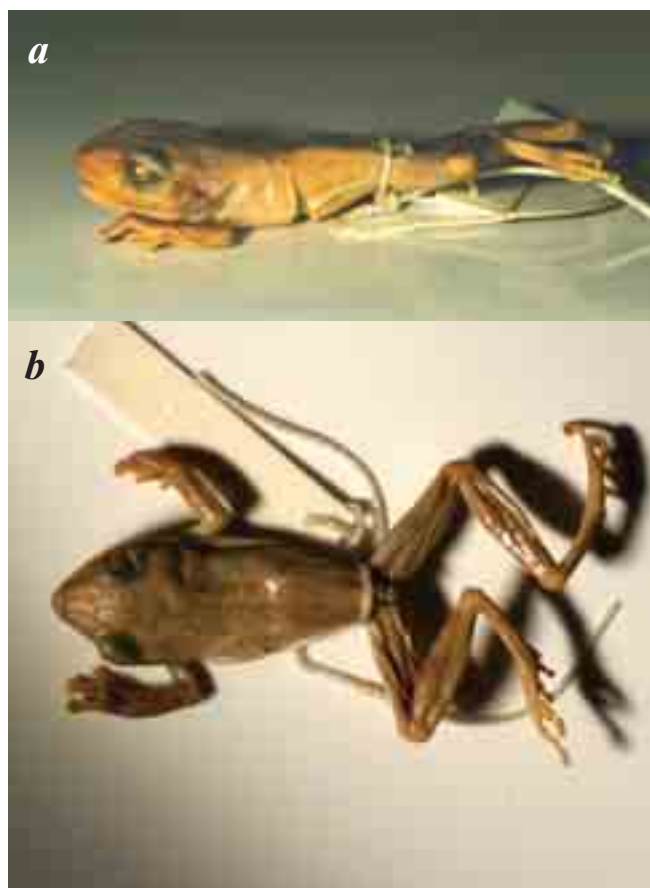


Fig. 23. *Philautus temporalis* lectotype, BMNH 1947.2.6.9, 31.0 mm SVL: *a*, lateral aspect; and *b*, dorsal aspect.

papilla absent. Dorsal surface of body without horn-like spinules. Calcar absent. Vomerine teeth present. Supernumerary tubercles present on palm and foot. Toes medially webbed. Chin and chest smooth; belly granular.

Description. – (Based on lectotype female, 31.0 mm SVL, BMNH 1947.2.6.9; see Figs. 23, 24). Mature females 28.4–31.0 mm SVL. Body slender. Head dorsally convex. Snout angle category 3 (angle of snout ~ 85°), rounded in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital and internarial space concave. Tympanum discernible, oval, vertical. Pineal ocellus present. Vomerine ridge present (on left side only), bearing a few indistinct small teeth, angled at about 60° relative to body axis, close to choanae. Lingual papilla absent, but conical tubercles present on tongue. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe on fingers absent. Toes medially webbed. Tarsal fold absent. Calcar absent. Dorsal and lateral parts of snout, interorbital space, side of head, dorsum and upper flank smooth; lower flank rough, granular. Dorsal area of forelimb smooth with a few scattered glandular warts. Thigh, shank and foot dorsally smooth. Throat and chest smooth. Belly rough, granular; underside of thigh with smooth granules. Glandular warts present around vent. Nuptial pad and inner vocal slits not observed (the species is known only from the all-female syntype series).

Colour in alcohol: (based on lectotype female, BMNH 1947.2.6.9, Fig. 23), head and body dorsally yellowish pale-

brown with brown dots. Loreal region, tympanic region, tympanum and upper lip yellowish pale-brown. Upper flank yellowish pale-brown with brown dots; lower flank yellow. Inguinal zone pale yellow. Dorsal and lateral parts of forelimb and foot yellowish pale-brown. Dorsal part of thigh and shank yellowish pale-brown with indistinct brown crossbars. Posterior part of thigh pale yellow. Throat, margin of throat and chest pale yellow with brown dots. Belly yellow. Underside of thigh pale brownish yellow. Webbing pale yellow.

Measurements of lectotype: (BMNH 1947.2.6.9, in mm), DBE, 10.1; DFE, 6.5; DL, 1.3; DW, 1.5; ED, 4.5; EN, 3.3; ES, 5.2; FEL, 13.6; FL I, 2.2; FL II, 2.5; FL III, 4.0; FL IV, 3.5; FOL, 19.3; HL, 12.5; HW, 11.6; IML, 1.2; IN, 3.3; IO, 3.3; LAL, 6.9; MBE, 4.8; MFE, 8.3; MN, 10.6; NS, 2.0; PAL, 8.0; SVL, 31.0; TBL, 14.4; TLI, 2.0; TL II, 2.5; TL III, 3.9; TL IV, 6.0; TL V, 4.2; TYD, 0.8; TYE, 1.7; UAW, 5.6; UEW, 3.2.

Remarks. – *Philautus temporalis* (Figs. 23, 24) resembles *P. nanus* (Figs. 25, 26), *P. rus* (Figs. 102, 103), and *P. popularis* (Figs. 105, 107). *Philautus temporalis* differs from *P. nanus* however, by having snout angle category 3, supratympanic fold not prominent and dorsum smooth, vs. snout shape category 6, supratympanic fold prominent and dorsum glandular, warty, in *P. nanus*. It differs from *P. rus* by having snout angle category 3, supratympanic fold indistinct, head dorsally convex and internarial concave, vs. snout angle category 6, supratympanic fold prominent, head dorsally flat and internarial flat, in *P. rus*. It is distinguished from *P. popularis* by having snout angle category 3, supratympanic fold indistinct, and internarial region concave, vs. snout angle category 5, supratympanic fold prominent and internarial region flat, in *P. popularis*.

Distribution. – The species is known only from the lectotype series, from ‘Ceylon’ (= Sri Lanka). It has not occurred in our surveys.

Conservation status. – Extinct.

***Philautus nanus* (Günther, 1869)**
(Figs. 25, 26; Table 9)

Polypedates nanus Günther, 1869: 485.

Material examined. – Lectotype of *Polypedates nanus* (designated by Bossuyt & Dubois, 2001), mature male, 34.8 mm SVL, ‘southern Ceylon’, BMNH 1947.2.7.78, being the specimen figured in Günther (1869: pl. 39 Fig. 3).

Diagnosis. – Mature male 34.8 mm SVL (see Figs. 25, 26). Tympanum discernible. Snout angle category 6. Dorsal surface of body glandular, warty, but lacking horn-like spinules. Canthal edges rounded. Vomerine teeth present. Supernumerary tubercles present on palm and on foot. Calcar absent. Toes medially webbed. Lingual papilla absent. Nuptial pads present in male. Throat, chest, belly and area around vent granular.

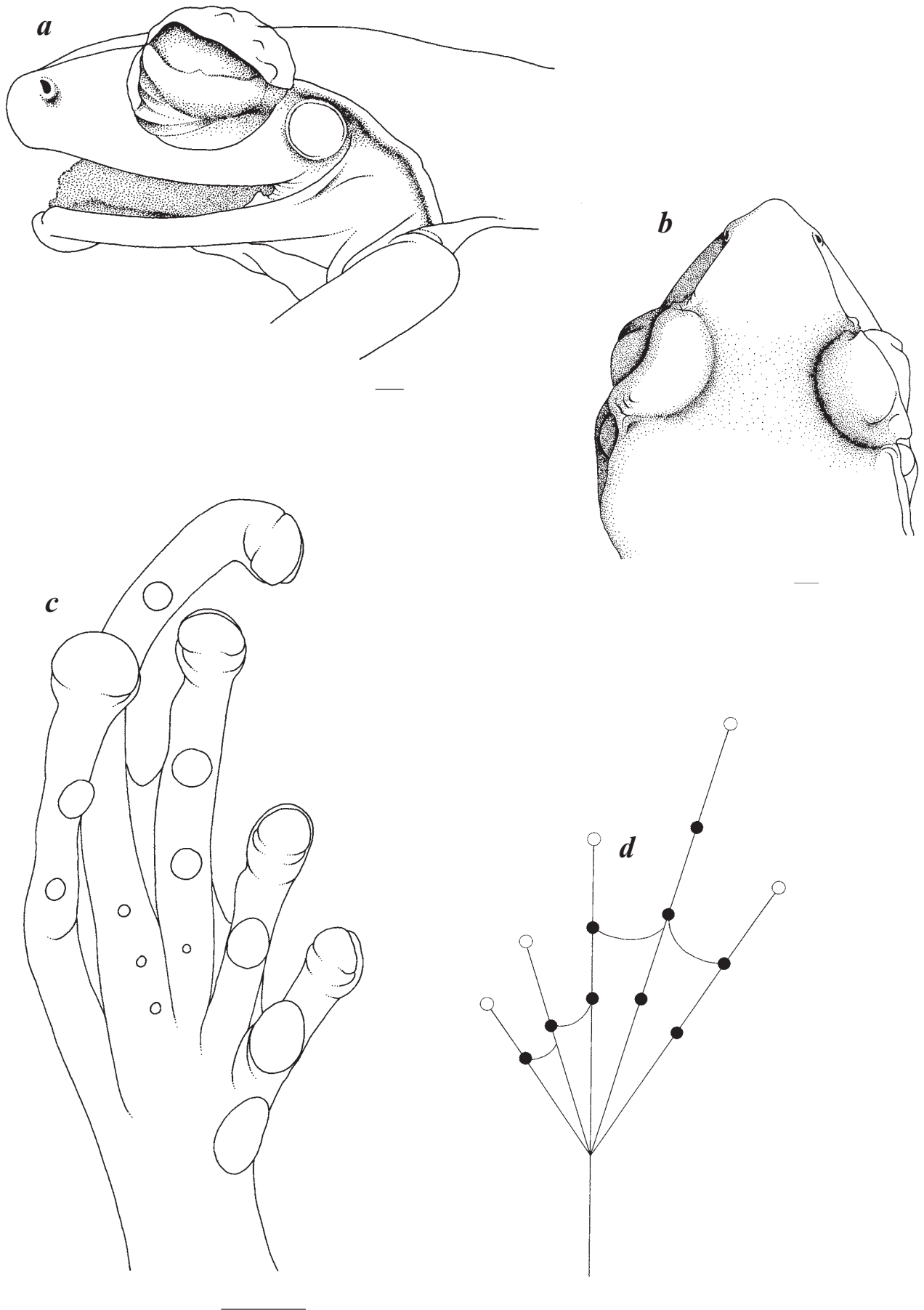


Fig. 24. *Philautus temporalis*: *a*–*b*, lateral and dorsal aspects respectively, of head; *c*, ventral aspect of right foot; and *d*, semi-diagrammatic representation of the left-foot webbing pattern of lectotype, BMNH 1947.2.6.9, 31.0 mm SVL. Scale bars: 1 mm.

Description. – (See Figs. 25, 26). Snout-vent length of mature male lectotype, 34.8 mm. Body elongate. Dorsal surface of head convex. Snout angle category 6 (angle of snout $\sim 102^\circ$), oval in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital space flat; internarial space concave. Tympanum oval, oblique. Pineal ocellus absent. Vomerine ridge present, with about 10 small teeth, between choanae, at an angle of $\sim 60^\circ$ relative to body axis, closer to choanae than to each other. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe on fingers absent. Toes medially webbed. Tarsal fold and tarsal tubercle absent. Dorsal and lateral parts of snout, interorbital area, side of head, and dorsum with a few glandular warts. Upper flank with glandular folds; lower flank granular. Dorsal part of forelimb, thigh, shank and foot smooth. Throat and chest granular, smooth. Belly granular, rough. Underside of thigh smooth. Area around vent granular, not rough. Internal vocal slits present. Pale yellow nuptial pad present on prepollex.

Colour in alcohol: (Fig. 25), head and body dorsally yellowish pale-brown with dark-brown patches. A dark interorbital bar present. Canthal edges brown. Loreal region pale brown. Tympanic region and tympanum brown. Upper lip pale yellow. Flank yellowish pale-brown with dark-brown patches. Dorsal and lateral parts of limbs, yellowish pale-brown with dark-brown crossbars or patches. Posterior part of thigh yellowish pale-brown. Throat pale yellow with light brown patches. Margins of throat, chest, belly, underside of thigh and webbing pale yellow.

Measurements of lectotype: (BMNH 1947.2.7.78, in mm): DBE, 12.6; DFE, 8.0; DL, 1.1; DW, 1.2; ED, 5.6; EN, 3.6; ES, 5.6; FEL, 18.9; FL I, 2.5; FL II, 3.2; FL III, 5.3; FL IV, 4.5; FOL, 25.1; HL, 13.7; HW, 14.2; IML, 1.3; IN, 3.3; IO, 3.8; LAL, 8.3; MBE, 4.8; MFE, 9.5; MN, 12.4; NS, 2.0; PAL, 10.5; SVL, 34.8; TBL, 19.0; TL I, 2.5; TL II, 3.3; TL III, 4.7; TL IV, 7.7; TL V, 5.7; TYD, 1.6; TYE, 1.9; UAW, 7.8; UEW, 3.7.

Remarks. *Philautus nanus* (Figs. 25, 26) resembles *P. temporalis* (Figs. 23, 24; see Remarks under *P. temporalis*), *P. rus* (Figs. 102, 103) and *P. popularis* (Figs. 105, 107). It differs from *P. rus* by having a larger male body size (34.8 mm SVL), head dorsally convex, black patches on anterior thigh absent, and internarial region concave, vs. smaller body size (20.6–23.1 mm SVL in both sexes), head dorsally flat, black patches on anterior thigh present and internarial region flat, in *P. rus*. It is distinguished from *P. popularis* by its larger body size (34.8 mm SVL male), snout angle category 6 and internarial region concave, vs. smaller body size (17.7–20.3 mm SVL in both sexes), snout angle category 5 and internarial region flat in *P. popularis*.

Bossuyt & Dubois (2001) state, “According to Günther (1869: 485–486), this species was described on the basis of 3 specimens, the largest of which had a SVL of 35 mm. In the catalogue of the London Museum, 5 ‘types’ are listed under the numbers BMNH 1947.2.7.78–82 (ex BMNH 1868.5.13.3),



Fig. 25. *Philautus nanus*, holotype, male, BMNH 1947.2.7.78, 34.8 mm SVL: a, lateral aspect; b, dorsal aspect; and c, ventral aspect.

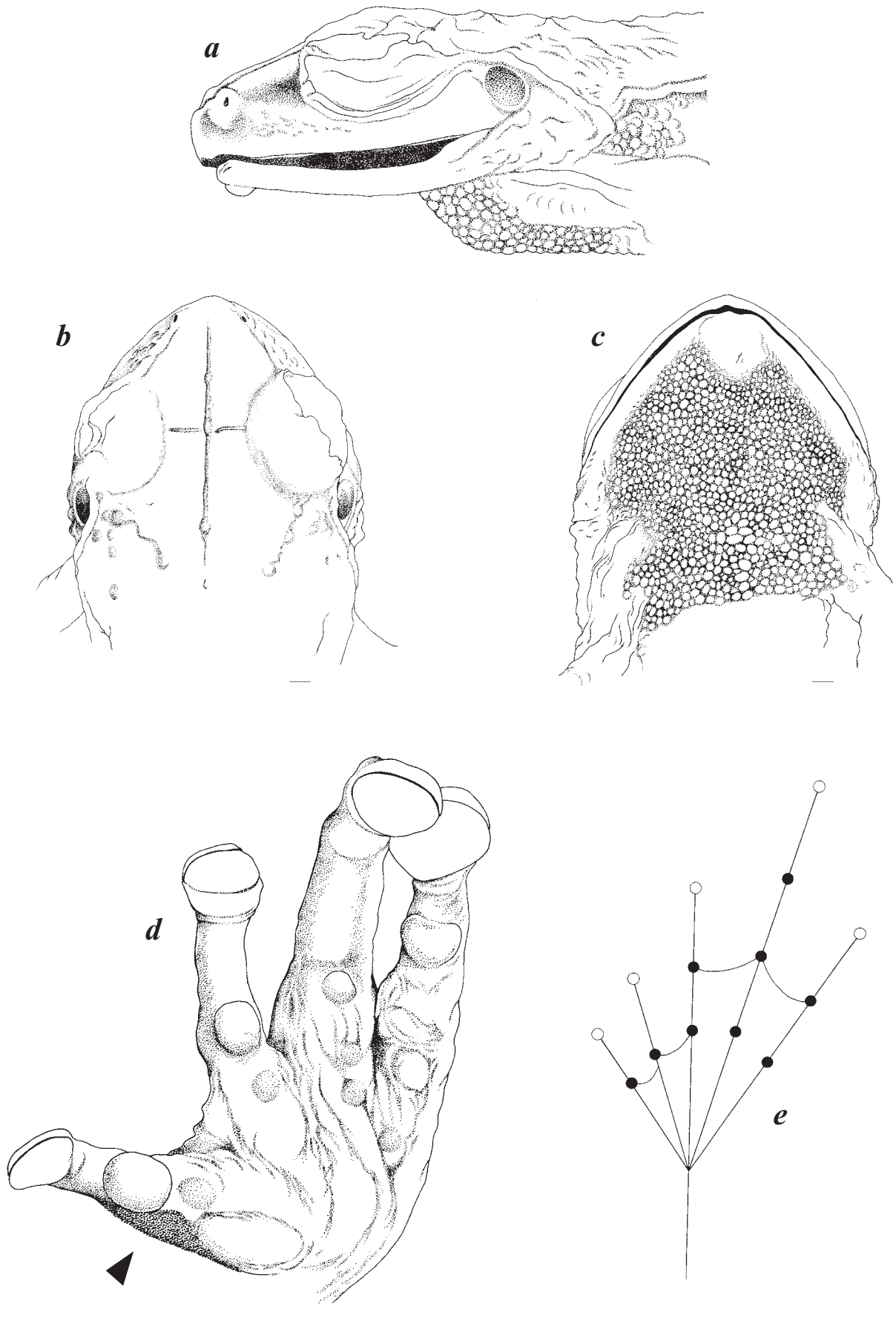


Fig. 26. *Philautus nanus*: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand (arrow indicates nuptial pad); and *e*, semi-diagrammatic representation of the left-foot webbing pattern of lectotype, male, BMNH 1947.2.7.78, 34.8 mm SVL (arrow indicates nuptial pad). Scale bars: 1 mm.

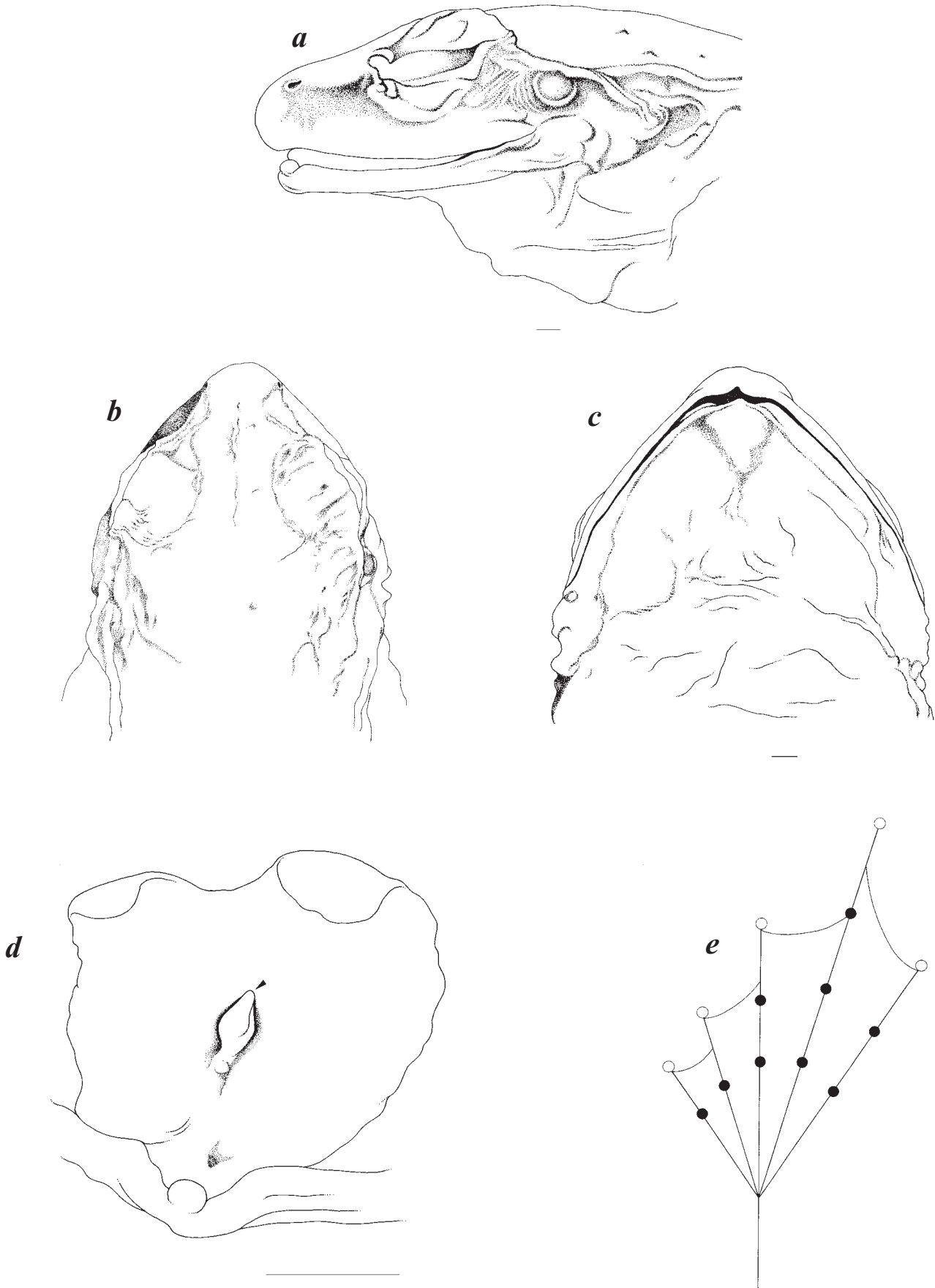


Fig. 27. *Philautus macropus*: a–c: lateral, dorsal and ventral aspects respectively, of head; d, dorsal aspect of tongue (arrow indicates lingual papilla); and e, semi-diagrammatic representation of the left-foot webbing-pattern of holotype, BMNH 1947.2.8.78, 35.4 mm SVL; Scale bars: 1 mm.

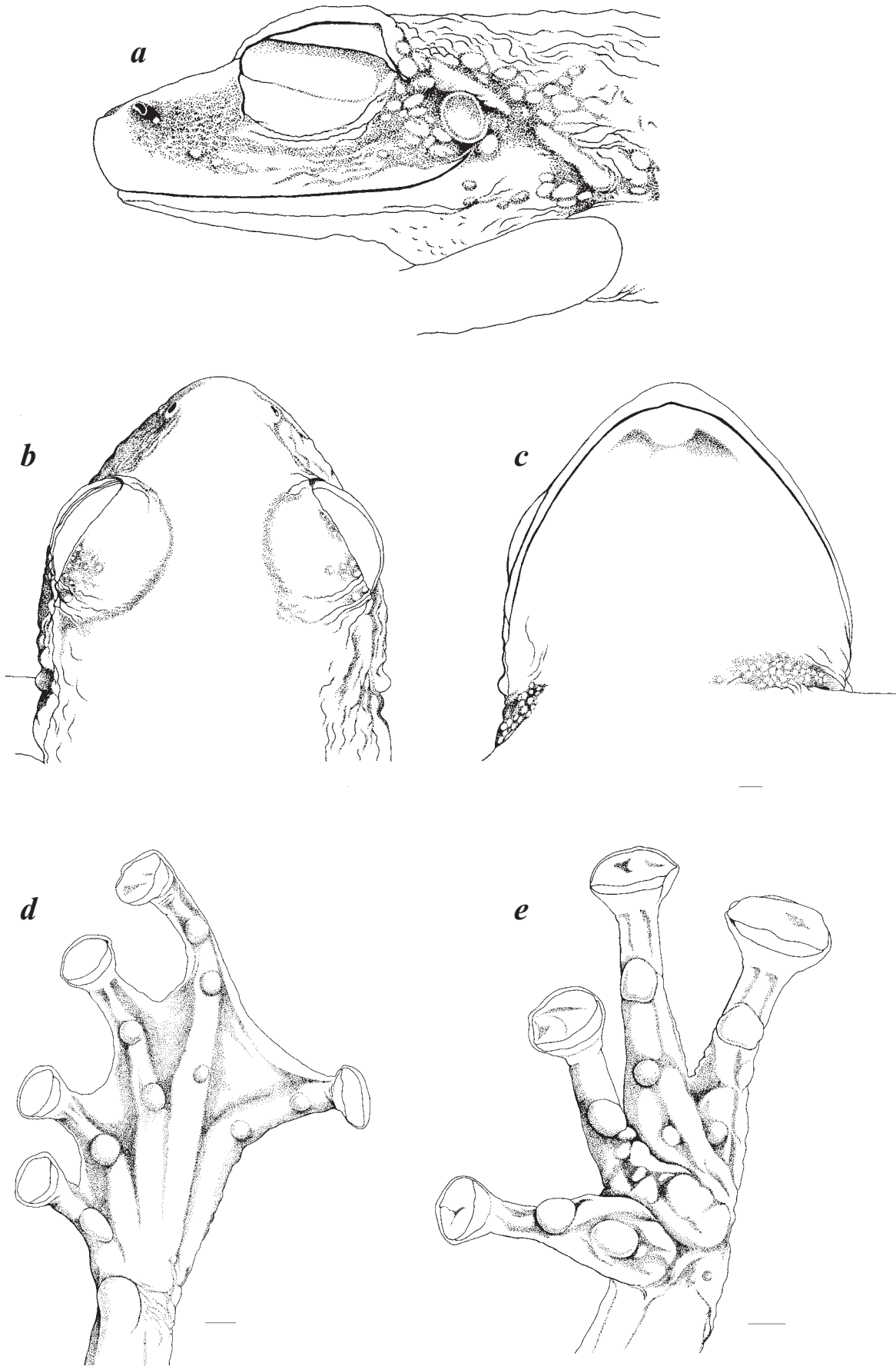


Fig. 28. *Philautus macropus*: a–c: lateral, dorsal and ventral aspects respectively, of head; d, ventral aspect of left foot; and e, ventral aspect of left hand of WHT 3183, 42.7 mm SVL. Scale bars: 1 mm.

but only 4 specimens are present in the collection. In order to avoid further confusion, we hereby designate the largest specimen, BMNH 1947.2.7.78, figured by Günther (1869), as lectotype of this species.”

Distribution. – The species is known only from the lectotype, from ‘southern Ceylon’ (= Sri Lanka).

Conservation status. – Extinct.

***Philautus macropus* (Günther, 1869)**

(Figs. 27–30; Table 5)

Ixalus macropus Günther, 1869: 414.

Material examined. – Holotype by monotypy of *Ixalus macropus*, mature female, 35.4 mm SVL, BMNH 1947.2.8.78, ‘Southern Ceylon’, coll. H. Cuming.

Others - 17 ex, female, 34.2 mm SVL, WHT 3390; male, 30.1 mm SVL, WHT 3391; male, 29.6 mm SVL, WHT 3392; female, 34.8 mm SVL, WHT 3393; female, 31.1 mm SVL, WHT 3394; male, 30.4 mm SVL, WHT 3395; male, 32.1 mm SVL, WHT 3396; male, 31.2 mm SVL, WHT 3397; male, 34.5 mm SVL, WHT 3398; female, 34.8 mm SVL, WHT 3399; male, 30.0 mm SVL, WHT 3400; female, 27.1 mm SVL, WHT 3401; female, 27.8 mm SVL, WHT 3402; male, 32.2 mm SVL, WHT 3403; male, 31.5 mm SVL, WHT 3404; female, 25.5 mm SVL, WHT 3405; male, 27.4 mm SVL, WHT 3406, Mousakanda (Gammaduwa), Knuckles, alt. 760 m (07°34’N, 80°42’E), coll. 02 Sep.1996; female, 42.7 mm SVL, WHT 3183, Divulgahapathana, Knuckles, alt. 603 m (07°33’48’’N, 80°43’26’’E), coll. 25 Nov.2002; female, 33.6 mm SVL, WHT 5900, Bambaraella, Knuckles, alt. 1,260 m (07°24’N, 80°47’E), coll. 19 Oct.2003.

Diagnosis. – (See Figs. 27–30). Mature individuals 27.4–42.7 mm SVL. Tympanum discernible. Snout angle category 6. Dorsal surface of head smooth. Dorsum shagreened, with scattered glandular warts. Supratympanic fold distinct. Canthal edges rounded. Nuptial pads present in males. Lingual papilla present. Calcar absent. Supernumerary tubercles present on palm. Toes 1, 2, 3 and 5 fully webbed. Belly granular.

Description. – (See Figs. 27–30). Mature males 27.4–34.5 mm SVL; mature females 31.1–42.7 mm SVL. Body stout or elongate. Head dorsally convex or concave. Snout angle category 6 (angle of snout ~ 100°), oval in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital and internarial space flat. Tympanum discernible, oval, horizontal or vertical. Pineal ocellus absent. Vomerine ridge present (absent in holotype), with about 5 small teeth at an angle of ~ 45° relative to body axis, spaced equally apart. A pointed or rounded lingual papilla present (pointed in the holotype). Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Webbing on fingers rudimentary. Toes 1, 2, 3 and 5 fully webbed. Tarsal fold absent. Calcar absent. Dorsal and lateral parts of snout smooth, interorbital area smooth, with a few scattered glandular warts. Side of head with glandular warts. Dorsum shagreened or smooth, with a few scattered glandular warts. Upper flank granular with a few scattered glandular warts; lower flank granular. Dorsal part of forelimb

shagreened with a few scattered glandular warts. Dorsal side of thigh, shank and foot smooth with a few scattered glandular warts. Throat and chest smooth or granular. Belly granular. Underside of thigh smooth, distally granular.

Colour life: (see Fig. 30), head dorsally dark brown or light brown. Loreal, temporal and tympanic regions dark brown. Lower edge of supratympanic fold black, its upper edge light brown. A dark-brown interorbital bar. Dorsum (including dorsal part of limbs) pale ashy brown, with two dark-brown dorsolateral bands. Upper flank dark brown, lower flank pale yellowish-white. Proximal half of thigh light brown, the distal half dark brown. Chin and chest pale yellowish-white with a few brown patches. Abdomen pale yellowish white. Limbs with dark-brown dorsal crossbars. Web on toes dark brown.

Colour in alcohol: (based on BMNH 1947.2.8.78; Fig. 29), background colour of head and dorsum light brown with dark-brown patches. Two dark-brown bars across interorbital area and snout. Loreal and tympanic region dark brown. Tympanum dark brown, its lower rim light brown. Upper lip brown with a white patch. Upper flank dark brown, lower flank pale yellowish-white. Background colour of forelimb, dorsal part of thigh, dorsal part of shank and dorsal part of foot light brown with dark-brown crossbars. Proximal half of thigh light brown, the distal half dark brown. Throat, margin of throat and chest pale yellowish-white with a few brown patches. Belly pale yellowish white. Underside of thigh and webbing light brown.

Measurements of holotype: (BMNH 1947.2.8.78, in mm), DBE, 12.1; DFE, 7.8; DL, 1.7; DW, 2.0; ED, 4.6; EN, 4.0; ES, 6.1; FEL, 22.5; FL I, 3.3; FL II, 3.8; FL III, 5.7; FL IV, 4.6; FOL, 27.5; HL, 13.3; HW, 13.6; IML, 1.8; IN, 3.4; IO, 3.3; LAL, 8.8; MBE, 5.1; MFE, 8.2; MN, 11.4; NS, 2.2; PAL, 11.2; SVL, 35.4; TBL, 21.4; TL I, 3.0; TL II, 6.7; TL III, 6.6; TL IV, 9.5; TL V, 6.5; TYD, 2.1; TYE, 1.3; UAW, 7.5; UEW, 3.7.

Remarks. – *Philautus macropus* (Figs. 27–30) resembles *P. sordidus* (Figs. 142, 143) from which it differs by having snout angle category 6, toes fully webbed and nuptial pads present in males, vs. snout angle category 7, toes half webbed, and nuptial pads absent in males, in *P. sordidus*.

Distribution. – The type locality was given by Günther as ‘southern Ceylon’ (= southern Sri Lanka). However, as understood at present, *Philautus macropus* is restricted to the Knuckles range, in central Sri Lanka (see Fig. 31), being recorded from between elevations of 603–760 m. This is a habitat specialist that is found only near streams. Adults were observed on boulders and rock crevices in or adjacent to streams flowing through both closed and open canopy habitats. Rarely, the species was observed on tree trunks on streamsides.

Conservation status. – Extent of Occurrence: 50 km² — riparian habitats in mid-elevations of the northern Knuckles range. Could be threatened by habitat degradation (e.g. cardamom cultivation). Outcome: Critically Endangered (criteria B1 a, b (iii)).



Fig. 29. *Philautus macropus*, holotype, female, BMNH 1947.2.8.78, 35.4 mm SVL: a, dorsal aspect; and b, ventral aspect.



Fig. 30. Dorso-lateral aspect of *Philautus macropus*, female, WHT 5900, 33.6 mm SVL.

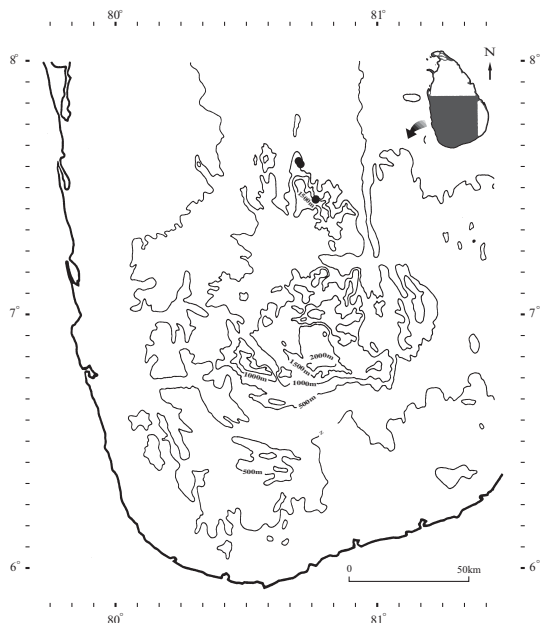


Fig. 31. Distribution of *Philautus macropus* in Sri Lanka.

***Philautus cavirostris* (Günther, 1869)**
(Figs. 32–36; Table 3)

Polypedates cavirostris Günther, 1869: 486.
Ixalus fimbriatus Günther, 1872: 87 — junior subjective synonym (here designated).

Material examined. — Holotype by monotypy of *Polypedates cavirostris*: mature female, 46.6 mm SVL, BMNH 1947.2.7.83, ‘southern Ceylon’, coll. Higgins.

Female, 28.8 mm SVL, BMNH 1947.2.31.29, ‘Ceylon’, coll. G. H. K. Thwaites; holotype by monotypy of *Ixalus fimbriatus*.

Others - Female, 44.5 mm SVL, WHT 1294, Haycock (Hiniduma, Galle), alt. 660 m (06°20’N, 80°18’E), 01 Jul.1996. 2 ex, females, 40.6 mm SVL, WHT 3299; 44.6 mm SVL, WHT 3300, Sinharaja World Heritage Site, Halmandiya, Weddagala, alt. 513 m (06°25’01’’N, 80°25’26’’E), 16 Jul.2001. Female, 45.1 mm SVL, WHT 3389, Kitulgala, alt. 200 m (07°00’N, 80°24’E), 29 Mar.1998. Female, 48.9 mm SVL, WHT 2318; Kosmulla near Neluwa, alt. 450 m (06°23’N, 80°23’E), 22 Aug.1998. 2 ex, females, 46.9 mm SVL, WHT 2046; 44.1 mm SVL, WHT 2425, Pathanegala (Knuckles), alt. 1,000 m (07°33’N, 80°44’E), 01 Sep.1997. Female, 47.9 mm SVL, WHT 2045; Kadugannawa, alt. 450 m (07°15’N, 80°30’E), 09 Sep.1997. Female, 38.4 mm SVL, WHT 3483; Pussellawe, alt. 986 m (7°00’N, 80°54’E), 26 Apr.2002.

Diagnosis. — (See Figs. 32–36). Mature individuals 38.4–48.9 mm SVL. Tympanum discernible. Snout angle category 5. Entire dorsal surface heavily tuberculated. A tuberculated fringe present on posterior margin of lower arm and foot. Vomerine teeth present. Supernumerary tubercles present on palm and foot. Calcar present. Toes 1, 2, 3 and 5 fully webbed. Prominent conical tubercles present around vent. Belly granular.

Description. – (See Figs. 32–36). Mature females 38.4–48.9 mm SVL. Body stout. Dorsal surface of head concave. Snout angle category 5 (angle of snout $\sim 97^\circ$), oval in lateral aspect. Canthal edges sharp. Loreal region concave. Interorbital and internarial space concave. Tympanum discernible, oval, vertical. Pineal ocellus absent. A vomerine ridge present, with about 10 small teeth angled at about 45° relative to body axis, shorter than the distance between them. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Rudimentary webbing and a lateral dermal fringe present on fingers. Toes 1, 2, 3 and 5 fully webbed. Tarsal fold prominent, tuberculated. Calcar present. Snout, interorbital area, side of head and dorsum with glandular warts. Upper flank smooth; lower flank granular. A dermal fold present on outer edge of lower arm. Dorsal part of forelimb, thigh, shank and foot smooth. Throat and chest smooth. Belly and underside of thigh granular. Several prominent glandular tubercles present around vent.

Colour in life: (see Figs. 33, 34), dorsal part of head and body dark brown with olive-green pigments. Two yellowish-green patches on interorbital area. Several light-brown patches on mid-dorsum. Upper flank olive green, lower flank with dark-brown and yellowish marbling. Loreal region, tympanic region and tympanum dark brown with olive-green pigments, yellowish-green and light-brown patches. Upper lip with light-brown vertical bars; lower lip yellow with dark-brown patches. Both upper and lower arms dorsally grey. Lower arm with two brown crossbars. Palm grey with brown patches. Fingers light brown with dark-brown dorsal crossbars. Disks brown dorsally. Inguinal zone and anterior thigh dark brown. Dorsal area of thigh and shank barred in yellowish white and brown. Posterior thigh and lower tibia dark brown. Foot and foot dorsally dark ash; posterior edge of foot ashy brown with dark-brown patches. Tarsal tubercles white. Throat light yellowish-white with brown patches. N.b. — specimens from the Knuckles Hills (e.g. WHT 2045) have a background chestnut colour and are more reddish than those from the south-western region (Fig. 34).

Colour in alcohol: (based on holotype BMNH 1947.2.7.83, Fig. 36), dorsum and dorsal part of head light brown with dark-brown patches. Canthal edges dark brown. Loreal region light brown with dark-brown patches. Tympanic region and tympanum light brown. Upper lip light brown with dark-brown patches. Upper flank light brown with dark-brown patches; lower flank white with dark-brown patches. Inguinal zone orange-brown. Dorsal and lateral parts of limbs light brown with dark-brown crossbars. Throat, margins of throat, chest and belly white with pale-brown patches. Ventral part of thigh orange-brown. Webbing dark brown.

Measurements of holotype: (BMNH 1947.2.7.83, in mm): DBE, 15.6; DFE, 12.1; DL, 2.2; DW, 2.0; ED, 5.0; EN, 6.7; ES, 9.5; FEL, 24.1; FL I, 3.6; FL II, 5.3; FL III, 6.7; FL IV, 5.9; FOL, 32.2; HL, 19.3; HW, 20.1; IML, 2.1; IN, 4.2; IO, 5.1; LAL, 10.7; MBE, 7.5; MFE, 11.7; MN, 17.5; NS, 2.8; PAL, 13.5; SVL, 46.6; TBL,



Fig. 32. *Philautus cavirostris*: a, b: ventral aspect of left hand and left foot respectively, of WHT 3483, 38.4 mm SVL. Scale bars = 1 mm.



Fig. 33. Dorso-lateral aspect of *Philautus cavirostris*, female, WHT 3299, 40.6 mm SVL.



Fig. 34. Dorso-lateral aspect of *Philautus cavirostris*, female, WHT 2045, 47.9 mm SVL.

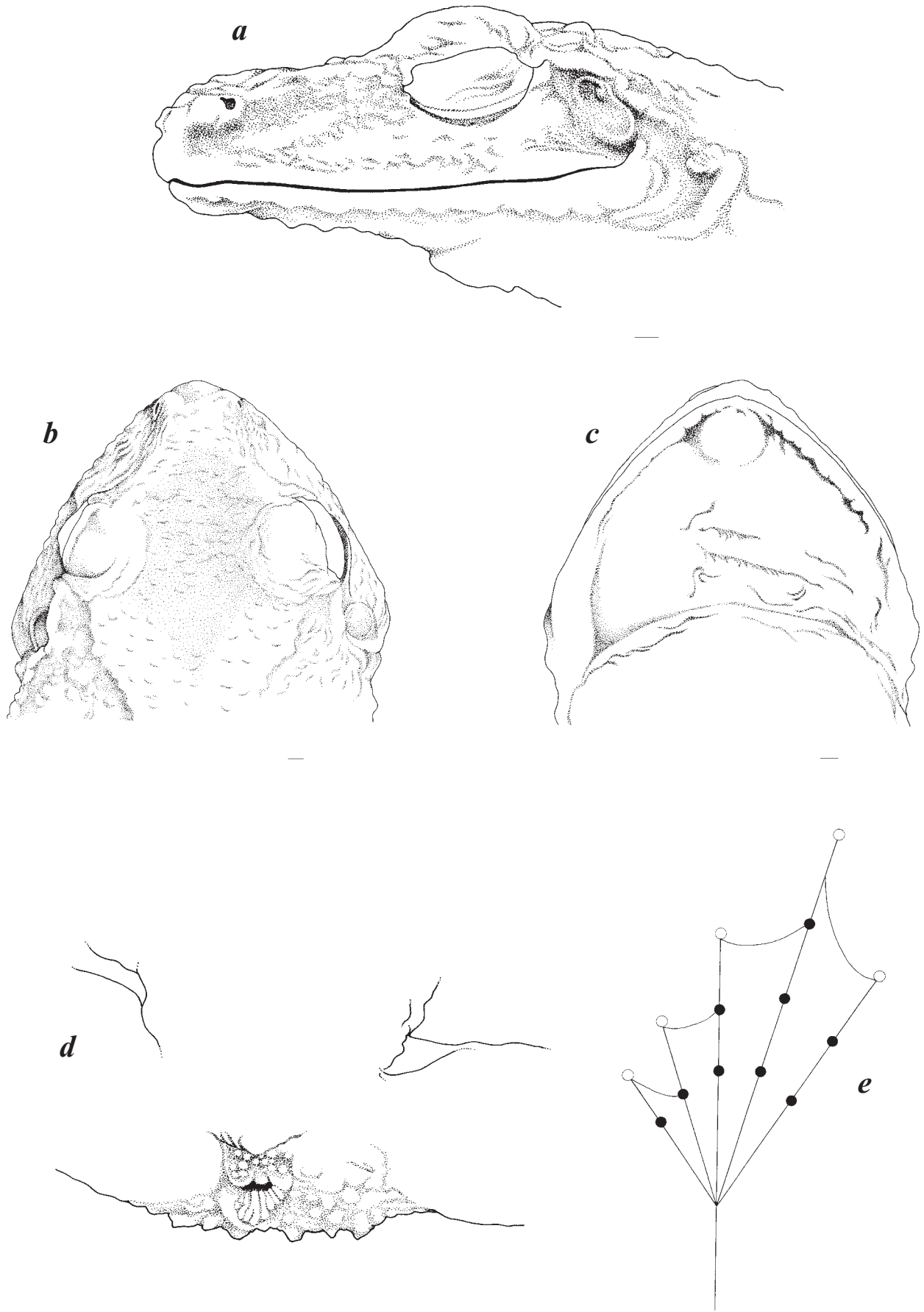


Fig. 35. *Philautus cavirostris*: a–c: lateral, dorsal and ventral aspects respectively, of head; d, dorsal aspect of posterior area showing prominent glandular tubercles around vent; and e, semidiagrammatic representation of the left-foot webbing-pattern of holotype, female, BMNH 1947.2.7.83, 46.6 mm SVL. Scale bars: 1 mm.



Fig. 36. *Philautus cavirostris*, holotype, female, BMNH 1947.2.7-83, 46.6 mm SVL: a, lateral aspect; b, dorsal aspect; and c, ventral aspect.

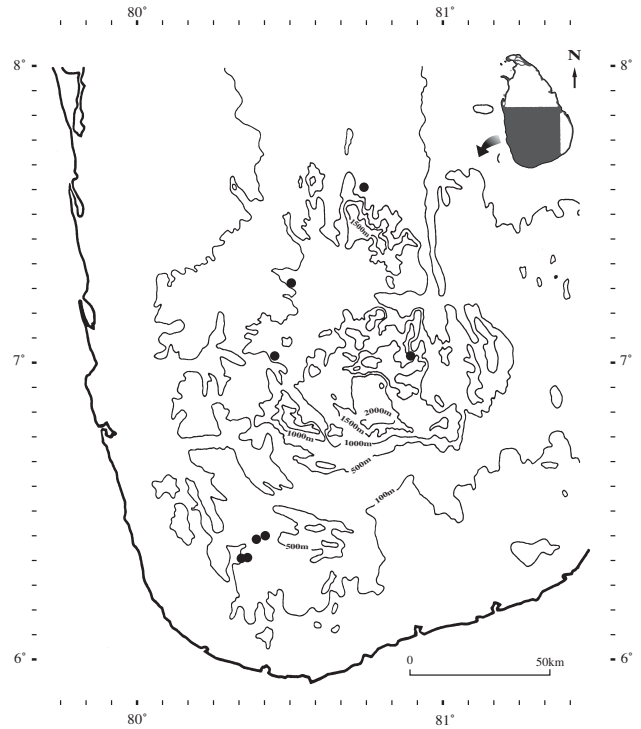


Fig. 37. Distribution of *Philautus cavirostris* in Sri Lanka.

23.8; TL I, 3.3; TL II, 4.2; TL III, 7.2; TL IV, 11.3, TL V, 7.2, TYD, 2.0; TYE, 2.9; UAW, 9.7; UEW, 4.6.

Remarks. – *Philautus cavirostris* (Figs. 32–36) resembles *P. schmarda* (Figs. 2, 3; see Remarks under *P. schmarda*), *P. decoris* (Figs. 153, 154) and *P. extirpo* (Figs. 140, 141). It is distinguished from *P. decoris* by having snout angle category 5, lingual papilla absent, toes fully webbed, vomerine ridge present and snout concave in lateral aspect, vs. snout angle category 4, lingual papilla present, toes half webbed, vomerine ridge absent and snout flat in lateral aspect, in *P. decoris*. It differs from *P. extirpo* by having the tympanum discernible, snout angle category 5, lingual papilla absent, webbing on fingers present, toes fully webbed, tarsal tubercle present, tarsal fold present, lower arm fold present, vomerine ridge present and head dorsally concave, vs. tympanum not discernible, snout angle category 7, lingual papilla present, webbing on fingers absent, toes half webbed, tarsal tubercle absent, tarsal fold absent, lower arm fold absent, vomerine ridge absent and head dorsally flat, in *P. extirpo*.

Distribution. – *Philautus cavirostris* (type locality ‘southern Ceylon’) was recorded from elevations in the range 200–1,000 m (Fig. 37). It is a habitat specialist that occurs only in closed canopy rainforests. Adults were observed mostly perched 0.3–2 m above the rainforest floor on branches, mossy logs and sometimes on mossy rock surfaces. We are unable to explain our inability to locate any males of this species, possibly because they occur only in the forest canopy. Despite being a wide-ranging species, it is rare wherever it does occur.

Conservation status. – Extent of Occurrence: 4,000 km² — Haycock, Weddagala, Kitulgala, Kosmulla, Pathanegala,

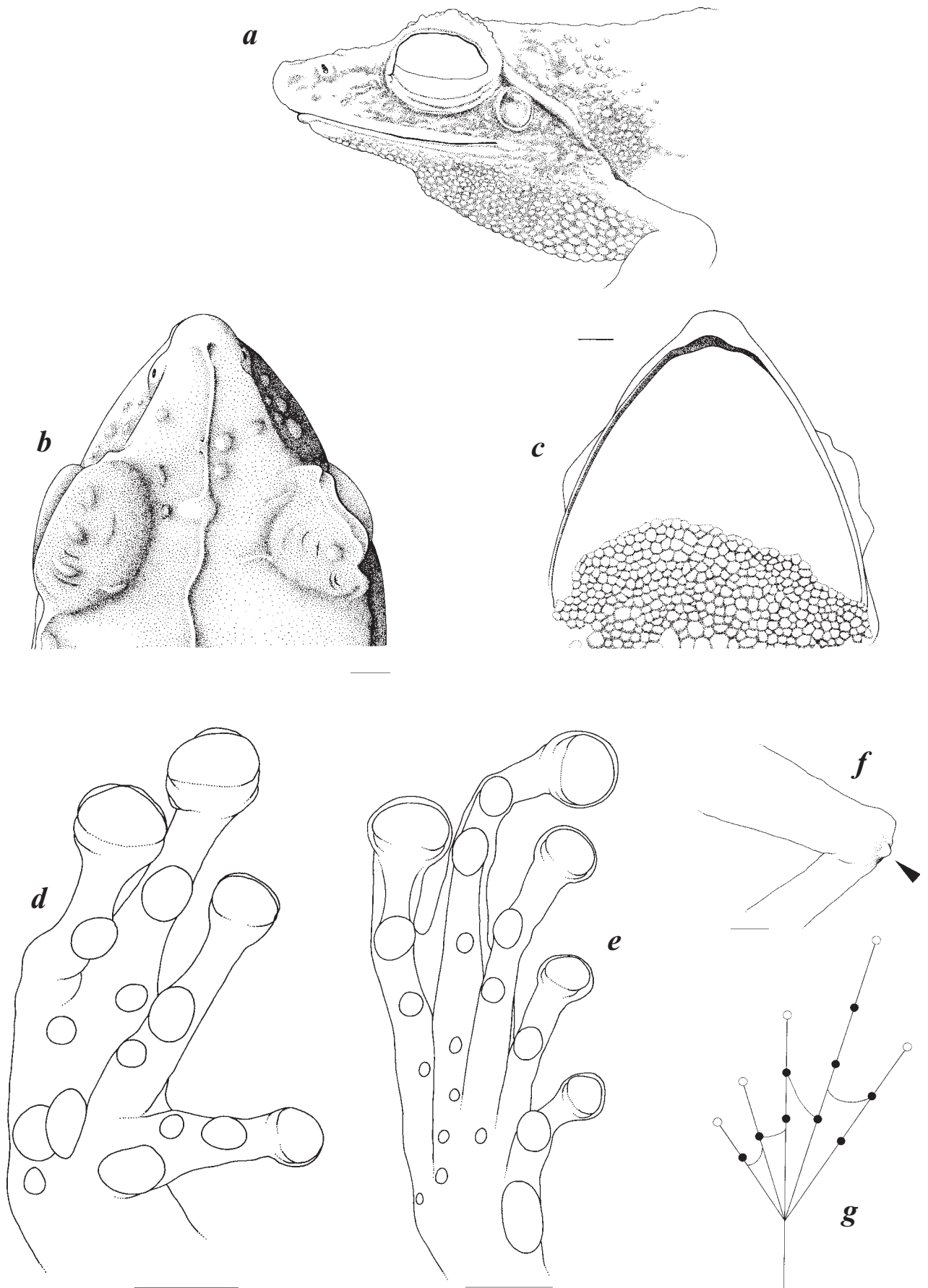


Fig. 38. *Philautus nasutus*: a–c: lateral, dorsal and ventral aspects respectively, of head; d, ventral aspect of right hand; e, ventral aspect of right foot; f, dorsal aspect of left tibiotarsal articulation (arrow indicates tarsal tubercle); and g, semi-diagrammatic representation of the left foot webbing pattern, of holotype, male, BMNH 1947.2.6.21, 17.4 mm SVL. Scale bars: 1 mm.

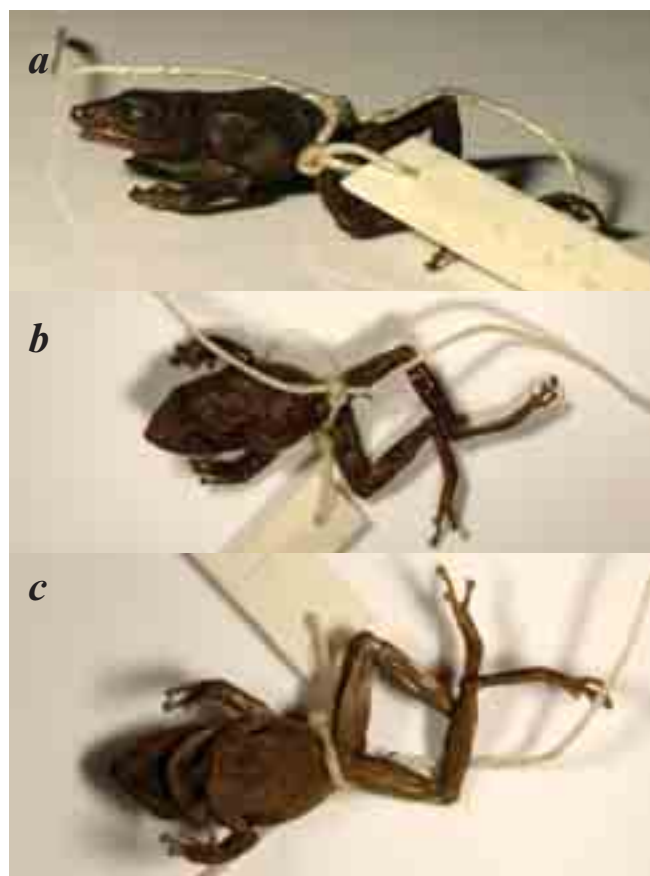


Fig. 39. *Philautus nasutus*, holotype, male, BMNH 1947.2.6.21, 17.4 mm SVL; *a*, lateral aspect; *b*, dorsal aspect; and *c*, ventral aspect.

Kadugannawa, Pussellawe. Habitat severely fragmented. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus nasutus* (Günther, 1869)**
(Figs. 38, 39; Table 6)

Ixalus nasutus Günther, 1869: 484.

Material examined. – Holotype by monotypy of *Ixalus nasutus*, mature male, 17.4 mm SVL, BMNH 1947.2.6.21, ‘Ceylon’, coll. Higgins.

Diagnosis. – (See Figs. 38, 39). Mature male 17.4 mm SVL. Tympanum discernible. Snout angle category 2. Dorsum tuberculated, without horn-like spinules. Calcar present. Vomerine teeth absent. Supernumerary tubercles present on palm and on foot. Toes medially webbed. Chin smooth. Chest and belly granular.

Description. – (See Figs. 38, 39). Mature male, 17.4 mm SVL. Snout angle category 2 (angle of snout ~ 80°, pointed in lateral aspect). Canthal edges sharp. Loreal region concave. Interorbital space flat. Internasal space concave. Tympanum discernible, oval, vertical. Pineal ocellus absent. Vomerine ridges absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Calcar present. Dorsal and lateral parts

of head with glandular warts. Dorsum tuberculated. Upper flank smooth, lower flank granular. A median dermal ridge extends from tip of snout to vent. Limbs dorsally with a few glandular warts. Throat, chest, belly and underside of thigh granular. Internal vocal slits present. Nuptial pad absent.

Colour in alcohol: dorsum uniform dark brown; limbs dorsally dark brown with dark crossbars.

Measurements of holotype: (BMNH 1947.2.6.21, in mm), DBE, 6.8; DFE, 4.3; DL, 0.9; DW, 0.8; ED, 2.7; EN, 2.0; ES, 3.4; FEL, 9.1; FL I, 1.2; FL II, 1.7; FL III, 2.5; FL IV, 2.0; FOL, 12.1; HL, 7.9; HW, 6.8; IML, 0.6; IN, 2.0; IO, 2.3; LAL, 4.5; MBE, 3.2; MFE, 5.0; MN, 7.7; NS, 1.5; PAL, 4.4; SVL, 17.4; TBL, 9.5; TL I, 1.2; TL II, 1.5; TL III, 2.4; TL IV, 3.7; TL V, 2.4; TYD, 0.8; TYE, 1.1; UAW, 3.1; UEW, 2.0.

Remarks. – *Philautus nasutus* (Figs. 38, 39) resembles, *P. adspersus* (Figs. 42, 43), *P. halyi* (Figs. 52, 54), *P. dimbullae* (Figs. 59, 60) and *P. zal* (Fig. 79). It differs from *P. adspersus* by having tympanum discernible, snout angle category 2, dermal fringe on fingers absent, tarsal tubercle present, loreal region concave and internarial area concave, vs. tympanum not discernible, snout angle category 7, dermal fringe on fingers present, tarsal tubercle absent, loreal region flat and internarial area flat, in *P. adspersus*. It may be distinguished from *P. halyi* by having snout angle category 2, dermal fringe on fingers absent, tarsal tubercle present, and head dorsally flat, vs. snout angle category 6, dermal fringe on fingers present, tarsal tubercle absent and head dorsally convex, in *P. halyi*. It is diagnosed from *P. dimbullae* by having snout angle category 2, dermal fringe on fingers absent, webbing on fingers absent, dorsal surface glandular and warty, tarsal tubercle present, head dorsally flat, and internarial area concave, vs. snout angle category 6, dermal fringe on fingers present, webbing on fingers present, dorsal surface shagreened, tarsal tubercle absent, head dorsally convex and internarial area flat, in *P. dimbullae*. *Philautus nasutus* differs from *P. zal* by having snout angle category 2, dermal fringe on fingers absent, supernumerary tubercles on foot present, tarsal tubercle present, loreal region concave, head dorsally flat, and internarial region concave, vs. snout angle category 5, dermal fringe on fingers present, supernumerary tubercles on foot absent, tarsal tubercle absent, loreal region flat, head dorsally convex and internarial region convex, in *P. zal*.

Distribution. – The species is known only from the holotype, type locality ‘Ceylon’ (= Sri Lanka).

Conservation status. – Extinct.

***Philautus oxyrhynchus* (Günther, 1872)**
(Figs. 40, 41; Table 5)

Ixalus oxyrhynchus Günther, 1872: 88.

Material examined. – Lectotype of *Ixalus oxyrhynchus* (here designated), mature female, 18.6 mm SVL, BMNH 1947.2.6.40, ‘Ceylon’, coll. K. G. H. K. Thwaites.

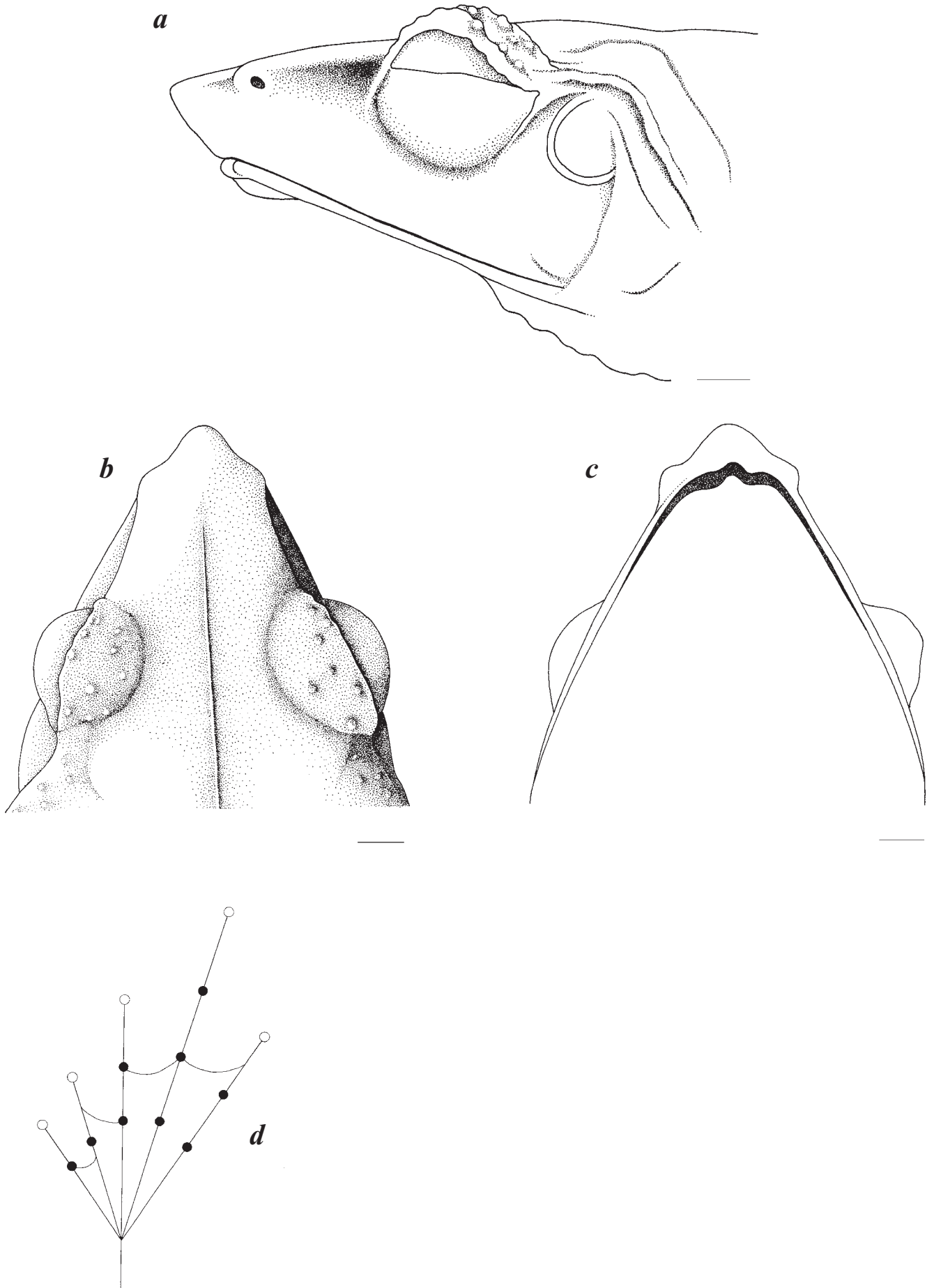


Fig. 40. *Philautus oxyrhynchus*: *a-c*: lateral, dorsal and ventral aspects respectively, of head; and *d*, semi-diagrammatic representation of the left-foot webbing pattern, of lectotype female, BMNH 1947.2.6.40, 19.3 mm SVL. Scale bars: 1 mm.

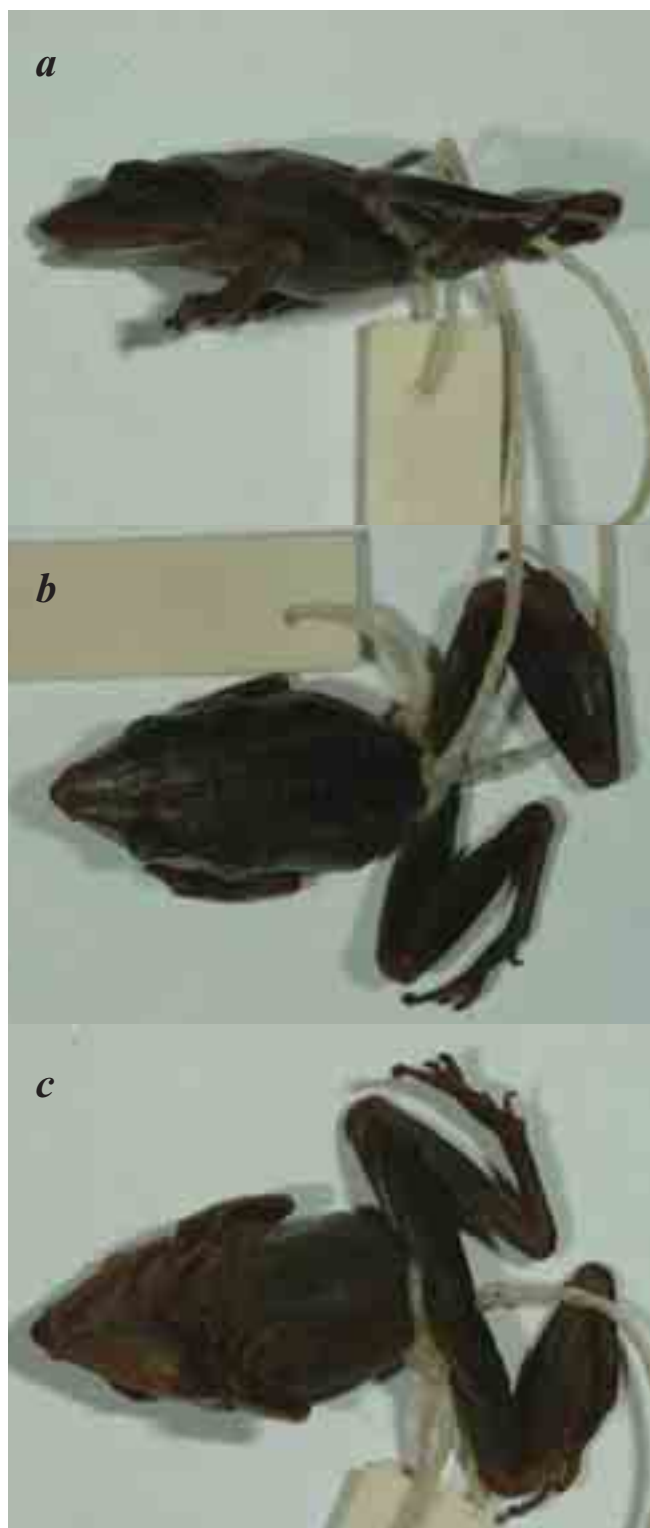


Fig. 41. *Philautus oxyrhynchus*, lectotype, female, BMNH 1947.2.6.40, 18.6 mm SVL; a, lateral aspect; b, dorsal aspect; and c, ventral aspect.

Diagnosis. – (See Figs. 40, 41). Mature female 18.6 mm SVL. Tympanum discernible. Snout angle category 0. Dorsum smooth. Horn-like spinules absent on dorsum. Calcar present. Vomerine teeth absent. Toes medially webbed. Belly granular.

Description. – (See Figs. 40, 41). Mature female 18.6 mm SVL. Body elongate. Head dorsally flat. Snout angle

category 0 (angle of snout $\sim 70^\circ$), pointed in lateral aspect. Canthal edges sharp. Loreal region flat. Interorbital space concave. Internasal space concave. Tympanum oval, oblique. Pineal ocellus, vomerine ridge, cephalic ridges, calcar, lingual papilla and skin on head not co-ossified with skull. Supratympanic fold distinct. A lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal folds absent. Calcar present. Snout, interorbital space, side of head and dorsum, both upper and lower flank smooth. Limbs dorsally smooth. Throat, chest and underside of thigh smooth. Belly granular.

Measurements of lectotype: (BMNH 1947.2.6.40, in mm), DBE, 6.3; DFE, 4.4; DL, 0.8; DW, 0.7; ED, 2.6; EN, 2.4; ES, 4.0; FEL, 9.8; FL I, 1.5; FL II, 1.6; FL III, 2.6; FL IV, 2.0; FOL, 12.6; HL, 9.0; HW, 7.4; IML, 0.8; IN, 2.5; IO, 2.5; LAL, 3.8; MBE, 3.8; MFE, 5.7; MN, 7.4; NS, 1.8; PAL, 4.3; SVL, 18.6; TBL, 10.6; TL I, 1.2; TL II, 1.5; TL III, 2.8; TL IV, 3.9; TL V, 2.6; TYD, 0.7; TYE, 1.6; UAW, 2.9; UEW, 1.6.

Colour in alcohol: (Fig. 41, based on lectotype: BMNH 1947.2.6.40), both dorsum and venter uniform dark brown; limbs with indistinct crossbars.

Remarks. – *Philautus oxyrhynchus* (Figs. 40, 41) resembles *P. hypomelas* (Figs. 45, 46) and *P. caeruleus* (Figs. 122, 123). It differs from *P. hypomelas* by having snout angle category 0, an indistinct supratympanic fold present, toes medially webbed, tarsal tubercle present, internarial area concave, vs. snout angle category 4, supratympanic fold absent, webbing on toes absent, tarsal tubercle absent, and internarial area flat in *P. hypomelas*. It is distinguished from *P. caeruleus* by having snout angle category 0, tarsal tubercle present, black band from tip of snout to tympanum in lateral view absent, blue pigment on inguinal zone absent, and head dorsally convex, vs. snout angle category 2, tarsal tubercle absent, a black band from tip of snout to tympanum in lateral view present, blue pigment on inguinal zone present, and head dorsally flat, in *P. caeruleus*.

Ixalus oxyrhynchus was described from two syntypes, one of which (female, 18.6 mm SVL, BMNH 1947.2.6.40), is here designated lectotype. We consider the second syntype (female, 23.6 mm SVL, BMNH 1947.2.6.39), to be an example of *P. temporalis*— see also Bossuyt & Dubois (2001: 25).

Distribution. – The species is known only from the type locality, ‘Ceylon’ (= Sri Lanka).

Conservation status. – Extinct.

Philautus adpersus (Günther, 1872)

(Figs. 42, 43; Table 6)

Ixalus adpersus Günther, 1872: 87.

Material examined. – Holotype by monotypy of *Ixalus adpersus*, mature female, 33.3 mm SVL, BMNH 1947.2.6.23, ‘Ceylon’, G. H. K. Thwaites.

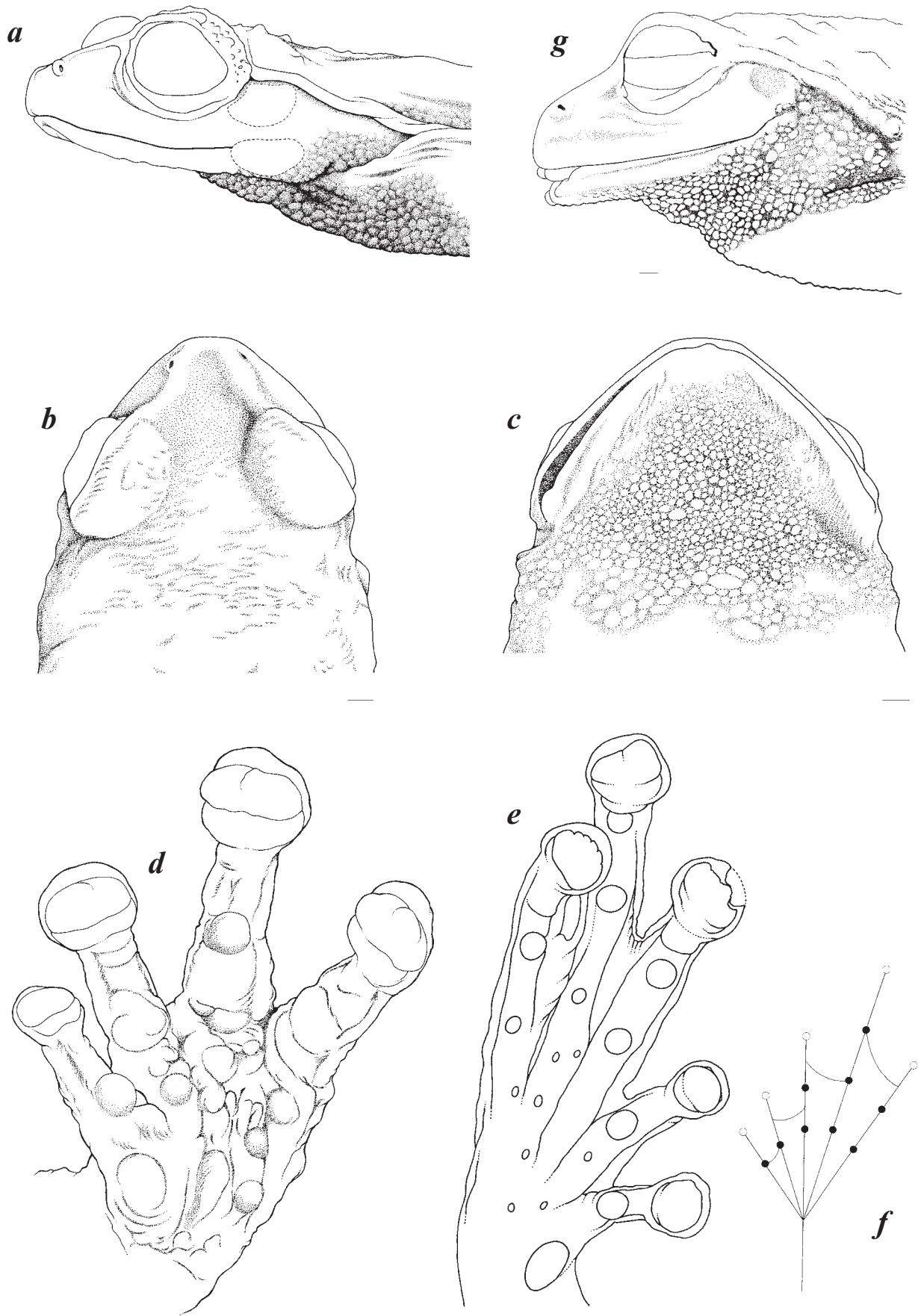


Fig. 42. *Philautus adspersus*: a–c, lateral dorsal and ventral aspects respectively, of head of holotype, female, BMNH 1947.2.6.23, 33.3 mm SVL; d, ventral aspect of left hand of female NHMB 1237, 41.7 mm SVL; e, ventral aspect of right foot; and f, semi-diagrammatic representation of the left-foot webbing pattern, of holotype, female, BMNH 1947.2.6.23, 33.3 mm SVL; g, lateral aspect of head of female NHMB 1237, 41.7 mm SVL. Scale bars: 1 mm. Dotted lines indicate reconstruction of damaged areas.

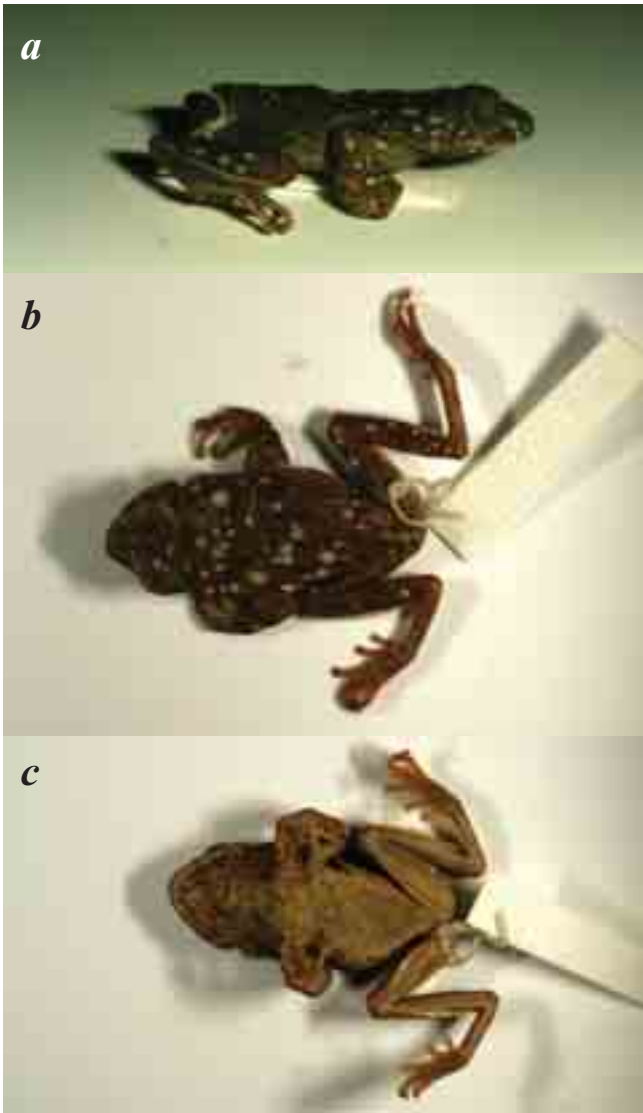


Fig. 43. *Philautus adspersus*, holotype, female, BMNH 1947.2.6.23, 33.3 mm SVL: *a*, lateral aspect; *b*, dorsal aspect; and *c*, ventral aspect.

Others - Female, 41.7 mm SVL, NHMB 1237, collected at Nuwara Eliya' by Paul and Fritz Sarasin, ca. 1886.

Diagnosis. – (See Figs. 42, 43). Mature females 33.3–41.7 mm SVL. Outer rim of tympanum not discernible. Snout angle category 7. Dorsal surface warty. Supratympanic fold prominent. Canthal edges sharp. Calcar absent. Vomerine teeth absent. Supernumerary tubercles present on palm and on foot. Toes medially webbed. Lingual papilla absent. Throat, chest and belly granular.

Description. – (See Figs. 42, 43). Mature females 33.3–41.7 mm SVL. Body stout. Head dorsally flat. Snout angle category 7 (angle of snout ~ 105°), truncate in lateral aspect. Canthal edges sharp. Loreal region flat or concave. Interorbital space concave or flat. Internarial space flat. Tympanum not discernible (left tympanum damaged in holotype; Günther, 1872a, noted 'tympanum distinct'). Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-



Fig. 44. Former distribution of *Philautus adspersus* in Sri Lanka.

ossified with skull. A lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Tarsal tubercle absent. Snout, interorbital area, side of head and anterior part of back smooth except for a few scattered glandular warts. Posterior dorsum smooth. Both upper and lower flank granular. Dorsal part of forelimb with glandular warts. Thigh and shank dorsally smooth. Foot granular. Throat and underside of thigh with smooth granules. Chest and belly rough, granular.

Colour in alcohol: (Fig. 43, based on BMNH 1947.2.6.23), dorsal and lateral areas of head and body light brown with whitish patches. Loreal region, tympanic region, tympanum, inguinal zone and lower part of flank light brown. Upper lip light brown with grey patches. Upper flank light brown with whitish patches. Limbs dorsally light brown with white patches; posterior thigh light brown. Throat light brown with grey patches. Margins of throat, chest, belly, thigh and webbing light brown.

Measurements of holotype: (BMNH 1947.2.6.23, in mm), DBE, 11.1; DFE, 6.3; DL, 1.3; DW, 1.4; ED, 4.8; EN, 2.9; ES, 4.5; FEL, 15.1; FL I, 2.6; FL II, 3.5; FL III, 6.0; FL IV, 4.9; FOL, 20.4; HL, 12.9; HW, 11.5; IML, 1.3; IN, 2.7; IO, 3.1; LAL, 6.8; MBE, 4.7; MFE, 9.0; MN, 11.7; NS, 1.9; PAL, 9.8; SVL, 33.3; TBL, 00.0; TL I, 2.4; TL II, 2.9; TL III, 4.7; TL IV, 6.8; TL V, 5.3; TYD, TYE (tympanum not discernible); UAW, 6.2; UEW, 3.0.

Measurements of NHMB 1237 (in mm): DBE, 14.6; DFE, 8.1; DL, 1.8; DW, 2.8; ED, 5.9; EN, 3.9; ES, 6.6; FEL, 20.1; FL I, 4.0; FL II, 4.8; FL III, 7.9; FL IV, 7.0; FOL, 29.6; HL, 15.7; HW, 17.5; IML, 1.9; IN, 3.9; IO, 4.2; LAL, 9.8; MBE, 6.5; MFE, 10.7; MN, 13.7; NS, 3.0; PAL, 13.3; SVL, 41.7; TBL,

19.5; TL I, 4.2; TL II, 4.5; TL III, 7.5; TL IV, 10.4; TL V, 8.5; TYD, TYE, (tympanum not discernible); UAW, 8.9; UEW, 4.6.

Remarks. – *Philautus adspersus* (Figs. 42, 43) resembles *P. nasutus* (Figs. 38, 39; see Remarks under *P. nasutus*), *P. halyi* (Figs. 52, 54), *P. dimbullae* (Figs. 59, 60) and *P. zal* (Fig. 79). It differs from, *P. halyi* by having tympanum not discernible, loreal region flat, head dorsally flat and internarial region flat, vs. tympanum discernible, loreal region concave, head dorsally convex and internarial region concave, in *P. halyi*. It may be distinguished from *P. dimbullae* by having tympanum not discernible, webbing on fingers absent, a black band from tip of snout to tympanum in lateral view absent, vomerine ridge absent, loreal region flat and head dorsally flat, vs. tympanum discernible, webbing on fingers present, a black band from tip of snout to tympanum in lateral view present, vomerine ridge present, loreal region concave and head dorsally convex, in *P. dimbullae*. It is also distinguished from *P. zal* by having tympanum not discernible, snout angle category 7, supernumerary tubercles on foot present, head dorsally flat and internarial region flat, vs. tympanum discernible, snout angle category 5, supernumerary tubercles on foot absent, head dorsally convex and internarial region convex, in *P. zal*.

The holotype has been erroneously reported by Bossuyt & Dubois (2001) to be a male.

Distribution. – *Philautus adspersus* is known from the single specimen for which a locality is recorded, Nuwara Eliya, a resort town among mountains rising to 1,700–2,500 m (Fig. 44).

Conservation status. – Extinct.

***Philautus hypomelas* (Günther, 1876)**
(Figs. 45, 46; Table 5)

Ixalus hypomelas Günther, 1876b: 380.

Material examined. – Lectotype of *Ixalus hypomelas* (here designated), mature female, 20.9 mm SVL, BMNH 1947.2.27.8, ‘Ceylon’, coll. Beddome. Paralectotypes: 11 ex., female, 19.1 mm SVL, BMNH 1947.2.7.47; male, 16.4 mm SVL, BMNH 1947.2.7.48; female, 18.1 mm SVL, BMNH 1947.2.7.49; male, 16.2 mm SVL, BMNH 1947.2.7.50; male, 14.6 mm SVL, BMNH 1947.2.7.51; female, 20.1 mm SVL, BMNH 1947.2.7.52; female, 19.4 mm SVL, BMNH 1947.2.7.53; female, 19.6 mm SVL, BMNH 1947.2.7.54; female, 15.5 mm SVL, BMNH 1947.2.7.55; female, 15.2 mm SVL, BMNH 1947.2.7.56; juvenile, 11.2 mm SVL, BMNH 1947.2.7.57, ‘Ceylon’, coll. Beddome.

Others - Female, 19.7 mm SVL, BMNH 1947.2.27.9; female, 20.7 mm SVL, BMNH 1947.2.27.10, ‘Ceylon’, coll. W. Ferguson.

Diagnosis. – (See Figs. 45, 46). Snout-vent length range of type series, 11.2–20.9 mm. Tympanum discernible. Snout angle category 4. Horn-like spinules absent on dorsal surface of body. Vomerine teeth absent. Supernumerary tubercles absent

on palm and on foot. Toes free (webbing absent). Nuptial pads not observed. Belly granular.

Description. – (Based on lectotype BMNH 1947.2.27.8, in poor condition: see Figs. 45, 46), mature female, 20.9 mm SVL. Body elongate. Head dorsally convex. Snout oval in lateral aspect, snout angle category 4 (angle of snout ~ 90°). Canthal edges rounded. Loreal region concave. Interorbital and internarial space flat. Tympanum rounded. Supratympanic fold absent. Toes free (webbing absent). Dorsum, chin, chest and underside of thighs smooth. Abdomen granular, smooth. Nuptial pads absent.

Colour in alcohol: (see Fig. 45, based on BMNH 1947.2.27.8) Dorsum brown, back head dark brown, both upper and lower flanks dark brown with yellow patches, inguinal zone dark brown, anterior part of thigh dark brown with yellow patches, back thigh brown, thigh dorsally with 4 and shank with 4 indistinct brown cross bars, throat and chest pale brown with dark brown patches, abdomen dark brown with yellow patches.

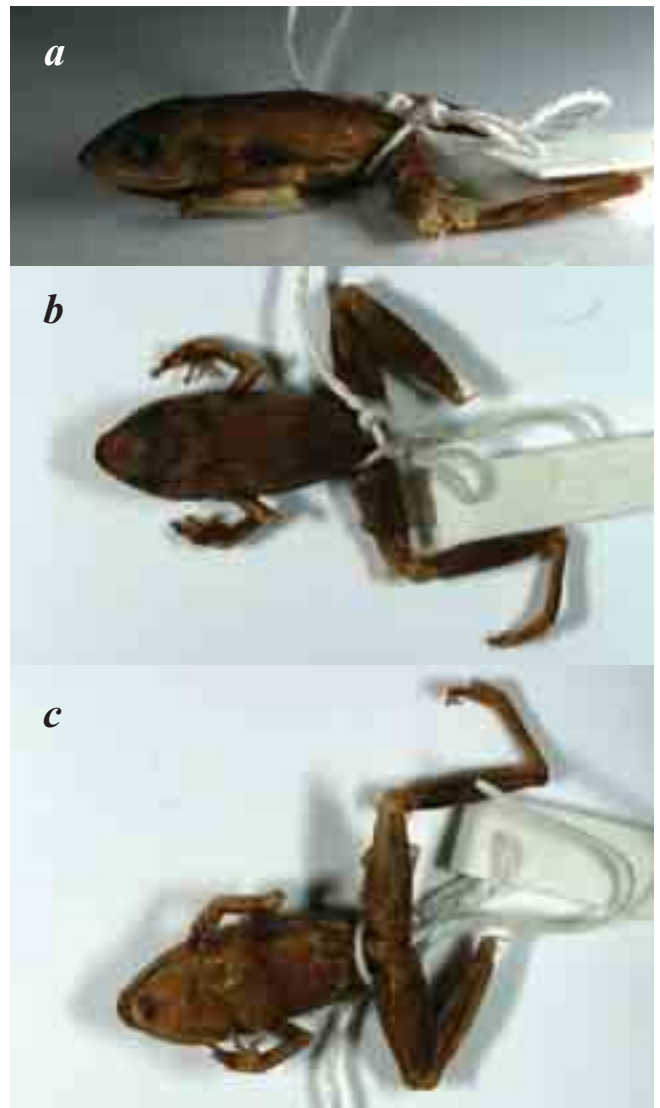


Fig. 45. *Philautus hypomelas*, lectotype, female, BMNH 1947.2.27.8, 20.9 mm SVL: a, lateral aspect; b, dorsal aspect; and c, ventral aspect.

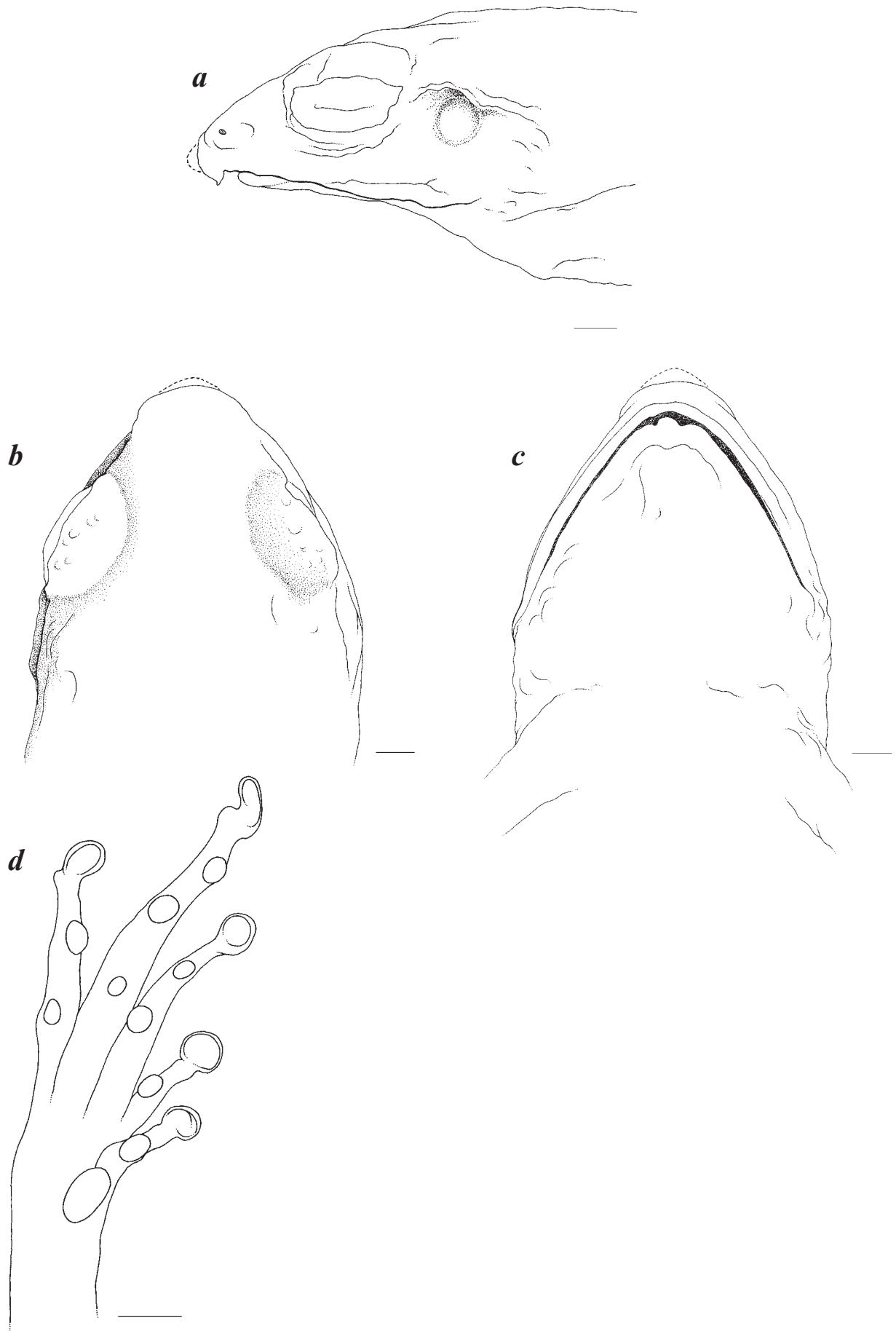


Fig. 46. *Philautus hypomelas*: a–c, lateral, dorsal and ventral aspects respectively, of head; and d, ventral aspect of right foot of lectotype, female, BMNH 1947.2.27.8, 20.9 mm SVL. Scale bars: 1 mm. Dotted lines indicate reconstruction of specimen deformed in preservation.

Measurements of lectotype: (BMNH 1947.2.27.8, in mm), DBE, 7.0; DFE, 4.7; DL, 0.9; DW, 0.8; ED, 3.0; EN, 2.1; ES, 3.5; FEL, 10.9; FL I, 1.3; FL II, 1.7; FL III, 2.8; FL IV, 2.0; FOL, (damaged); HL, 8.3; HW, 7.5; IML, 0.8; IN, 2.4; IO, 2.7; LAL, (damaged); MBE, 3.9; MFE, 5.7; MN, 7.3; NS, 1.5; PAL, (damaged); SVL, 20.9; TBL, 12.0; TL I, 1.3; TL II, 1.8; TL III, 3.0; TL IV, 4.5; TL V, 3.0; TYD, 1.0; TYE, 1.0; UAW, (damaged); UEW, 1.7.

Remarks. – *Philautus hypomelas* (Figs. 45, 46) resembles *P. oxyrhynchus* (Figs. 40, 41; see Remarks under *P. oxyrhynchus*) and *P. caeruleus* (Figs. 123, 124). It differs from *P. caeruleus* by having snout angle category 4, supratympanic fold absent, webbing on toes absent, a black band from tip of snout to tympanum in lateral view absent, blue pigments on inguinal zone absent, and head dorsally concave, vs. snout angle category 2, an indistinct supratympanic fold present, webbing on toes present, a black band from tip of snout to tympanum in lateral view present, blue pigments on inguinal zone present, and head dorsally flat, in *P. caeruleus*.

Distribution. – The species is known only from the syntype series, type locality ‘Ceylon’ (= Sri Lanka).

Conservation status. – Extinct.

Philautus fergusonianus (Ahl, 1927)

(Figs. 47–50; Table 6)

Rhacophorus fergusonii Boulenger, 1882a: 82, a junior secondary homonym in *Philautus* of *Ixalus fergusonii* Günther, 1876. We here use *Philautus fergusonianus*, the replacement name proposed by Ahl (1927) for this taxon (see also Bossuyt & Dubois, 2001: 29).

Material examined. – Holotype by monotypy of *Rhacophorus fergusonii*, female, 44.5 mm SVL, BMNH 1947.2.27.61, ‘Ceylon’, coll. W. Ferguson.

Others - Male, 32.1 mm SVL, WHT 731, Kumaradola, Monaragala, alt. 305 m (06°53'N, 81°22'E), coll. 17 Oct. 1994. Female, 36.4 mm SVL, WHT 1012, Kitulhela (near Moragahapitiya), Monaragala, alt. 520 m (07°20'N, 81°28'E), coll. 26 Aug. 1995. Female, 34.9 mm SVL, WHT 2233, Kumaradola, Monaragala, alt. 305 m (06°53'N, 81°22'E), coll. 30 Apr. 1998. 2 ex female, 39.7 mm SVL, WHT 2400; 37.8 mm SVL, WHT 2401; Sera Ella (near Pottotawela), Knuckles, alt. 460 m (07°35'N, 80°45'E), coll. 03 Sep. 1996. 3 ex. females, 41.4 mm SVL, WHT 2038; 39.4 mm SVL, WHT 2039; 38.9 mm SVL, WHT 2040, Puwakpitiya (near Laggala), Knuckles, alt. 450 m (07°34'N, 80°45'E), coll. 01 Sep. 1997. Male, 34.8 mm SVL, WHT 3360, Deniyaya, alt. 460 m (06°21'N, 80°34'E), coll. 09 Oct. 2001. 5 ex. female, 29.4 mm SVL, WHT 3361; male, 30.8 mm SVL, WHT 3362; female, 34.4 mm SVL, WHT 3363; male, 26.9 mm SVL, WHT 3364; male, 28.4 mm SVL, WHT 3365, Pitadeniya (near Watugala), alt. 320 m (06°22'N, 80°28'E), coll. 09 Oct. 2001. 2 ex., males, 31.7 mm SVL, WHT 3168; 32.5 mm SVL, WHT 3177; 31.9 mm SVL, WHT 3195, Gannoruwa Forest reserve, Kandy, alt. 684 m (07°17'N, 80°35'E), coll. 22 Apr. 2001. 5 ex., females, 33.4 mm SVL, WHT 3178; 29.7 mm SVL, WHT 3179; 27.6 mm SVL, WHT 3180; 32.6 mm SVL, WHT 3181; male, 34.4 mm SVL, WHT 3182, Puwakpitiya, Knuckles, alt. 414 m (07°34'45"N, 80°44'11"E), coll. 22 Apr. 2001. Female, 35.4 mm SVL, WHT 3229, Hantana, Kandy, alt. 600 m (07°15'N, 80°37'E), coll. 26 Jun. 2001. 3 ex., females, 32.2 mm SVL, WHT 3380; 36.8 mm SVL, WHT 3381; 27.5 mm

SVL, WHT 3382, Kumaradola, Monaragala, alt. 305 m (06°53'N, 81°22'E), coll. 03 Jul. 1999.

Diagnosis. – (See Figs. 47–50). Mature individuals 26.9–44.5 mm SVL. Tympanum discernible. Snout angle category 5. Dorsal surface glandular, warty. Supratympanic fold prominent. Canthal edges rounded. Nuptial pad present in males. Lingual papilla absent. Calcar absent. Vomerine teeth present. Supernumerary tubercles on palm. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Figs. 47–50). Mature males 26.9–34.8 mm SVL; mature females 29.4–44.5 mm SVL. Body stout. Head concave or flat above. Snout angle category 5 (angle of snout ~ 95°–97°), rounded in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital space concave or flat; internarial space concave. Tympanum discernible, rounded or oval, oblique. Pineal ocellus absent. Vomerine ridge present (only on left side of holotype), bearing about 9 small teeth, angled at about 45° relative to body axis, close to choanae. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridge absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Webbing on fingers rudimentary. Toes medially webbed. Disks triangular in dorsal aspect. Dorsal and lateral area of snout and interorbital shagreened. Side of head with a few glandular warts. Anterior dorsum shagreened; posterior with a few glandular warts. Upper flank shagreened; lower flank granular. Males with glandular warts and horn-like spinules on snout, interorbital area, side of head, dorsum and upper flank. Dorsal areas of forelimb, thigh, shank and foot smooth or with glandular warts. Posterior sides of lower arm and foot with prominent glandular tubercles. Throat granular, smooth. Chest smooth, granular. Belly and underside of thigh granular. Internal vocal slits present in males; also a velvety, yellow nuptial pad present on inner and dorsal surface of prepollex and first finger in males.

Colour in life: (based on WHT 0731, Fig. 50), dorsal colour pattern varies from brown to ashy-pale brown. Interorbital bar dark brown or ashy-brown. Upper lip brown or brownish-ash with small, white patches. Both upper and lower flanks pale brown or white with or without black markings. Inguinal zone yellow, white or pale brown with dark-brown patches. Loreal and tympanic regions ashy-brown. Outer rim of tympanum pale ash or pale brown, its mid-area ash and brown. Dorsal and lateral parts of forelimb brown or ash with indistinct dark-brown or dark-ash crossbars. Disks dorsally white or pale brown. Dorsal part of thigh, shank and foot pale brown with dark ashy-brown crossbars. Posterior part of thigh dark brown. Throat and chest pale brown with dark-brown patches. Margin of throat brown with white patches. Belly pale yellow. Underside of thigh pale yellow with brown patches. Webbing ashy brown.

In alcohol, based on holotype (BMNH 1947.2.27.61, see Fig. 49), head and body dorsally ashy light-brown with ashy dark-brown patches and dots. Interorbital bar dark brown. Upper lip brown with small, white patches. Upper flank pale yellow with black markings; lower flank pale yellow. Inguinal zone yellow with dark-brown patches. Loreal and tympanic regions ashy-brown. Outer rim of tympanum pale ash, its mid-area

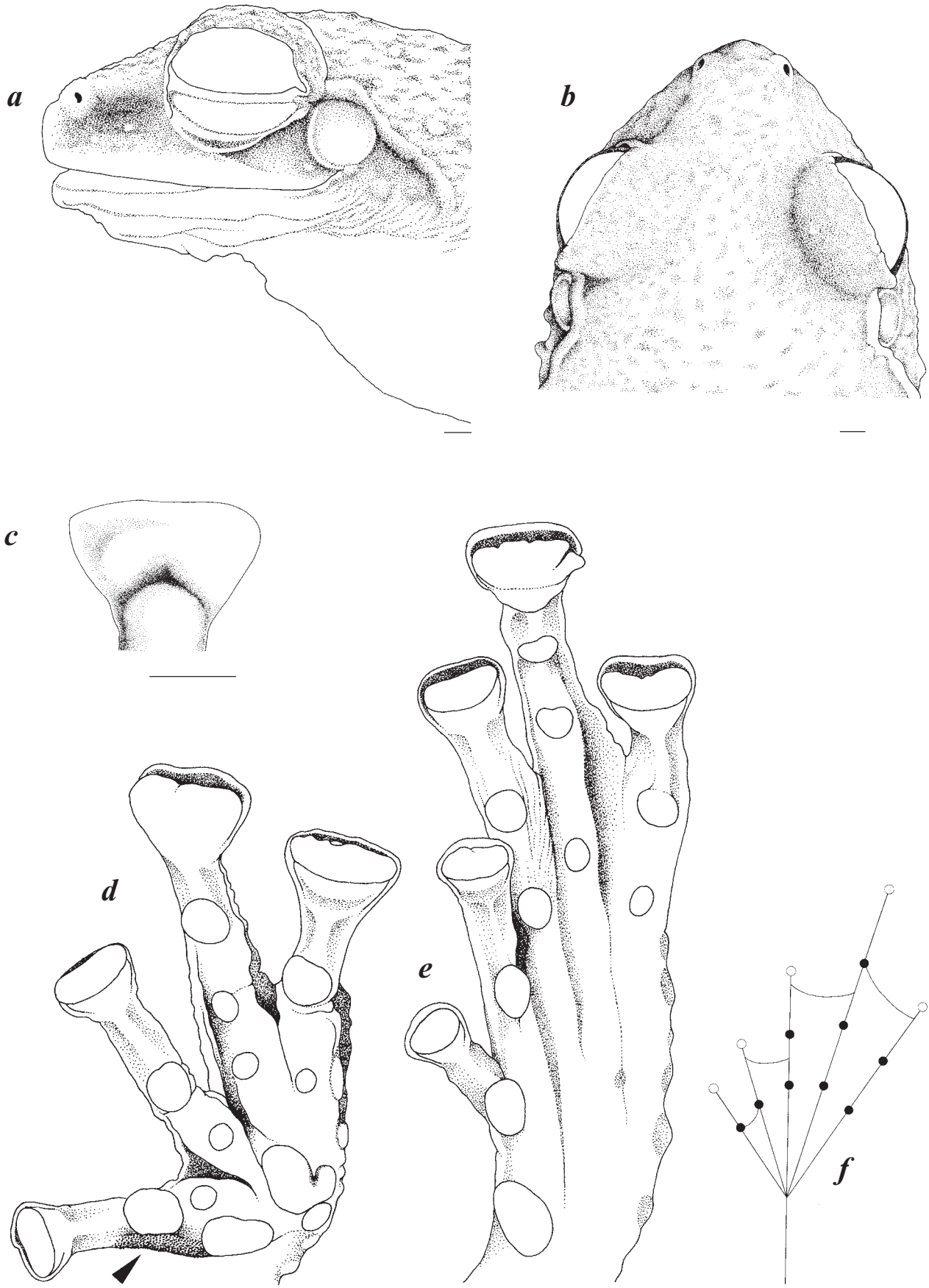


Fig. 47. *Philautus fergusonianus*: a–b, lateral and dorsal aspects respectively, of head; c, dorsal aspect of disk of left-hand finger 3; d, ventral aspect of left hand (arrow indicates nuptial pad); e, ventral aspect of left foot of male, WHT 731, 32.1 mm SVL; and f, semi-diagrammatic representation of the left-foot webbing pattern of holotype, BMNH1947.2.27.61, 44.5 mm SVL. Scale bars: 1 mm.

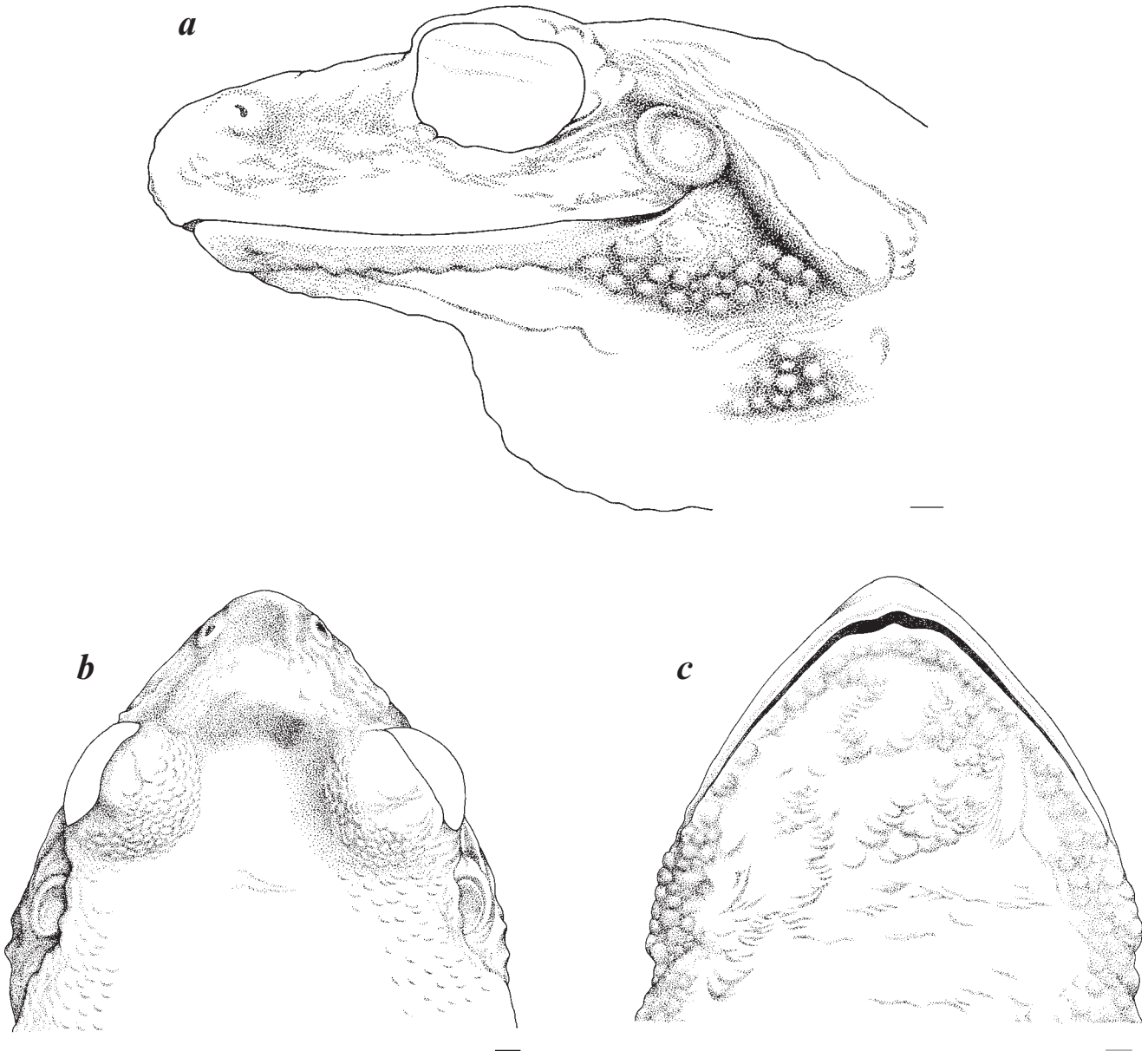


Fig. 48. *Philautus fergusonianus*: a–c, lateral, dorsal and ventral aspects respectively, of head of holotype, female, BMNH 1947.2.27.61, 44.5 mm SVL. Scale bars = 1 mm.

ash and brown. Dorsal and lateral parts of forelimb brown with dark-brown crossbars. Dorsal part of thigh, shank and foot pale brown with dark ashy-brown crossbars. Posterior part of thigh dark brown. Throat and chest pale brown with dark-brown patches. Margin of throat brown with white patches. Belly pale yellow. Underside of thigh pale yellow with brown patches. Webbing ashy brown.

Measurements of holotype: (BMNH 1947.2.27.61, in mm), DBE, 14.6; DFE, 8.8; DL, 1.9; DW, 2.4; ED, 5.4; EN, 4.8; ES, 7.7; FEL, 23.5; FL I, 4.0; FL II, 4.7; FL III, 6.1; FL IV, 6.0; FOL, 28.7; HL, 17.1; HW, 17.3; IML, 1.6; IN, 3.9; IO, 4.2; LAL, 10.2; MBE, 5.4; MFE, 10.2; MN, 5.1; NS, 2.7; PAL, 12.5; SVL, 44.5; TBL, 22.4; TL I, 3.0; TL II, 3.5; TL III, 5.9; TL IV, 8.8; TL V, 6.3; TYD, 1.1; TYE, 2.4; UAW, 8.4; UEW, 3.7.

Remarks.—*Philautus fergusonianus* (Figs. 47–50) resembles *P. regius* (Figs. 98, 100), *P. stictomerus* (Figs. 75–77) and *P.*

sarasinorum (Figs. 65–68). It differs from *P. regius* by having snout angle category 5, an indistinct supratympanic fold present, dermal fringe on fingers present, webbing on fingers present, supernumerary tubercles on foot absent, and vomerine ridge present, vs. snout angle category 7, prominent supratympanic fold present, dermal fringe on fingers absent, webbing on fingers absent, supernumerary tubercles on foot present, and vomerine ridge absent, in *P. regius*. It differs from *P. stictomerus* by having dermal fringe on fingers present, webbing on fingers present and dorsum glandular, warty, vs. dermal fringe on fingers absent, webbing on fingers absent and dorsum smooth, in *P. stictomerus*. It may also be distinguished from *P. sarasinorum* by having lingual papilla absent, supratympanic fold indistinct, dermal fringe on fingers present, webbing on fingers present, toes half-webbed, vomerine ridge present and head dorsally flat or concave in lateral view, vs. lingual papilla present, supratympanic fold prominent, dermal fringe on fingers absent, webbing on fingers

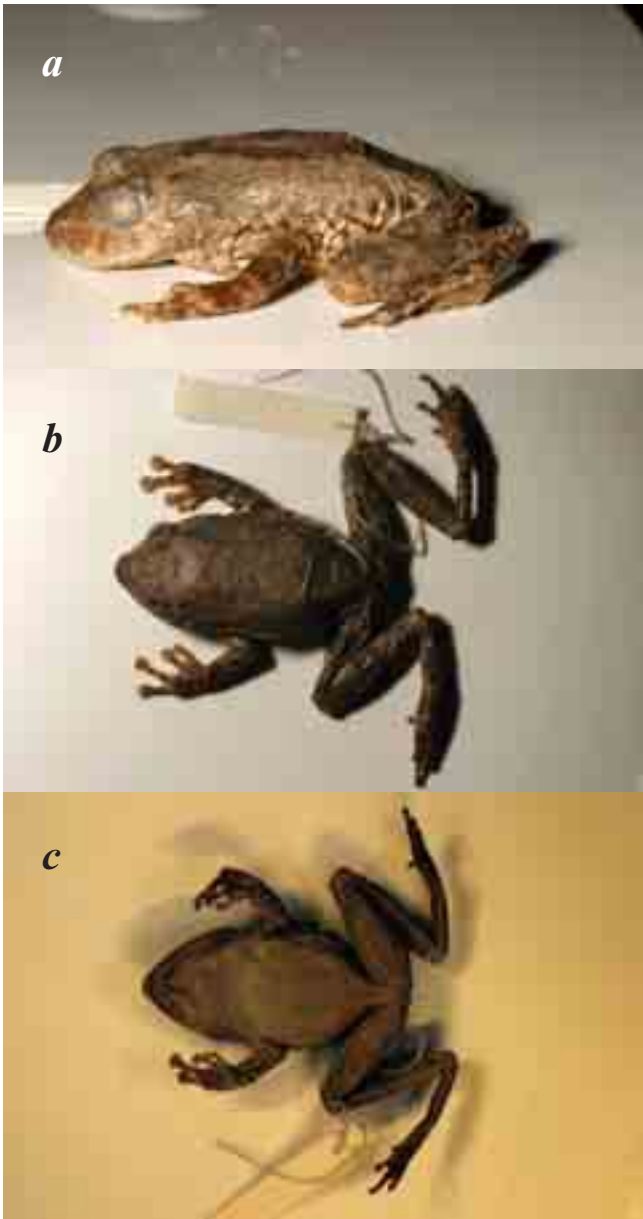


Fig. 49. *Philautus fergusonianus*: a–c, lateral, dorsal and ventral aspects respectively, of female, BMNH 1947.2.27.61, 44.5 mm SVL.

absent, toes fully webbed, vomerine ridge absent, and head dorsally flat in lateral view, in *P. sarasinorum*.

We think it likely that the examination of a larger series of specimens will in the future show the Sinharaja population to be a species distinct from the central hiss and Knuckles populations.

Distribution. – *Philautus fergusonianus* is restricted to the north-eastern part of the hill country, at elevations of approximately 300–700 m (Fig. 51). It is a habitat generalist, found in open-canopy, often synanthropic habitats, including rubber plantations, and also closed canopy rainforest. It was observed on wet, rocky surfaces and tree trunks, often close to water. A wide ranging species, but nowhere very common.



Fig. 50. *Philautus fergusonianus*, male, WHT 0731, 32.1 mm SVL.

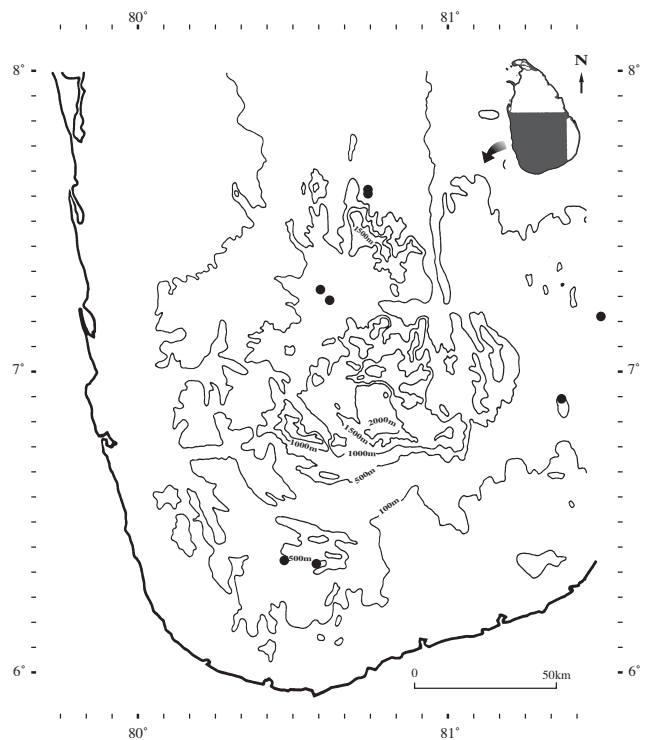


Fig. 51. Distribution of *Philautus fergusonianus* in Sri Lanka.

Conservation status. – Extent of Occurrence: 5,000 km² — Monaragala, Knuckles, Gannoruwa, Hantana, including anthropogenic habitats. Outcome: Least Concern.

***Philautus halyi* (Boulenger, 1904)**

(Figs. 52, 54; Table 6)

Ixalus halyi Boulenger, 1904: 431.

Material examined. – holotype by monotypy of *Ixalus halyi*, mature male, 27.9 mm SVL, BMNH 1947.2.6.16, Pattipola (6°51'N, 80°50'E, 1,890 m alt.), Ceylon, Received from A. Haly, via E. E. Green, 1899.

Diagnosis. – (See Figs. 52, 54). Snout-vent length (of mature-male holotype) 27.9 mm SVL. Tympanum discernible. Snout angle category 6. Dorsum tuberculated. Supratympanic fold

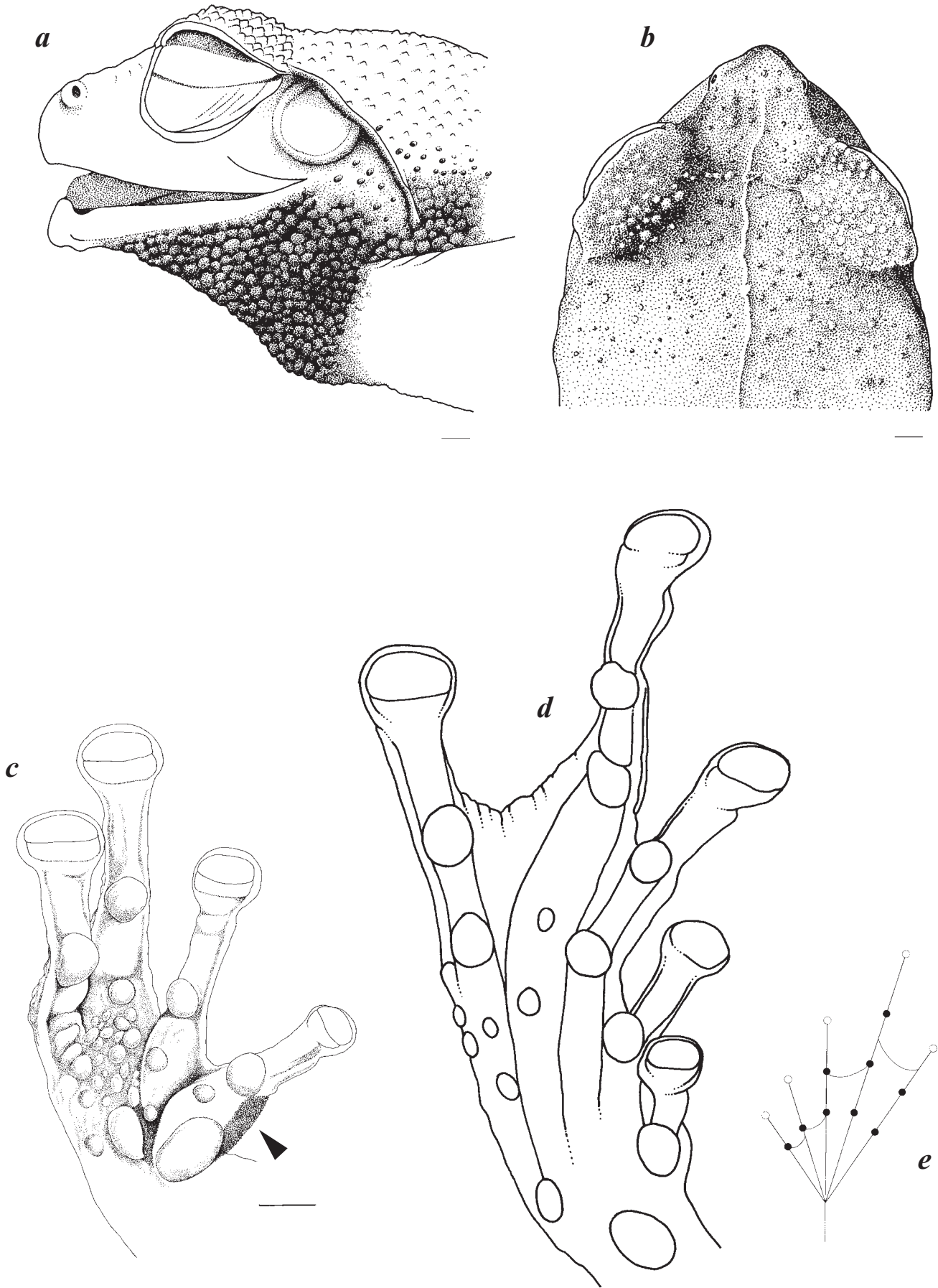


Fig. 52. *Philautus halyi*: a–b, lateral and dorsal aspects respectively, of head; c, ventral aspect of right hand; d, ventral aspect of right foot; and e, semi-diagrammatic representation of the left foot webbing pattern, of holotype, male, BMNH 1947.2.6.16, 27.9 mm SVL (arrow indicates nuptial pad). Scale bars: 1 mm.

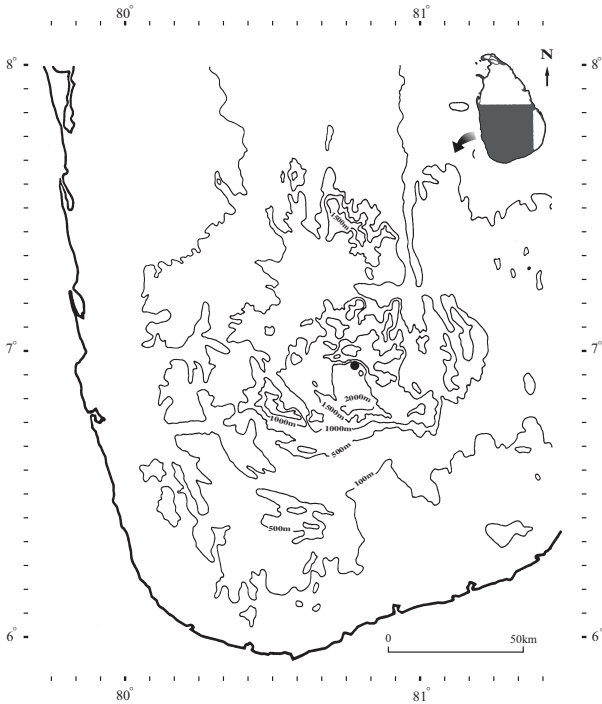


Fig. 53. Former distribution of *Philautus halyi* in Sri Lanka.

prominent. Canthal edges sharp. Lingual papilla absent. Calcar absent. Vomerine teeth absent. Supernumerary tubercles present on palm and foot. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Figs. 52, 54). Mature male 27.7 mm SVL. Body stout. Head dorsally uneven. Snout rounded in lateral aspect, snout angle category 6 (angle of snout ~ 100°). Canthal edges sharp. Loreal region concave. Interorbital space flat. Internarial space flat. Tympanum discernible, oval, vertical. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral fringe present on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head and dorsum shagreened with glandular warts; upper flank with glandular warts; lower flank granular. A median dermal ridge from tip of snout to vent. Dorsal part of forelimb, thigh, shank and foot with glandular warts. Throat, chest, belly and underside of thigh granular. Internal vocal slits present. Nuptial pads present on dorsal and inner side of prepollex and Finger I.

Colour in alcohol: uniform brown except for venter, which is pale yellowish brown.

Measurements of holotype: (BMNH 1947.2.6.16, in mm), DBE, 11.0; DFE, 6.0; DL, 1.1; DW, 1.4; ED, 4.3; EN, 2.8; ES, 4.5; FEL, 13.7; FL I, 2.4; FL II, 3.0; FL III, 4.9; FL IV, 3.8; FOL, 18.0; HL, 11.6; HW, 12.0; IML, 1.1; IN, 2.8; IO, 3.5; LAL, 6.0; MBE, 4.9; MFE, 7.6; MN, 10.0; NS, 2.2; PAL, 9.0; SVL, 27.7; TBL, 13.7; TLI, 2.2; TL II, 2.6; TL III, 4.4; TL IV, 6.1, TL V, 4.7, TYD, 1.1; TYE, 1.8; UAW, 5.9; UEW, 2.9.

Remarks. – *Philautus halyi* (Figs. 52, 54) resembles *P. nasutus* (Figs. 38, 39; see Remarks under *P. nasutus*), *P. adspersus* (Figs. 42, 43; see Remarks under *P. adspersus*), *P. dimbullae* (Figs. 59, 60) and *P. zal* (Fig. 79). It differs from *P. dimbullae* by having webbing on fingers absent, glandular warts on dorsum present, a black band from tip of snout to tympanum absent, vomerine ridge absent and internarial region concave, vs. webbing on fingers present, dorsum shagreened, a black band from tip of snout to tympanum present, vomerine ridge present, and internarial region flat, in *P. dimbullae*. It is distinguished from *P. zal* by having snout angle category 6, supernumerary tubercle on foot present, loreal region concave, and internarial region concave, vs. snout angle category 5, supernumerary tubercle on foot absent, loreal region flat and internarial region flat, in *P. zal*.

Distribution. – *Philautus halyi* has not been recorded since the original description based on a specimen collected at ‘Pattipola, Ceylon’ (Sri Lanka, Fig. 53). The species is known only from the holotype.

Conservation status. – Extinct.

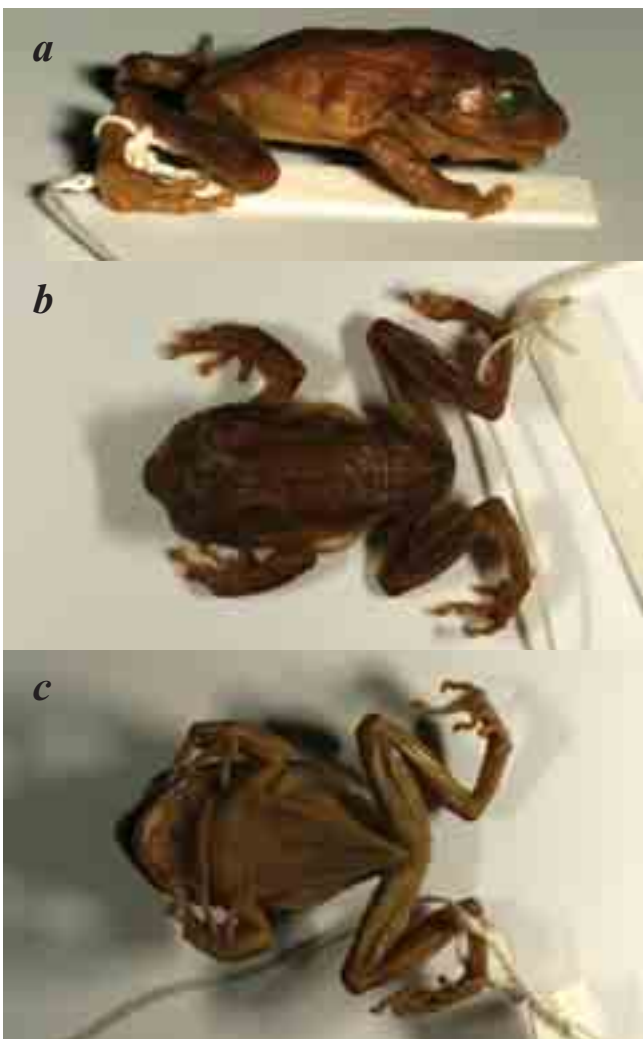


Fig. 54. *Philautus halyi*, holotype, male, BMNH 1947.2.6.16, 27.9 mm SVL: a, lateral aspect; b, dorsal aspect; and c, ventral aspect

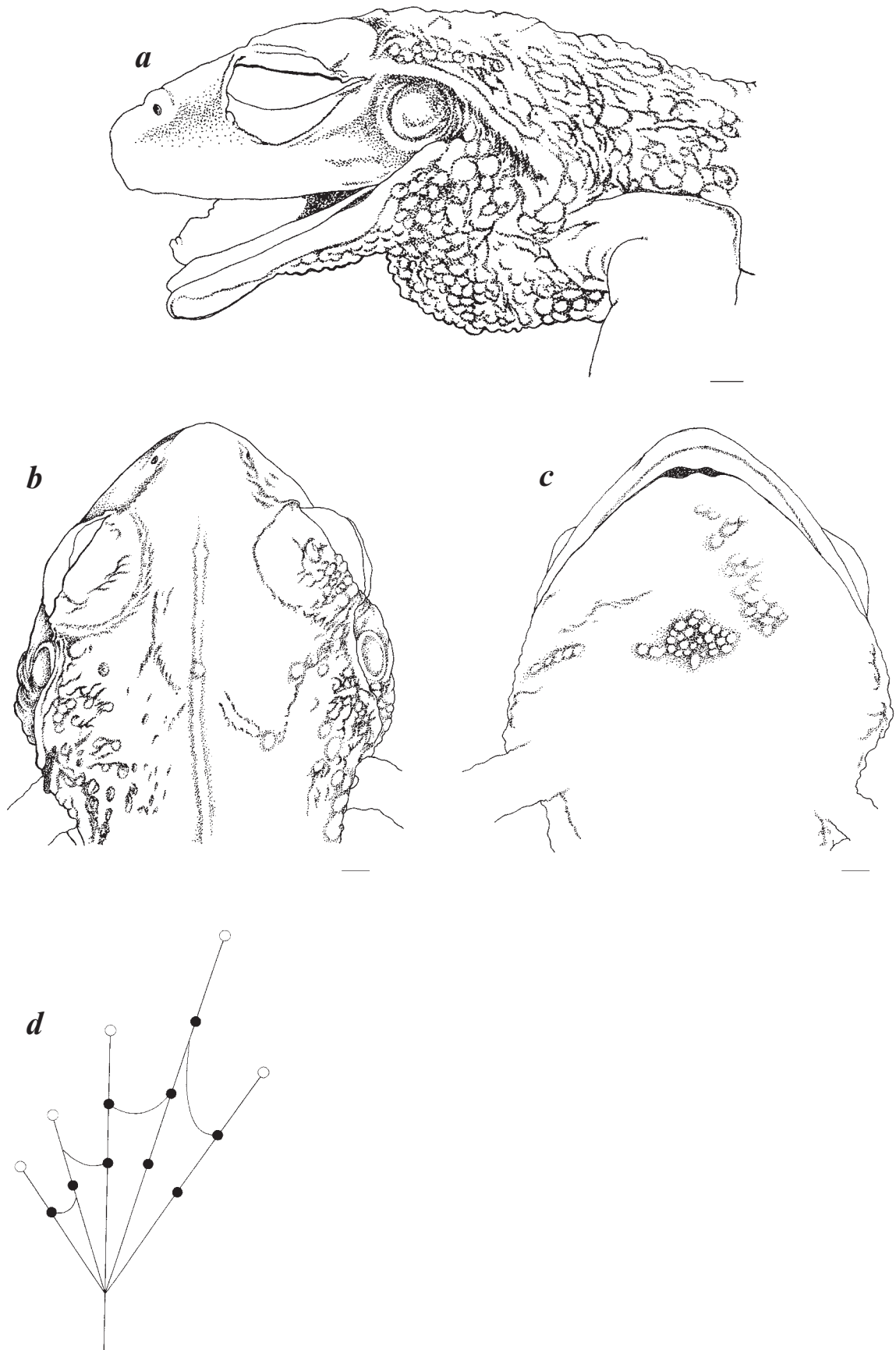


Fig. 55. *Philautus zimmeri*: a–c, lateral, dorsal and ventral aspects respectively, of head; d, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, ZMB 6111, 31.6 mm SVL. Scale bars: 1 mm.

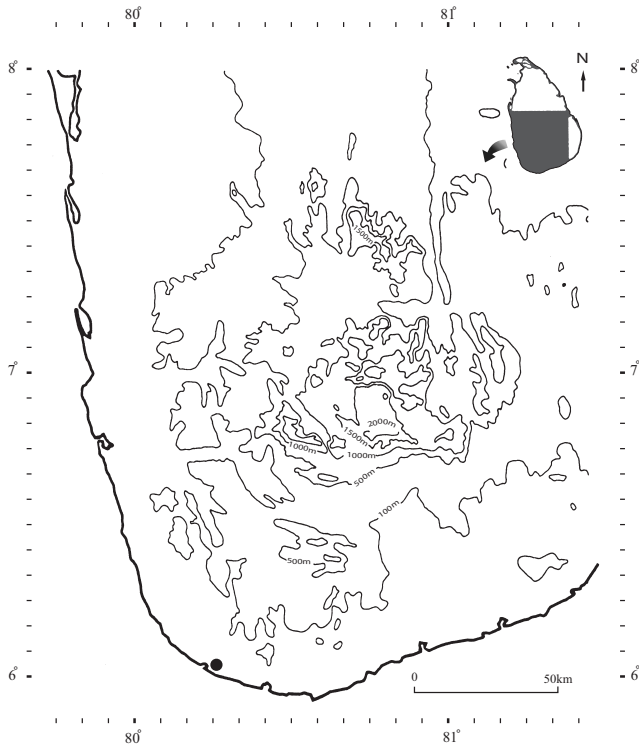


Fig. 56. Former distribution of *Philautus zimmeri* in Sri Lanka.

***Philautus zimmeri* (Ahl, 1927)**
(Fig. 55; Table 8)

Rhacophorus zimmeri Ahl, 1927: 41.

Material examined. – Holotype by monotypy of *Rhacophorus zimmeri*, mature male, 31.6 mm SVL, ZMB 6111, ‘Point de Galle, Ceylon’ (6°02’N, 80°13’E, 5 m alt.), Doria.

Diagnosis. – (See Fig. 55). Mature male (holotype) 31.6 mm SVL. Tympanum discernible. Snout angle category 7. Canthal edges sharp. Dorsum with a few scattered glandular warts. Vomerine teeth present. Supratympanic fold prominent. Supernumerary tubercles present on palm and foot. Toes medially webbed. Nuptial pad present in males. Lingual papilla absent. Throat, chest and belly granular.

Description. – (See Fig. 55). Mature male (holotype) 31.6 mm SVL. Body slender. Head dorsally convex. Snout angle category 7 (angle of snout ~ 105°), blunt in lateral aspects. Canthal edges sharp. Loreal region concave. Interorbital and internarial space flat. Tympanum discernible, oval, vertical. Pineal ocellus present. Vomerine ridge present (but only on right side), bearing a few small teeth, angled at about 60° relative to body axis. Lingual papilla absent. Supratympanic fold prominent. Pineal ocellus present. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Tarsal tubercle present. Snout, interorbital area, side of head, and dorsum with glandular warts. Flank granular. Dorsal part of forelimb, thigh, shank and foot with glandular warts. Throat, chest, belly and underside of thigh granular. Internal vocal slits and a velvety nuptial pad present.

Colour in alcohol: (based on holotype, ZMB 6111), dorsum, dorsal area of head and upper flank brown with lighter markings. Lower flank and inguinal zone yellowish. Canthal, loreal and tympanic region brown. Tympanum dark brown. Upper lip light brown. Forelimb, thigh, shank and foot dorsally light brown with dark-brown crossbars. Posterior area of thigh light brown with dark-brown markings. Venter yellow.

Measurements of holotype: (ZMB 6111, in mm), DBE, 10.3; DFE, 6.6; DL, 1.4; DW, 1.3; ED, 4.5; EN, 2.9; ES, 5.3; FEL, 15.3; FL I, 2.7; FL II, 3.3; FL III, 5.3; FL IV, 4.4; FOL, 23.9; HL, 12.4; HW, 12.7; IML, 1.2; IN, 3.3; IO, 3.7; LAL, 6.8; MBE, 4.8; MFE, 8.5; MN, 10.6; NS, 2.4; PAL, 9.8; SVL, 31.6; TBL, 17.4; TL I, 2.3; TL II, 3.2; TL III, 5.2; TL IV, 7.9; TL V, 5.2; TYD, 1.3; TYE, 1.8; UAW, 6.8; UEW, 2.6.

Remarks. – The species is known only from the holotype. *Philautus zimmeri* (Fig. 55) resembles *P. fulvus* (Figs. 111, 112), from which it differs, however, by having the supratympanic fold prominent, toes medially webbed, internarial region flat, dorsum smooth or glandular and warty, and internarial region flat, vs. supratympanic fold indistinct, toes fully webbed, internarial region concave and dorsum shagreened, in *P. fulvus*.

Distribution. – The type specimen was recorded from ‘Point de Galle’ (present-day Galle, Fig. 56), where the species no longer appears to occur, probably because of urbanization of its habitat.

Conservation status. – Extinct.

***Philautus malcolmsmithi* (Ahl, 1927)**
(Fig. 57; Table 7)

Rhacophorus malcolmsmithi Ahl, 1927: 39.

Material examined. – Holotype by monotypy of *Rhacophorus malcolmsmithi*, mature female, 14.9 mm SVL, ZMB 9037, ‘Ceylon’, coll. Godeffro.

Diagnosis. – (See Fig. 57). Mature female (holotype) 14.9 mm SVL. Tympanum discernible; snout angle category 1. Anterior dorsum with two \/-shaped ridges. Horn-like spinules absent on dorsum. Calcar present. Vomerine teeth absent. Supernumerary tubercles present on palm and foot. Toes medially webbed. Belly granular. A lateral dark-brown stripe from tip of snout to base of upper arm.

Description. – (See Fig. 57). Mature female (holotype) 14.9 mm SVL. Body slender. Head dorsally convex. Snout angle category 1 (angle of snout ~ 78°) and pointed in lateral aspect. Canthal edges sharp. Loreal region concave. Interorbital and internarial space flat. Tympanum discernible, oval, vertical. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Tarsal tubercle present. Dorsal and lateral area of snout, interorbital area, side of head and

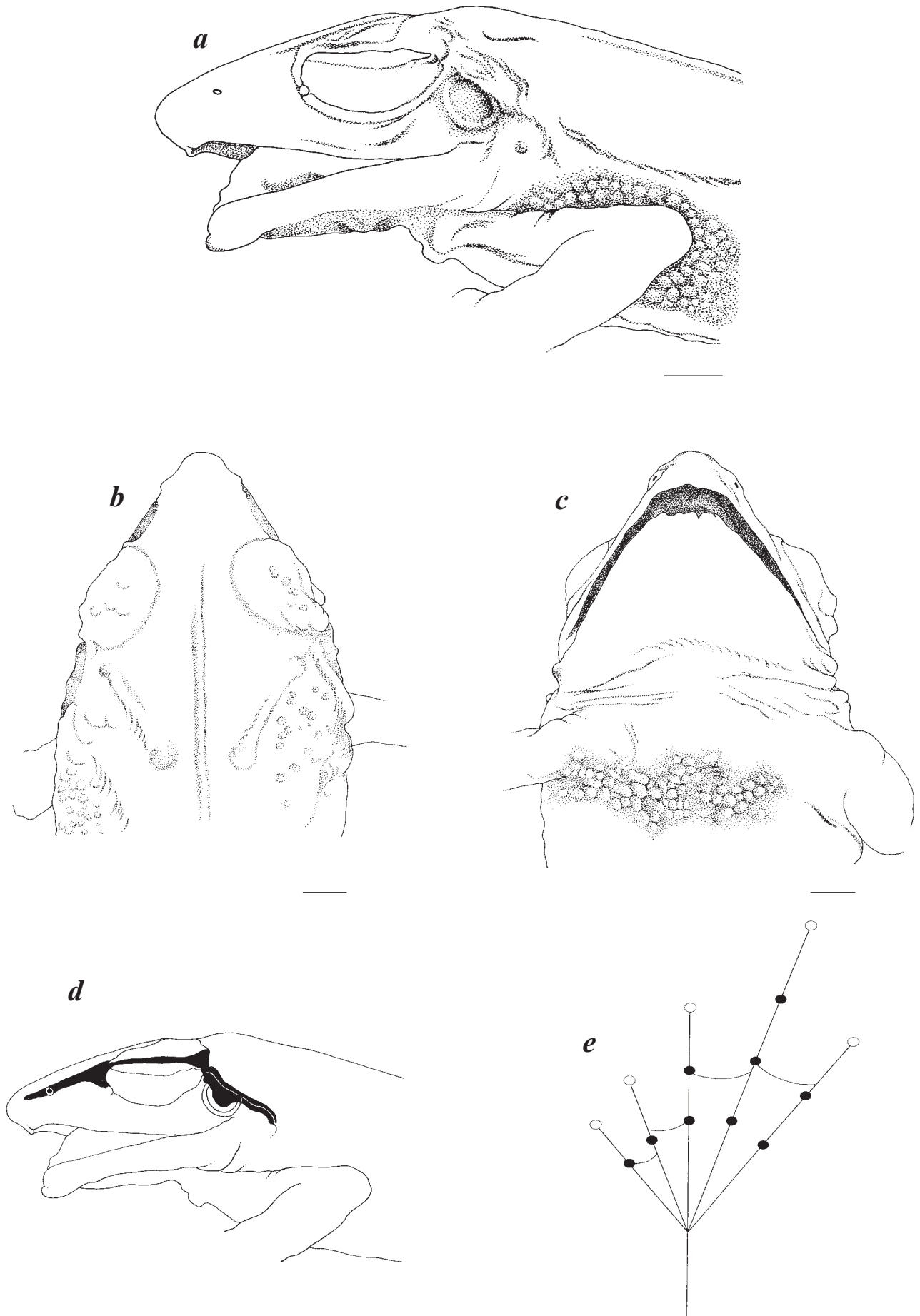


Fig. 57. *Philautus malcolmsmithi*: a–c, lateral, dorsal and ventral aspects respectively, of head; d, dark-brown colour pattern on lateral side of head; and e, semi-diagrammatic representation of the left-foot webbing pattern of holotype, ZMB9037, 14.9 mm SVL. Scale bars: 1 mm.

dorsum smooth. Upper and lower flank with glandular warts. Dorsal part of forelimb, thigh, shank and foot smooth, with a few scattered glandular warts. Throat and chest smooth. Belly and underside of thigh granular.

Colour in alcohol: (based on holotype, ZMB 9037), head and body dorsally brown. Loreal and tympanic regions brown. Upper half of tympanum dark brown, the lower half yellowish light-brown. Canthal edges, edge of upper eyelid and lower area of supratympanic fold dark brown. Upper lip pale yellow. Upper flank pale brown; lower flank yellow. Dorsal and lateral area of forelimb pale brown. A dark-brown crossbar on lower arm. Dorsal area of thigh and shank pale brown with two dark-brown crossbars. Foot dorsally pale yellow with dark-brown crossbars, its back margin dark brown. Posterior area of thigh dark brown. Throat, margin of throat, chest, belly, underside of thighs and webbing brownish yellow.

Measurements of holotype: (ZMB 9037, in mm), DBE, 5.6; DFE, 3.7; DL, 0.6; DW, not in good condition; ED, 2.4; EN, 1.7; ES, 3.0; FEL, 8.2; FL I, 1.0; FL II, 1.2; FL III, 2.0; FL IV, 1.5; FOL, 10.5; HL, 6.7; HW, 6.1; IML, 0.5; IN, 1.8; IO, 1.9; LAL, 2.8; MBE, 2.6; MFE, 4.3; MN, 5.6; NS, 1.4; PAL, 3.8; SVL, 14.9; TBL, 8.4; TL I, 0.9; TL II, 1.2; TL III, 1.9; TL IV, 3.0; TL V, 1.9; TYD, 0.5; TYE, 1.0; UAW, 2.9; UEW, 2.5.

Remarks. – *Philautus malcolmsmithi* (Fig. 57) resembles *P. rugatus* (Fig. 58), *P. cuspis* (Figs. 79, 81), *P. zorro* (Figs. 90, 91) and *P. alto* (Figs. 96, 97). It differs from *P. rugatus* by having snout angle category 1, tarsal tubercle present and head dorsally flat in lateral view, vs. snout angle category 6, tarsal tubercle absent and head dorsally concave in lateral view, in *P. rugatus*. It may be distinguished from *P. cuspis* by having snout angle category 1, supratympanic fold prominent, supernumerary tubercles on foot present, dorsum smooth, loreal region concave and two \/-shaped ridges on present anterior dorsum, vs. snout angle category 0, supratympanic fold indistinct, supernumerary tubercles on foot absent, dorsum with glandular warts and horny spinules, loreal region flat and \/-shaped ridges on anterior dorsum absent, in *P. cuspis*. It differs from *P. zorro* by having snout angle category 1, dorsum smooth, head dorsally convex in lateral view, internarial area flat and two \/-shaped ridges present on anterior dorsum, vs. snout angle category 3, dorsum with horn-like spinules and glandular warts, head dorsally concave in lateral view, internarial area concave and two \/-shaped ridges on anterior dorsum absent, in *P. zorro*. It may be diagnosed from *P. alto* by having canthal edges sharp, snout angle category 1, a prominent supratympanic fold present, dermal fringe on fingers absent and internarial area flat, vs. canthal edges rounded, snout angle category 3, supratympanic fold indistinct, dermal fringe on fingers present and internarial area concave, in *P. alto*.

Distribution. – The species is known only from the holotype, type locality ‘Ceylon’ (Sri Lanka). It has not occurred in our survey.

Conservation status. – Extinct.

Philautus rugatus (Ahl, 1927)

(Fig. 58; Table 7)

Rhacophorus rugatus Ahl, 1927: 36.

Material examined. – Holotype by monotypy, female, 17.5 mm SVL, ZMB 8557, ‘Taralanda’ on specimen label; ‘Farmlands’, *vide* Bossuyt & Dubois, 2001. ‘Ceylon’ (= Sri Lanka), Coll. Nietner.

Diagnosis. – (See Fig. 58). Female (holotype) 17.5 mm SVL. Tympanum faintly discernible. Snout angle category 7. Dorsal surface glandular, warty. Supratympanic fold prominent. Canthal edges sharp. Lingual papilla absent. Calcar absent. Vomerine teeth absent. Supernumerary tubercles present on palm and foot. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Fig. 58). Snout-vent length of female holotype 17.5 mm. Body stout. Head dorsally convex. Snout rounded in lateral aspect, snout angle category 7 (angle of snout ~ 101°). Canthal edges sharp. Loreal region concave. Interorbital space convex; internarial space concave. Tympanum faintly discernible. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Tarsal tubercle absent. A poorly developed dermal fringe on outer edge of 5th toe, from tip to penultimate subarticular tubercle. Dorsal and lateral parts of snout, interorbital area, side of head, and dorsum smooth except for a few scattered glandular warts. Upper flank with glandular warts; lower flank granular. Dorsal area of forelimb, thigh, shank and foot smooth with a few scattered glandular warts. Throat granular, smooth. Chest smooth except for mid-area, which is granular. Belly and underside of thigh rough, granular.

Colour in alcohol: (based on holotype, ZMB 8557) head and body dorsally light brown. Two dark-brown patches on interorbital area. Some small brown patches on dorsal area of head. Two longitudinal dark-brown marks on back. Canthal, infraorbital, supratympanic region and tympanum brown. Upper lip brown, with light patches. Upper and lower flank light brown with dark-brown patches. Inguinal zone pale brown. Limbs light brown with dark-brown crossbars. Posterior part of thigh dark brown. Throat, margin of throat, chest, belly and underside of thighs dark brown. Webbing light brown.

Measurements of holotype: (ZMB 8557, in mm), DBE, 7.4; DFE, 4.4; DL, 0.8; DW, 0.9; ED, 3.0; EN, 1.9; ES, 3.1; FEL, 9.0; FL I, 1.4; FL II, 1.9; FL III, 2.9; FL IV, 2.4; FOL, 11.8; HL, 8.2; HW, 8.2; IML, 0.7; IN, 2.0; IO, 2.5; LAL, 3.8; MBE, 3.4; MFE, 5.5; MN, 6.9; NS, 1.3; PAL, 5.1; SVL, 17.5; TBL, 8.8; TL I, 1.3; TL II, 1.7; TL III, 2.6; TL IV, 3.6; TL V, 2.7; TYD, (tympanum indistinct); TYE, (tympanum indistinct); UAW, 3.9; UEW, 2.0.

Remarks. – *Philautus rugatus* (Fig. 58) resembles *P. malcolmsmithi* (Fig. 57; see Remarks under *P. malcolmsmithi*).

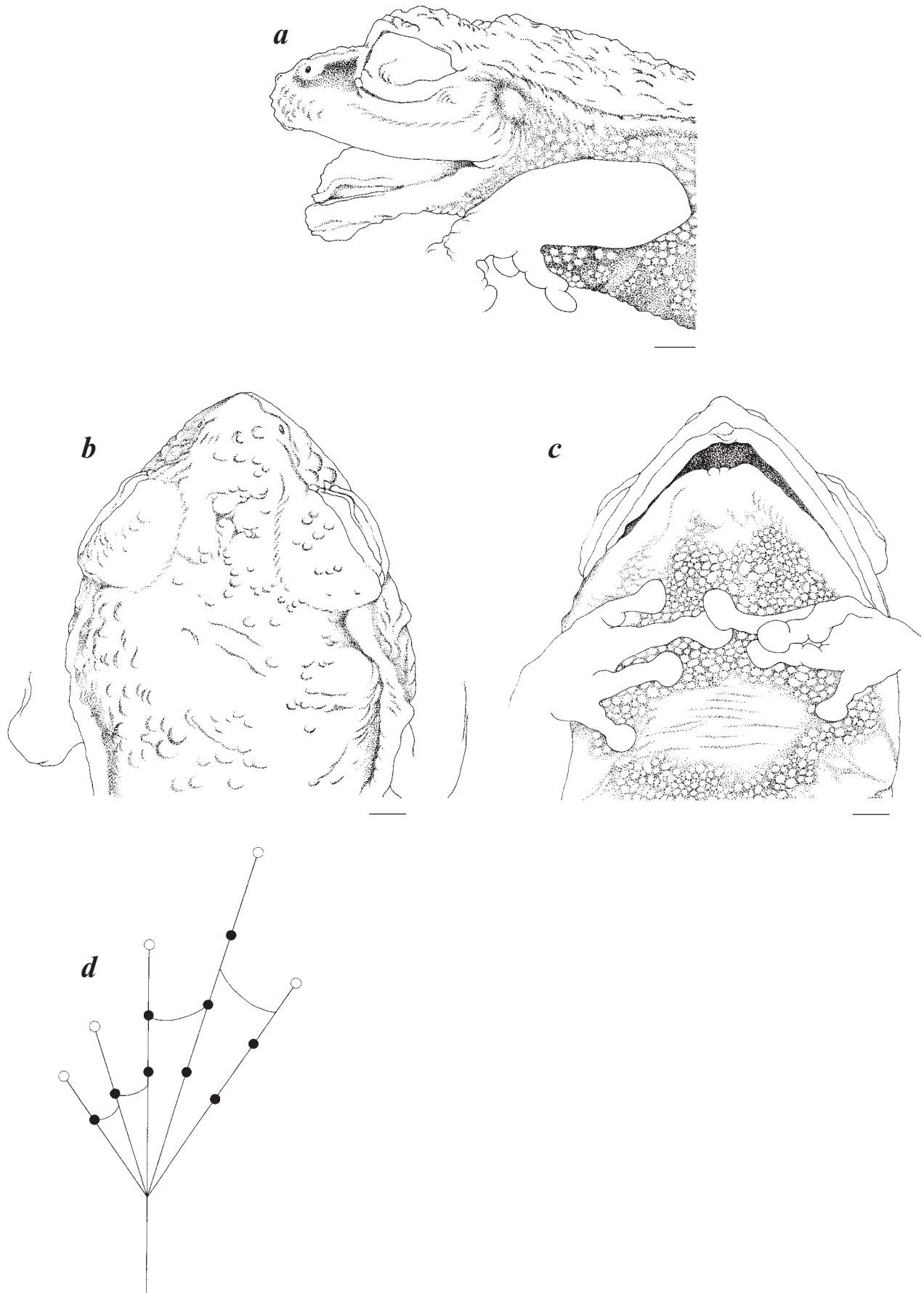


Fig. 58. *Philautus rugatus*: a–c, lateral, dorsal and ventral aspects respectively, of head; d, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, ZMB 8557, 17.5 mm SVL. Scale bars: 1 mm.

smithi), *P. cuspis* (Figs. 80, 81), *P. zorro* (Figs. 90, 91) and *P. alto* (Figs. 96, 97). It differs from *P. cuspis* by having snout angle category 7, supratympanic fold prominent, supernumerary tubercles on foot present, tarsal tubercle absent, loreal region concave and internarial region concave, vs. snout angle category 0, supratympanic fold not prominent, supernumerary tubercles on foot absent, tarsal tubercle present, loreal region flat and internarial region flat, in *P. cuspis*. It is distinguished from *P. zorro* by having snout angle category 7, tarsal tubercle absent, and head dorsally convex, vs. snout angle category 2, tarsal tubercle present and head dorsally concave, in *P. zorro*. It is diagnosable from *P. alto* by having canthal edges sharp, snout angle category 7, supratympanic fold prominent, dermal fringe on fingers absent and tarsal tubercle absent, vs. canthal edges rounded, snout angle category 2, supratympanic fold indistinct, dermal fringe on fingers present, and tarsal tubercle present, in *P. alto*.

Distribution. – *Philautus rugatus* is known only from the holotype. We have not been able to establish the localities ‘Taralanda’ or ‘Farnlands’, probably the former names of tea plantations or farms in the Central Province.

Conservation status. – Extinct.

***Philautus dimbullae* (Shreve, 1940)**
(Figs. 59, 60; Table 6)

Original name. – *Rhacophorus dimbullae* Shreve, 1940: 105.

Material examined. – Holotype by original designation of *Rhacophorus dimbullae*, mature female, 44.8 mm SVL, MCZ A-20878, Queenwood Est., Dimbullen (= Dimbulla), ‘Ceylon’, coll. W. L. Schofield, 1933.

Diagnosis. – (See Figs. 59, 60). Mature female (holotype) 44.8 mm SVL. Tympanum discernible; snout angle category 6; dorsal surface shagreened; supratympanic fold prominent; canthal edges sharp; no papilla on tongue; calcar absent; vomerine teeth present; supernumerary tubercles on palm and on foot; toes medially webbed; throat, chest and belly granular.

Description. – (See Figs. 59, 60). Mature female (holotype) 44.8 mm SVL. Body elongate. Head dorsally convex. Snout truncate in lateral aspect, snout angle category 6 (angle of snout ~ 100°). Canthal edges sharp. Loreal region concave. Interorbital and internarial space flat. Tympanum discernible, oblique. Pineal ocellus absent. Vomerine ridge present, with about 10 small teeth, at an angle of about 60° relative to body axis; ridge approximately as long as the distance between them. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Webbing rudimentary between fingers 1 and 2. Toes medially webbed. A poorly-developed dermal fringe on outer edge of 5th toe, from tip of toe to mid-foot area. Tarsal fold and tarsal tubercle absent. Dorsal and lateral area of snout, interorbital area, side of head, dorsum and upper flank shagreened; lower flank

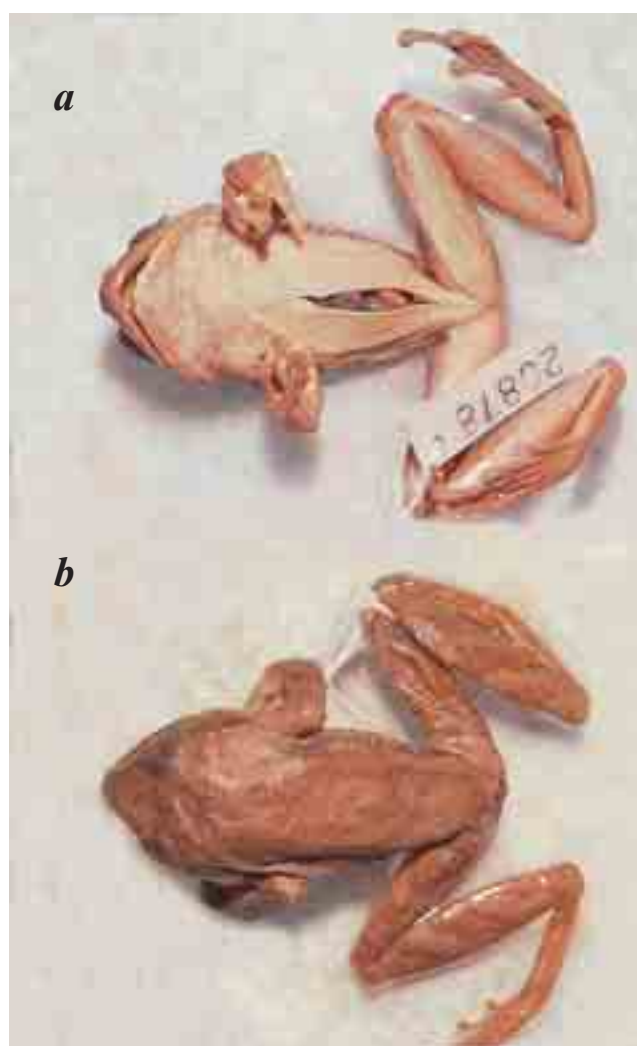


Fig. 59. *Philautus dimbullae*, MCZ A-20878, holotype, female, 44.8 mm SVL: a, ventral aspect; b, dorsal aspect.

granular. Dorsal area of forelimb shagreened with small glandular warts. Thigh, shank and foot dorsally smooth. Throat and chest smoothly granular. Belly and underside of thigh granular, rough.

Colour in alcohol: (Fig. 59), head and body dorsally brown. A dark-brown interorbital bar. Canthal and supratympanic regions, and upper half of tympanum, dark brown. Upper lip light brown, lower lip yellow. Upper flank dark brown, lower flank pale yellow. Anterior dorsum with a W-shaped dark-brown marking; posterior dorsum with an oval brown patch. Limbs light brown with incomplete dark-brown crossbars. Posterior part of thigh light brown with dark-brown patches. Throat pale buff. Margin of throat brown. Chest, belly and underside of thighs yellow. Webbing dark brown.

Measurements of holotype: (MCZ A-20878, in mm), DBE, 15.4; DFE, 8.8; DL, 1.7; DW, 2.1; ED, 5.4; EN, 4.9; ES, 7.8; FEL, 26.3; FL I, 4.3; FL II, 4.5; FL III, 8.2; FL IV, 7.1; FOL, 35.7; HL, 17.8; HW, 18.8; IML, 1.9; IN, 4.2; IO, 4.8; LAL, 10.7; MBE, 6.7; MFE, 11.3; MN, 15.5; NS, 3.0; PAL, 14.7; SVL, 44.8; TBL, 26.8; TL I, 3.7; TL II, 4.6; TL III, 7.6; TL IV, 11.6; TL V, 8.6; TYD, 1.9; TYE, 2.1; UAW, 8.3; UEW, 4.4.

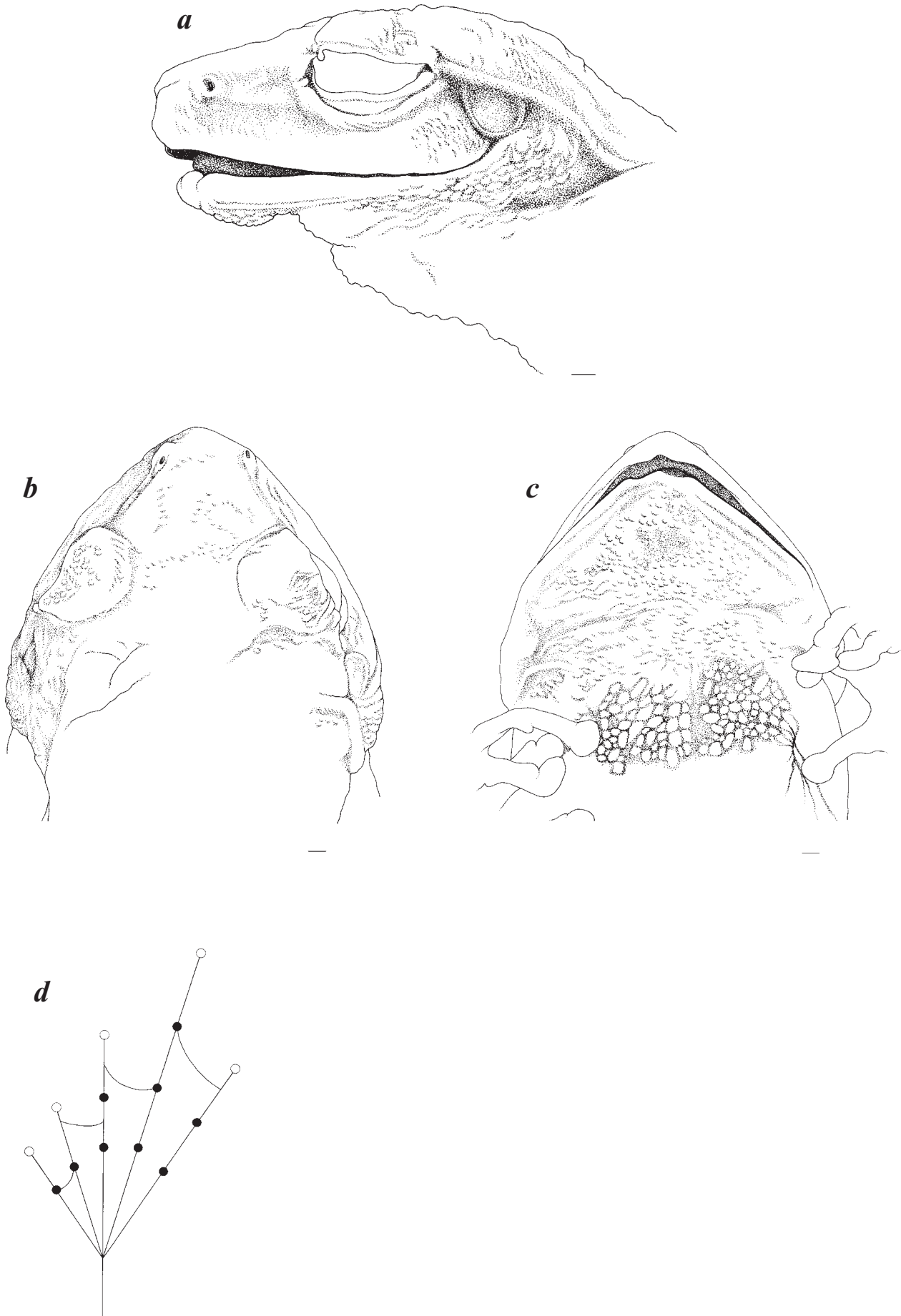


Fig. 60. *Philautus dimbullae*: a–c, lateral, dorsal and ventral aspects respectively, of head; d, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, MCZ A-20878, 44.8 mm SVL. Scale bars: 1 mm.

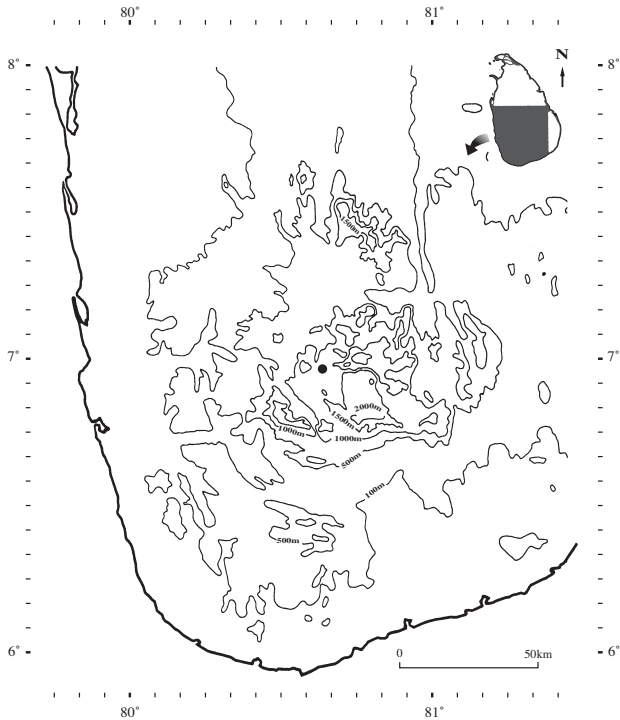


Fig. 61. Former distribution in Sri Lanka of *Philautus dimbullae*.

Remarks. – *Philautus dimbullae* (Figs. 59, 60) resembles *P. nasutus* (Figs. 38, 39), *P. adpersus* (Figs. 42, 43), *P. halyi* (Figs. 52, 53) and *P. zal* (Fig. 79). It differs from *P. zal* by having snout angle category 6, webbing on fingers present, supernumerary tubercles on foot present, dorsum shagreened, a black band from tip of snout to tympanum in lateral view present, vomerine ridge present, loreal region concave and internarial region flat, vs. snout angle category 5, webbing on fingers absent, supernumerary tubercles on foot absent, dorsum glandular and warty, a black band from tip of snout to tympanum in lateral view absent, vomerine ridge absent, loreal region flat and internarial region convex, in *P. zal*.

Distribution. – *Philautus dimbullae* was not recorded by us in the type locality, Dimbulla [Valley], or elsewhere (Fig. 61). The species is known only from the holotype.

Conservation status. – Extinct.

***Philautus eximius* (Shreve, 1940)**
(Figs. 62, 63; Table 5)

Philautus eximius Shreve, 1940: 105.

Material examined. – Holotype by original designation of *Philautus eximius*, mature female, 35.3 mm SVL, MCZ A-20879, Queenwood Est., Dimbulle (Dimbulla), ‘Ceylon’, coll. W. L. Schofield, 1933.

Diagnosis. – (See Figs. 62, 63). Mature female (holotype) 35.3 mm SVL. Tympanum not discernible. Snout angle category 9. Dorsum and dorsal surface of head smooth. Supratympanic fold distinct. Canthal edges sharp. Calcar absent. Vomerine teeth absent. A rounded lingual papilla present.

Supernumerary tubercles present on palm and on foot. Toes medially webbed. Throat smooth. Chest and belly granular.

Description. – (See Figs. 62, 63). Mature female (holotype) 35.3 mm SVL. Body stout. Head dorsally flat. Snout angle category 9 (angle of snout 115°), rounded in lateral aspect. Canthal edges sharp. Loreal region concave. Interorbital and internarial spaces flat. Tympanum not discernible, its outer rim indistinct. Pineal ocellus absent. Vomerine ridge absent. A rounded lingual papilla present. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold and tarsal tubercle absent. Dorsal and lateral area of snout, interorbital area, side of head, dorsum and upper flank smooth; lower flank granular, smooth. Dorsal area of forelimb, thigh, shank and foot smooth. Throat smooth. Chest granular, smooth. Belly and underside of thigh granular, rough.

Colour in alcohol: (Fig. 63), head and body dorsally and laterally yellowish light-brown with dark-brown markings. Loreal and tympanic regions, and tympanum, light yellowish-brown. Upper lip yellowish light-brown. Upper flank yellowish light-brown with brown markings. Lower flank pale yellow. Inguinal zone pale yellow. Limbs dorsally and laterally yellowish light-brown with brown markings, crossbars and narrow cross-lines. Posterior part of thigh pale brown. Throat, chest, belly, underside of thighs and webbing pale yellow.

Measurements of holotype: (MCZ A-20879, in mm), DBE, 12.8; DFE, 7.2; DL, 1.5; DW, 1.9; ED, 4.6; EN, 3.4; ES, 5.5; FEL, 18.3; FL I, 2.6; FL II, 3.3; FL III, 5.6; FL IV, 4.4; FOL, 24.5; HL, 14.2; HW, 15.0; IML, 1.5; IN, 3.0; IO, 3.7; LAL, 7.7; MBE, 5.7; MFE, 9.4; MN, 12.3; NS, 2.1; PAL, 10.2; SVL, 35.3; TBL, 17.4; TL I, 3.0; TL II, 3.5; TL III, 5.0; TL IV, 7.4; TL V, 5.4; TYD (tympanum indistinct); TYE (tympanum indistinct); UAW, 6.3; UEW, 3.5.

Remarks. – *Philautus eximius* resembles *P. variabilis*, from which a diagnosis is provided in the remarks on the description of the latter species.

Distribution. – *Philautus eximius* was not recorded by us at the type locality, Queen[s]wood Est., Dimbulle (=Dimbulla), or elsewhere (Fig. 64). The species is known only from the holotype.

Conservation status. – Extinct.

***Philautus stellatus* (Kelaart, 1853)**

Polypedates stellata Kelaart, 1853: 194 (specific epithet corrected to masculine gender in accordance with Art. 32.5 of the International Code of Zoological Nomenclature).

Material examined. – None.

Remarks. – There has been no record of the specimen, ‘about 2¼ inches’ long, from ‘Newera-Ellia’ (= Nuwara Eliya) since the original description (Kelaart, 1853), which was as follows:

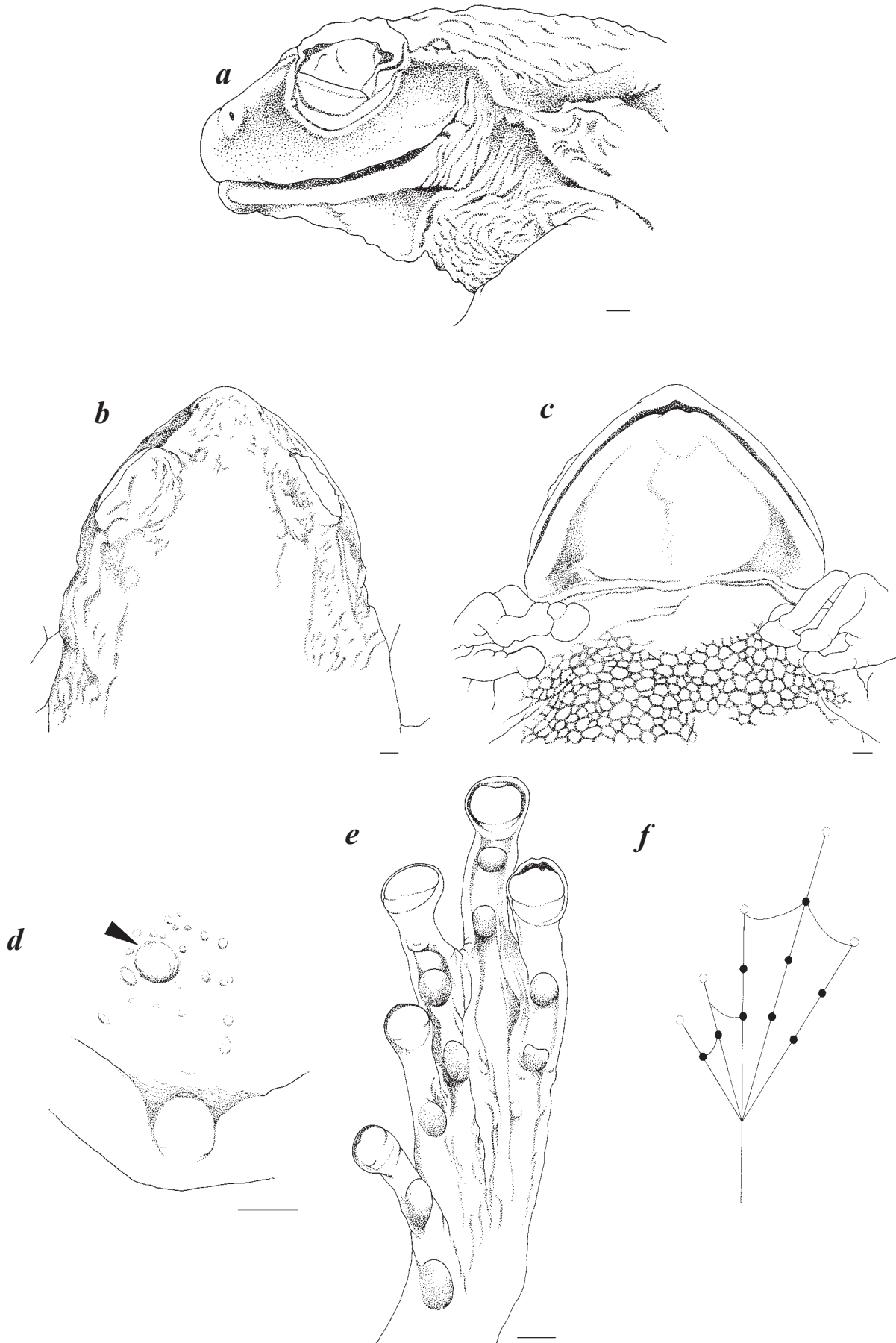


Fig. 62. *Philautus eximius*: *a-c*: lateral, dorsal and ventral aspects respectively, of head; *d*, dorsal aspect of tongue (arrow indicates lingual papilla); and *e*, ventral aspect of left foot; and *f*, semi-diagrammatic representation of the left-foot webbing-pattern of holotype, female, MCZ A-20879, 35.3 mm SVL. Scale bars: 1 mm.

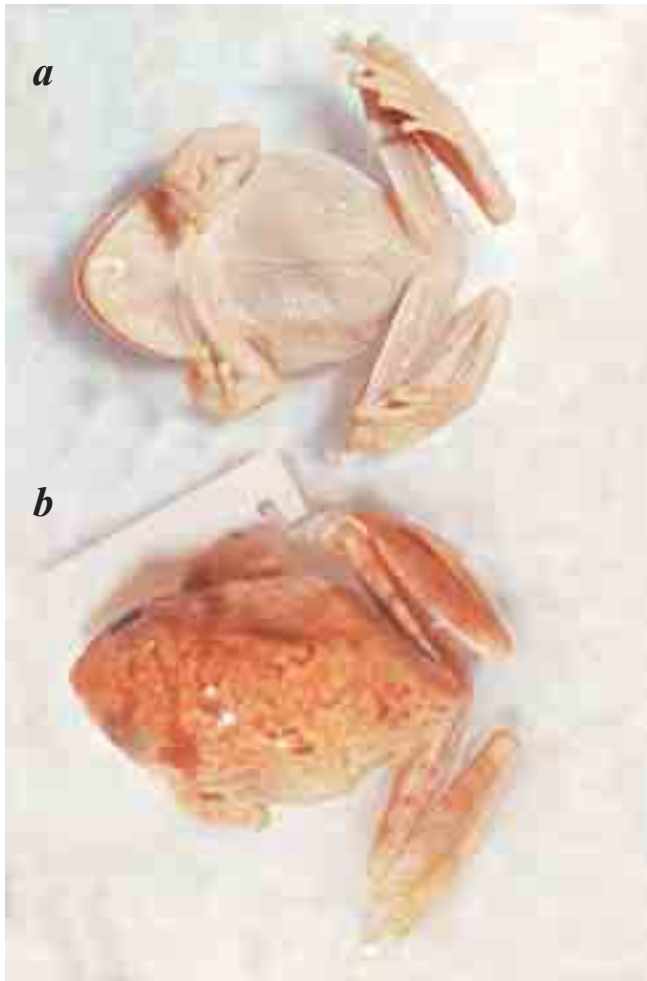


Fig. 63. *Philautus eximius*, MCZ A-20879, holotype, female, 35.3 mm SVL: a, ventral aspect; b, dorsal aspect.

“Above bright green, with transverse darker bands, and irregularly spotted *white*. Limbs barred brown and spotted white. Beneath pinkish white. Body oval. Total length about 2¼ inches. *Geographical Distribution* – Newera-Ellia, Ceylon. We are indebted to Miss Barbara Layard for the only specimen of this beautiful frog found at Newera-Ellia. This frog, too, changes its green colour into a purplish brown, the transverse bands become brown, but the white spots are always present.”

Though scant, the description provided by Kelaart contains information that facilitates a diagnosis from all known *Philautus* and *Polypedates* in Sri Lanka. He diagnosed the genus *Polypedates* with large disks however, which, based on the present-day anuran fauna of Sri Lanka, makes it likely that this species was a rhacophorine. There is no species of Sri Lankan *Polypedates* sensu stricto that is green, as described by Kelaart. This narrows the identification to a green *Philautus* about 57 mm (2¼ inches) long. However, the largest green *Philautus* recorded by us from Sri Lanka is *P. viridis*, which reaches a maximum 36.3 mm SVL (WHT 2764). We therefore tentatively consider *Polypedates stellata* Kelaart, 1853 to be a valid, now extinct *Philautus*. We are thus unable to act on Bossuyt & Dubois’ (2001) recommendation that the name *Philautus stellatus* be used, in the interests of ‘nomenclatural parsimony’, for a new species being described from the Nuwara Eliya area, agreeing by its characters with Kelaart’s (1853) description.

Distribution. – The species was not recorded by us in the type locality, Nuwara Eliya, or elsewhere in Sri Lanka.

Conservation status. – Extinct.

***Philautus sarasinorum* (Müller, 1887)**

(Figs. 65–68, Table 6)

Ixalus sarasinorum Müller, 1887: 256.

Type material. – Lectotype (designated by Forcart, 1946: 129), juvenile, 22.6 mm SVL, NHMB 1217; paralectotype, juvenile, 14.2 mm SVL, NHMB 1218; ‘Peradeniya’ (=Peradeniya, 07°16’N, 80°37’E), Sri Lanka. Not examined.

Material examined. – Female, 32.1 mm SVL, WHT 2481, Bogawantalawa–Balangoda road (near 25th km post), alt. 1300 m (06°45’N, 80°42’E), coll. 30 Aug. 1999; 2 ex. females, 36.1 mm SVL, WHT 2480; male, 28.3 mm SVL, WHT 2482; female, 21.8 mm SVL, WHT 2483, Bogawantalawa–Balangoda road, alt. 1300 m (06°45’N, 80°42’E), coll. 30 Aug. 1999. 4 ex., males, 28.4 mm SVL, WHT 2429; 26.6 mm SVL, WHT 2426; females, 30.8 mm SVL, WHT 2427; 38.1 mm SVL, WHT 2428, Corbett’s Gap, alt. 1,000 m (07°22’N, 80°50’E), coll. 05, 06 Jun. 1999.

Others - Male, 29.8 mm SVL, WHT 5865, Hunnasgiriya, alt. 367 m (07°23’N, 80°41’E), coll. 16 Oct. 2003; females, 34.2 mm SVL, WHT 5378, Agra Arboretum, alt. 1,555 m (06°50’N, 80°40’E), coll. 24 Nov. 2001; 2 ex. females, 27.4 mm SVL, WHT 5428 and 34.6 mm SVL, WHT 5429, coll. 20 Apr. 2002.

Diagnosis. – (See Figs. 65–68). Mature individuals 26.6–38.1 mm SVL. Tympanum discernible. Snout angle category 6.



Fig. 64. Former distribution in Sri Lanka of *Philautus eximius*.

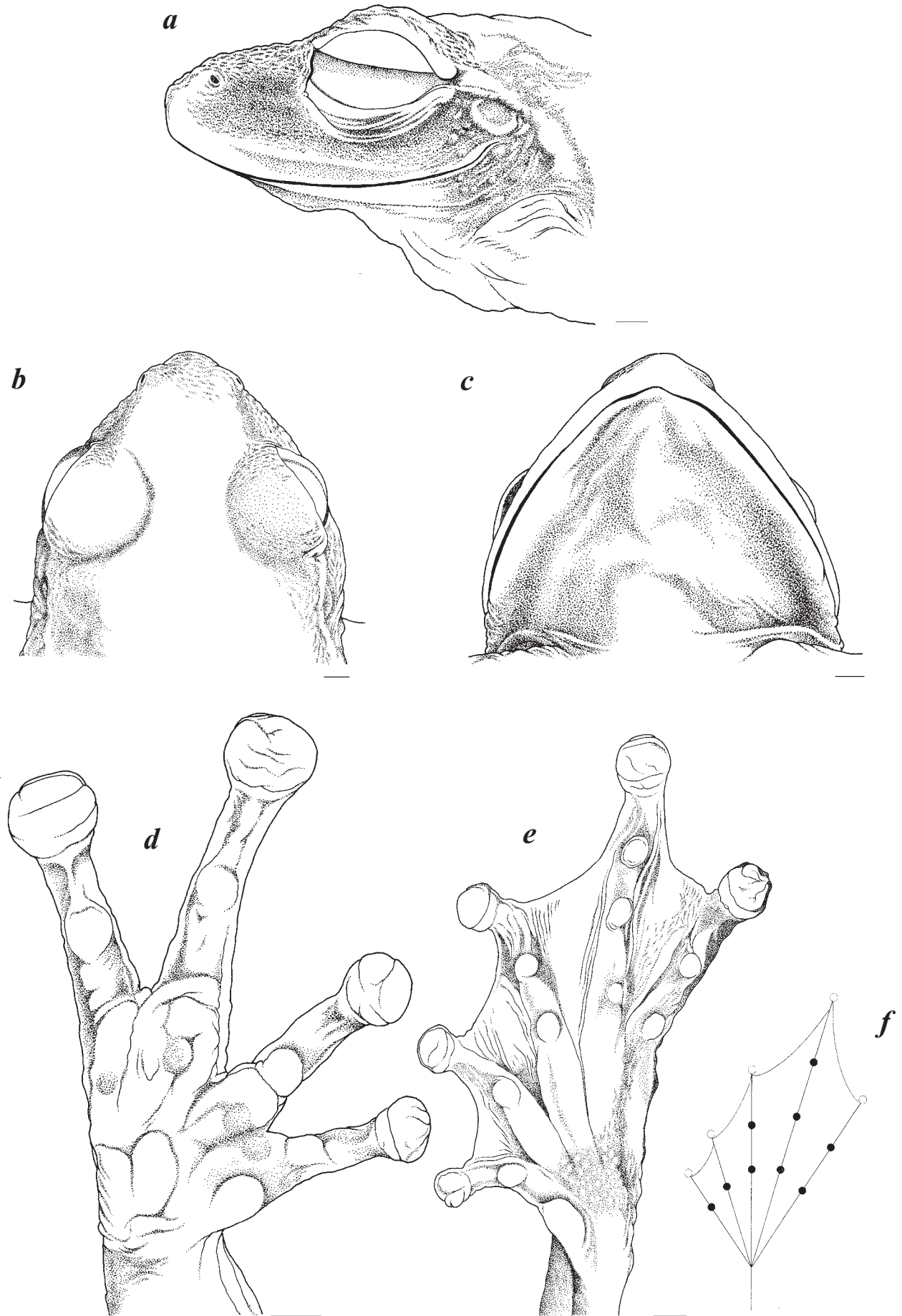


Fig. 65. *Philautus sarasinorum*: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of left foot; and *f*, semi-diagrammatic representation of the left-foot webbing pattern of WHT 2481, 32.1 mm SVL. Scale bars: 1 mm.



Fig. 66. Dorsal aspect of *Philautus sarasinorum*, lectotype, juvenile, NHMB 1217, 22.6 mm SVL .



Fig. 68. *Philautus sarasinorum*, female, WHT 5428, 27.4 mm SVL.



Fig. 67. *Philautus sarasinorum*, female, WHT 5429, 34.6 mm SVL

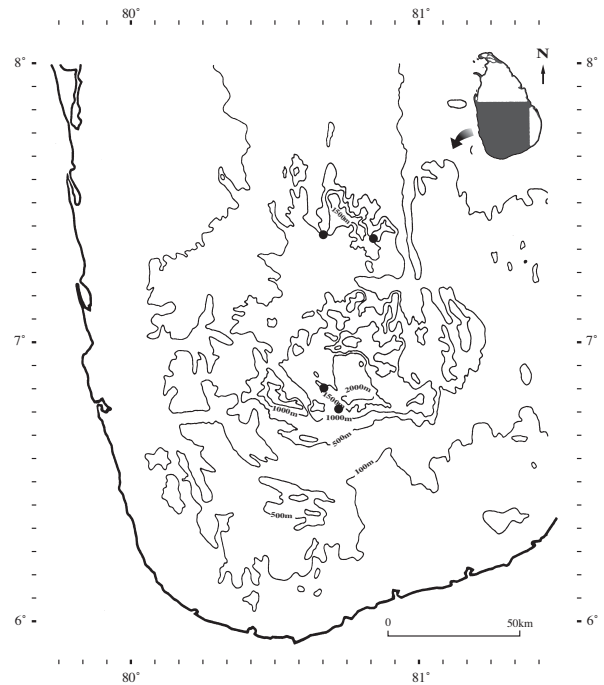


Fig. 69. Distribution of *Philautus sarasinorum* in Sri Lanka.

Dorsal surface of body shagreened. Canthal edges rounded. Lingual papilla present. Vomerine teeth absent. Supratympanic fold prominent. Supernumerary tubercles present on palm. Toes medially webbed; toes 1, 2, 3 and 5 fully webbed. Nuptial pads absent in male. Lingual papilla present. Belly granular. Dorsal colour variable in life.

Description. – (See Figs. 65–68). Mature males 26.6–29.8 mm SVL; mature females 32.1–38.1 mm. Body elongate. Head dorsally flat. Snout rounded in lateral aspect, snout angle category 6 (angle of snout ~ 100°). Canthal edges rounded. Loreal region concave. Interorbital space flat. Internarial space concave. Tympanum discernible, oval. Pineal ocellus absent. Vomerine ridge absent. A point, dorso-ventrally flattened lingual papilla present. Supratympanic fold prominent. Cephalic ridges absent.

Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially or fully webbed; toes 1, 2, 3 and 5 fully webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head, dorsum with glandular warts. Upper flank with glandular folds. Lower flank granular in females. Males with horn-like spinules scattered on dorsum. Dorsal part of forelimb, thigh and shank smooth. Foot and throat with glandular warts. Chest and underside of thigh smooth. Belly granular. Nuptial pads not observed in males. Males with inner vocal slits and yellowish subdermal ‘glands’ on inner and dorsal surface of prepollex and first finger.

Colour in life: (based on WHT 5429, WHT 5428; see also Figs. 67, 68), dorsal part of head and body dark brown. A dark interorbital bar. A dark-brown W-shaped symmetrical marking

on mid-dorsum. Flank dark-brown and yellow. Limbs dorsally brown with dark crossbars. Throat dark brown with yellow patches. Upper abdomen yellow, lower abdomen flesh coloured with scattered brown patches. Lower area of limbs dark brown and flesh coloured. Dorsal surface of discs brown.

Colour in alcohol: (based on WHT 2480; see also Fig. 66), dorsal part of head and body brownish-ash. Upper flank brownish-ash; lower flank dark brown. Inguinal zone dark brown. Loreal region dark ash. Tympanic region brown; tympanum light brown. Upper lip dark ashy-brown. Dorsal and lateral parts of limbs dark brown and ashy brown. Dorsal surface of thigh with three black patches. Throat, margins of throat, chest and belly yellow with brown pigments. Underside of thigh and webbing dark brown.

Measurements of female, WHT 2481, in mm (as type cannot be traced), DBE, 10.9; DFE, 6.9; DL, 1.7; DW, 1.8; ED, 4.4; EN, 3.3; ES, 5.3; FEL, 17.7; FL I, 2.9; FL II, 3.6; FL III, 5.4; FL IV, 5.1; FOL, 23.6; HL, 11.8; HW, 11.7; IML, 1.6; IN, 3.3; IO, 3.3; LAL, 7.3; MBE, 3.5; MFE, 7.1; MN, 9.7; NS, 2.1; PAL, 10.1; SVL, 32.1; TBL, 18.0; TL I, 2.9; TL II, 3.7; TL III, 5.4; TL IV, 7.8, TL V, 6.3, TYD, 1.2; TYE, 1.1; UAW, 7.0; UEW, 3.5.

Remarks. – The type specimens have not been available for examination at NHMB for several years (Ambrose Haenggi, pers. com., 2000) and could not be traced during a visit to that institution by K.M. –A. in December, 2000. We have, pending rediscovery of the types and in order not to create an unnecessary new name, assigned the current species to *Philautus sarasinorum* based on the photograph of the lectotype at Fig. 66 (reproduced from Dutta & Manamendra-Arachchi, 1996: 194), owing to the similar colour pattern on mid-dorsum; broad, distinct crossbars on thigh and shanks; fully webbed toes; and habitus. We also recorded this species from Hantana, a few kilometres from Peradeniya, the type locality. If the lectotype is rediscovered and proves not to be conspecific with the recent material described herein, WHT 2481 may be designated holotype and a new name made available for the extant species; if the lectotype is indeed lost, WHT 2481 may in the future be designated neotype so as to assure nomenclatural stability.

Philautus sarasinorum resembles *P. fergusonianus*, *P. regius* and *P. stictomerus* (for diagnoses, see Remarks in those species accounts).

Distribution. – *Philautus sarasinorum* is known from two disjunct populations in the central hills and Knuckles range, at elevations of ~ 1250–1300 m (Fig. 69). It was observed at night on boulders or branches close to water, in streams traversing both closed and open-canopy forests, and also in anthropogenic habitats. Specimens were seen on low (<1.5 m) branches overhanging water mainly at night: during daytime, they hide in rock crevices on the margins of streams.

Conservation status. – Extent of Occurrence: 2,000 km² — Peradeniya, Agra-Bopath, Bogowantalawa, Knuckles. Threatened by water quality deterioration and loss of riparian forest. Outcome: Endangered (criteria B1 a, b (iii)).

Philautus pleurotaenia (Boulenger, 1904)

(Figs. 70–73, Table 8)

Rhacophorus pleurotaenia Boulenger, 1904: 430.

Type material. – Holotype by monotypy of *Rhacophorus pleurotaenia*, sex not mentioned in the original description, 27.0 mm SVL, BMNH 1947.2.7.64, ‘Kandy’, coll. Haly. Not examined.

Material examined. – Male, 30.3 mm SVL, WHT 5824, Gannoruwa Forest reserve, Kandy, alt. 684 m (07°17’N, 80°35’E), coll. 10 Sep.2003; Male, 28.5 mm SVL, WHT 3176, Gannoruwa Forest reserve, Kandy, alt. 684 m (07°17’N, 80°35’E), coll. 22 Apr.2001. Males, 3 ex., 27.1 mm SVL, WHT 5859; 26.2 mm SVL, WHT 5860; 25.6 mm SVL, WHT 5861; Nawalapitiya, alt. 700 m (07°03’N, 80°32’E), coll. 13 Oct.2003.

Diagnosis. – (See Figs. 70–73). Mature individuals 25.6–30.3 mm SVL. Tympanum discernible: half circle (Fig. 70a). Snout angle category 7. Dorsum shagreened, with scattered glandular warts and horny spinules in males. Supratympanic fold not prominent. Canthal edges rounded. Nuptial pads absent in male. Lingual papilla absent. Calcar absent. Vomerine teeth absent. Supernumerary tubercles present on palm. Toes 2, 3 and 4 fully webbed. Belly granular.

Description. – (See Figs. 70–73). Mature male, 25.6–30.3 mm SVL. Body slender. Head convex above. Snout angle category 7 (angle of snout ~ 106°), truncate in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital space convex and internarial space concave. Tympanum discernible, half circle, horizontal. Pineal ocellus absent. Vomerine ridge absent. Supratympanic fold not prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Webbing on fingers rudimentary. Toes 2, 3 and 4 fully webbed. Tarsal fold absent. Calcar absent. Dorsal and lateral parts of snout, interorbital area and side of head shagreened. Dorsum shagreened, with a few scattered glandular warts and horny spinules. Upper flank shagreened, with a few scattered glandular warts and horny spinules; lower flank granular. Dorsal part of forelimb, thigh, shank and foot smooth. Throat and chest and belly granular. Underside of thigh granular. Nuptial pad absent. Vocal sacs and internal vocal slits present in males.

Colour life: (see Figs. 72, 73), dorsally pale green, edges of upper eyelid and tip of snout yellow. Loreal region tympanic region and supratympanic fold dark greenish grey. Upper lip and warts on dorsum yellow. Upper flank pale greenish yellow, lower flank yellow with black spots. Upper and lower arms yellow with green and black spots. Thigh, shank and foot pale green with dark-green patches. Disks grey. Venter pale yellow with dark-brown or black spots. Webbing ventrally black.

Colour in alcohol: (based on WHT 5824, male, 30.3 mm SVL) background colour of head and dorsum light brown with dark-brown patches, the interorbital area darker. Loreal region, tympanum and tympanic region brown. Upper lip yellow with black pigments. Both upper and lower flanks yellowish with black patches. Inguinal zone yellow with

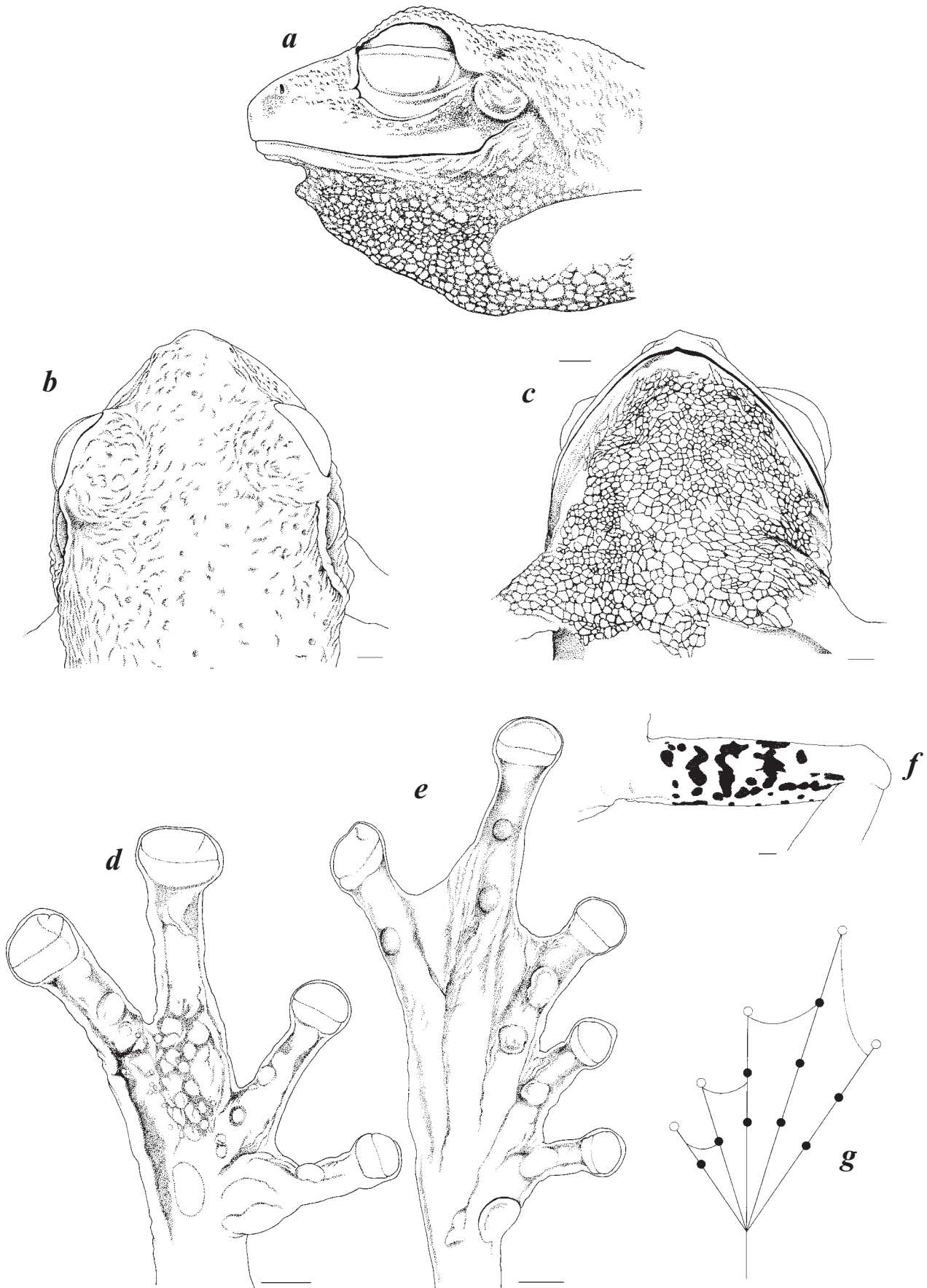


Fig. 70. *Philautus pleurotaenia*: a–c, lateral, dorsal and ventral aspects respectively, of head; d, ventral aspect of right hand; e, ventral aspect of right foot; f, posterior margin of right thigh; and g, semi-diagrammatic representation of the left-foot webbing pattern of male, WHT 3176, 28.5 mm SVL. Scale bars: 1 mm.

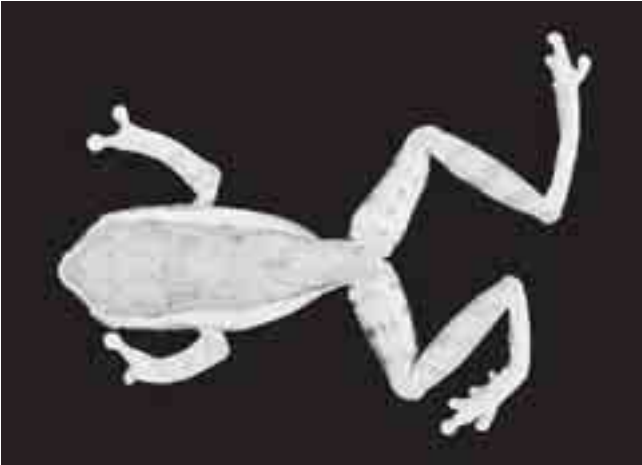


Fig. 71. Dorsal aspect of *Philautus pleurotaenia*, holotype, BMNH 1947.2.7.64.



Fig. 72. *Philautus pleurotaenia*, male, WHT 3176, 28.5 mm SVL.



Fig. 73. Dorso-lateral aspect of *Philautus pleurotaenia*, male, WHT 5859, 27.1 mm SVL.

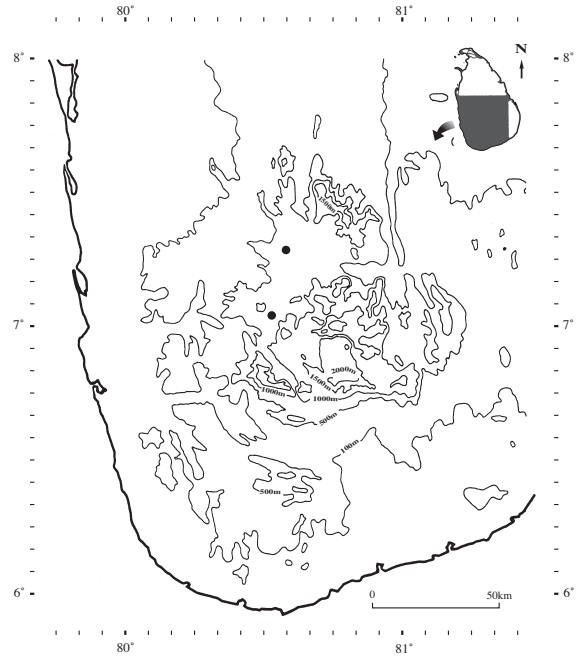


Fig. 74. Distribution of *Philautus pleurotaenia* in Sri Lanka.

black patches. Background colour of forelimb pale brown with indistinct brown crossbars, dorsal part of thigh pale yellow with black patches. Dorsal parts of shank and foot pale brown with indistinct brown crossbars. Posterior of thigh pale yellow with black patches. Throat, margin of throat, chest, belly and thigh pale yellow. Webbing brown.

Remarks. – This species was known only from the holotype, BMNH 1947.2.7.64, juvenile female, SVL 27 mm, ‘Kandy’ (7°17’N, 80°40’E) (Boulenger, 1904: 431). On two visits to BMNH, in August 1996 and November 2000, K.M. –A. was unable to trace this specimen. Barry Clarke (in conversation) explained that this specimen had been loaned in the early 1980s and evidently never returned. It is presumed lost (see also account of *Philautus stictomerus*).

The lost holotype (reproduced from Dutta & Manamendra-Arachchi, 1996: 197) is shown in Fig. 71. This illustration does not show sufficient detail to facilitate unambiguous diagnosis, and the assignment of the taxon described here to *Philautus pleurotaenia* purely on the basis of such detail as is visible in the photograph, is tentative, intended to avoid causing an unnecessary new name to be created. Should the type not be found, this name may be stabilized by the designation of a neotype from amongst the material listed herein. We do not here make such designation however, in the hope that the type, which has been missing for only about two decades, will be rediscovered.

According to Boulenger (1904), vomerine teeth are present in two very small groups in the holotype (BMNH 1947.2.7.64). The examination of large series of Sri Lankan *Philautus* shows that vomerine teeth are often not consistently present or absent within species (regardless of sex or maturity); however, none of the specimens in the series examined by us has vomerine teeth. Boulenger also

points out that the toes of the holotype are half webbed, but in the absence of a diagram, it is not possible to know what exactly he meant by this (the present series has fully webbed toes). While Boulenger did not mention the sex of the holotype, Bossuyt & Dubois (2001) identified it as a juvenile female.

Boulenger (1904) also mentions a broad, white, black edged band from eye to the groin. It is however clear both from Boulenger's drawing and the photograph of the holotype (Dutta & Manamendra-Arachchi 1996: 197) that the white, black-edged band commences at the tip of the snout. In any event, as already observed, dichromatism is common in these frogs (see Fig. 72; Fig. 73 shows the same colour pattern as the holotype).

Philautus pleurotaenia resembles *P. asankai* (Figs. 114–116), *P. hoipolloi* (Figs. 118–120) and *P. auratus* (Figs. 145–147). It is distinguished from *P. asankai* by having snout angle category 7, supratympanic fold distinct, dermal fringe on fingers present and toes fully webbed, vs. snout angle category 6, supratympanic fold indistinct, dermal fringe on fingers absent, and toes half webbed, in *P. asankai*. It may be diagnosed from *P. hoipolloi* by having snout angle 7, lingual papilla absent, supratympanic fold prominent, toes fully webbed and internarial region flat, vs. snout angle 6, lingual papilla present, supratympanic fold indistinct, toes half-webbed and internarial region concave, in *P. hoipolloi*. It may be distinguished from *P. auratus* by having supratympanic fold prominent, toes fully webbed, dorsum glandular warty or shagreened, with horny spinules in males, and head dorsally convex in lateral view, vs. supratympanic fold indistinct, toes half webbed, dorsum shagreened, lacking horny spinules in males, and head dorsally flat in lateral view, in *P. auratus*.

Distribution. – The type locality was given by Boulenger as 'Kandy'. As understood at present, *Philautus pleurotaenia* has been recorded only from two locations (Gannoruwa and Nawalapitiya) near Kandy, alt. 684 m (07°17'N, 80°35'E, 07°30'N, 80°32'E, respectively), in central Sri Lanka (see Fig. 74). One of the specimens collected was perched on a *Syzygium* (Myrtaceae) bush at the forest edge, about 2 m above ground.

Conservation status. – Extent of Occurrence: 200 km² — Nawalapitiya, Gannoruwa. Outcome: Endangered (criteria B1 a, b (iii)).

Philautus stictomerus (Günther, 1876)

(Figs. 75–77, Table 6)

Ixalus stictomerus Günther, 1876a: 575.

Type material. – Holotype by monotypy of *Ixalus stictomerus*, adult female, 34.0 mm SVL, BMNH 1947.2.8.54, 'Ceylon'. Not examined.

Material examined. – Female, 35.4 mm SVL, WHT 1173, Kottawa (Galle), alt. 60 m (06°06'N, 80°20'E), coll. 03 Mar. 1996. Female, 35.0 mm SVL, WHT 2402, Kottawa (Galle), alt. 60 m (06°06'N, 80°20'E), coll. 31 Aug. 1996. Female, 31.1 mm SVL,

WHT 2403, Kanneliya (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 27 Nov. 1996. Male, 23.2 mm SVL, WHT 2404, Kanneliya (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 27 Dec. 1996. Female, 36.0 mm SVL, WHT 3301, Sinharaja Forest (near Kudawa), alt. 513 m (06°25'01"N, 80°25'26"E), coll. 16 Jul. 2001. 5 ex. females, 33.2 mm SVL, WHT 3355; 33.7 mm SVL, WHT 3356; 33.3 mm SVL, WHT 3357; 24.7 mm SVL, WHT 3358; 27.9 mm SVL, WHT 3359, Kosmulla (near Nelluwa), alt. 320 m (06°24'N, 80°23'E), coll. 21 Oct. 1998.

Diagnosis. – (See Figs. 75–77). Mature individuals 23.2–36.0 mm SVL. Tympanum discernible. Snout angle category 5. Dorsal surface in males scattered with horn-like spinules; in females, smooth and shagreened. Supratympanic fold distinct. Canthal edges rounded. Nuptial pad present in males. Lingual papilla absent. Calcar absent. Vomerine teeth present. Supernumerary tubercles present on palm. Toes medially webbed. Head dorsally smooth. In males, abdomen granular, throat and chest shagreened; in females, abdomen granular, throat and chest smooth. Canthal edges, edge of upper eyelid and supratympanic fold bright orange in life.

Description. – (See Figs. 75–77). Mature male 23.2 mm SVL; mature females 24.7–36.0 mm SVL. Body elongate. Head dorsally flat or convex. Snout obtusely pointed in lateral aspect, snout angle category 5 (angle of snout ~ 95°). Canthal edges rounded. Loreal region concave. Interorbital and internarial spaces concave or flat. Tympanum discernible, oval, vertical. Pineal ocellus absent. Vomerine ridge present, bearing a few small teeth, angled at about 45° relative to body axis, shorter than the distance between them. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout and interorbital area smooth. Side of head smooth or with glandular warts. Dorsum and upper flank shagreened; lower flank granular. Dorsal part of forelimb with glandular warts. Thigh, shank and foot dorsally smooth. Throat and chest smooth or shagreened. Belly and underside of thigh granular. Dorsum and upper flank with horn-like spinules in males. Mature male with a well-developed, velvety nuptial pad on inner and dorsal surface of prepollex and 1st finger. Internal vocal slits present in males.

Colour in life: (based on WHT 3301, see also Fig. 77), dorsum dark brown. A narrow yellow stripe on mid-dorsum from tip of snout to vent. Canthal edges, edge of upper eyelid and supratympanic fold bright orange. Light-blue spots scattered on dorsolateral area. Flank marbled in white and brown. Thigh dark brown with light-brown spots. Chin and chest ash and dark brown. Abdomen ashy pale-brown. Limbs, fingers and toes ventrally dark brown.

Colour in alcohol: (based on Female, WHT 1173, 35.4 mm SVL) dorsal part of head and body dark brown. A narrow yellow stripe on mid-dorsum from tip of snout to vent. Flank pale brownish yellow with dark-brown markings. Inguinal zone pale brownish-yellow with dark-brown marbling. Loreal and tympanic regions brown. Upper area of tympanum dark

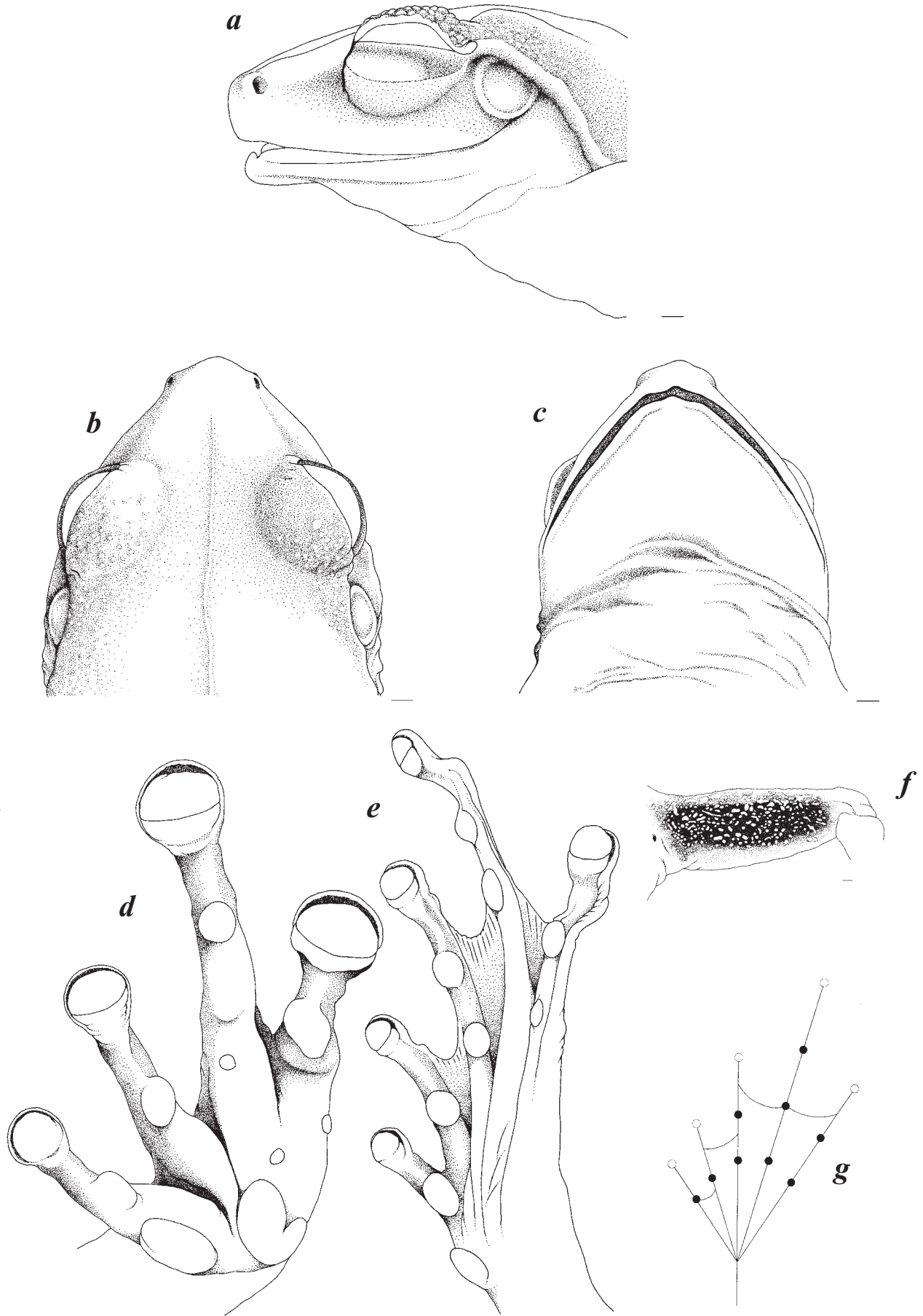


Fig. 75. *Philautus stictomerus*: a–c, lateral, dorsal and ventral aspects respectively, of head; d, ventral aspect of left hand; e, ventral aspect of left foot; f, posterior margin of right thigh; and g, semi-diagrammatic representation of the left-foot webbing pattern of female, WHT 1173, 35.4 mm SVL. Scale bars: 1 mm.

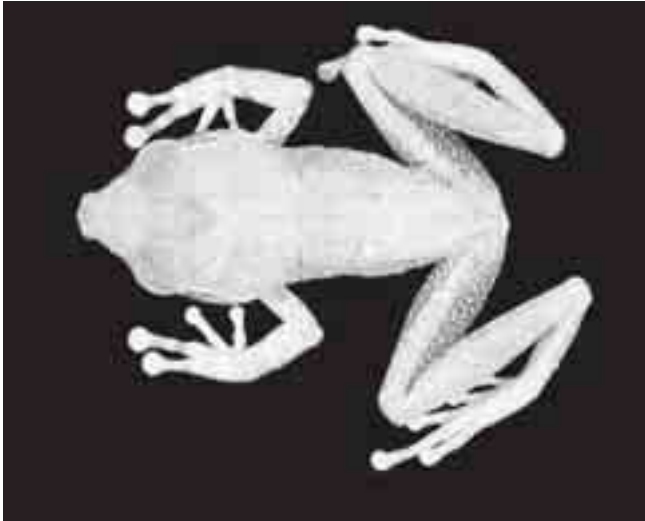


Fig. 76. Dorsal aspect of *Philautus stictomerus*, holotype, female, 34.0 mm SVL, BMNH 1947.2.8.54.



Fig. 77. *Philautus stictomerus*, female, WHT 3301, 36.0 mm SVL.

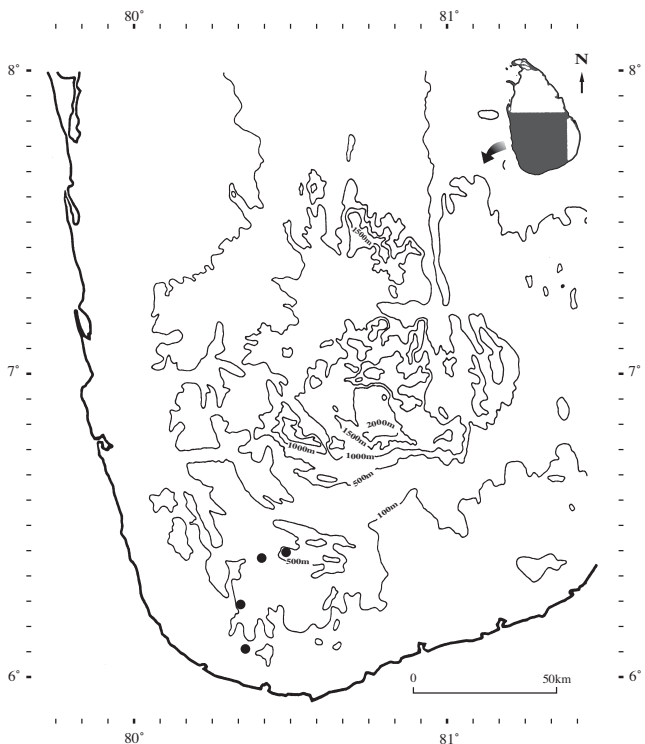


Fig. 78. Distribution of *Philautus stictomerus* in Sri Lanka.

brown; lower area pale brownish-yellow. Upper lip dark brown with yellow patches. Dorsal and lateral area of forelimb brown with darker crossbars. Dorsal part of thigh brown, marbled in darker brown. Dorsal parts of shank and foot brown. Posterior thigh marbled in dark brown on a pale-brown background. Throat, margins of throat, chest, belly and ventral part of thigh pale yellow with dark-brown dots. Webbing dark brown.

Remarks. – The species was described only from the holotype (by monotypy), BMNH 1947.2.8.54, an adult female, SVL 34 mm, from ‘Ceylon’. K.M. –A. was unable to trace this specimen on two visits to BMNH, in August 1996 and November 2000. Dr. Barry Clarke (in conversation) explained that this specimen had been loaned in the early 1980s and evidently never returned. It is presumed lost (see also account of *Philautus pleurotaenia*). Fig. 76 is a photograph of the missing holotype, from Dutta & Manamendra-Arachchi (1996: 164). Although this illustration does not show a wealth of detail, the head shape and femoral colour pattern are sufficiently distinctive tentatively to enable diagnosis of this species.

Philautus stictomerus (Figs. 75–77) resembles *P. fergusonianus* (Figs. 47–50; see Remarks under *P. fergusonianus*), *P. regius* (Figs. 98, 100; see Remarks under *P. regius*) and *P. sarasinorum* (Figs. 65–68). *Philautus stictomerus* differs from *P. sarasinorum* by having lingual papilla absent, supratympanic fold indistinct, toes medially webbed, dorsum smooth, vomerine ridge present and internarial region flat or concave, vs. lingual papilla present, supratympanic fold prominent, toes fully webbed, dorsum glandular and warty, vomerine ridge absent and internarial region concave.

Distribution. – *Philautus stictomerus* is a low-country wet-zone species, ranging from approximately 60–515 m elevation in south-western Sri Lanka (Fig. 78). It is a habitat generalist found in open and closed canopy habitats. Adult males and females were collected from about 1 m above ground, from shrubs in the forest understorey.

Conservation status. – Extent of Occurrence: 3,000 km² — Kottawa, Kanneliya, Sinharaja, Kosmulla. Some parts of the range subject to land use change. Outcome: Vulnerable (criteria B1 a, b (iii)).

Philautus semiruber (Annandale, 1913)

Ixalus semiruber Annandale, 1913: 305.

Material examined. – None.

Remarks. – The species is known only from the holotype (by original designation), ZSIC 17401, sex and stage not stated, SVL 12 mm (Annandale, 1913: 305), Pattipola (06°51'N, 80°49'E; about 1829 m) ‘ca. 6000 feet’ elevation. Chanda et al. (2000) state that the specimen was present in ZSI, though K.M. –A. was unable to trace this specimen on a visit to that

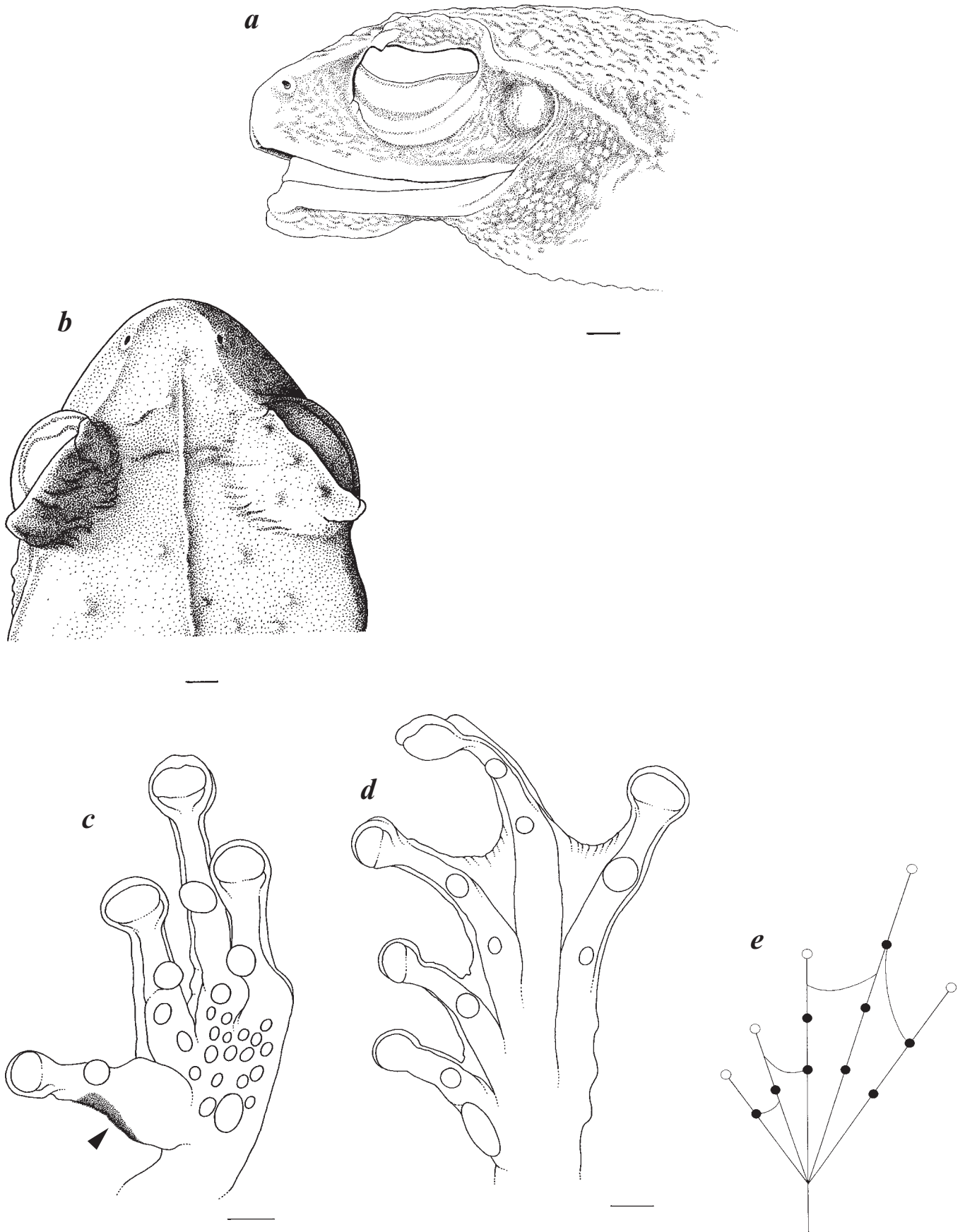


Fig. 79. *Philautus zal*, new species: *a–b*, lateral and dorsal aspects respectively, of head; *c*, ventral aspect of left hand (arrow indicates nuptial pad); *d*, ventral aspect of left foot; and *e*, semi-diagrammatic representation of the left-foot webbing pattern, of holotype, BMNH 1947.2.8.45, 24.2 mm SVL. Scale bars: 1 mm.

institution in May 1998. Subsequent to Chanda et al. (2000), Chanda (pers. comm., 2001) informed K.M.-A. that the specimen once more could not be located. We have therefore not been able to examine this specimen which, though only 12 mm SVL, could in fact be mature and diagnostically useful. Until the holotype can be made available for study, we tentatively retain *Philautus semiruber* in status incertae sedis.

Conservation status. – Data Deficient.

Philautus zal, new species

(Fig. 79; Table 6)

Material examined. – Holotype: mature male, 25.1 mm SVL, BMNH 1947.2.8.45, ‘Ceylon’, H. Cuming.

Paratypes: male, 25.4 mm SVL, BMNH 1947.2.7.94, ‘Ceylon’, H. Cuming (previously a syntype of *P. variabilis*); male, 25.0 mm SVL, BMNH 1947.2.8.47, ‘Ceylon’, H. Cuming (previously a syntype of *P. microtypanum*).

Diagnosis. – (See Fig. 79). Tympanum discernible. Snout angle category 5. Dorsum tuberculated. Canthal edges sharp. Loreal region flat. Vomerine teeth absent. Supratympanic fold prominent. Supernumerary tubercles present on palm. Toes medially webbed. Lingual papilla absent. Belly granular.

Description. – (See Fig. 79). Mature males 24.2–25.4 mm SVL. Body stout. Head dorsally convex. Snout rounded in lateral aspect, snout angle category 5 (angle of snout 99°). Canthal edges sharp. Loreal region flat. Interorbital space convex. Internarial space flat. Tympanum discernible, oval, oblique, vertical, outer rim indistinct. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head and dorsum shagreened with glandular warts. A median dermal ridge extends from tip of snout to vent. Both upper and lower flanks granular. Dorsal part of forelimb, thigh, shank and foot with glandular warts. Throat, chest, belly and underside of thigh granular. Internal vocal slits present in males. Nuptial pad on dorsal and inner side of prepollex and finger I also present in males.

Colour in alcohol: body uniform light brown with dark-brown blotches; about 5 white spots on dorsum. Upper flank dark brown, lower flank yellow. Loreal region pale brown with dark-brown dots, tympanic region and tympanum dark brown with a white patch; upper lip pale brown. Limbs dorsally pale brown with 3 or 4 dark-brown crossbars; posterior part of thigh dark brown. Venter pale yellow.

Measurements of holotype: (BMNH 1947.2.8.45, in mm), DBE, 10.2; DFE, 5.5; DL, 1.0; DW, 1.2; ED, 3.8; EN, 2.5; ES, 4.1; FEL, 12.3; FL I, 2.2; FL II, 2.7; FL III, 4.1; FL IV, 3.5; FOL, 16.3; HL, 10.4; HW, 10.4; IML, 1.0; IN, 2.4; IO, 3.6; LAL, 5.6; MBE, 4.6; MFE, 7.4; MN, 9.4; NS, 1.8; PAL, 8.0; SVL, 25.1; TBL, 12.4; TL I, 2.1; TL II, 2.3; TL III, 4.0; TL IV, 5.7; TL V, 4.2, TYD, (outer

tympanic rim not clear); TYE, (outer tympanic rim not clear); UAW, 5.4; UEW, 2.1.

Etymology. – The species epithet *zal* is a Polish word that, in the words of pianist Artur Rubinstein (1887–1982), “means sadness, nostalgia, regret, burning hurt, and yet something else. It feels like a howling inside you, so unbearable that it breaks your heart”, Rubinstein (1973:10). *Zal* expresses completely our sadness and frustration at the loss of this and so many other endemic amphibians in Sri Lanka.

Remarks. – The holotype, BMNH 1947.2.8.45, was in a separate jar labelled (presumably) by Günther, as “*Ixalus minutus*”, an unpublished manuscript name. The two paratypes, BMNH 1947.2.7.94 and BMNH 1947.2.8.47, were part of the syntype series of *P. variabilis* and *P. microtypanum*, respectively. All three specimens had been procured from H. Cuming. It would appear therefore, that this species may have had a relatively wide distribution, though it has nowhere appeared in our recent collections and is therefore considered extinct.

Philautus zal resembles *Philautus nasutus*, *P. adspersus*, *P. halyi* and *P. dimbullae* (see Remarks in those species accounts for diagnoses).

Distribution. – The species is known only from museum specimens, from ‘Ceylon’: it has not occurred in our survey.

Conservation status. – Extinct.

Philautus cuspis, new species

(Figs. 80, 81; Table 7)

Material examined. – Holotype: mature male, 20.3 mm SVL, WHT 1177(e), Koskulana (near Panapola), alt. 460 m (06°25’N, 80°27’E), coll. 23 May 1996.

Paratypes: male, 19.0 mm SVL, WHT 1177(i); females, 26.7 mm SVL, WHT 1177(a); 25.9 mm SVL, WHT 1177(b); 22.3 mm SVL, WHT 1177(c); 25.6 mm SVL, WHT 1177(d); 26.0 mm SVL, WHT 1177(f); 26.8 mm SVL, WHT 1177(g); 25.2 mm SVL, WHT 1177(h); 18.4 mm SVL, WHT 1177(j), Koskulana (near Panapola), alt. 460 m (06°25’N, 80°27’E), coll. 23 May 1996.

Others - Female, 28.9 mm SVL, Millawa (near Morawaka), alt. 150 m (06°17’N, 80°28’E), coll. 10 May 1997. Female, 25.0 mm SVL, WHT 1141, Mederipitiya (near Deniyaya), alt. 365 m (06°21’N, 80°29’E), coll. 1995. Female, 28.2 mm SVL, WHT 1148(j), Watugala (near Deniyaya), alt. 600 m (06°23’N, 80°28’E), coll. 24 Jan. 1996. Female, 21.0 mm SVL, WHT 3500, Mederipitiya (near Deniyaya), alt. 365 m (06°21’N, 80°29’E), coll. 18 Jan. 2003.

Diagnosis. – (See Figs. 80, 81). Mature individuals 18.4–28.9 mm SVL. Tympanum discernible. Snout angle category 0. Anterior dorsum with “(”)-shaped rows of horn-like spinules. Calcar present. Vomerine teeth absent. Supernumerary tubercles present on palm. Toes medially webbed. Nuptial pads present in males. Belly granular. A dark-brown lateral stripe from the tip of snout to base of upper arm.

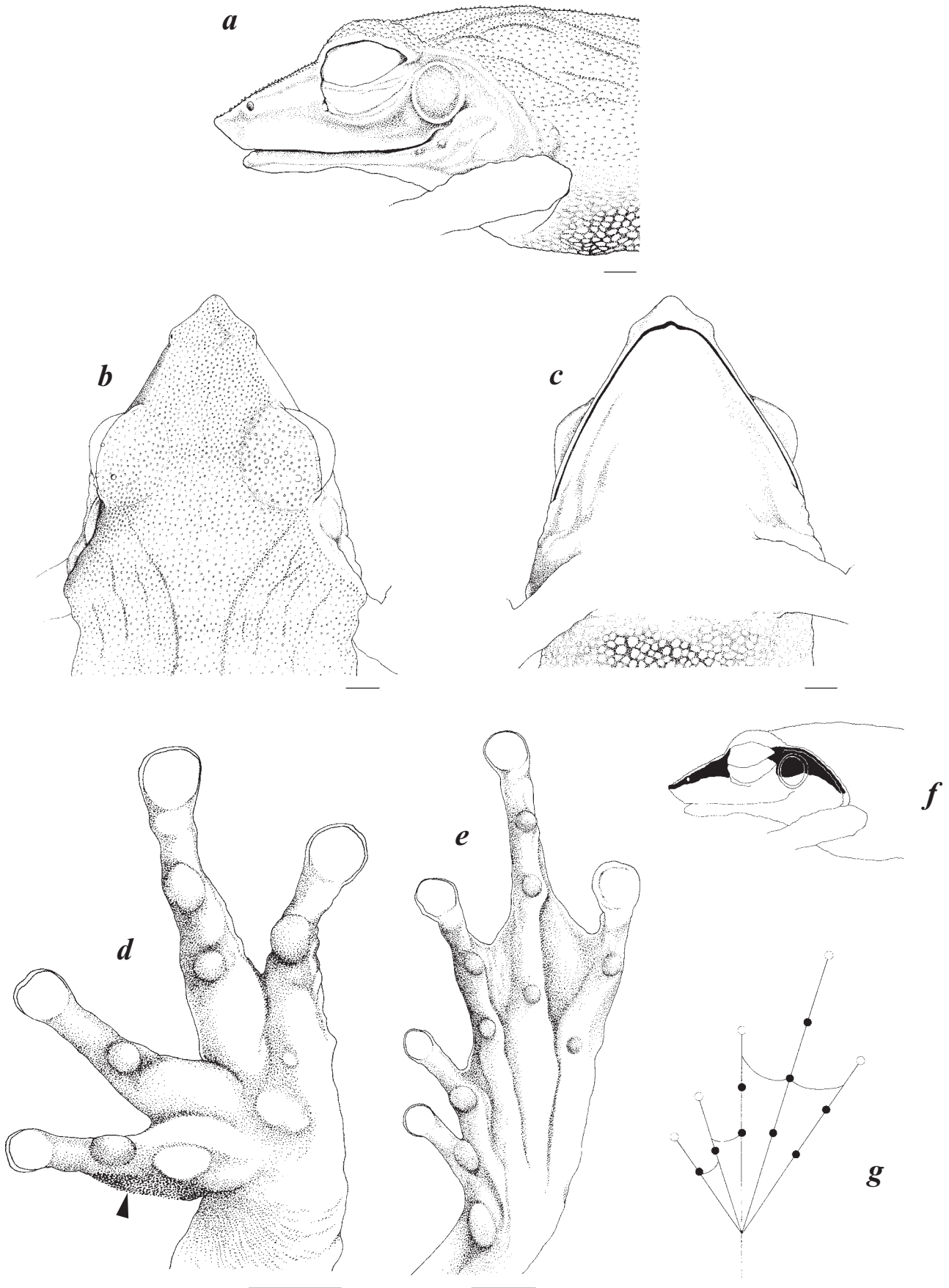


Fig. 80. *Philautus cuspis* new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand (arrow indicates nuptial pad); *e*, ventral aspect of left foot; *f*, dark brown colour pattern on lateral side of head; and *g*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 1177(e), 20.3 mm SVL. Scale bars: 1 mm.



Fig. 81. *Philautus cuspis*, new species, female, WHT 3500, 21.0 mm SVL.

Description. – (See Figs. 80, 81). Mature males 18.4–21.0 mm SVL; mature females 17.6–28.9 mm SVL. Body slender. Head dorsally convex. Snout sharply pointed in lateral aspect, snout angle category 0 (angle of snout ~ 73°). Canthal edges sharp. Loreal region flat or concave. Interorbital space convex. Internarial space flat. Tympanum discernible, oval, vertical. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar present. Snout and interorbital area with horn-like spinules. Side of head smooth. Dorsum with horn-like spinules. Upper flank smooth or with glandular warts; lower flank smooth or granular. A narrow dermal fringe on mid-dorsum from tip of snout to vent. Anterior dorsum with a “(”-shaped pattern of tubercles. Dorsal part of forelimb, thigh and foot smooth or with glandular warts. Shank with glandular folds, scattered with glandular warts. Throat smooth. Chest smooth or granular. Belly and underside of thigh granular. Internal vocal slits present in males. Nuptial pad present in males, on dorsal and inner side of prepollex of finger 1.

Colour in life: (see Fig. 83), head and body dorsally chestnut brown to pale brown; loreal and temporal regions black; tympanum black, its lower rim pale brown; canthal edge, edge of upper eyelid and supratympanic fold yellow or bright orange; a yellowish mid-dorsal stripe or band sometimes present; indistinct cross-bars present on limbs; posterior thigh dark brown; venter white with dark brown pigments; Males more brightly coloured than females.

Colour in alcohol: (based on holotype, WHT 1177(e)), dorsal head and body light brown. Four pairs of black patches present on dorsum. Flank and inguinal zone pale yellow with black pigments. Loreal and tympanic region dark brown. Upper area of tympanum dark brown; lower area light brown. Upper lip dark brown. Dorsal and lateral



Fig. 82. Distribution of *Philautus cuspis*, new species, in Sri Lanka.

parts of forelimb, thigh, shank and foot pale yellow with indistinct dark-brown crossbars. Foot dark brown both dorsally and ventrally/ Posterior thigh dark brown. Throat, margins of throat, chest, belly, ventral part of thigh and webbing pale yellow with black pigments.

Measurements of holotype: (WHT 1177(e), in mm), DBE, 6.6; DFE, 4.6; DL, 0.7; DW, 0.6; ED, 2.9; EN, 2.6; ES, 4.2; FEL, 10.5; FL I, 1.4; FL II, 1.6; FL III, 2.6; FL IV, 1.9; FOL, 13.6; HL, 9.2; HW, 8.0; IML, 0.8; IN, 2.4; IO, 2.5; LAL, 3.7; MBE, 3.3; MFE, 5.3; MN, 7.7; NS, 1.8; PAL, 4.9; SVL, 20.3; TBL, 11.0; TL I, 1.4; TL II, 1.6; TL III, 2.6; TL IV, 4.1; TL V, 2.8; TYD, 0.4; TYE, 1.6; UAW, 3.8; UEW, 2.1.

Etymology. – The species-name alludes to the sharp snout of this frog: Latin, *cuspis* = ‘the pointed end of an object’.

Remarks. – *Philautus cuspis* (Figs. 80, 81) resembles *P. malcolmsmithi* (Fig. 57; see Remarks under *P. malcolmsmithi* for diagnosis), *P. rugatus* (Fig. 58; see Remarks under *P. rugatus* for diagnosis), *P. zorro* (Fig. 90) and *P. alto* (Figs. 96, 97). It differs from *P. zorro* by having snout angle category 0, supratympanic fold indistinct, supernumerary tubercles on foot absent, loreal region flat, head dorsally convex and internarial region flat, vs. snout angle category 2, supratympanic fold prominent, supernumerary tubercles on foot present, loreal region concave, head dorsally concave and internarial region concave, in *P. zorro*. It may be distinguished from *P. alto* by having canthal edges sharp, snout angle category 0, dermal fringe on fingers absent, supernumerary tubercles on foot absent, “(”-shaped rows of horn-like spinules on dorsum present, loreal region flat and internarial region flat, vs. canthal edges rounded, snout

angle category 2, dermal fringe on fingers present, supernumerary tubercles on foot present, “(”)-shaped rows of horn-like spinules on dorsum absent (scattered horn like spinules, however, present on dorsum), loreal region concave and internarial region concave, in *P. alto*.

Distribution. – *Philautus cuspis* is restricted to the low-country wet zone, being recorded between elevations of 150–660 m (Fig. 82). It is a habitat specialist found only in closed canopy rainforests with little understorey. All specimens collected during the day were on the ground, in leaf litter, in damp, shaded forest habitats. At night, the males perch and vocalize from branches and leaves, ~ 0.3 m above the forest floor. This frog is active during both day and night.

Conservation status. – Extent of Occurrence: 200 km² — Sinharaja, Morawaka, Deniyaya. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus viridis*, new species**

(Figs. 83, 84, 86; Table 7)

Material examined. – Holotype: mature male, 28.6 mm SVL, WHT 5127, Agra Arboretum, near Agarapatana, alt. 1555 m (06°51'N, 80°41'E), coll. 03 Oct.2000.

Paratypes: 16 ex. male, 31.5 mm SVL, WHT 2763; female, 36.3 mm SVL, WHT 2764; male, 28.4 mm SVL, WHT 2765; male, 28.9 mm SVL, WHT 2766; male, 27.6 mm SVL, WHT 2767; male, 29.6 mm SVL, WHT 2768, Ambewela (near radio station), alt. 1830 m (06°53'N, 80°48'E), coll. 22 Sep.1999. Males, 28.8 mm SVL, WHT 5104; 29.5 mm SVL, WHT 5105; 29.4 mm SVL, WHT 5106; 28.6 mm SVL, WHT 5099; 28.3 mm SVL, WHT 5100; 28.6 mm SVL, WHT5103, Agra Arboretum, near Agarapatana, alt. 1555 m (06°51' N, 80°41' E), coll. 2 Sep.2000. Males, 28.6 mm SVL, WHT 5126, Agra Arboretum, near Agarapatana, alt. 1555 m (06°51' N, 80°41' E), coll. 4 Oct.2000. Male, 28.5 mm SVL, WHT 4999, Ambewela (near radio station), alt 1830 m (06°53' N, 80°48' E), coll. 5 Oct. 2000. Male, 26.1 mm SVL, WHT 3488; female, 27.4 mm SVL, WHT3489, Agra Arboretum, near Agarapatana, alt. 1555 m (06°51' N, 80°41' E), coll. 4 Oct.2002.

Diagnosis. – (See Figs. 83, 84, 86). Mature individuals 26.1–36.5 mm SVL. Tympanum not prominent. Snout blunt or rounded in lateral view. Snout angle category 8. Dorsum of males with horn-like spinules (rarely smooth); females shagreened dorsally. Canthal edges indistinct. Vomerine teeth absent. Supratympanic fold distinct. Supernumerary tubercles present on palm. Toes medially webbed. Nuptial pads absent on males. Belly granular.

Description. – (See Figs. 83, 84, 86). Mature males 27.6–31.5 mm SVL; mature females 27.4–36.3 mm SVL. Body stout. Head dorsally convex. Snout blunt or rounded in lateral aspect. Snout angle category 8 (angle of snout ~ 110°). Canthal edges indistinct. Loreal region concave. Interorbital and internarial spaces flat. Tympanum discernible (rarely indistinct), oval or vertical. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent.



Fig. 83. *Philautus viridis*, new species, paratype, male, WHT 2763, 31.5 mm SVL.



Fig. 84. *Philautus viridis*, new species, paratype, female, WHT 2764, 36.3 mm SVL.



Fig. 85. Distribution of *Philautus viridis*, new species in Sri Lanka.

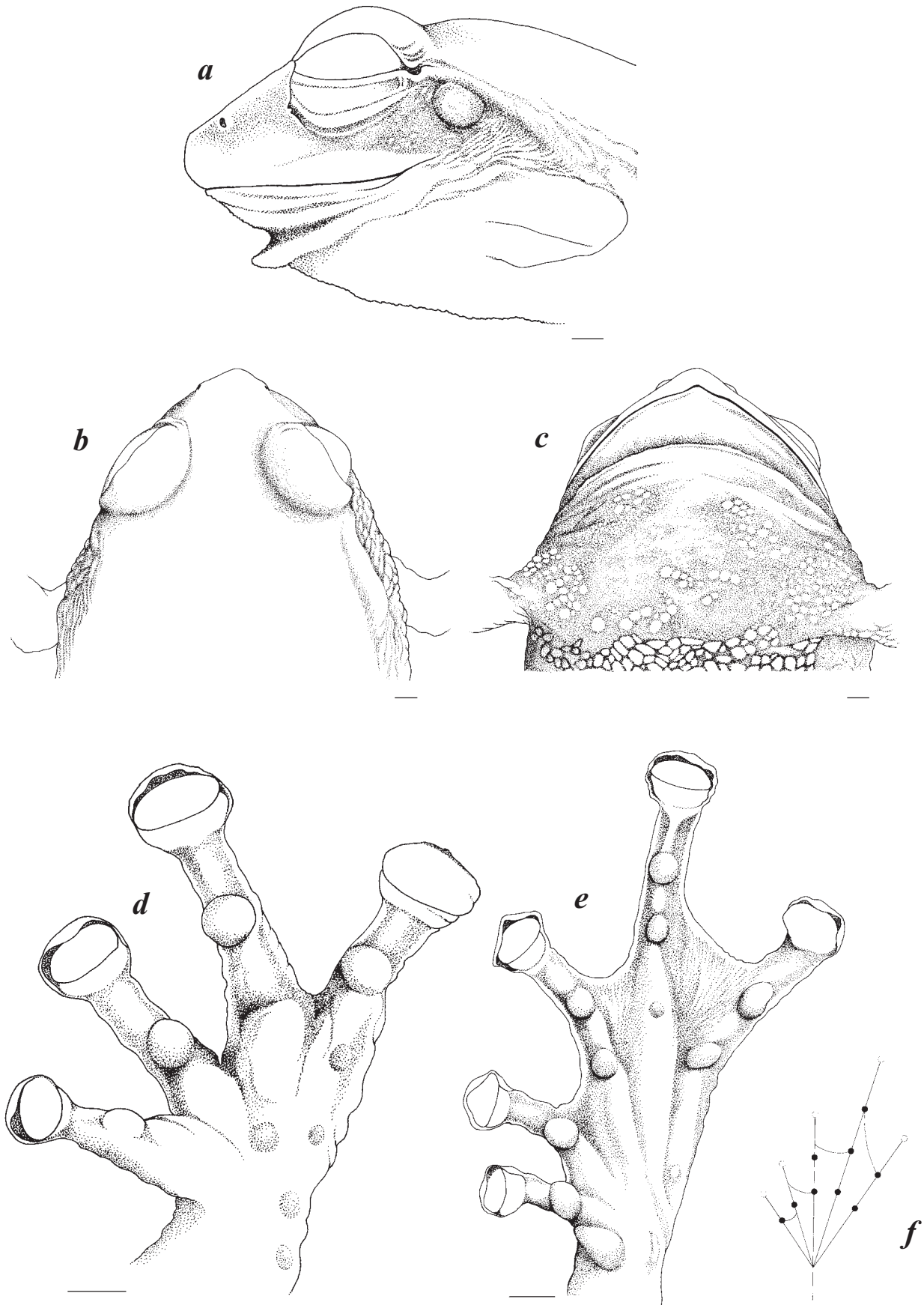


Fig. 86. *Philautus viridis*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of left foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 5127, 28.6 mm SVL. Scale bars: 1 mm.

Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Webbing on fingers absent. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head, dorsum and upper flank with horn-like spinules (smooth in females and immature males); lower flank granular. Dorsal part of forelimb, thigh, shank and foot shagreened. Throat, chest, belly and underside of thigh granular. Inner vocal slits present, nuptial pad absent, in males.

Colour in life: (Figs. 83, 84), dorsum, dorsal head, loreal region, cheek, tympanic region, tympanum and limbs dorsally light green. Crossbars absent on limbs. Flank light yellow with light-blue patches. Inguinal zone yellow with light-blue patches. Upper edge of supratympanic fold and outer edge of upper eyelid yellow. Upper lip light yellowish-green. Lower lip white. Throat and chest flesh coloured. Abdomen flesh coloured, with white spots. Ventral parts of arms and palms flesh coloured. Fingers dorsally ashy-yellow with light-brown markings, ventrally pale yellow. Discs on both fingers and on toes yellow or yellowish-brown dorsally. Posterior edge of lower arm and 4th finger white. Anterior thigh flesh-coloured. Ventral thigh flesh-coloured with white spots. Venter and ventral side of thigh white. Distal half of posterior thigh ashy-flesh coloured. Ventral part of shank flesh-coloured. Outer edge of shank, outer edge of foot and 5th toe white. Ventral part of foot and toes dark flesh-coloured. Some mature individuals are brown.

Colour in alcohol: (based on holotype, WHT 5127), head and body dorsally light green. Upper flank light bluish-green; lower flank pale yellow. Inguinal zone brown. Loreal tympanic regions light green. Tympanum and upper lip light green with black pigments. Limbs dorsally light green and brown, or light green and black. Posterior thigh pale yellow with brown pigments. Throat, margins of throat, chest and belly pale yellow. Ventral thigh and webbing pale yellow with brown pigments.

Measurements of holotype: (WHT 5127, in mm), DBE, 10.6; DFE, 5.9; DL, 1.2; DW, 1.6; ED, 4.0; EN, 2.6; ES, 4.5; FEL, 14.3; FL I, 2.3; FL II, 2.8; FL III, 4.3; FL IV, 3.9; FOL, 19.9; HL, 10.9; HW, 11.8; IML, 1.3; IN, 2.7; IO, 3.3; LAL, 6.0; MBE, 4.0; MFE, 7.1; MN, 9.5; NS, 1.9; PAL, 8.8; SVL, 28.6; TBL, 14.9; TL I, 2.3; TL II, 2.6; TL III, 4.3; TL IV, 6.5; TL V, 4.7; TYD, 1.0; TYE, 1.3; UAW, 6.0; UEW, 2.6.

Etymology. – The species-name is the Latin for ‘green’, an allusion to the colour of this beautiful frog.

Remarks. – *Philautus viridis* most resembles *P. femoralis*; see Remarks under account of *P. femoralis* for a diagnosis from that species.

Distribution. – *Philautus viridis* is restricted to the central hills, being recorded between elevations of 1555–1830 m (Fig. 85). It is a habitat generalist, found both in open and closed canopy vegetation, including cloud forests and adjacent anthropogenic habitats. These frogs were usually observed

1–5 m above ground, perched on leaves and twigs on shrubs in the forest understorey. In closed canopy habitats, it occupies the top stratum.

Conservation status. – Extent of Occurrence: 200 km² — Agra Bopath, Ambewela. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus folicola*, new species**
(Figs. 87, 88; Table 9)

Material examined. – Holotype: mature female, 29.4 mm SVL, WHT 2645, Kottawa (Galle), alt. 60 m (06°06'N, 80°20'E), coll. 13 Sep.1999.

Paratypes. – (All from type locality.) Males, 26.1 mm SVL, WHT 2646; 25.1 mm SVL, WHT 2647; 25.0 mm SVL, WHT 2649; 26.8 mm SVL, WHT 2650; 23.7 mm SVL, WHT 2651; 24.6 mm SVL, WHT 2652; coll. 13 Sep.1999.

Others - Female, 26.0 mm SVL, WHT 2685, Haycock (Hiniduma), alt. 660 m (06°20'N, 80°18'E), coll. 15 Sep.1999. Female, 26.5 mm SVL, WHT 3232, Induruwa (Ratnapura), alt. 150 m (06°45'N, 80°26'E), coll. 30 Jun.2001.

Diagnosis. – (See Figs. 87, 88). Mature individuals 23.7–29.4 mm SVL. Tympanum discernible. Snout angle category 4. Horn-like spinules absent on dorsal surface of body. Calcar absent. Vomerine teeth present. Lingual papilla present or absent. Supernumerary tubercles present on palm. Toes medially webbed. Males without nuptial pads. Belly granular. A distinct black lateral band present, from nostril to posterior end of supratympanic fold.

Description. – (See Figs. 87, 88). Mature males 23.7–26.8 mm SVL; mature females 26.0–29.4 mm SVL. Body slender. Head dorsally flat. Snout rounded or truncate in lateral aspect, snout angle category 4 (angle of snout ~ 90°). Canthal edges sharp. Loreal region concave. Interorbital space flat. Internarial space concave. Tympanum discernible, oval, oblique or vertical. Pineal ocellus absent or present. Vomerine ridge present, with 3–5 small teeth angled at about 60° relative to body axis, shorter than the distance between them. Lingual papilla present or absent. Supratympanic fold distinct. Two fronto-parietal ridges present, co-ossified with skin on head. Lateral dermal fringe on fingers present. Toes medially webbed. Tarsal fold absent. Tarsal tubercle absent. Snout and interorbital area smooth. Side of head shagreened, smooth or with a few scattered glandular warts. Anterior dorsum smooth or granular; posterior dorsum smooth. Flank granular. Dorsal part of forelimb and hind limb smooth. Throat and chest granular or smooth. Belly and under side of thigh granular. Inner vocal slits present in males, but nuptial pads absent.

Colour in life: (Fig. 88), dorsal part of head and dorsum dark brown. A narrow yellow stripe present on mid-dorsum from tip of snout to vent (some specimens lack this stripe: e.g. WHT 3232, Fig. 88). Interorbital bar yellowish brown. Background colour of flank ashy white with black and dark-



Fig. 87. *Philautus folicola*, new species: *a–c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of right foot; *f*, dark brown colour pattern on lateral side of head; and *g*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, WHT 2645, 29.4 mm SVL. Scale bars: 1 mm.



Fig. 88. *Philautus folicola*, new species, paratype, female, WHT 3232, 26.5 mm SVL.

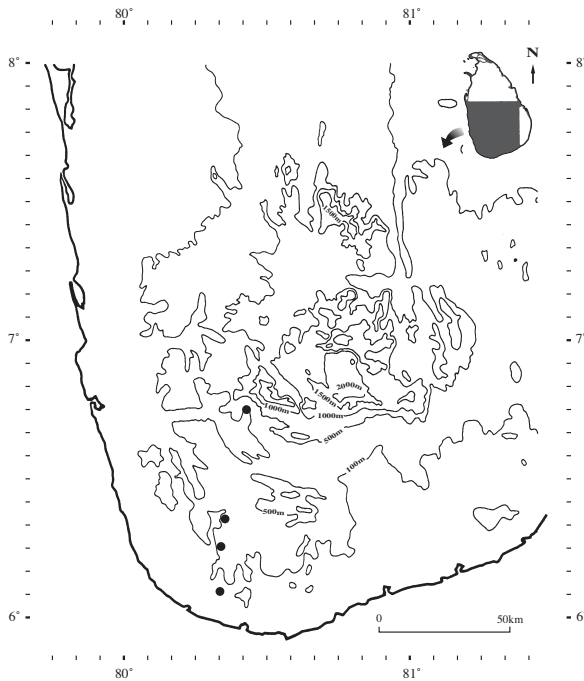


Fig. 89. Distribution of *Philautus folicola*, new species, in Sri Lanka.

brown spots. Inguinal zone light bluish with black and dark-brown spots. Loreal region brown. Upper canthal edge, outer edge of upper eyelid and upper half of supratympanic fold yellowish brown. Lower canthal edge, lower area of supratympanic fold and upper half of tympanum distinctly dark brown or black. Tympanic region brown. Lower half of tympanum light brownish yellow. Upper and lower lips dark brown with white spots. Dorsal and lateral parts of forelimb dark brown with blackish crossbars dorsally. Dorsal part of thigh brown with darker crossbars. Dorsal part of shank and foot brown with dark-brown crossbars. Posterior thigh, especially the proximal area, light bluish with black and dark-brown spots. Throat, margins of throat, chest and belly ash with white patches and dots. Limbs ventrally ashy dark-brown.

Colour in alcohol: (description based on holotype, WHT 2645), dorsal part of head and dorsum dark brown. A narrow yellow

stripe present on mid-dorsum from tip of snout to vent. Interorbital bar dark brown. Upper flank light brown with dark-brown and white spots; lower flank white with dark-brown spots. Inguinal zone dark brown with white spots. Loreal region dark brown. Canthal area black. Tympanic region brown. Upper half of tympanum dark brown; lower half light brown. Upper lip dark brown with white spots. Dorsal and lateral parts of forelimb dark brown with indistinct crossbars. Dorsal part of thigh brown with darker crossbars. Posterior thigh dark brown with white spots. Dorsal part of shank brown with darker crossbars. Dorsal part of foot brown. Posterior part of thigh dark brown with white spots. Throat, margins of throat, vocal sacs, chest and belly white with brown spots. Ventral part of thigh and webbing brown.

Measurements of holotype: (WHT 2645, in mm), DBE, 9.8; DFE, 6.2; DL, 1.2; DW, 1.2; ED, 4.5; EN, 3.9; ES, 5.8; FEL, 15.2; FL I, 2.4; FL II, 3.1; FL III, 5.1, FL IV, 4.3; FOL, 21.9; HL, 13.2; HW, 11.7; IML, 1.3; IN, 2.9; IO, 3.1; LAL, 7.1; MBE, 4.6; MFE, 8.2; MN, 11.7; NS, 2.0; PAL, 8.5; SVL, 29.4; TBL, 17.0; TL I, 2.7; TL II, 3.5; TL III, 4.9; TL IV, 7.2, TL V, 5.1, TYD, 0.9; TYE, 1.6; UAW, 6.5; UEW, 2.9.

Etymology. – The species epithet *folicola* is derived from the Latin for ‘leaf’ (*folium*) and ‘dweller’ (*-cola*), a reference to calling males often secreting themselves in dry curled leaves.

Remarks. – *Philautus folicola* (Figs. 87, 88) resembles *P. leucorhinus* (Figs. 5–7); see Remarks under *P. leucorhinus* and *P. limbus* (Figs. 93, 95). It differs from *P. limbus* by having canthal edges sharp, lingual papilla absent, supratympanic fold indistinct, supernumerary tubercles on palm present, supernumerary tubercles on foot absent, tarsal tubercle absent, crossbars on limbs a black band from tip of snout to tympanum in lateral view, vs. canthal edges rounded, lingual papilla present, supratympanic fold prominent, supernumerary tubercles on palm absent, supernumerary tubercles on foot present, tarsal tubercle present, and no crossbars on limbs or black band from tip of snout to tympanum in lateral view, in *P. limbus*.

Distribution. – *Philautus folicola* was recorded from the lowland wet zone at elevations of 60–660 m (Fig. 89). A habitat generalist, it occurs in shaded places including rainforests and anthropogenic habitats. It was usually observed 0.3–2 m above ground, perched on branches or leaves. Calling males were sometimes found concealed in dry curled leaves (making location difficult); in Gilimale however, males were always observed vocalizing while on leaves.

Conservation status. – Extent of Occurrence: 1,000 km² — Kottawa, Haycock, Gilimale, Induruwa. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus zorro*, new species**
(Figs. 90, 91; Table 7)

Material examined. – Holotype: mature male, 23.1 mm SVL, WHT 3169, Gannoruwa Forest Reserve, Kandy, alt. 684 m (07°17’N, 80°35’E), coll. 22 Apr.2001.

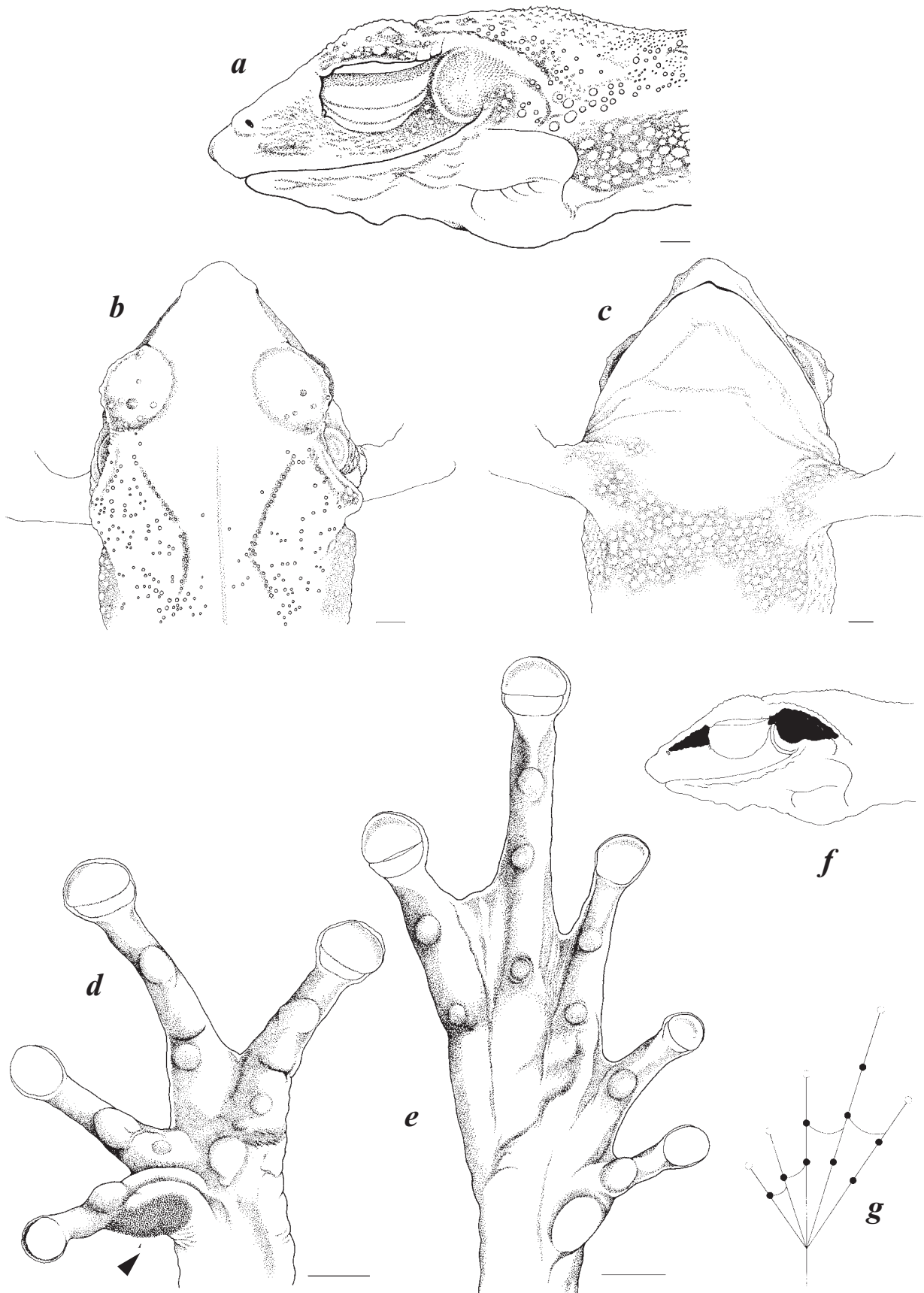


Fig. 90. *Philautus zorro*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand (arrow indicates nuptial pad); *e*, ventral aspect of right foot; *f*, dark colour pattern on lateral side of head; and *g*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3169, 23.1 mm SVL. Scale bars: 1 mm.



Fig. 91. *Philautus zorro*, new species, female, WHT 3508, 17.5 mm SVL.

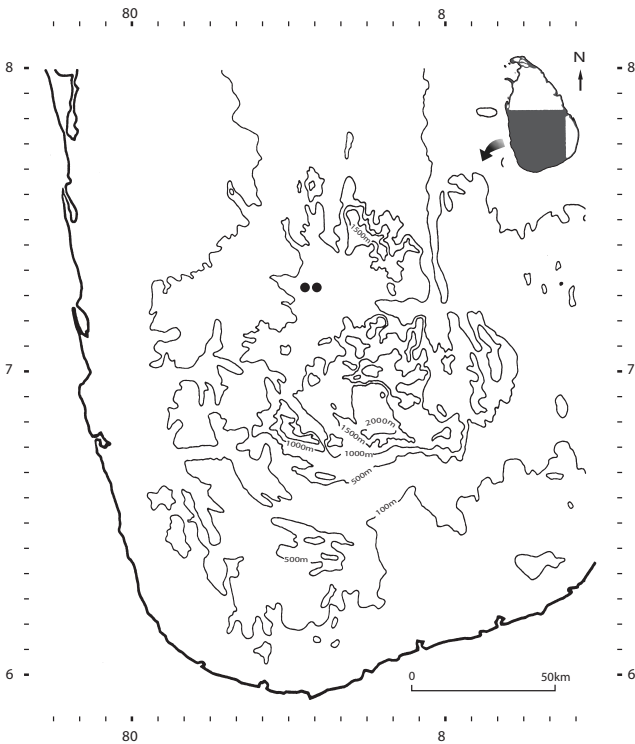


Fig. 92. Distribution of *Philautus zorro*, new species, in Sri Lanka.

Paratypes: male, 22.9 mm SVL, WHT 3175, same data as holotype. Female, 30.1 mm SVL, WHT 3204; male, 24.1 mm SVL, WHT 3205, both from type locality, coll. 04 Oct.1996.

Others - Female, 17.5 mm SVL, WHT 3508, Tiverton Estate (near Peradeniya), alt. 450 m, (7°16'N, 80°34'E), coll. 25 Dec.2003.

Diagnosis. – (See Figs. 90, 91). Mature individuals 23.1–30.1 mm SVL. Tympanum discernible. Snout angle category 3. Anterior dorsum with horn-like spinules in a “(”)-shaped pattern. Calcar present. Vomerine teeth absent. Supernumerary tubercles present on palm and foot. Toes medially webbed. Nuptial pads present in males. Belly granular. A dark-brown lateral stripe from nostril to base of upper arm.

Description. – (Based on holotype, WHT 3169: see Figs. 90, 91). Mature males 22.9–24.1 mm SVL; mature female 30.1 mm SVL. Body elongate. Head dorsally concave. Snout pointed in lateral aspect, snout angle category 3 (angle of snout ~ 87°). Canthal edges sharp. Loreal region concave. Interorbital space flat. Internarial space concave. Tympanum discernible, oval, vertical. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar present. Snout and interorbital area with horn-like spinules. Side of head with glandular warts. Dorsum with horn-like spinules. Upper flank with glandular warts; lower flank granular. A narrow dermal fringe on mid-dorsum from tip of snout to vent. Anterior dorsum with a “(”)-shaped pattern of tubercles. Dorsal part of forelimb smooth. Thigh and shank dorsally with glandular warts. Foot smooth. Throat and mid chest smooth. Belly granular. Ventral side of thigh smooth. Males with internal vocal slits and nuptial pad on dorsal and inner side of prepollex.

Colour in life: (based on WHT 3508, see Fig. 91), head dorsally light brown. Body dorsally greyish-brown with black patches or pigments. Upper flank pale grey; lower flank grey with black pigments. Inguinal zone bright red with brown and black pigments. Loreal region black. Tympanic region dark brown or black. Upper part of tympanum black, the lower part brown (Fig. 91). Upper edge of supratympanic fold bright yellowish-light brown. Upper lip grey. Dorsal and lateral parts of forelimb garish-brown or dark brown. Thigh, shank and foot grey with dark-brown crossbars. Posterior thigh dark brown. Throat, margins of throat, chest, belly and ventral part of thigh white with black pigments. Webbing grey and dark brown.

Colour in alcohol: (based on holotype, WHT 3169), head dorsally grey. Body dorsally greyish-brown with black patches. Upper flank pale grey; lower flank white with black pigments. Inguinal zone white with brown and black pigments. Loreal region black. Tympanic region grey. Upper part of tympanum black, the lower part grey. Upper lip grey. Dorsal and lateral parts of forelimb dark brown. Thigh, shank and foot grey with dark-brown crossbars. Posterior thigh dark brown. Throat, margins of throat, chest, belly and underside of thigh white with black pigments. Webbing grey and dark brown.

Measurements of holotype: (WHT 3169, in mm), DBE, 7.8; DFE, 5.2; DL, 1.0; DW, 1.1; ED, 3.6; EN, 2.6; ES, 4.3; FEL, 10.2; FL I, 1.8; FL II, 2.3; FL III, 3.5; FL IV, 2.9; FOL, 15.8; HL, 9.9; HW, 9.4; IML, 1.0; IN, 2.5; IO, 2.8; LAL, 4.2; MBE, 3.4; MFE, 6.0; MN, 8.6; NS, 2.0; PAL, 6.3; SVL, 23.1; TBL, 12.0; TLI, 1.8; TL II, 2.0; TL III, 3.3; TL IV, 5.5, TL V, 3.8, TYD, 0.4; TYE, 2.2; UAW, 5.2; UEW, 2.7.

Etymology. – The species epithet is patronymic reference to Zorro, the masked hero of Johnston McCulley’s (1919) book, *The curse of Capistrano*: an allusion to the mask-like eye band in this species.

Remarks. – *Philautus zorro* (Fig. 90, 91) resembles *P. malcolmsmithi* (Fig. 57), *P. rugatus* (Fig. 58), *P. cuspis* (Figs. 80, 81): see Remarks under those species accounts for diagnoses. It also resembles *P. alto* (Figs. 96, 97), from which it differs, however, having canthal edges sharp, supratympanic fold prominent, dermal fringe on fingers absent, a “(”)-shaped ridge of spinules on anterior dorsum present, and head dorsally concave, vs. canthal edges rounded, supratympanic fold indistinct, dermal fringe on fingers present, a “(”)-shaped ridge of spinules absent on dorsum (horn-like spinules however, are scattered on dorsum), and head dorsally convex, in *P. alto*.

Distribution. – *Philautus zorro* is restricted to the wet-zone, being recorded between elevations of 500–800 m (Fig. 92) from Gannoruwa Forest and home gardens around Tiverton Estate; it was also observed (though not collected) at Hantana and Udawattakelle forest reserves around Kandy. It is a habitat generalist, inhabiting closed-canopy rainforest habitats with little understorey, and also occurs in home gardens with a lot of leaf litter. It is active during both day and night. Specimens collected during the day were on ground in leaf litter. At night, as for *P. cuspis*, males vocalize from branches and leaves on shrubs, ~ 0.3–1.5 m above the forest floor.

Conservation status. – Extent of Occurrence: 150 km² — Gannoruwa, Peradeniya. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus limbus*, new species**
(Figs. 93, 95; Table 9)

Material examined. – Holotype: mature male, 25.7 mm SVL, WHT 2700, Haycock (Hiniduma), alt. 560 m (06°20'N, 80°18'E), coll. 15 Sep. 1999.

Diagnosis. – (See Figs. 93, 95). Mature male 25.7 mm SVL. Tympanum discernible. Skin on head not co-ossified with skull. Snout angle category 4. Dorsum granular, smooth. Calcar present. Canthal edges rounded. Vomerine teeth present. Lingual papilla present. Supernumerary tubercles present on foot. Toes medially webbed. Nuptial pad absent. Throat, chest and belly granular. In life, a black and yellow variegated pattern on dorsum.

Description. – (See Figs. 93, 95). Mature-male holotype 25.7 mm SVL. Body slender. Head dorsally concave. Snout obtusely pointed in lateral aspect, snout angle category 4 (angle of snout ~ 94°). Canthal edges rounded. Loreal region concave. Interorbital and internarial space concave. Tympanum discernible, oval, vertical. Pineal ocellus absent. Vomerine ridge present, with about 4 large teeth, angled at about 45° relative to body axis, shorter than the distance between them. A blunt lingual papilla present. Supratympanic fold prominent. Two fronto-parietal ridges present; skin co-ossified on fronto-parietals. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar present. Snout, interorbital area, side of head and dorsum granular, smooth. Flank granular. Dorsal part of forelimb, thigh, shank and foot granular, not



Fig. 93. *Philautus limbus*, new species, holotype, male, WHT 2700, 25.7 mm SVL.

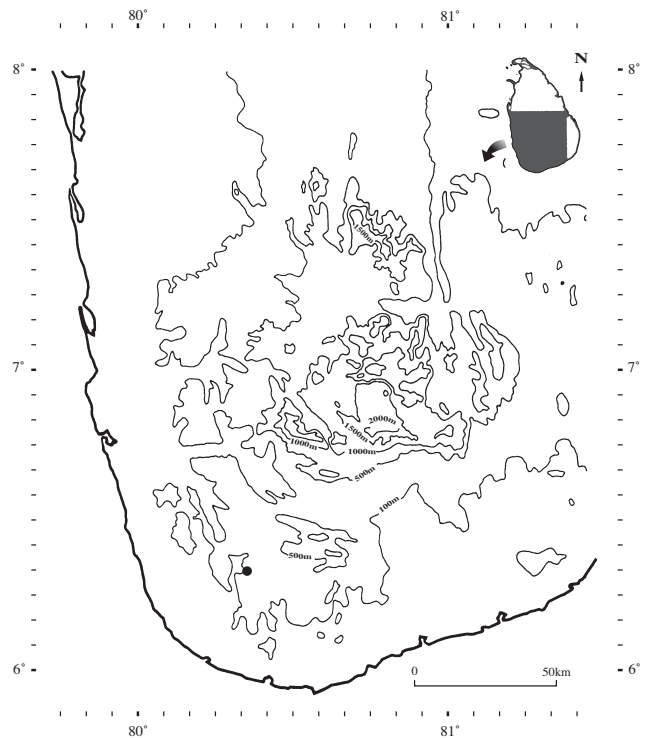


Fig. 94. Distribution of *Philautus limbus*, new species, in Sri Lanka.

rough. Throat, chest, belly and underside of thigh granular. Inner vocal slits present; nuptial pad absent.

Colour in life: (based on holotype, WHT 2700), dorsal part of head and dorsum white with dark-brown and reddish-orange patches. Flank whitish, with a few dark-brown patches. Inguinal zone dark brown. Loreal region white and brown. Canthal edge dark brown. Tympanic region white and brown. Upper half of tympanum dark brown, the lower half white. Upper lip dark brown with white and black patches; some grey patches on lower lip. Limbs dorsally dark brown and white. Abdomen and ventral side of limbs ashy white (Fig. 93).

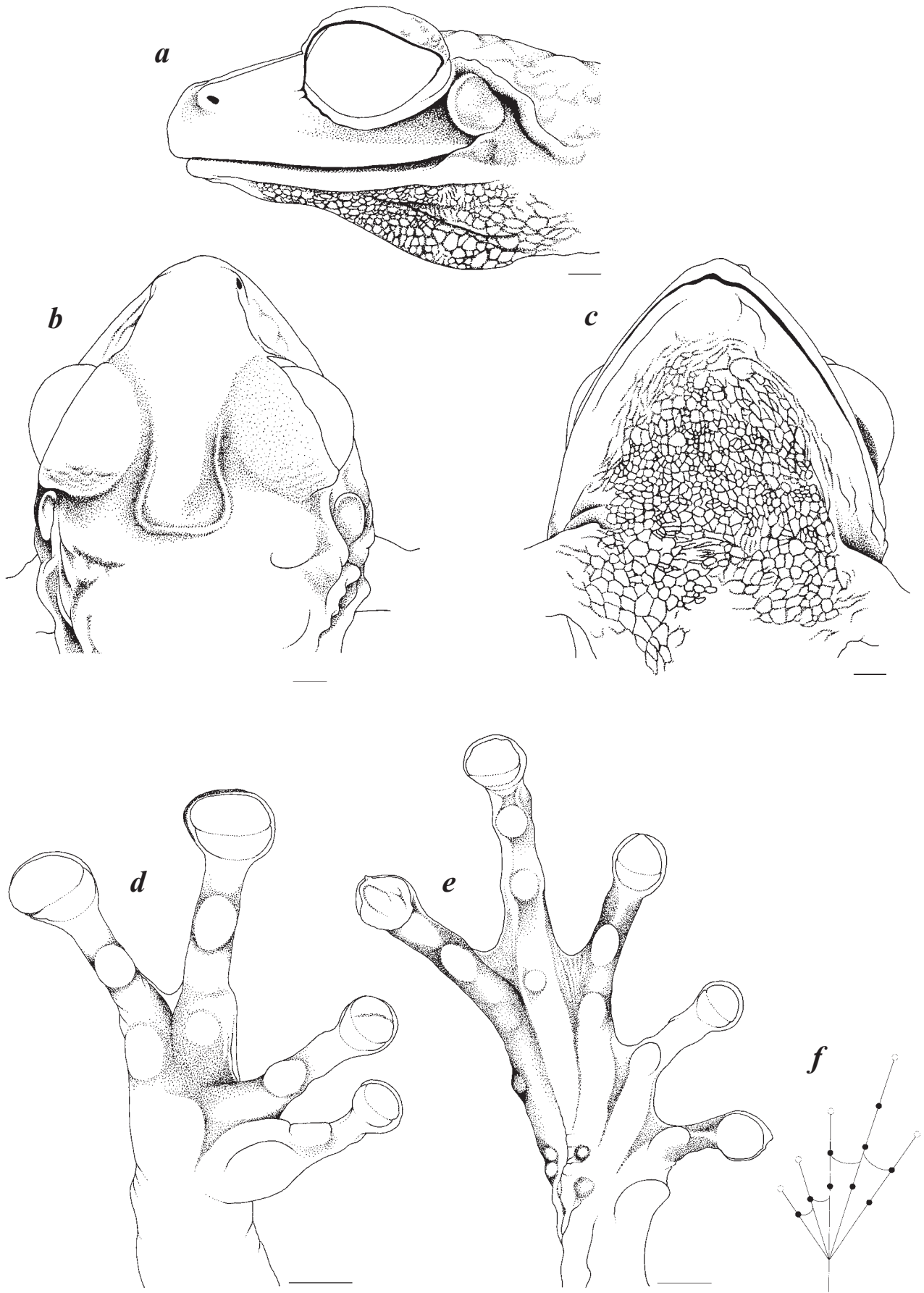


Fig. 95. *Philautus limbus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 2700, 25.7 mm SVL. Scale bars: 1 mm.

Colour in alcohol: (based on holotype, WHT 2700), head dorsally dark brown with pale-yellow patches. Dorsum pale yellow with dark-brown patches. Flank and inguinal zone pale yellow with dark-brown patches. Loreal and tympanic regions dark brown with pale-yellow patches. Upper half of tympanum dark brown, the lower half pale brown or white. Upper lip dark brown with pale-yellow patches. Dorsal and lateral parts of forelimb, dorsal and posterior part of thigh pale yellow with dark-brown patches. Shank and foot dorsally brown with pale-yellow patches. Throat, vocal sacs, chest, belly and underside of thigh pale yellow. Margin of throat dark brown and pale yellow. Webbing brown and pale yellow.

Measurements of holotype: (WHT 2700, in mm): DBE, 8.4; DFE, 4.6; DL, 1.0; DW, 1.2; ED, 4.3; EN, 2.7; ES, 4.6; FEL, 12.3; FL I, 2.1; FL II, 2.3; FL III, 4.3; FL IV, 3.2; FOL, 17.7; HL, 11.0; HW, 10.5; IML, 1.2; IN, 2.5; IO, 2.8; LAL, 5.8; MBE, 4.0; MFE, 7.4; MN, 9.4; NS, 1.7; PAL, 7.4; SVL, 25.7; TBL, 14.0; TL I, 2.1; TL II, 2.4; TL III, 3.6; TL IV, 6.1; TL V, 3.5; TYD, 0.7; TYE, 1.5; UAW, 5.4; UEW, 2.6.

Etymology. – The species epithet *limbus* (Latin, ‘edge, border’) refers to our having found the only specimen of this species thus far known on the border of the Haycock Hill (Hiniduma) Forest Reserve.

Remarks. – *Philautus limbus* resembles *P. leucorhinus* and *P. folicola* (see Remarks under those species accounts for diagnoses).

Distribution. – The species appears to be restricted to the type locality, Haycock (Hiniduma), alt. 560 m (06°20'N, 80°18'E), Fig. 94, where it is rare. The type specimen was collected from a low (50 cm above ground) branch on the border of the Forest Reserve, beside a tea garden. For the present, the species is known only from the holotype.

Conservation status. – Extent of Occurrence: 10 km² — Haycock. Outcome: Critically Endangered (criteria B1 a, b (iii)).

Philautus alto, new species (Figs. 96, 97; Table 7)

Material examined. – Holotype: mature male, 18.4 mm SVL, WHT 2721, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 22 Sep. 1999.

Paratypes: males, 17.0 mm SVL, WHT 2723; 17.9 mm SVL, WHT 2725; females, 26.9 mm SVL, WHT 2718; 21.7 mm SVL, WHT 2719; 22.2 mm SVL, WHT 2720; 18.6 mm SVL, WHT 2722; 21.7 mm SVL, WHT 2724, same data as holotype.

Others - Female, 27.5 mm SVL, WHT 3338, Pattipola, alt. 1890 m (06°51'N, 80°51'E), coll. 13 Oct. 1997. Female, 21.5 mm SVL, WHT 2080, Horton Plains National Park, alt. 2135 m (06°46'N, 80°47'E), coll. 07 Oct. 1997.

Diagnosis. – (See Figs. 96, 97). Mature individuals 17.0–27.5 mm SVL. Tympanum discernible. Snout angle category 3. Dorsal surface of body with horn-like spinules. Calcar present. Vomerine teeth absent. Supernumerary tubercles present on palm and on foot. Toes medially webbed. Nuptial pads present in males. Belly granular. A dark-brown lateral stripe present, from loreal region to base of upper arm.

Description. – (See Figs. 96, 97). Mature males 17.0–18.4 mm SVL; mature females 18.6–27.5 mm SVL. Body elongate. Head dorsally convex. Snout obtusely pointed in lateral aspect, snout angle category 3 (angle of snout ~ 88°). Canthal edges rounded. Loreal region concave. Interorbital space convex. Internarial space concave. Tympanum discernible, oval, vertical. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Calcar present. Snout, interorbital area, dorsum, upper flank with horn-like spinules in males. Dorsum warty in females. Side of head smooth. Lower flank granular. Dorsal part of forelimb, thigh, shank and foot smooth. Throat, chest, belly and underside of thigh granular. Males with internal vocal slits and nuptial pad on inner edge of prepollex.

Colour in life: (Fig. 97), dorsal part of head and body light olive-brown. A yellow band on mid-dorsum from tip of snout to vent. Flank light orange-brown with black patches and pigments. Inguinal zone and anterior thigh dark brown with light-brown patches. Loreal region olive brown. Canthal edge dark brown. Tympanum dark brown, its lower rim golden yellow. Upper lip white, with dark-brown patches. Dorsal and lateral parts of limbs ashy light-brown with dark olive-green crossbars. Lower arm with 3, thigh with 5 and shank with 3 dark crossbars. Fingers and toes dorsally light brownish-yellow or buff. Throat and chest dark brown with a pure-white medial band. Margins of throat dark brown with white patches. Belly light pink-white with black pigments. Posterior part of lower arm dark brown. Palm and fingers ventrally light red-brown. Thigh ventrally ashy brown with black pigments. Foot and toes ventrally light reddish to dark brown.

Colour in alcohol: (based on holotype, WHT 2721), head and body dorsally grey and dark brown. A black interorbital bar present. Flank grey with dark-brown patches. Inguinal zone pale-yellow and brown. Loreal region grey with black patches. Tympanic region brown. Upper part of tympanum dark brown; the lower part yellow with brown pigments. Upper lip grey with black patches. Dorsal and lateral parts of forelimb dark brown. Thigh and shank brown with dark-brown crossbars. Foot and posterior part of thigh brown. Throat, vocal sacs and chest dark brown. Margins of throat dark brown with grey patches. Belly and ventral area of thigh brown and pale yellow. Webbing pale yellow with brown pigments.

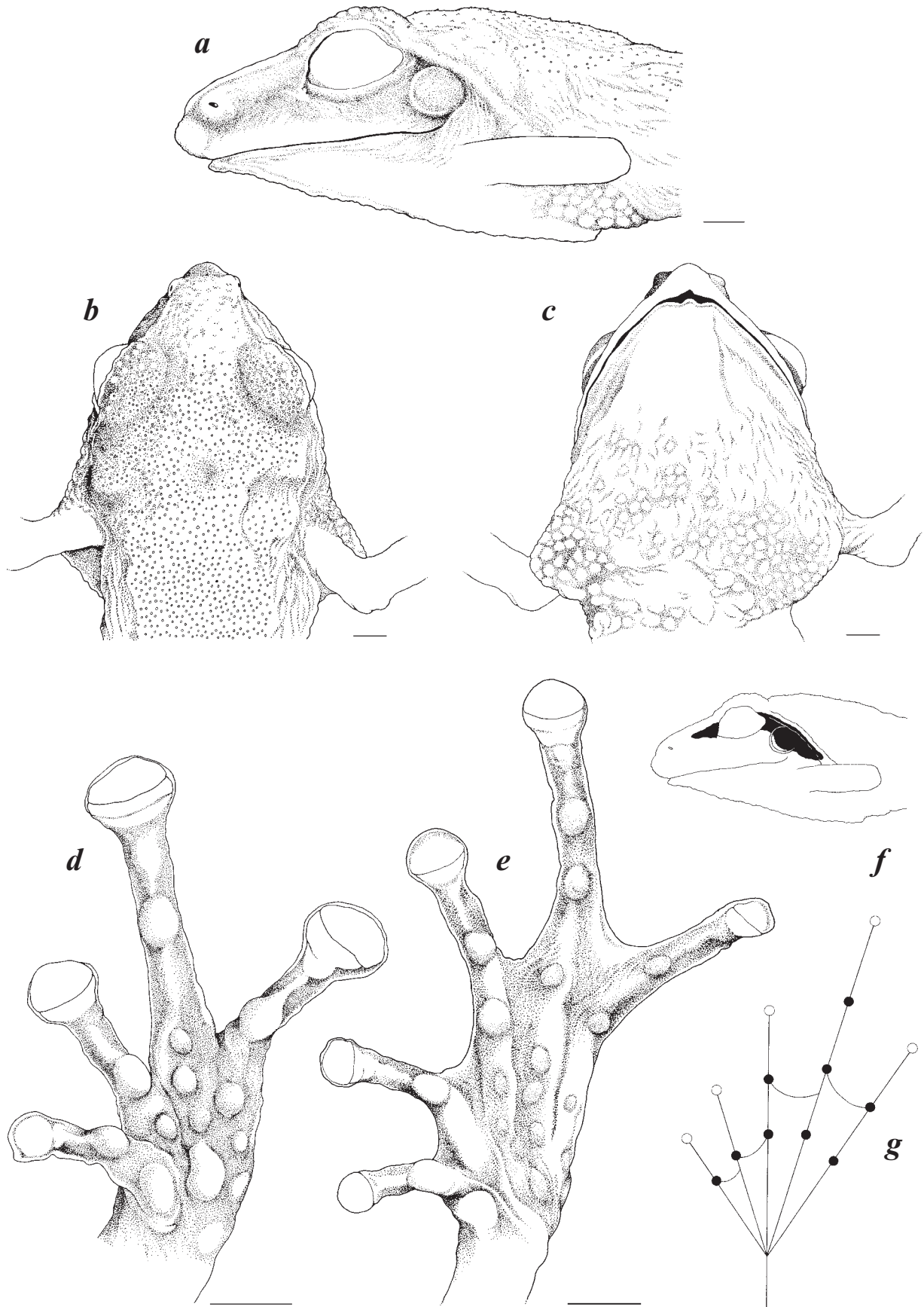


Fig. 96. *Philautus alto*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of left foot; *f*, dark brown colour pattern on lateral side of head; and *g*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 2721, 18.4 mm SVL. Scale bars: 1 mm.



Fig. 97. *Philautus alto*, new species, female, WHT 2080, 21.5 mm SVL.

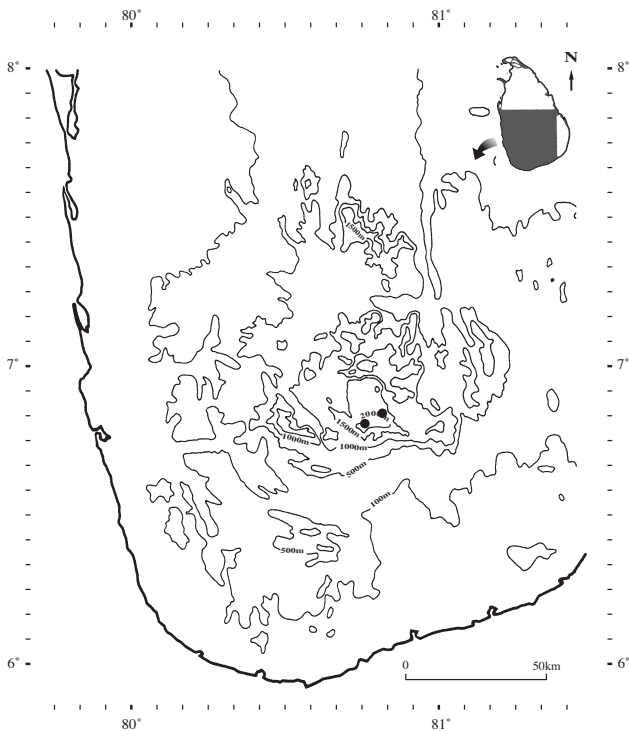


Fig. 98. Distribution of *Philautus alto*, new species, in Sri Lanka.

Measurements of holotype: (WHT 2721, in mm), DBE, 6.5; DFE, 4.0; DL, 0.7; DW, 1.1; ED, 2.6; EN, 2.3; ES, 3.7; FEL, 9.2; FL I, 1.4; FL II, 2.0; FL III, 3.6; FL IV, 2.8; FOL, 13.9; HL, 7.9; HW, 7.0; IML, 0.9; IN, 2.0; IO, 2.4; LAL, 4.3; MBE, 2.8; MFE, 4.6; MN, 6.8; NS, 1.5; PAL, 5.8; SVL, 18.4; TBL, 10.3; TL I, 1.7; TL II, 2.0; TL III, 3.2; TL IV, 4.5; TL V, 3.3; TYD, 0.5; TYE, 1.0; UAW, 3.6; UEW, 1.7.

Etymology. – The species epithet is a reference to the geographic range of this species, which is restricted to the higher elevations of Sri Lanka; *alto* (Latin) meaning ‘high’.

Remarks. – *Philautus alto* resembles *P. malcolmsmithi*, *P. rugatus*, *P. cuspis* and *P. zorro*: for diagnoses, see Remarks under those species accounts.

Distribution. – *Philautus alto* was recorded from the central hills, at elevations of 1890–2135 m (Fig. 98). It is a habitat generalist found mostly on shrubs (usually less than 0.3–2 m above ground), anthropogenic habitats and forest edges. It is active during both day and night. At night, adult males perch on branches and leaves and vocalize; during wet or humid weather, males call from within shrubs also in daytime. Mature females were also observed on shrubs.

Conservation status. – Extent of Occurrence: 40 km² — Horton Plains, Pattipola. The Pattipola population is at risk from timber harvesting (from plantation forest) on the border of Horton Plains National Park. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus regius*, new species**
(Figs. 99, 100; Table 6)

Material examined. – Holotype: mature male, 21.7 mm SVL, WHT 3122, Angammadilla, Polonnaruwa, alt. 90 m (07°51'N, 80°55'E.), coll. 01 Feb.2001.

Paratypes: 3 ex., males, 20.0 mm SVL, WHT 5827; 18.3 mm SVL, WHT 5828 and 19.5 mm SVL, WHT 5829: all from type locality, coll. 07 Sep.2003.

Diagnosis. – (See Figs. 99, 100). Mature males 18.3–21.7 mm SVL. Tympanum discernible. Snout angle category 7. Dorsal surface with horn-like spinules. Supratympanic fold distinct. Canthal edges rounded. Nuptial pad present. Lingual papilla absent. Calcar absent. Supernumerary tubercles present on palm and foot. Toes medially webbed. Toe 4 webbing to penultimate subarticular tubercle on outer side. Throat, chest and belly granular.

Description. – (See Figs. 99, 100). Mature male 18.3–21.7 mm SVL. Body elongate. Head dorsally flat. Snout oval in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges rounded. Loreal region concave. Interorbital and internarial spaces concave. Tympanum discernible, oval, oblique. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe on fingers absent. Toes webbed, toe 4 webbing to penultimate subarticular tubercle on outer side. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head, anterior and posterior dorsum with horn-like spinules. Upper and lower flank glandular. Dorsal part of forelimb, thigh and shank with glandular warts. Foot smooth. Throat, chest belly and underside of thigh granular. Nuptial pad present on inner and dorsal surfaces of finger I and prepollex. Nuptial pad oval; gular slits present.

Colour in life: (Fig. 100), dorsal area of snout and dorsolateral area of body chocolate brown. Mid-body dark brown. Head laterally dark brown. Lips dark brown with pale-yellow patches. Lower part of tympanum golden yellow. Flank brown

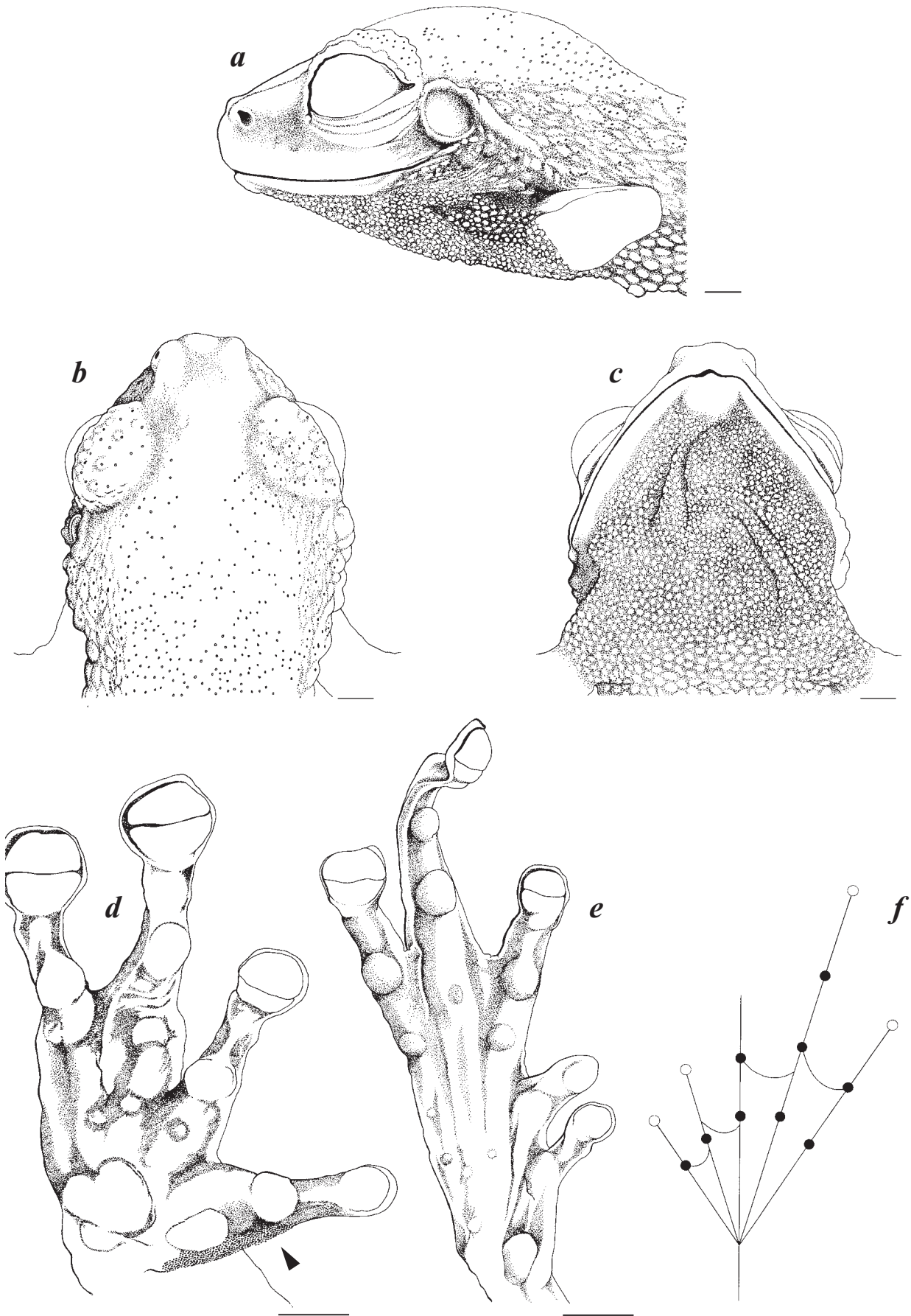


Fig. 99. *Philautus regius*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand (arrow indicates nuptial pad); *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3122, 21.7 mm SVL. Scale bars: 1 mm.



Fig. 100. *Philautus regius*, new species, holotype, male, WHT 3122, 21.7 mm SVL

reddish-brown, its lower rim white. Both lips dark brown with white patches. Lower lip white with fewer dark patches. Upper flank whitish, with dark patches. Inguinal zone brown with white patches. Dorsal and lateral parts of forelimb and shank dark brown with indistinct crossbars in black. Thigh pale brown with dark-brown crossbars. Foot and posterior part of thigh brown. Throat, margins of throat and vocal sacs white with dark-brown patches. Chest and belly white with dark-brown pigments. Thigh ashy brown. Webbing ventrally dark brown. Nuptial pad white.

Measurements of holotype: (WHT 3122, in mm), DBE, 7.8; DFE, 4.6; DL, 0.9; DW, 1.1; ED, 3.4; EN, 2.1; ES, 3.4; FEL, 11.3; FL I, 1.7; FL II, 2.2; FL III, 3.3; FL IV, 2.8; FOL, 14.9; HL, 8.6; HW, 7.9; IML, 0.8; IN, 2.3; IO, 2.7; LAL, 4.6; MBE, 2.8; MFE, 5.4; MN, 7.4; NS, 1.5; PAL, 6.1; SVL, 21.7; TBL, 11.2; TLI, 1.7; TL II, 2.1; TL III, 3.1; TL IV, 4.9; TL V, 3.7; TYD, 0.3; TYE, 1.4; UAW, 3.4; UEW, 2.1.

Etymology. – The species epithet *regius* (= ‘regal’, in Latin) alludes to the type locality being within the ancient kingdom of Polonnaruwa, the centre of a successful ‘hydraulic’ civilization based on a complex irrigation network.

Remarks. – *Philautus regius* (Figs. 99, 100) resembles *P. fergusonianus* (Figs. 47–50; see Remarks under *P. fergusonianus*), *P. stictomerus* (Figs. 75–77) and *P. sarasinorum* (Figs. 65–68). It differs from *P. stictomerus* by having snout angle category 7, supratympanic fold prominent, supernumerary tubercles on foot present, dorsum glandular and warty and vomerine ridge absent, vs. snout angle category 5, supratympanic fold indistinct, supernumerary tubercles on foot absent, dorsum smooth and vomerine ridge present, in *P. stictomerus*. It may be distinguished from *P. sarasinorum* by having snout angle category 7, lingual papilla absent, toes medially webbed and supernumerary tubercle on foot present, vs. snout angle category 5, lingual papilla present, toes fully webbed and supernumerary tubercles on foot absent, in *P. sarasinorum*.

Distribution. – This species is presently known only from a few specimens from dry, shrubby habitats near rice fields around Polonnaruwa, in the north-eastern dry zone (Fig. 101). Observations during wet weather, when males are more likely to call, are likely to demonstrate that the species is both more abundant and has a wider distribution. The specimens listed above were collected while perched on leaves, about 1 m above ground level, in dry weather, when *Philautus* males do not usually vocalize.

Conservation status. – Extent of Occurrence: ~ 5,000 km² — Angammadilla, Polonnaruwa. Despite its probably wider range and greater abundance, we retain this species as Near Threatened in view of its habitat having no protection status and being subject to land use change through shifting cultivation and widespread agrochemical use. Outcome: Near Threatened.

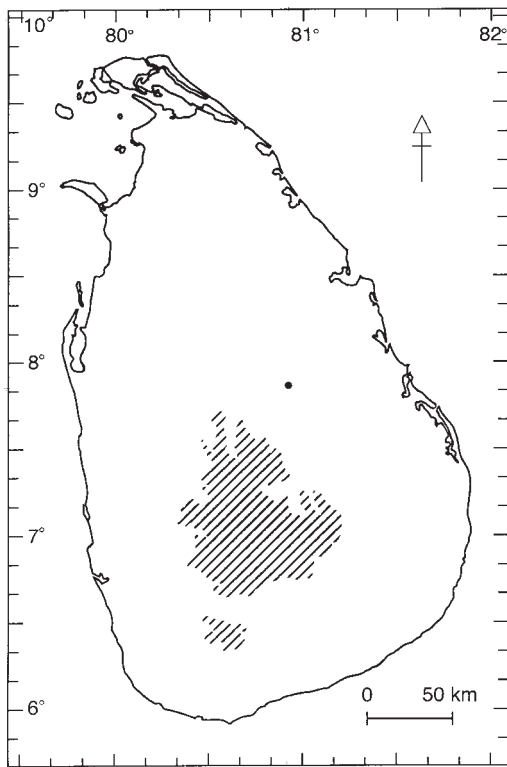


Fig. 101. Distribution in Sri Lanka of *Philautus regius*, new species

with pale-yellow spots. Inguinal zone ashy brown. Lower arm dark with dark-brown crossbars. Fingers dark with white patches. Disks on fingers and toes orange. Toes dark brown with yellow patches. Abdomen pale yellow with black spots. Limbs ashy brown ventrally.

Colour in alcohol: (Based on holotype, WHT 3122) dorsal area of snout and dorsolateral area of body reddish brown. Sides of head, loreal region and mid-dorsum dark brown. Tympanic region dark brown with white patches. Tympanum

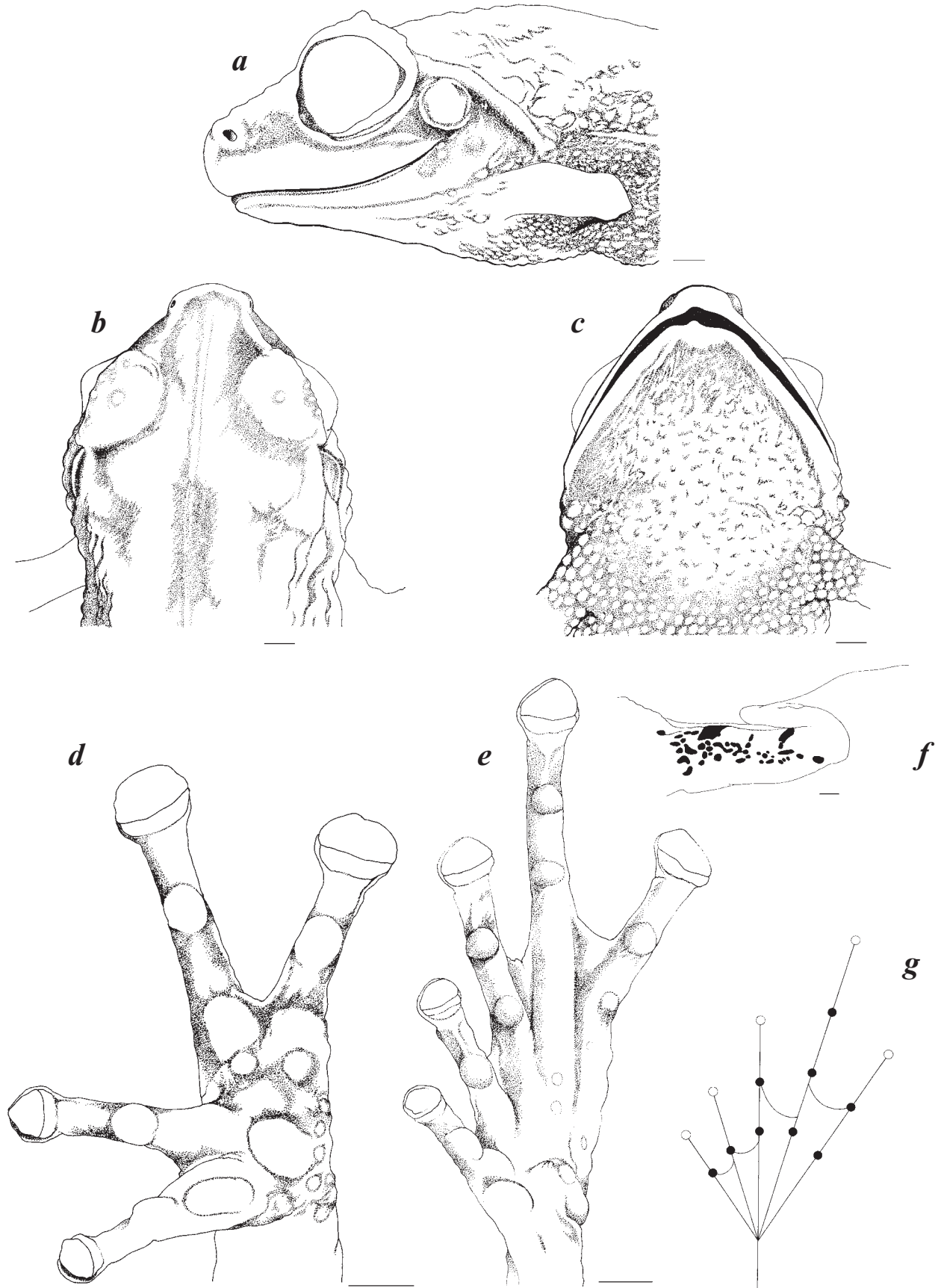


Fig. 102. *Philautus rus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of left foot; *f*, anterior side of left thigh; and *g*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3474, 21.6 mm SVL. Scale bars: 1 mm.



Fig. 103. *Philautus rus*, new species, male, WHT 5431, 20.6 mm SVL.

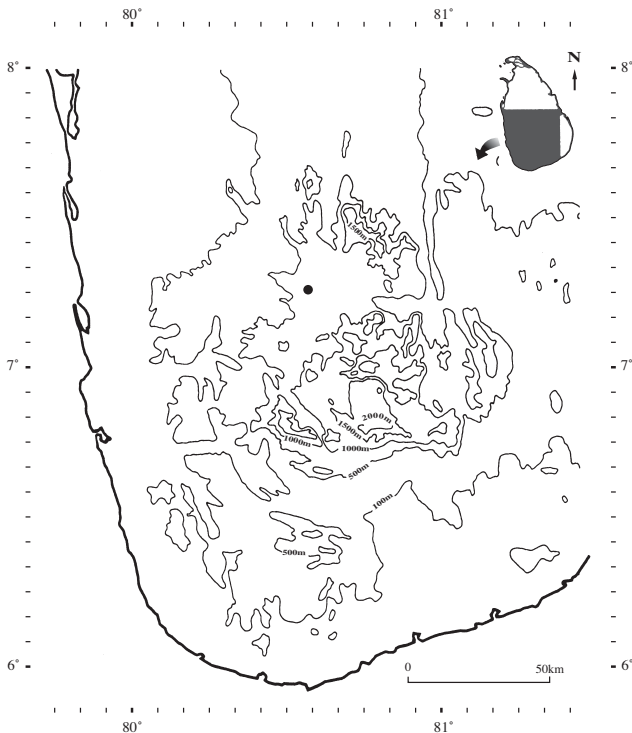


Fig. 104. Distribution of *Philautus rus*, new species in Sri Lanka.

***Philautus rus*, new species**
(Figs. 102, 103; Table 4)

Material examined. – Holotype: mature male, 21.6 mm SVL, WHT 3474, Kiribatkumbura (near Peradeniya), alt. 450 m (07°16'N, 80°34'E), coll. 28 Jul.2001.

Paratypes: male, 20.6 mm SVL, WHT 3475; female, 23.1 mm SVL, WHT 3476; male, 21.7 mm SVL, WHT 3477, same data as holotype. 8 ex., males, 20.6 mm SVL, WHT 5437; 20.8 mm SVL, WHT 5439; 23.6 mm SVL, WHT 5436; 24.1 mm SVL, WHT 5440; 23.2 mm SVL, WHT 5438; 24.2 mm SVL, WHT 5432; 20.0 mm SVL, WHT 5435; 22.4 mm SVL, WHT 5434, Pilimatalawa (near Peradeniya), alt. 658 m (07°15'N, 80°34'E), coll. 24 Apr.2002.

Others - Male, 20.6 mm SVL, WHT 5431, Pilimatalawa (near Peradeniya), alt. 658 m (80°34'E, 07°15'N), coll. 24 Apr.2002.

Diagnosis. – (See Figs. 102, 103). Mature individuals 20.6–23.6 mm SVL. Tympanum discernible. Snout angle category 6. Dorsal surface glandular warty. Supratympanic fold prominent. Canthal edges rounded. Nuptial pad absent. Lingual papilla absent. Calcar absent. Supernumerary tubercles present on palm. Toes medially webbed. Throat, chest and belly granular. Anterior surface of thigh with black patches.

Description. – (See Figs. 102, 103). Mature males 20.6–24.1 mm SVL; mature female 23.1 mm SVL. Body elongate. Head dorsally flat. Snout oval in lateral aspect, snout angle category 6 (angle of snout ~ 100°). Canthal edges rounded. Loreal region concave. Interorbital and internarial spaces flat. Tympanum distinct, oval, oblique. Pineal ocellus absent. Vomerine ridge present or absent: when present, bearing a few small teeth, angled at about 60° relative to body axis, shorter than the distance between them. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout and interorbital area smooth. Side of head and dorsum with glandular warts. Flank granular. Dorsal areas of forelimb, thigh, shank and foot smooth. Throat, chest, belly and underside of thigh granular. Nuptial pad absent in males, but inner vocal slits present.

Colour in life: (see Fig. 103), dorsum dark brown with light-brown patches. Tympanic region dark brown with pale-brown and ashy patches, the tympanum itself reddish or dark brown. Upper lip dark brown with pale and ashy brown patches. Loreal region dark brown. Upper flank chestnut brown with dark-brown patches; lower flank pale yellow with dark-brown patches. Dorsal and lateral parts of forelimb, dorsal part of thigh, dorsal part of shank and dorsal part of foot brown with dark-brown crossbars. Thigh brown with dark-brown patches on posterior edge. Throat, margins of throat, vocal sacs, chest, belly and underside of thigh pale yellow yellowish-orange with dark-brown pigments. Webbing dark brown.

Colour in alcohol: (based on holotype, WHT 3474) dorsum dark brown with light-brown patches. Tympanic region dark brown with pale-brown patches, the tympanum itself reddish-brown. Upper lip dark brown with pale-brown patches. Loreal region dark brown. Upper flank light brown with dark-brown patches; lower flank pale yellow with dark-brown patches. Dorsal and lateral parts of forelimb, dorsal part of thigh, dorsal part of shank and dorsal part of foot brown with dark-brown crossbars. Thigh brown with dark-brown patches on posterior edge. Throat, margins of throat, vocal sacs, chest, belly and underside of thigh pale yellow with dark-brown pigments. Webbing dark brown.

Measurements of holotype: (WHT 3474, in mm), DBE, 8.1; DFE, 4.8; DL, 1.0; DW, 1.3; ED, 3.5; EN, 2.5; ES, 4.1; FEL, 12.1; FL I, 1.9; FL II, 2.1; FL III, 3.7; FL IV, 3.2; FOL, 16.7; HL, 9.5; HW, 8.7; IML, 0.9; IN, 2.4; IO, 2.7; LAL, 4.7; MBE, 3.6; MFE,

6.1; MN, 8.2; NS, 1.7; PAL, 7.0; SVL, 21.6; TBL, 12.5; TLI, 1.7; TL II, 2.2; TL III, 3.7; TL IV, 5.9, TL V, 3.8, TYD, 0.7; TYE, 1.4; UAW, 4.2; UEW, 2.3.

Etymology. – The species epithet *rus* is Latin for ‘fields, countryside’: an allusion to this species occurring in home gardens in the suburbs of Kandy.

Remarks. – *Philautus rus* (Figs. 102, 103) resembles *P. temporalis* (Fig. 23, 24) and *P. nanus* (Fig. 25, 26), for diagnoses from which, see Remarks in the accounts for these species. It also resembles *P. popularis* (Figs. 105, 107), from which it differs by having black patches on anterior thigh present, snout angle category 6, nuptial pad absent, and head dorsally flat, vs. black patches on anterior thigh absent, snout angle category 5, nuptial pad present and head dorsally convex, in *P. popularis*.

Distribution. – *Philautus rus* was recorded from around Kandy (~ 500–800 m elevation, Fig. 104). It is a habitat generalist found in shaded forest and anthropogenic habitats. Very active at dusk, it was observed calling from leaves and branches less than 1 m above ground. Males were observed engaged in calling duets and territorial aggression. Females are relatively cryptic. The species is common in home gardens in the suburbs of Kandy.

Conservation status. – Extent of Occurrence: 120 km² — Kandy. Outcome: Near Threatened (despite its restricted range, we refrain from assigning a threatened status to this species as it is both abundant and common in human-modified habitats).

***Philautus popularis*, new species**
(Figs. 105, 107; Table 4)

Material examined. – Holotype: mature male, 20.3 mm SVL, WHT 3469, Kiribatkumbura (near Peradeniya), alt. 450 m (07°16'N, 80°34'E.), coll. 28 Jul.2001.

Paratypes: 5 ex, males, 18.9 mm SVL, WHT 3468; 18.0 mm SVL, WHT 3470; 19.9 mm SVL, WHT 3471; 17.7 mm SVL, WHT 3472; 17.9 mm SVL, WHT 3473: same data as holotype.

Others - Male, 21.3 mm SVL, WHT 3497, Kithulampitiya, Galle, alt. 15 m (06°04'N, 80°12'E), coll. 28 Nov.2002. Male, 19.2 mm SVL, WHT 3479, Kitulgala, alt. 1067m (07°00'N, 80°24'E), coll. 11 Nov.2002. Female, 24.7 mm SVL, WHT 3487, Pussellawe, alt. 986 m (07°06'N, 80°37'E), coll. 26 Apr.2002.

Diagnosis. – (See Figs. 105, 107). Mature individuals 17.7–24.7 mm SVL. Tympanum discernible. Snout angle category 5. Dorsal surface of males with horn-like spinules; females with glandular warts. Supratympanic fold prominent. Canthal edges rounded. Nuptial pad present in males; Lingual papilla absent. Calcar absent. Supernumerary tubercles present on palm and foot. Toes medially webbed. Throat, chest and belly granular. Black patches on anterior surface of thigh absent.

Description. – (See Figs. 105, 107). Mature males 17.7–24.7 mm SVL. Body elongate. Head dorsally convex. Snout rounded



Fig. 105. *Philautus popularis*, new species, from Kiribatkumbura (near Peradeniya), alt. 450 m, not preserved.

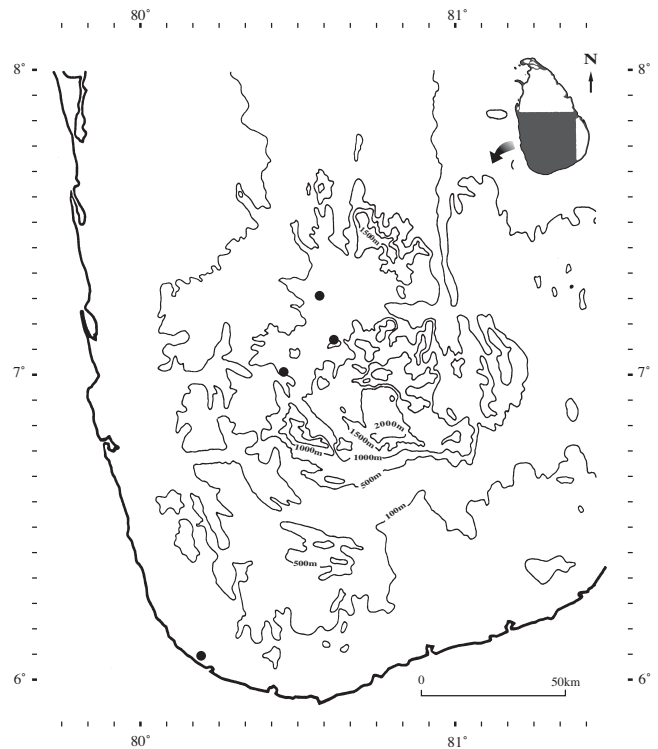


Fig. 106. Distribution of *Philautus popularis*, new species in Sri Lanka.

in lateral aspect, snout angle category 5 (angle of snout ~ 95°). Canthal edges rounded. Loreal region concave. Interorbital and internarial spaces flat. Tympanum distinct, oval, oblique. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout and side of head with glandular warts. Interorbital area smooth. Dorsum and upper flank with horn-like spinules. Lower flank granular. Dorsal part of forelimb, thigh and shank with glandular warts. Foot dorsally smooth. Throat, chest, belly and underside of thigh granular. Nuptial pad and inner vocal slits present in males.

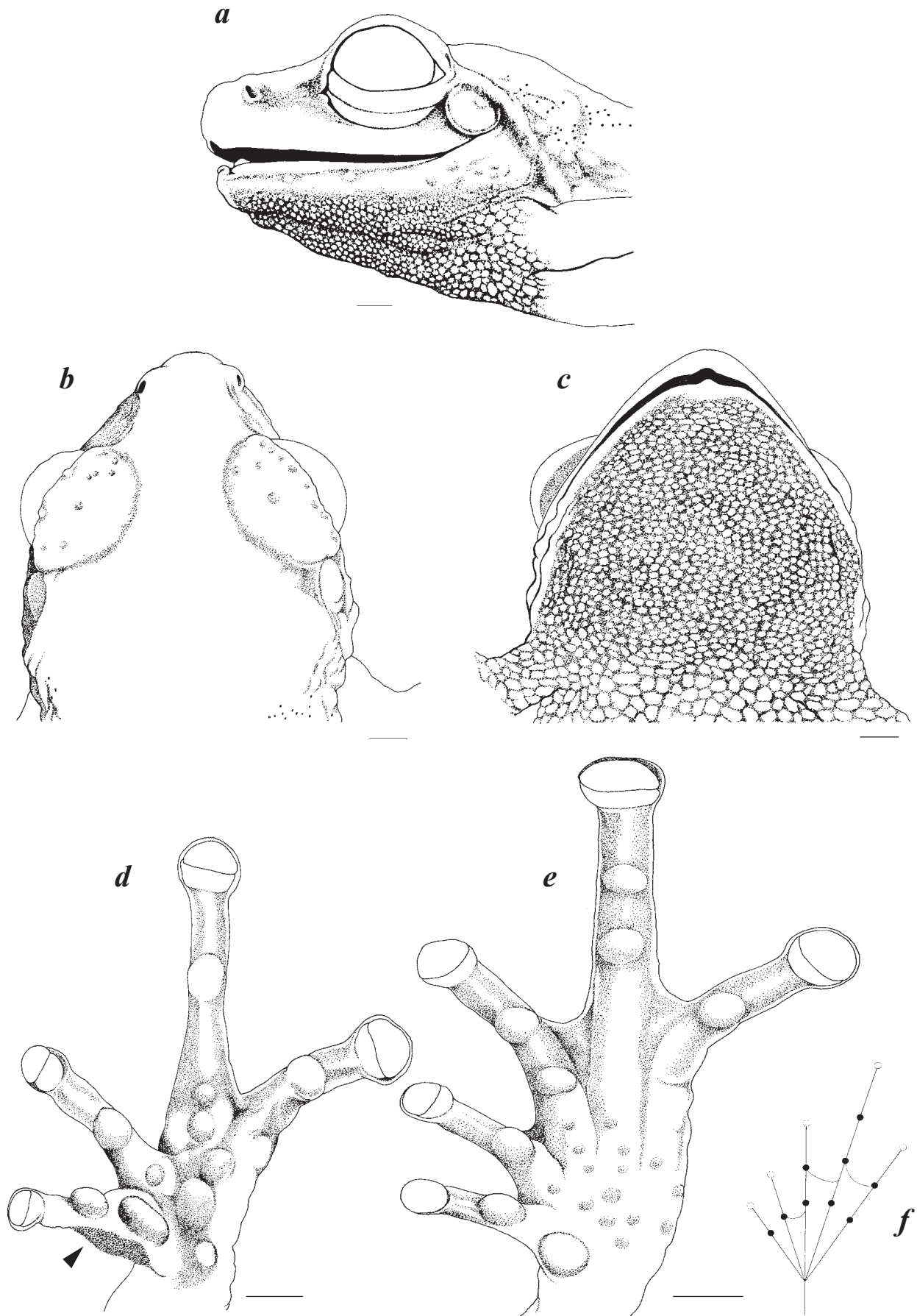


Fig. 107. *Philautus popularis*, new species: a–c, lateral, dorsal and ventral aspects respectively, of head; d, ventral aspect of left hand (arrow indicates nuptial pad); e, ventral aspect of left foot; f, semi-diagrammatic representation of the left-foot webbing pattern (there is no webbing between toes I and II) of holotype, male, WHT 3469, 20.3 mm SVL. Scale bars: 1 mm.

Colour in life: (see Fig. 105), dorsum colour varies from brown to ashy brown. Head dorsally darker. Limbs dorsally yellowish with indistinct crossbars in brown. A symmetrical dark-brown stripe on mid-dorsum. Flank yellow. Throat, vocal sacs, chest, belly and thigh pale yellow with dark-brown pigments. Margin of throat pale yellow with dark-brown patches. Webbing yellow.

Colour in alcohol: (based on holotype, WHT 3469) dorsum olive brown. A symmetrical dark-brown marking on mid-dorsum. Loreal and tympanic regions olive brown with dark-brown patches. Upper half of tympanum olive brown; lower half pale yellow. Upper lip pale yellow with dark-brown pigments. Upper flank olive brown; lower flank pale yellow. Inguinal zone pale yellow and brown. Dorsal and lateral parts of forelimb, dorsal part of thigh, dorsal part of shank and dorsal part of foot olive brown with dark-brown crossbars. Posterior thigh brown. Throat, vocal sacs, chest, belly and thigh pale yellow with dark-brown pigments. Margin of throat pale yellow with dark-brown patches. Webbing yellow.

Measurements of holotype: (WHT 3469, in mm), DBE, 7.4; DFE, 4.4; DL, 0.9; DW, 1.1; ED, 3.2; EN, 2.0; ES, 3.8; FEL, 11.1; FL I, 1.7; FL II, 2.2; FL III, 4.3; FL IV, 2.8; FOL, 15.4; HL, 8.5; HW, 7.8; IML, 0.7; IN, 2.2; IO, 2.4; LAL, 4.5; MBE, 3.2; MFE, 5.6; MN, 7.3; NS, 1.6; PAL, 6.4; SVL, 20.3; TBL, 11.5; TL I, 1.7; TL II, 2.1; TL III, 3.5; TL IV, 5.5; TL V, 3.6; TYD, 0.4; TYE, 1.8; UAW, 3.9; UEW, 2.1.

Etymology. – The species-name *popularis* (Latin, ‘of the people’) refers to the entirely synanthropic distribution of this species.

Remarks. – *Philautus popularis* resembles *P. temporalis*, *P. nanus* and *P. rus* (for diagnoses from which, see Remarks under those species accounts).

Distribution. – *Philautus popularis* occurs in the low-country wet zone (sea level to 1067 m, Fig. 106). It is a synanthropic species that occurs also in grasslands and forest edges. These frogs were usually observed perched on shrubs 0.3–1 m above ground. Males call also in daytime. A wide-ranging species that is common wherever it occurs.

Conservation status. – Extent of Occurrence: 5,000 km² — Peradeniya, Galle, Kitulgala, Pussellawe. Outcome: Least Concern (in view of it being widespread, abundant and synanthropic).

Philautus simba, new species

(Figs. 108, 109; Table 10)

Material examined. – Holotype: mature male, 12.6 mm SVL, WHT 3464, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 12 Jan. 1999.

Paratypes: females, 15.6 mm SVL, WHT 3465; 15.3 mm SVL, WHT 3466; 14.5 mm SVL, WHT 3467, all from type locality, coll. 14 Aug. 1996.

Diagnosis. – (See Figs. 108, 109). Mature individuals 12.6–15.6 mm SVL. Tympanum discernible. Snout angle category 5. Dorsal surface smooth, with scattered glandular warts. Supratympanic fold distinct. Canthal edges rounded. Nuptial pad absent in males. Lingual papilla absent. Calcar absent. Vomerine teeth absent. Supernumerary tubercles present on palm. Toes with rudimentary webbing. Throat, chest and belly granular. Head laterally dark brown.

Description. – (See Figs. 108, 109). Mature male 12.6 mm SVL; mature females 14.5–15.6 mm SVL. Body elongate. Head dorsally convex. Snout truncate in lateral aspect, snout angle category 5 (angle of snout ~ 97°). Canthal edges rounded. Loreal region flat. Interorbital space convex. Internarial space flat. Tympanum distinct, oval, vertical. Pineal ocellus absent. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Rudimentary webbing present on fingers. Prepollex prominent. Toes with rudimentary webbing. Tarsal fold absent. Calcar absent. Snout, interorbital area and posterior dorsum smooth. Dorsum and lateral side of head with glandular warts. Lower flank granular. Dorsal part of forelimb, thigh, shank, and foot smooth. Throat and chest granular, smooth. Belly and underside of thigh granular, rough. Males with inner vocal slits, but nuptial pad absent.

Colour in life: see Fig. 109. Dorsal part of head and dorsum chestnut brown. Flank dark brown or black with white or light-blue patches. Inguinal zone ashy brown. Loreal region, tympanic region and tympanum dark brown. Area around tympanum with light-blue dots. Lips dark brown. Base of upper arm, distal half of lower arm and fingers dorsally dark brown. Thigh and shank dorsally chestnut brown with dark-brown crossbars. Foot dorsally light brown, ventrally dark brown. Area around vent dark brown. Throat, margin of throat and chest brown. Belly ashy brown with dark-brown patches. Underside of thigh and webbing yellowish brown.

Colour in alcohol: (based on holotype, WHT 3464), dorsal part of head and dorsum brown. Flank ashy brown with dark-brown patches. Inguinal zone ashy brown. Loreal region, tympanic region and tympanum dark brown. Lips dark brown. Base of upper arm, distal half of lower arm and fingers dorsally dark brown. Femur and shank dorsally light brown with dark-brown crossbars. Foot dorsally light brown, ventrally dark brown. Area around vent dark brown. Throat, margin of throat and chest brown. Belly ashy brown with dark-brown patches. Underside of thigh and webbing yellowish brown.

Measurements of holotype: (WHT 3464, in mm), DBE, 4.0; DFE, 2.7; DL, 0.4; DW, 0.5; ED, 1.8; EN, 0.9; ES, 1.8; FEL, 6.5; FL I, 0.6; FL II, 1.0; FL III, 1.5; FL IV, 1.2; FOL, 8.5; HL, 5.0; HW, 4.5; IML, 0.5; IN, 1.7; IO, 1.5; LAL, .2.7; MBE, 2.4; MFE, 3.4; MN, 4.3; NS, 0.8; PAL, 2.8; SVL, 12.6; TBL, 6.6; TLI, 0.9; TL II, 1.2; TL III, 1.9; TL IV, 2.9; TL V, 1.6; TYD, 0.5; TYE, 0.8; UAW, 3.0; UEW, 1.3.

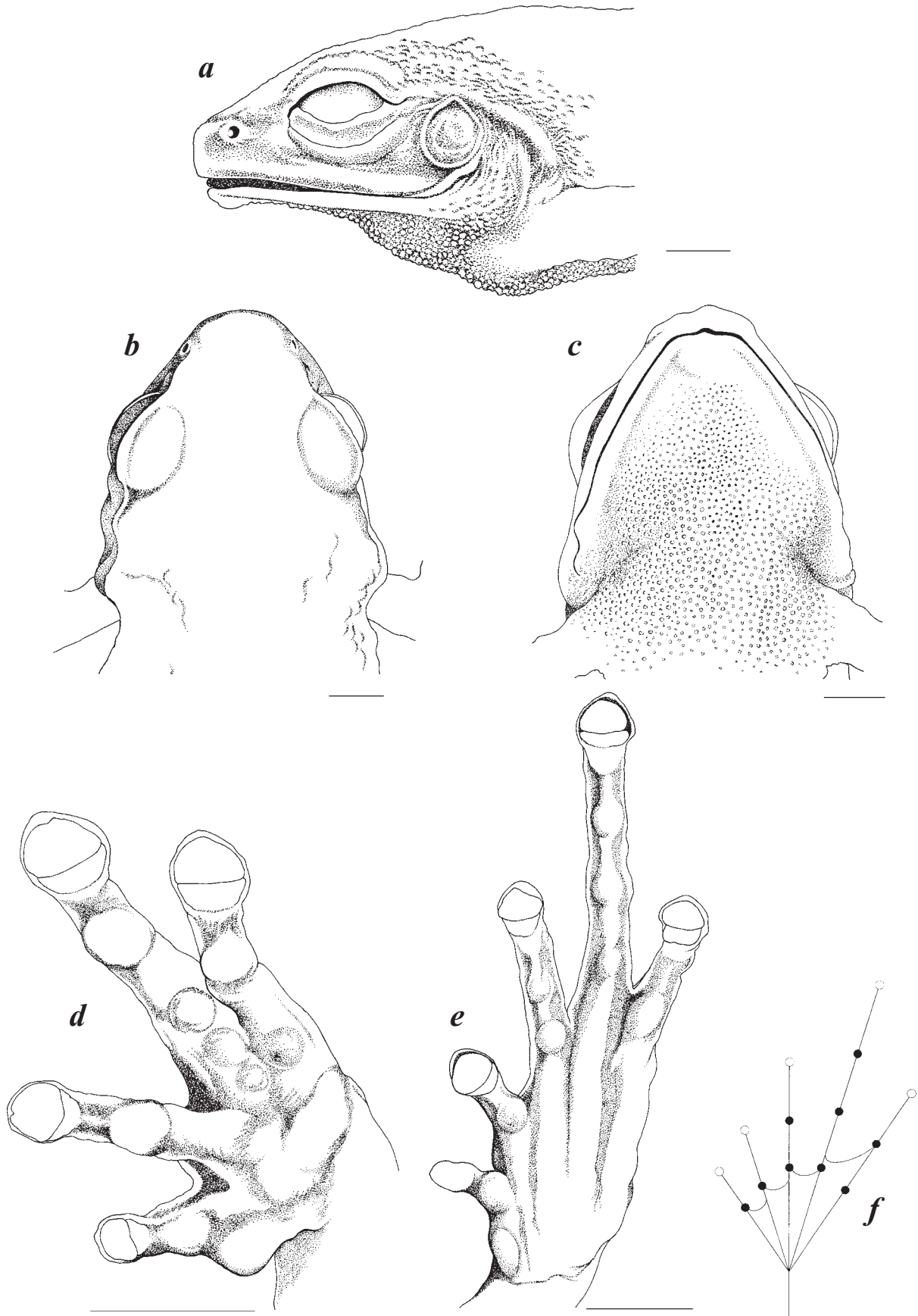


Fig. 108. *Philautus simba*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of left foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3464, 12.6 mm SVL. Scale bars: 1 mm.



Fig. 109. *Philautus simba*, new species, from Morningside Forest Reserve, not preserved.

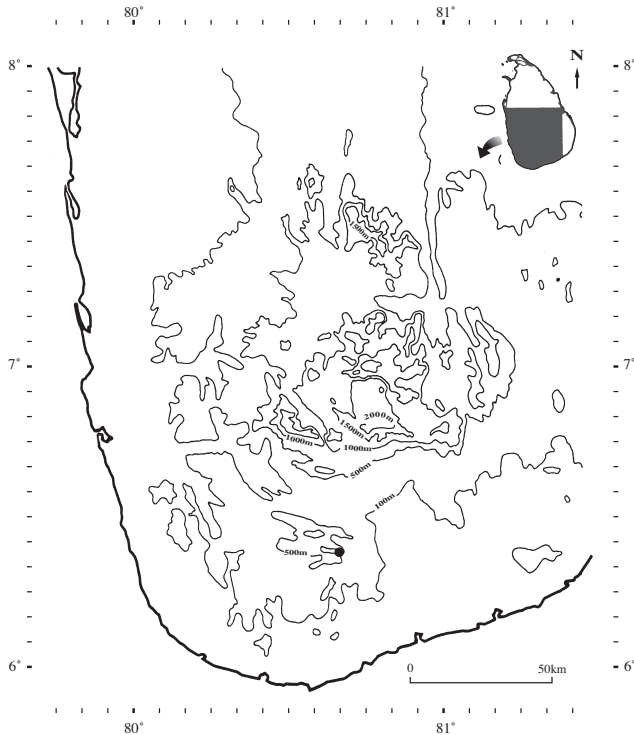


Fig. 110. Distribution of *Philautus simba*, new species, in Sri Lanka.

Etymology. – The species epithet *simba* is Bantu for lion, being also the name of the hero in the Disney musical, *The Lion King* — coincidentally, a transliteration of the Sinhala place-name Sinharaja [World Heritage Site], of which the type locality is part: *sinha* (= lion), *raja* (= king, royal); applied as a noun in apposition.

Remarks. – *Philautus simba* (Figs. 108, 109) resembles *P. nemus* (Figs. 160, 161), from which it may be differentiated however, by having snout angle category 5, webbing on fingers present, nuptial pads in males absent and loreal region flate, vs. snout angle category 4, webbing on fingers absent, nuptial pads in males present and loreal region concave, in *P. nemus*.

Distribution. – *Philautus simba* appears to be restricted to the type locality, Morningside Forest Reserve (near Rakwana, 06°24'N, 80°38'E, alt. 1060 m, Fig. 110), on the eastern side of the Sinharaja World Heritage Site. It is a habitat specialist found in closed canopy habitats that include cloud forest and cardamom plantations within it. Essentially a ground-dwelling leaf-litter species. It has a very restricted range and is rare.

Conservation status. – Extent of Occurrence: 15 km² — Morningside. Outcome: Critically Endangered (criteria B1 a, b (iii)). In addition to being recorded only from a single locality, the species could be at risk because of illegal gem mining and excessive disturbance by cardamom cultivation (e.g. if agrochemical usage intensifies).

***Philautus fulvus*, new species**
(Figs. 111, 112; Table 8)

Material examined. – Holotype: mature male, 35.9 mm SVL, WHT 2949, Laggala (Knuckles), alt. 1220 m (07°33'N, 80°44'E), coll. 12 Aug.2000.

Paratypes: female, 46.1 mm SVL, WHT 2948; same data as holotype. 2 ex. females, 44.8 mm SVL, WHT 3112; 46.8 mm SVL, WHT 3114; Moussakanda, Gammaduwa, Knuckles, alt. 915 m (07°34'N, 80°42'E), coll. 28 Feb.2001. Male, 34.9 mm SVL, WHT 3121; Puwakpitiya (near Laggala), Knuckles, alt. 450 m (07°34'N, 80°45'E), coll. 27 Feb.2001. Male, 33.4 mm SVL, WHT 3463; Moussakanda, Gammaduwa, Knuckles, alt. 915 m (07°34'N, 80°42'E), coll. 02 Sep.1996.

Diagnosis. – (See Figs. 111, 112). Mature individuals 33.4–46.8 mm SVL. Tympanum discernible. Snout angle category 6. Dorsal surface shagreened. Supratympanic fold distinct. Canthal edges sharp. Nuptial pads present in male. Lingual papilla absent. Calcar present. Vomerine teeth present. Supernumerary tubercles present on palm and foot. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Figs. 111, 112). Mature males 33.4–35.9 mm SVL; mature females 44.8–46.8 mm SVL. Body stout. Head dorsally convex. Snout rounded in lateral aspect, snout angle category 5 (angle of snout ~ 101°). Canthal edges sharp. Loreal region concave. Interorbital space flat. Internarial space concave. Tympanum distinct, oval, vertical. Pineal ocellus absent. Vomerine ridge present, with about 5 small teeth, closer to choanae, shorter than distance between them. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridge absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Fingers with rudimentary webbing. Toes medially webbed. Dorsal and lateral part of snout, interorbital area, side of head, dorsum and upper flank shagreened; lower flank granular. Dorsal area of forelimb and thigh shagreened; shank and foot smooth. Ventral throat, chest, belly and thigh granular. A yellow, oval nuptial pad present dorsally and on inner surface of prepollex and finger I. Vocal sacs present. A pair of internal vocal slits present in males.

Colour in life: (Fig. 112), dorsum reddish-brown with symmetrical dark-brown markings. Interorbital bar dark brown. Loreal and

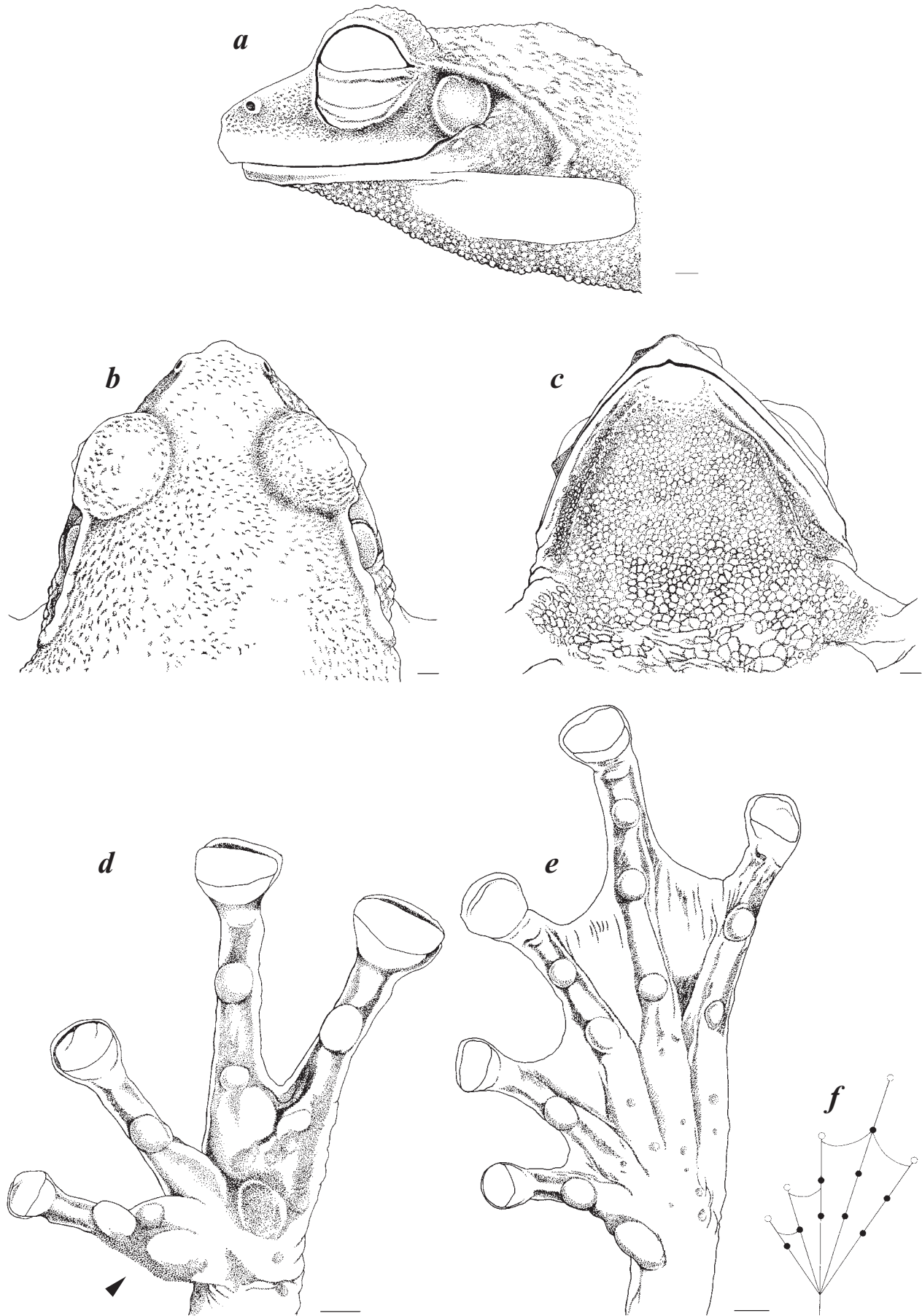


Fig. 111. *Philautus fulvus*, new species: *a–c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand (arrow indicates nuptial pad); *e*, ventral aspect of left foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 2949, 35.9 mm SVL. Scale bars: 1 mm.



Fig. 112. *Philautus fulvus*, new species, from Laggala (Knuckles), alt. 1220 m; not preserved.

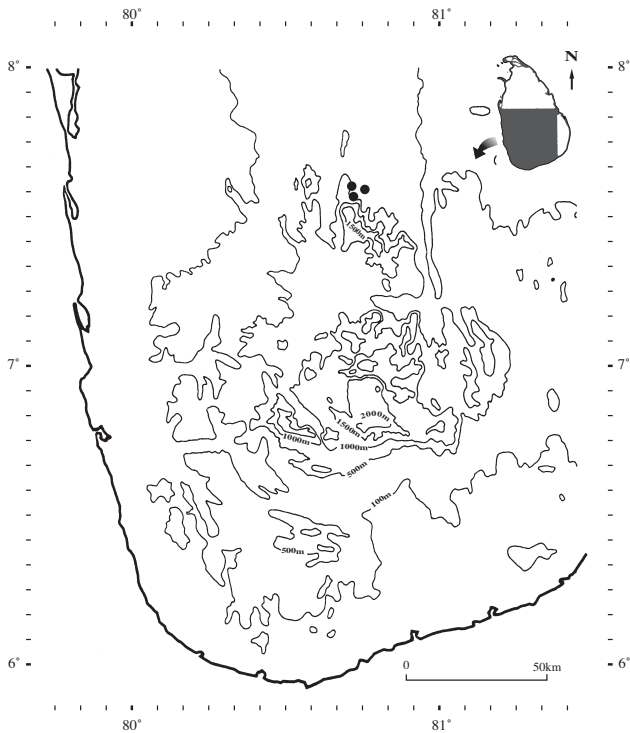


Fig. 113. Distribution of *Philautus fulvus*, new species, in Sri Lanka.

tympanic region brown. A dark-brown patch on infraorbital area. Lower lip pale brown with dark-brown patches. Canthal edges dark brown. Lower supratympanic area and upper half of tympanum black. Limbs with dark-brown crossbars. Both upper and lower flank yellow with dark-brown spots. Chin, and chest pale brown. Abdomen pale yellow mixed with pale brown. Ventral side of limbs pale red mixed with brown. Posterior thigh dark brown with yellow spots.

Colour in alcohol: (based on holotype, WHT 2949) head and body dorsally ashy brown with dark-brown patches. Interorbital bar dark brown. Flank ashy yellow with dark-brown patches. Loreal region dark brown. Tympanic region and tympanum yellow with dark-brown patches. Inguinal zone dark brown. Forelimb

and dorsal part of thigh and shank light brown with dark-brown crossbars. Foot dorsally dark brown. Posterior thigh dark brown with light-brown patches. Throat, margins of throat and vocal sacs pale yellow with ash patches. Chest, belly and underside of thigh pale yellow. Webbing dark brown.

Measurements of holotype: (WHT 2949, in mm), DBE, 12.8; DFE, 7.9; DL, 1.3; DW, 2.3; ED, 4.6; EN, 3.5; ES, 6.2; FEL, 19.3; FL I, 3.3; FL II, 4.2; FL III, 6.7; FL IV, 5.5; FOL, 26.9; HL, 14.3; HW, 14.7; IML, 1.7; IN, 3.7; IO, 4.2; LAL, 7.4; MBE, 5.4; MFE, 9.0; MN, 12.2; NS, 2.6; PAL, 11.4; SVL, 35.9; TBL, 21.1; TL I, 3.4; TL II, 4.1; TL III, 6.4; TL IV, 9.0; TL V, 7.2; TYD, 1.5; TYE, 2.3; UAW, 6.4; UEW, 3.9.

Etymology. – The species-epithet *fulvus* (Latin, tawny) alludes to the colour of this frog.

Remarks. – *Philautus fulvus* resembles *P. zimmeri* (for diagnosis from which, see Remarks under *P. zimmeri*).

Distribution. – *Philautus fulvus* is restricted to the Knuckles Range, being recorded between elevations of 450–1220 m (Fig. 113). It is a habitat generalist, found mainly in closed canopy habitats that include natural forest, anthropogenic habitats, secondary forests and cardamom plantations. Adult males and females were observed at night perched 2–4 m above ground on branches, tree trunks and moss-covered rocks.

Conservation status. – Extent of Occurrence: 50 km² — Northern Knuckles. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus asankai*, new species**
(Figs. 114–116; Table 8)

Material examined. – Holotype: mature male, 18.9 mm SVL, WHT 3507, Agra Arboretum, Torrington Estate, near Agarapatana, alt. 1665 m (06°50'36"N, 80°40'40"E), coll. 21 Dec.2003.

Paratypes: male, 22.7 mm SVL, WHT 2100, Moray Estate, Rajamally, alt. 1370 m (06°48'N, 80°31'E), coll. 22 Aug.1997. Male, 23.9 mm SVL, WHT 5472, Dayagama Estate, 3rd division, Dayagama, alt. 1830 m (06°50'36"N, 80°40'40"E), coll. 13 Jul.2002. Female, 23.0 mm SVL, WHT 5425, Agra Arboretum, Torrington Estate, near Agarapatana, alt. 1665 m (06°50'36"N, 80°40'40"E), coll. 20 Apr.2002. 3 ex., females, 27.3 mm SVL, WHT 3504; 26.4 mm SVL, WHT 3505 and 26.6 mm SVL, WHT 3506, Agra Arboretum, Torrington Estate, near Agarapatana, alt. 1665 m (06°50'36"N, 80°40'40"E), coll. 21 Dec.2003.

Diagnosis. – (See Figs. 114–116). Mature individuals 18.9–27.3 mm SVL. Tympanum not discernible (subdermal) or feebly defined. Snout angle category 6. Dorsal surface of body with horn-like spinules. Canthal edges rounded. Vomerine teeth and lingual papilla absent. Supratympanic fold feebly defined. Supernumerary tubercles absent on palm and foot. Toes medially webbed. Nuptial pads absent in male. Belly granular. Dorsal colour variable: in life, pale green, pale brown or ashy-blue with ashy spots.

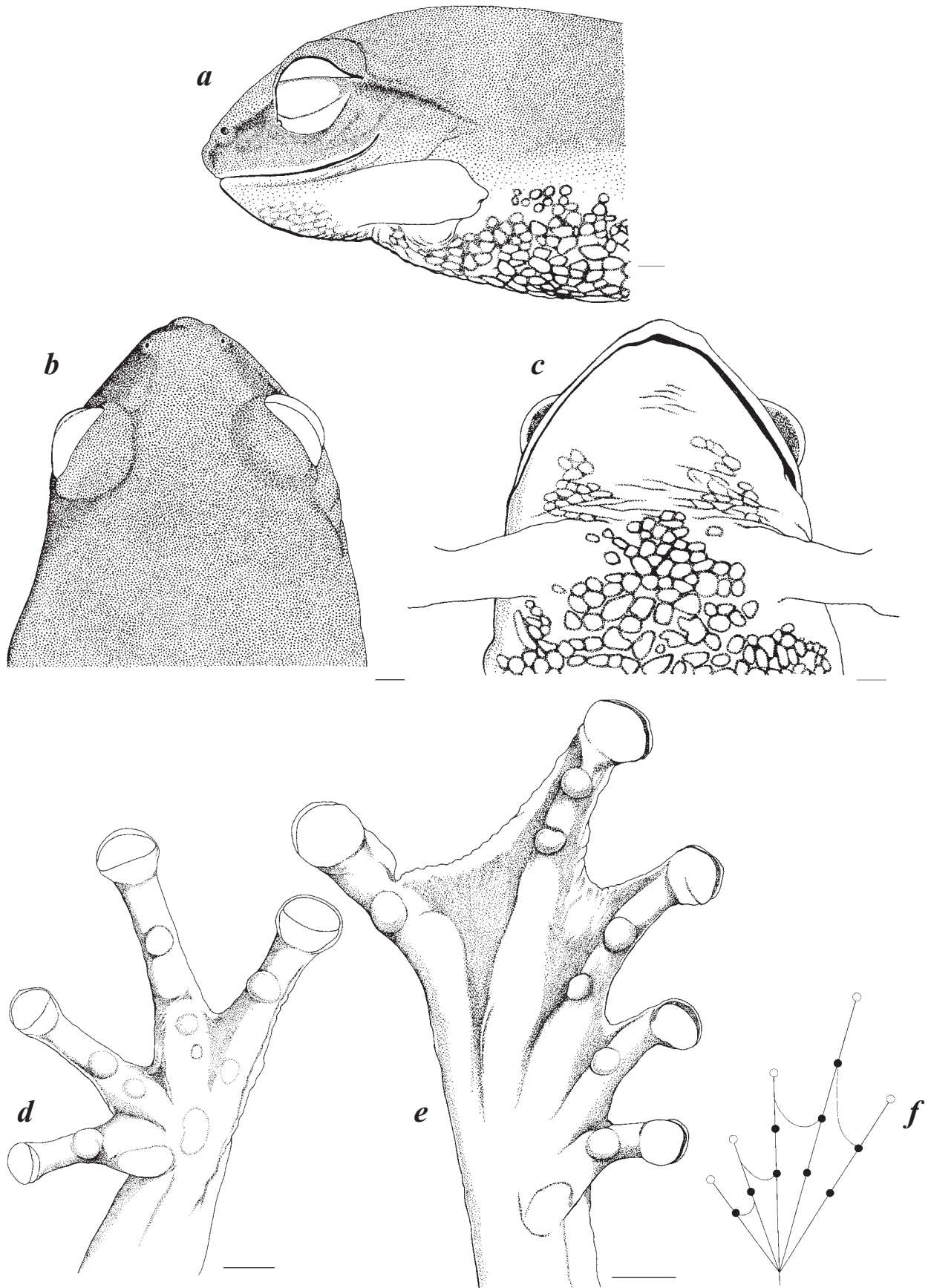


Fig. 114. *Philautus asankai*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of right foot of paratype, female, WHT 5425, 23.0 mm SVL; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3507, 18.9 mm SVL. Scale bars: 1 mm.



Fig. 115. *Philautus asankai*, new species, paratype, female, WHT 5425, 23.0 mm SVL



Fig. 116. *Philautus asankai*, new species, paratype, male, WHT 5472, 23.9 mm SVL.

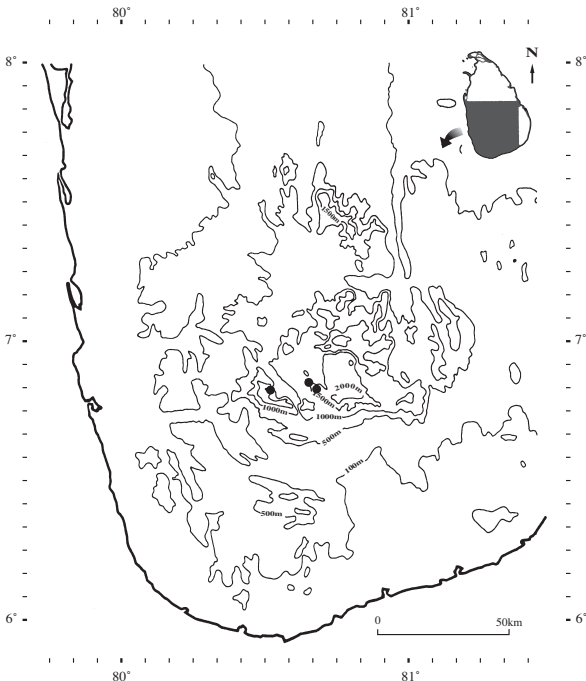


Fig. 117. Distribution of *Philautus asankai*, new species in Sri Lanka.

Description. – (See Figs. 114–116). Mature males 18.9–23.9 mm SVL; mature females 23.0–27.3 mm SVL. Body stout. Head dorsally convex. Snout obtusely pointed in lateral aspect, snout angle category 6 (angle of snout ~ 101°). Canthal edges rounded. Loreal region flat. Interorbital space convex. Internarial space flat. Tympanum not discernible (in paratype WHT 5425) or feebly defined and subdermal. Pineal ocellus absent. Vomerine ridge and lingual papilla absent. Supratympanic fold feebly defined. Cephalic ridges absent. Skin on head not co-ossified with skull. Fingers lack lateral dermal fringe. Rudimentary webbing on fingers. Toes medially webbed. Tarsal fold and calcar absent. Snout, interorbital area, side of head, dorsum, upper and lower flank, dorsal part of forelimb, thigh, shank and foot with very fine, horn-like spinules. Throat, chest, belly and under-thigh granular.

Colour in life: dorsal colour very variable (see Figs. 115, 116): e.g. pale green, pale brown with ashy spots, light bluish. Venter bright yellow. Fingers yellow on both dorsal and ventral sides. Toes 1–3 yellow dorsally; foot yellow.

Colour in alcohol: (based on holotype, WHT 3507) head and body dorsally ashy-brown with a few dark-brown spots. Flank ashy brown. Inguinal zone pale yellow with brown pigments. Loreal and tympanic regions ashy brown. Upper lip yellow. Dorsal and lateral parts of forelimb, dorsal part of thigh, shank and foot ashy brown. Anterior side of thigh yellow; the posterior side brown. Throat, margin of throat, vocal sacs, chest, belly and underside of thigh yellow, webbing yellow with brown pigments.

Measurements of holotype: (WHT 3507, in mm), DBE, 7.2; DFE, 4.3; DL, 0.9; DW, 1.2; ED, 2.6; EN, 2.1; ES, 3.5; FEL, 9.1; FL I, 1.4; FL II, 2.0; FL III, 3.1, FL IV, 2.5; FOL, 13.7; HL, 7.8; HW, 8.0; IML, 1.0; IN, 2.0; IO, 2.7; LAL, 4.1; MBE, 2.8; MFE, 5.0; MN, 6.8; NS, 1.4; PAL, 6.0; SVL, 18.9; TBL, 10.2; TLI, 1.5; TL II, 1.9; TL III, 2.9; TL IV, 4.5, TL V, 3.1, UAW, 3.9; UEW, 1.6.

Etymology. – The species-name is a patronym (in the genitive singular) honouring Mr Asanka Goonewardena, who has for many years generously supported this research, and also the development of WHT’s Agra Arboretum, the type locality of *Philautus asankai*.

Remarks. – *Philautus asankai* (Figs. 114–116) resembles *P. pleurotaenia* (Figs. 70–73; for diagnosis from which, see Remarks under *P. pleurotaenia*), *P. hoipolloi* (Figs. 118–121) and *P. auratus* (Figs. 145–147). It differs from *P. hoipolloi* however, by having lingual papilla absent, dermal fringe on fingers absent and internarial region flat, vs. lingual papilla present, dermal fringe on fingers present, and internarial region concave. It may also be distinguished from *P. auratus* by having snout angle category 6, dermal fringe on fingers absent, horny spinules present on dorsum in males, dorsum glandular and warty, and head dorsally convex, vs. snout angle category 7, dermal fringe on fingers present, horny spinules on dorsum absent in males (dorsum shagreened) and head dorsally flat, in *P. auratus*.

Distribution. – *Philautus asankai* is restricted to the central hill country, between elevations of 810–1830 m (Fig. 117). It is a habitat generalist that occurs in open canopy (including anthropogenic) habitats. The species is however, fairly cryptic: calling adult males are most often seen at night perched high on shrubs, 1.5–3 m above ground. In Moray Estate, these frogs occur on shrubs bordering the tea plantation.

Conservation status. – Extent of Occurrence: 250 km² — Moray, Agra Bopath, Dayagama. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus hoipolloi*, new species**

(Figs. 118–121; Table 8)

Material examined. – Holotype: mature male, 22.0 mm SVL, WHT 2673, Haycock (Hiniduma), alt. 660 m (06°20'N, 80°18'E), coll. 15 Sep.1999.

Paratypes: males, 23.3 mm SVL, WHT 2674; 22.6 mm SVL, WHT 2675, same data as holotype; 26.5 mm SVL, WHT 2405; 26.8 mm SVL, WHT 2406; 24.6 mm SVL, WHT 2407; 27.3 mm SVL, WHT 2408; 24.2 mm SVL, WHT 2409, Kahaduwatta (Galle), alt. 15 m (06°04'N, 80°12'E), coll. 29 Dec.1998. Males, 25.1 mm SVL, WHT 3196; 24.5 mm SVL, WHT 3197; 26.4 mm SVL, WHT 3198; 24.8 mm SVL, WHT 3199; 24.9 mm SVL, WHT 3200, Udugama (Galle), alt. 30 m (06°14'N, 80°20'E), coll. 22 Oct.2000. Female, 28.6 mm SVL, WHT 3201, Kodagoda (Galle), alt. 45 m (06°02'N, 80°23'E), coll. 14 May 2001.

Diagnosis. – (See Figs. 118–121). Mature individuals 22.0–28.6 mm SVL. Tympanum distinct. Snout angle category 7. Dorsal surface of body shagreened. Canthal edges rounded. Vomerine teeth absent. Supratympanic fold feebly defined. Supernumerary tubercles present on palm. Toes medially webbed. Nuptial pads absent on male. Lingual papilla present. Belly granular. Dorsal colour variable in life.

Description. – (See Figs. 118–121). Mature males 22.0–27.3 mm SVL, mature females 28.6 mm. Body stout. Head dorsally convex. Snout blunt in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges rounded. Loreal region flat. Interorbital space flat. Internarial space concave. Tympanum distinct, oval or rounded, oblique. Pineal ocellus absent. Vomerine ridge absent. Tongue with or without a rounded papilla. Supratympanic fold not prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe and rudimentary webbing present on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head and dorsum smooth or shagreened. Flank smooth or granular. Dorsal part of forelimb, thigh, shank and foot smooth. Throat and chest shagreened. Belly and under-thigh granular. Vocal slits present in males, but nuptial pad absent.

Colour in life: The living coloration of this species is extremely diverse— see Figs. 118–120.

Colour in alcohol: (based on holotype, WHT 2673), dorsal part of head and body grey with dark-brown patches. Upper flank yellow with dark-brown patches. Lower flank yellow.



Fig. 118. *Philautus hoipolloi*, new species, paratype, male, WHT 2405; 26.5 mm SVL.



Fig. 119. *Philautus hoipolloi*, new species, holotype, male, WHT 2673, 22.0 mm SVL.



Fig. 120. *Philautus hoipolloi*, new species, paratype, male, WHT 2407, 24.6 mm SVL.

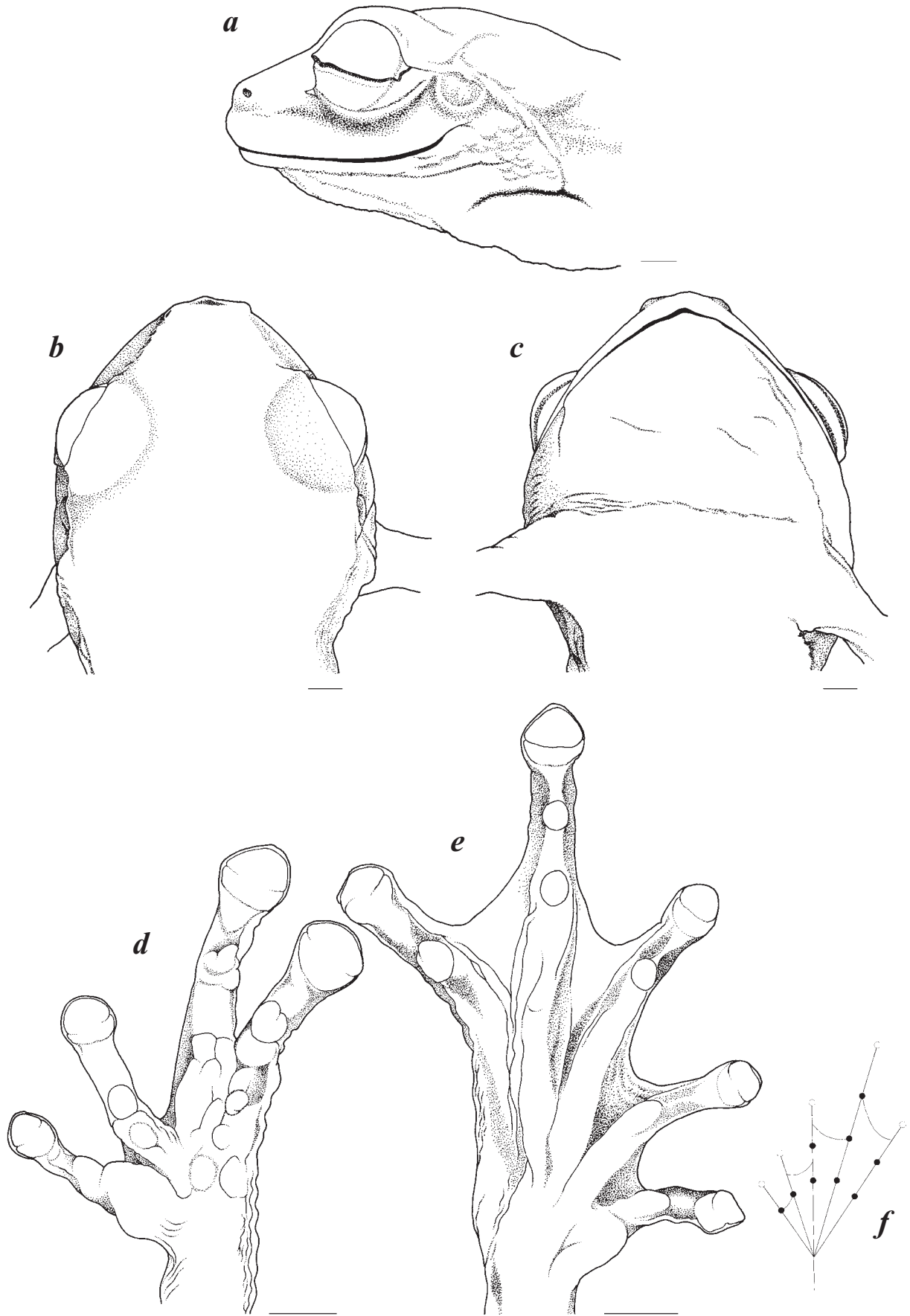


Fig. 121. *Philautus hoipolloi*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 2673, 22.0 mm SVL. Scale bars: 1 mm.

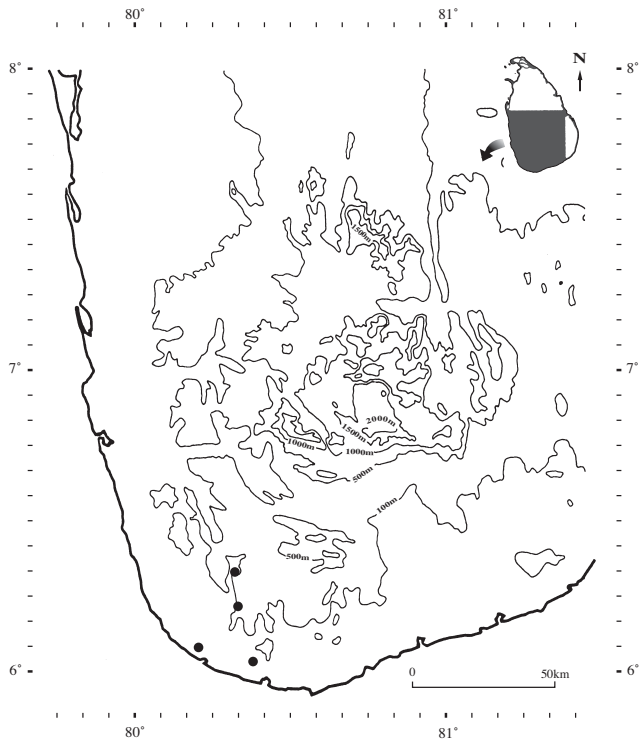


Fig. 122. Distribution of *Philautus hoipolloi*, new species, in Sri Lanka.

Inguinal zone yellow with dark-brown patches and pigments. A pale-yellow patch with a dark-brown outline at centre of loreal region. Upper loreal dark brown. Tympanum ash and dark brown. Upper lip pale yellow and dark brown. Dorsal and lateral parts of forelimb, dorsal part of thigh, shank and foot dark brown with darker crossbars and patches. Posterior thigh pale yellow. Throat, margins of throat, chest, belly and under-thigh pale yellow. Webbing yellow and brown.

Measurements of holotype: (WHT 2673, in mm), DBE, 8.3; DFE, 5.5; DL, 1.1; DW, 1.1; ED, 3.4; EN, 2.6; ES, 4.0; FEL, 11.3; FL I, 1.5; FL II, 1.9; FL III, 3.3, FL IV, 2.6; FOL, 14.6; HL, 9.1; HW, 9.1; IML, 1.2; IN, 2.4; IO, 3.0; LAL, 4.7; MBE, 3.4; MFE, 6.1; MN, 8.2; NS, 1.5; PAL, 6.0; SVL, 22.0; TBL, 11.6; TLI, 1.7; TL II, 1.7; TL III, 3.0; TL IV, 4.5, TL V, 3.1, TYD, 0.6; TYE, 1.1; UAW, 4.7; UEW, 2.2.

Etymology. – The species name is a reference to the Greek for ‘the many’ (applied here as a noun in apposition), now slang for ‘the common people’ — an allusion to the exclusively synanthropic distribution of this species.

Remarks. – *Philautus hoipolloi* (Figs. 118–121) resembles *P. pleurotaenia* (Figs. 70–73) and *P. asankai* (Figs. 114–116), for diagnoses from which, see Remarks under those species. It also resembles *P. auratus* (Figs. 145–147), from which it differs, however, lingual papilla present, horn-like spinules on males present, and head dorsally convex in lateral view, vs. lingual papilla absent, horn-like spinules on males absent, and head dorsally flat in lateral view, in *P. auratus*.

Distribution. – *Philautus hoipolloi* is widely distributed across the lowlands of the south-western wet zone, between

elevations of 15–684 m (Fig. 122), occurring in open habitats such as home gardens and forest edges. Most specimens were collected from coffee trees and overgrown tea bushes. Entirely nocturnal and cryptic, males perch from 1–3 m, on leaves. The species is common where it occurs.

Conservation status. – Extent of Occurrence: 300 km² — Haycock, Galle. Outcome: Least Concern. The almost exclusively synanthropic distribution of this species, the stability of its habitats, and its high population level, lead us to conclude that it is not immediately at risk.

***Philautus caeruleus*, new species**
(Figs. 123, 124; Table 5)

Material examined. – Holotype: mature male, 16.3 mm SVL, WHT 2514, Bogawantalawa–Balangoda road (near Udugama), alt. 810 m (06°44’N, 80°41’E), coll. 30 Aug. 1999.

Paratypes: female, 19.0 mm SVL, WHT 2511; male, 16.7 mm SVL, WHT 2512; male, 16.6 mm SVL, WHT 2513, data same as holotype. Female, 17.7 mm SVL, WHT 2101A; male, 17.8 mm SVL, WHT 2101B, Moray Estate, Rajamally, alt. 1370 m (06°48’N, 80°31’E), coll. 22 Aug. 1997.

Diagnosis. – (See Figs. 123, 124). Mature individuals 16.3–19.0 mm SVL. Tympanum discernible. Snout angle category 3. Dorsal surface of males with horn-like spinules; females with glandular warts. Supratympanic fold not prominent. Canthal edges sharp. Nuptial pad absent in males. An oval, depressed, lingual papilla present. Vomerine teeth absent. Calcar absent. Supernumerary tubercles present on palm. Toes medially webbed. Throat and chest granular in males; smooth in females. Belly granular. A dark-brown lateral stripe from tip of snout to mid-flank. In life, anterior and posterior surface of thigh in inguinal area blue.

Description. – (See Figs. 123, 124). Mature males 16.3–17.8 mm SVL; mature females 17.7–19.0 mm SVL. Body slender. Head dorsally flat. Snout obtusely pointed in lateral aspect, snout angle category 3 (angle of snout ~ 85°). Canthal edges sharp. Loreal region concave. Interorbital space flat. Internarial space flat or concave. Tympanum distinct, oval, vertically elongate. Pineal ocellus absent. Vomerine ridge absent. An oval, depressed lingual papilla present. Supratympanic fold not prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold and calcar absent. Snout, interorbital area, side of head, dorsum and upper flank with glandular warts and horn-like spinules (females lack horn-like spinules on dorsum). Lower flank granular in males. Dorsal part of forelimb, thigh, shank and foot smooth. Throat granular with scattered glandular warts. Chest, belly and underside of thigh granular in males. Throat and chest smooth in females. Inner vocal slits present in males; nuptial pad absent.

Colour in life: (Fig. 124), dorsal part of head and dorsum light brown with black, brown, white and black spots and blotches. Inguinal zone and thigh blue. Loreal region reddish brown. Lower eye and upper lip reddish brown and dark brown.

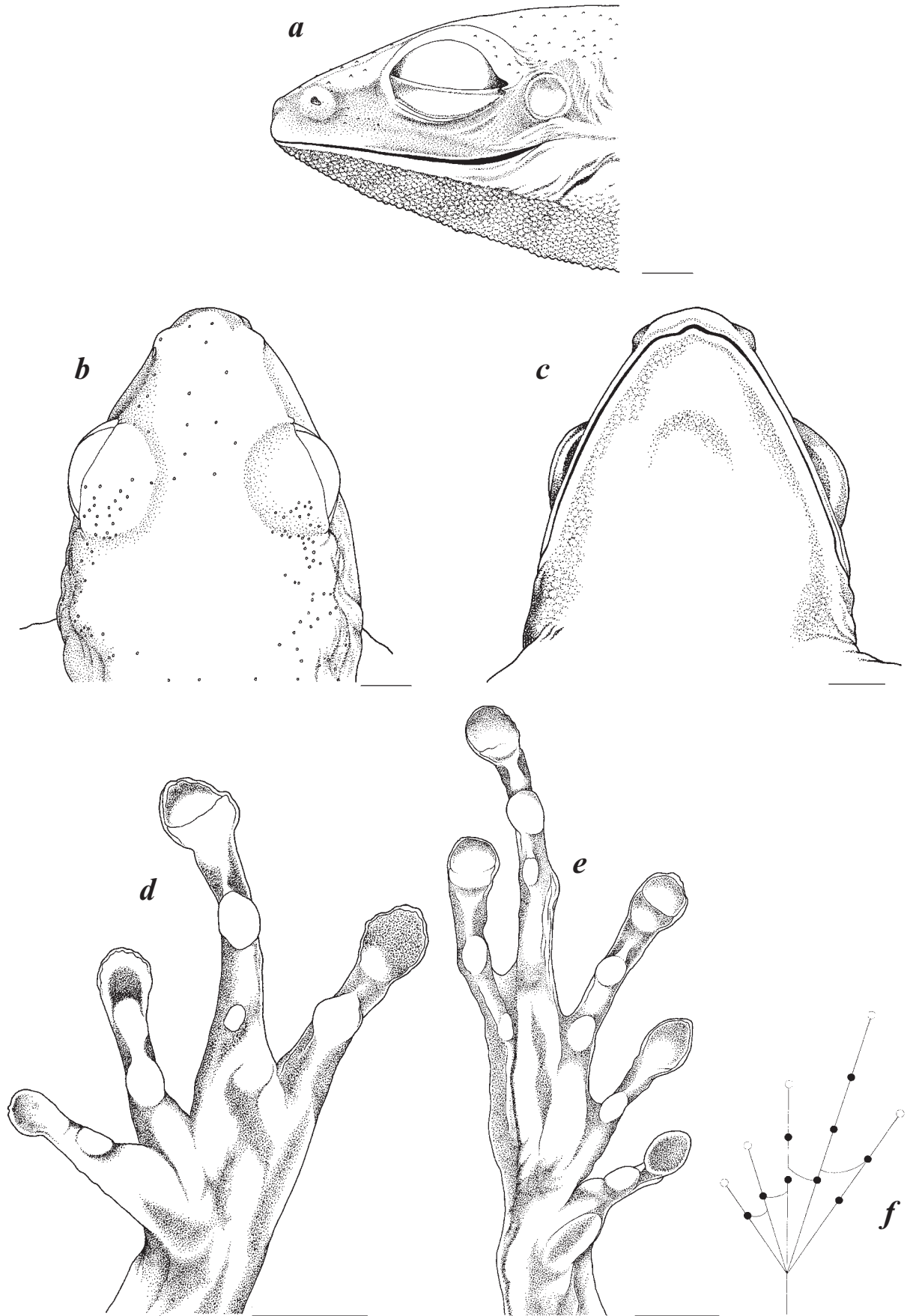


Fig. 123. *Philautus caeruleus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 2514, 16.3 mm SVL. Scale bars: 1 mm.



Fig. 124. *Philautus caeruleus*, new species, paratype, female, WHT 2101A, 17.7 mm SVL.

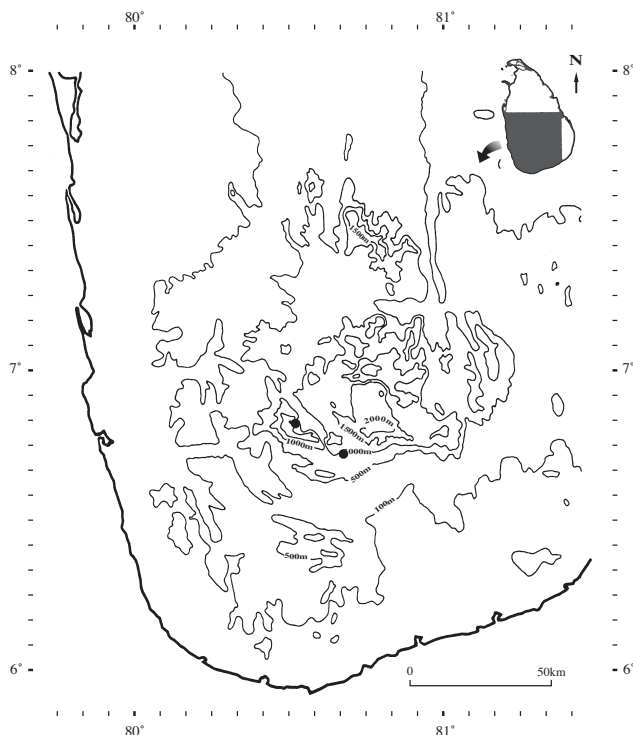


Fig. 125. Distribution of *Philautus caeruleus*, new species, in Sri Lanka.

Tympanum dark brown. A dark lateral band present, from back of eye to inguinal zone. Dark-brown spots on a reddish-brown background around gape. Limbs dorsally reddish light-brown with reddish dark-brown crossbars. Area around vent black. Discs dorsally brown. Throat, chest, abdomen and ventral side of limbs marbled in black, white and light brown. Background colour of throat and chest reddish light-brown. Lower shank with blue patches. Palm and foot black.

Colour in alcohol: (based on paratype, WHT 2512), head dorsally ashy-brown. Body dorsally light brown with dark-brown patches. Upper flank light brown; lower flank light brown with dark-brown patches. Inguinal zone greyish-blue and dark brown. Loreal region dark brown. A dark band from back of eye to base of forearm. Upper half of tympanum dark brown; the lower half lighter. Upper lip light brown. Dorsal and lateral parts of forelimb light brown;

dorsal part of thigh and shank light brown with 4 dark transverse bands on each. Thigh laterally dark brown. Throat, chest and webbing ventrally light brown; margin of throat dark brown. Belly light brown with dark-brown patches. Ventral part of thigh light brown.

Measurements of holotype: (WHT 2514, in mm), DBE, 5.3; DFE, 3.6; DL, 0.7; DW, 0.7; ED, 2.4; EN, 1.6; ES, 2.7; FEL, 7.9; FLI, 1.0; FLII, 1.5; FLIII, 2.5; FLIV, 1.9; FOL, 11.7; HL, 6.9; HW, 5.8; IML, 0.8; IN, 2.2; IO, 2.1; LAL, 3.8; MBE, 2.6; MFE, 4.5; MN, 6.0; NS, 1.2; PAL, 4.3; SVL, 16.3; TBL, 8.4; TLI, 1.3; TLII, 1.6; TLIII, 2.5; TLIV, 3.8; TLV, 2.5; TYD, 0.6; TYE, 1.0; UAW, 3.8; UEW, 1.4.

Etymology. – The species-epithet *caeruleus* (Latin for sky-blue) is a reference to the distinctive blue coloration of the posterior thigh and inguinal region of this species.

Remarks. – *Philautus caeruleus* resembles *P. oxyrhynchus* and *P. hypomelas* (for diagnoses from which, see Remarks under those species accounts).

Distribution. – *Philautus caeruleus* is restricted to the central hill country, between elevations of 810–1370 m (Fig. 125). It is a habitat generalist, observed in closed-canopy habitats, both in disturbed and undisturbed forests. Adults are strictly nocturnal; males were observed to perch on branches of low shrubs 20–50 cm above ground level. The range of this species is fairly restricted and it is nowhere common.

Conservation status. – Extent of Occurrence: 150 km² — Peak Wilderness. Outcome: Endangered (criteria B1 a, b (iii)).

***Philautus lunatus*, new species**
(Figs. 126, 127; Table 10)

Material examined. – Holotype: mature female, 40.9 mm SVL, WHT 3283, Handapan Ella Plains (near Suriyakanda), alt. 1270 m (06°26'42"N, 080°36'35"E), coll. 15 Jul.2001.

Diagnosis. – (See Figs. 126, 127). Mature female 40.9 mm SVL. Tympanum discernible. Snout angle category 7. Dorsal surface smooth. Supratympanic fold distinct. Canthal edges rounded. Lingual papilla present. Calcar present. Vomerine teeth present. Supernumerary tubercles present on palm and foot. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Figs. 126, 127). Mature female (holotype) 40.9 mm SVL. Body elongate. Head dorsally flat. Snout oval in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges rounded. Loreal region concave. Interorbital and internarial spaces concave. Tympanum distinct, oval, oblique. Pineal ocellus absent. Vomerine ridge present, bearing about 4 small teeth, angled at about 45° relative to body axis, shorter than distance between them. Tongue with a conical papilla. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Fingers with a lateral dermal fringe. Toes webbed. Tarsal fold absent. Calcar present. Snout, interorbital area, side of head and dorsum smooth. Upper flank with glandular warts. Lower flank granular. Dorsal part of forelimb and thigh smooth. Shank



Fig. 126. *Philautus lunatus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of right foot; *f*, dorsal aspect of tongue (arrow indicates lingual papilla); and *g*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, WHT 3283, 40.9 mm SVL. Scale bars: 1 mm.



Fig. 127. *Philautus lunatus*, new species, holotype, female, WHT 3283, 40.9 mm SVL.

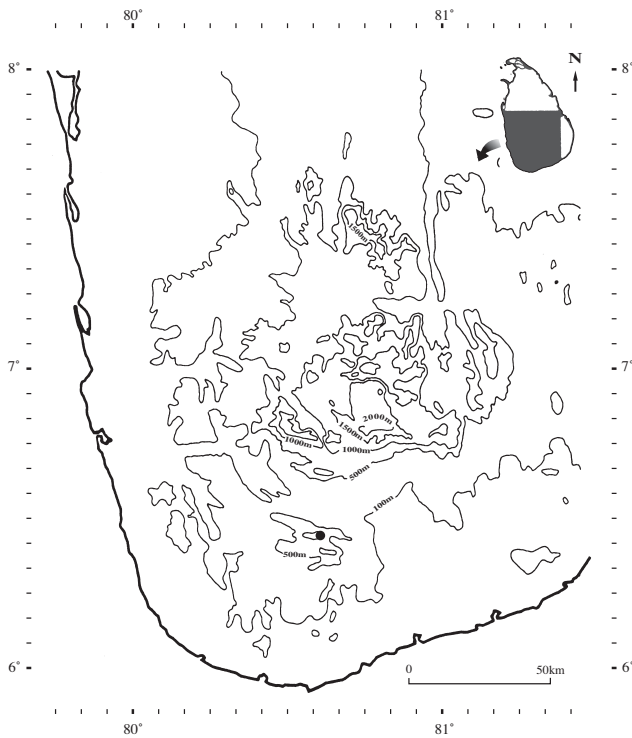


Fig. 128. Distribution of *Philautus lunatus*, new species, in Sri Lanka.

and foot smooth with a few scattered glandular warts. Throat, chest, belly and underthigh smooth.

Colour in life: (Fig. 127), background colour of mid-dorsum reddish brown. Interorbital bar dark brown with black spots. Dorsolateral area of body ashy brown with black patches. Two dark-brown bands present on dorsum. Flank pale-ashy brown with dark-brown patches. Inguinal zone dark brown. Canthal edges, lower eye, lower area of supratympanic fold and tympanum dark brown. Loreal region, temporal region and lower area of tympanum reddish-brown. Limbs dorsally ashy-brown with red and dark-brown crossbars. Chin and chest white with dark-brown patches. Abdomen ashy-white. Limbs ventrally dark brown with ashy spots. Toe-tips dark ash; fingertips dorsally ashy yellow.

Colour in alcohol: (based on holotype, WHT 3283) dorsal part of head and body brown. Interorbital bar dark-brown. Mid-dorsum pale brown. Dorso-lateral area black. Upper flank dark brown with black spots; lower flank pale yellow with black and brown patches. Inguinal zone brown and pale yellow. Loreal region brown. Tympanic region pale yellow and brown. Tympanum black, its lower rim pale yellow. Upper lip dark brown with pale-yellow patches. Dorsal and lateral area of forelimbs brown and pale yellow with dark-brown crossbars. Dorsal part of thigh and shank brown with dark crossbars. Dorsal part of foot brown with black patches. Posterior part of thigh brown with pale yellow and black patches. Anterior thigh brown. Throat pale yellow with dark-brown patches. Margins of throat pale yellow with dark-brown bands. Chest pale yellow with dark-brown spots. Ventral part of thigh brown with pale-yellow spots. Webbing dark brown.

Measurements of holotype: (WHT 3283, in mm), DBE, 14.3; DFE, 8.1; DL, 1.4; DW, 2.5; ED, 5.7; EN, 3.7; ES, 6.3; FEL, 20.4; FL I, 3.7; FL II, 4.3; FL III, 7.5; FL IV, 6.6; FOL, 30.7; HL, 16.4; HW, 16.7; IML, 2.2; IN, 3.7; IO, 4.0; LAL, 8.8; MBE, 6.4; MFE, 11.8; MN, 14.3; NS, 2.5; PAL, 13.3; SVL, 40.9; TBL, 22.2; TL I, 3.5; TL II, 4.0; TL III, 6.6; TL IV, 10.1, TL V, 7.5, TYD, 2.0; TYE, 2.1; UAW, 7.6; UEW, 3.9.

Etymology. – The species-epithet *lunatus* derives from *lunar*, Latin for moon; an allusion to the type locality (Sinhala, ‘Handapan Ella’ = moonlit plains).

Remarks. – *Philautus lunatus* (Figs. 126, 127) resembles *P. ocellaris* (Figs. 149–151), from which it differs by having lingual papilla present, dermal fringe on fingers present, dorsum smooth and crossbars on limbs present, vs. lingual papilla absent, dermal fringe on fingers absent, dorsum shagreened and crossbars on limbs absent, in *P. ocellaris*.

Distribution. – *Philautus lunatus* was recorded only from the type locality, Handapan Ella Plains (near Suriyakanda), in the eastern part of the Sinharaja World Heritage Site, alt. 1270 m (06°26’42”N, 80°36’35”E; see Fig. 128), to which it is presumed to be restricted. The species is known only from the holotype, which was collected while perched on the leaf of a cardamom plant, about 1 m above ground level, at ~20.00 hrs.

Conservation status. – Extent of Occurrence: 10 km² — Handapan Ella Plains. Outcome: Critically Endangered (criteria B1 a, b (iii)). The habitat of this species is threatened by illegal gem mining and inadequate protection.

***Philautus papillosus*, new species**
(Figs. 129, 130; Table 3)

Material examined. – Holotype: mature male, 40.0 mm SVL, WHT 3284, Handapan Ella Plains (near Rakwana), alt. 1270 m (06°26’42”N, 80°36’35”E), coll. 15 Jul.2001.

Diagnosis. – (See Figs. 129, 130). Mature male (holotype) 40.0 mm SVL. Tympanum discernible. Snout angle category 8.

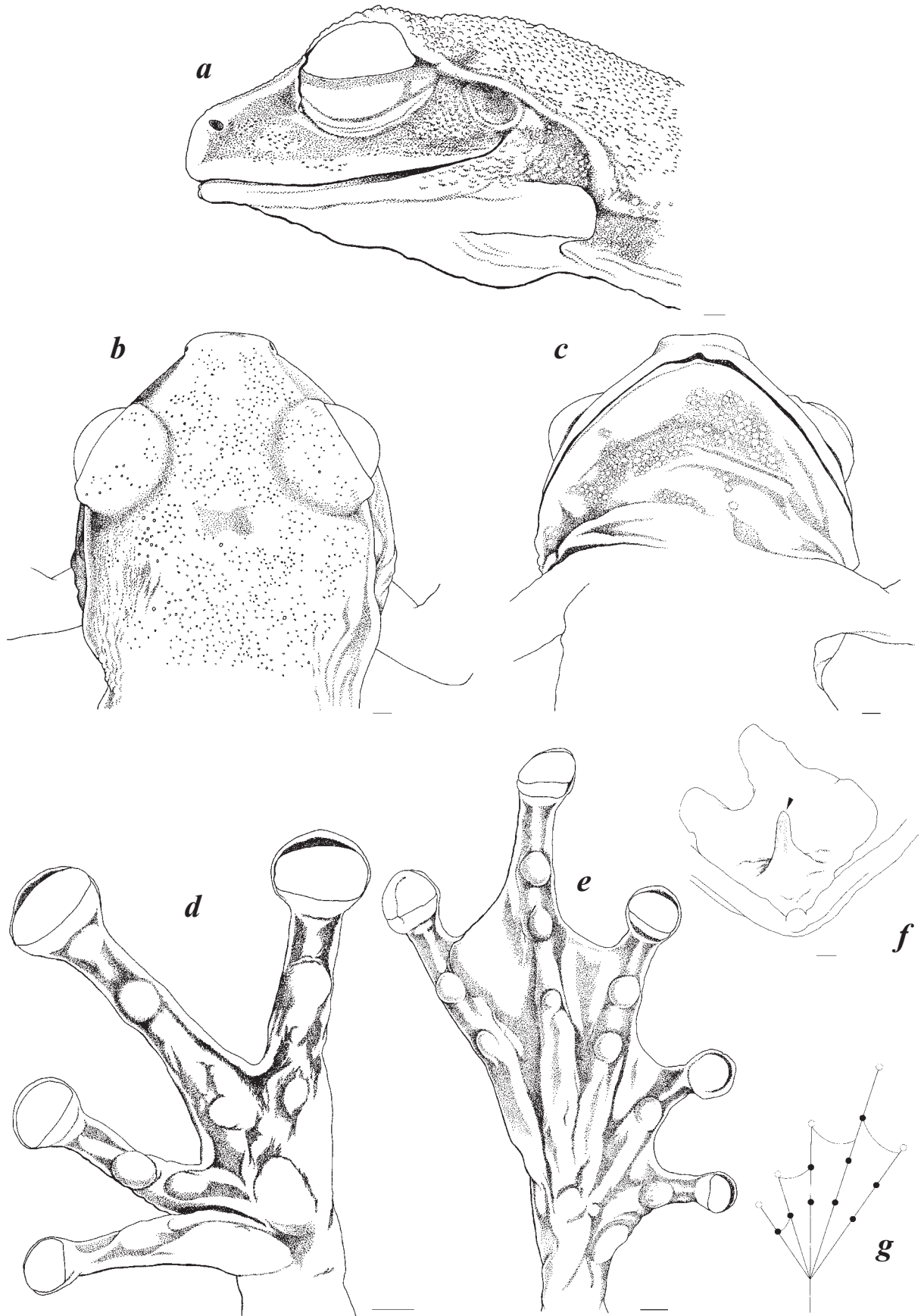


Fig. 129. *Philautus papillosus*, new species: *a–c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of right foot; *f*, dorsal aspect of tongue (arrow indicates lingual papilla); and *g*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3284, 40.0 mm SVL. Scale bars: 1 mm.

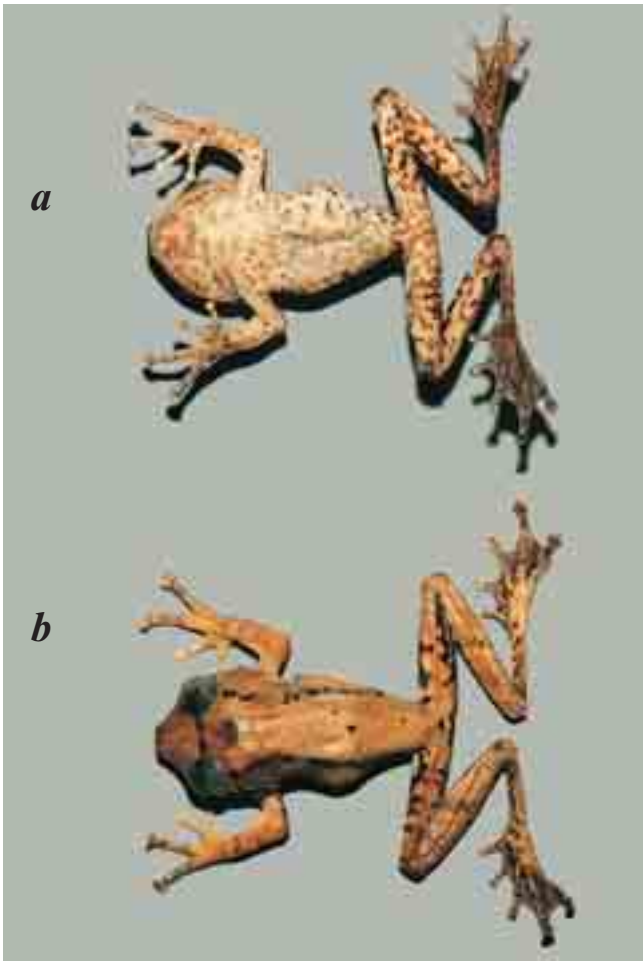


Fig. 130. Dorsal aspect of *Philautus papillosus*, new species, (preserved): *a*, ventral aspect; *b*, dorsal aspect of holotype, male, WHT 3284, 40.0 mm SVL.



Fig. 131. Distribution of *Philautus papillosus*, new species, in Sri Lanka.

Dorsal surface glandular and warty. Supratympanic fold distinct. Canthal edges sharp. Nuptial pad present. An large, pointed papilla on tongue. Calcar present. Supernumerary tubercles present on palm. Toes 2 and 3 fully webbed. Throat, chest and belly granular.

Description. – (See Figs. 129, 130). Mature male 40.0 mm SVL. Body elongate. Head dorsally convex. Snout truncate in lateral aspect, snout angle category 8 (angle of snout ~ 110°). Canthal edges sharp. Loreal region concave. Interorbital space concave; inter-nasal space flat. Tympanum distinct, oval, oblique. Pineal ocellus absent. Vomerine ridge present, with about 7 small teeth, angled at about 45° relative to body axis, shorter than distance between them. A large, pointed papilla on tongue. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Toes 2, 3 fully webbed. Tarsal fold absent. Calcar present. Snout, interorbital area, side of head, dorsum and upper flank with glandular warts; lower flank granular. Dorsal part of forelimb, thigh, shank and foot with glandular warts. Throat, chest, belly and underside of thigh granular. Inner vocal slits present. Nuptial pad yellow; nuptial pad oval.

Colour in life: head and body dorsally brown. A narrow, black interorbital bar. Two black dorsolateral bands. Flank orangish-brown with black spots. Chin and throat pale ashy-yellow with indistinct brown patches. Abdomen brownish pale-yellow with black spots. Thigh orangish-brown with black reticulation. Limbs ventrally brown with black spots. Palm and fingers ventrally brown. Foot, foot and toes ventrally dark brown.

Colour in alcohol: (based on holotype, WHT 3284) head and body dorsally light brown (Fig. 130). A narrow, black, interorbital bar. Two black dorsolateral bands. Loreal region ashy-brown to light brown. Canthal edges, tympanic region and tympanum light brown. Lower supratympanic fold black. Upper lip yellow, with black pigments. Flank yellow, with black dots. Dorsal and lateral part of forelimb, dorsal part of thigh, dorsal part of shank and dorsal part of foot light brown with ash and black crossbars. Posterior thigh light brown with black reticulation. Throat and margin of throat yellow with dark-brown pigments. Chest, belly and underside of thigh yellow with black dots. Webbing dark brown.

Measurements of holotype: (WHT 3284, in mm), DBE, 15.9; DFE, 10.1; DL, 1.9; DW, 3.0; ED, 6.0; EN, 4.4; ES, 7.4; FEL, 20.7; FL I, 3.7; FL II, 4.3; FL III, 7.8, FL IV, 7.0; FOL, 28.9; HL, 16.8; HW, 17.4; IML, 1.8; IN, 4.2; IO, 5.1; LAL, 8.4; MBE, 6.7; MFE, 11.0; MN, 14.8; NS, 3.1; PAL, 13.2; SVL, 40.0; TBL, 22.0; TL I, 3.5; TL II, 4.1; TL III, 6.5; TL IV, 9.6, TL V, 7.7, TYD, 2.0; TYE, 2.2; UAW, 8.5; UEW, 4.1.

Etymology. – The species epithet is a reference to the exceptionally large lingual papilla in this species.

Remarks. – *Philautus papillosus* resembles *P. reticulatus* (for diagnosis from which, see Remarks under *P. reticulatus*).

Distribution. – *Philautus papillosus* is known only from the type locality, Handapan Ella Plains (near Rakwana), alt. 1270 m (06°26'42"N, 80°36'35"E, Fig. 131). The type specimen was collected from a branch about 2 m above ground level, in a cardamom plantation. For the present, the species is known only from the holotype.

Conservation status. – Extent of Occurrence: 10 km² — Handapan Ella Plains. Outcome: Critically Endangered (criteria B1 a, b (iii)). The habitat of this species is threatened by illegal gem mining and inadequate protection from land-use change.

Philautus procax, new species

(Figs. 132, 134; Table 9)

Material examined. – Holotype: mature male, WHT 3279, 26.8 mm SVL, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 14 Aug.2000.

Paratypes: 2 ex, males, 25.7 mm SVL, WHT 2786; 26.6 mm SVL, WHT 2787, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 24 Jul.1999. 4 ex. males, 26.3 mm SVL, WHT 3277; 26.1 mm SVL, WHT 3278; 25.8 mm SVL, WHT 3280; 25.1 mm SVL, WHT 3281, data same as holotype.

Diagnosis. – (See Figs. 132, 134). Mature males 25.1–26.8 mm SVL. Tympanum discernible. Snout angle category 5. Dorsal surface with horn-like spinules in males, smooth in females. Supratympanic fold distinct. Canthal edges rounded. Nuptial pad absent in males. Lingual papilla present, Calcar absent. Vomerine teeth present. Supernumerary tubercles present on palm. Toes medially webbed; fine granules on throat and chest. Belly granular. A distinct white patch present between lower margin of eye and upper lip.

Description. – (See Figs. 132, 134). Mature males 25.1–26.8 mm SVL. Body slender. Head concave above. Snout angle category 5 (angle of snout ~ 98°); pointed or oval in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital space flat; internarial space concave. Tympanum distinct, oval, vertical. Pineal ocellus absent. Vomerine ridge present, with about 4 small teeth, angled at about 45° relative to body axis, shorter than distance between them. A conical lingual papilla present. Supratympanic fold distinct. A lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Snout, interorbital area and side of head smooth. Dorsum with horn-like spinules (spinules absent in females). Upper flank smooth; lower flank granular. Dorsal part of forelimb, thigh, shank and foot smooth. Fine granules on throat and chest. Belly and underside of thigh granular. Males with inner vocal slits. Mature males with yellow dermal glands on inner side of prepollex. Nuptial pad absent.

Colour in life: (Fig. 132) dorsally pale brown with dark-brown markings. A yellowish or pale red mid-dorsal stripe from tip of snout to vent in some specimens. Loreal and temporal area dark brown. A yellow infraorbital patch. Edge of lower lip bright yellow. Chin and chest pale brownish yellow. Abdomen bright yellow (the colours of the dorsum and venter meet in a



Fig. 132. *Philautus procax*, new species, holotype, male, WHT 3279, 26.8 mm SVL.

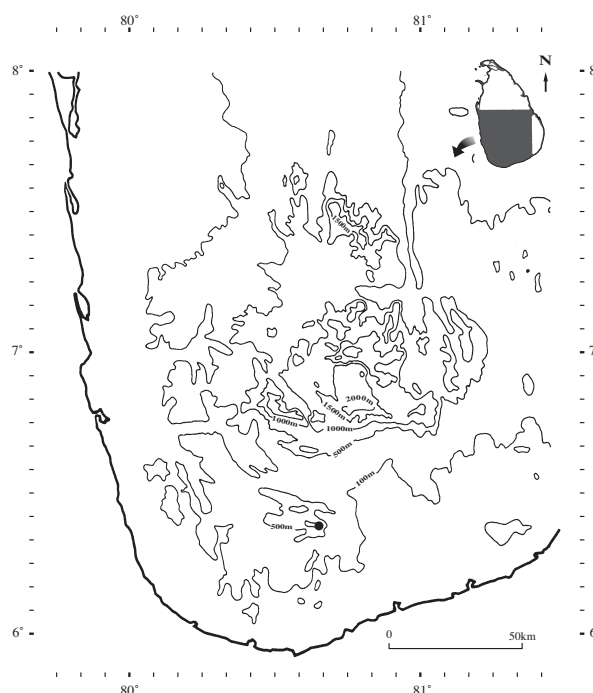


Fig. 133. Distribution of *Philautus procax*, new species, in Sri Lanka.

well-defined zone on the flank). Limbs dorsally dark brown. Anterior and posterior thigh dark brown. Discs dorsally red or reddish-orange.

Colour in alcohol: (based on holotype, WHT 3279), dorsum ashy brown. Loreal region, tympanic region, tympanum and upper lip brown. A white patch on infraorbital area. Upper flank ashy brown; lower flank yellow. Inguinal zone ashy-brown. Dorsal and lateral parts of forelimb dark brown with dark crossbars. Dorsal part of thigh, shank, foot and posterior part of thigh brown. Throat, margins of throat, chest, belly and thigh yellow with few brown patches and pigments. Webbing ashy brown.

Measurements of holotype: (WHT 3279, in mm), DBE, 9.7; DFE, 5.8; DL, 1.4; DW, 1.7; ED, 4.0; EN, 2.8; ES, 4.6; FEL, 13.2; FL I, 2.4; FL II, 2.9; FL III, 5.0; FL IV, 4.1; FOL, 19.0; HL, 11.0; HW, 10.0; IML, 1.3; IN, 2.6; IO, 2.8; LAL, 4.8; MBE, 4.3; MFE,

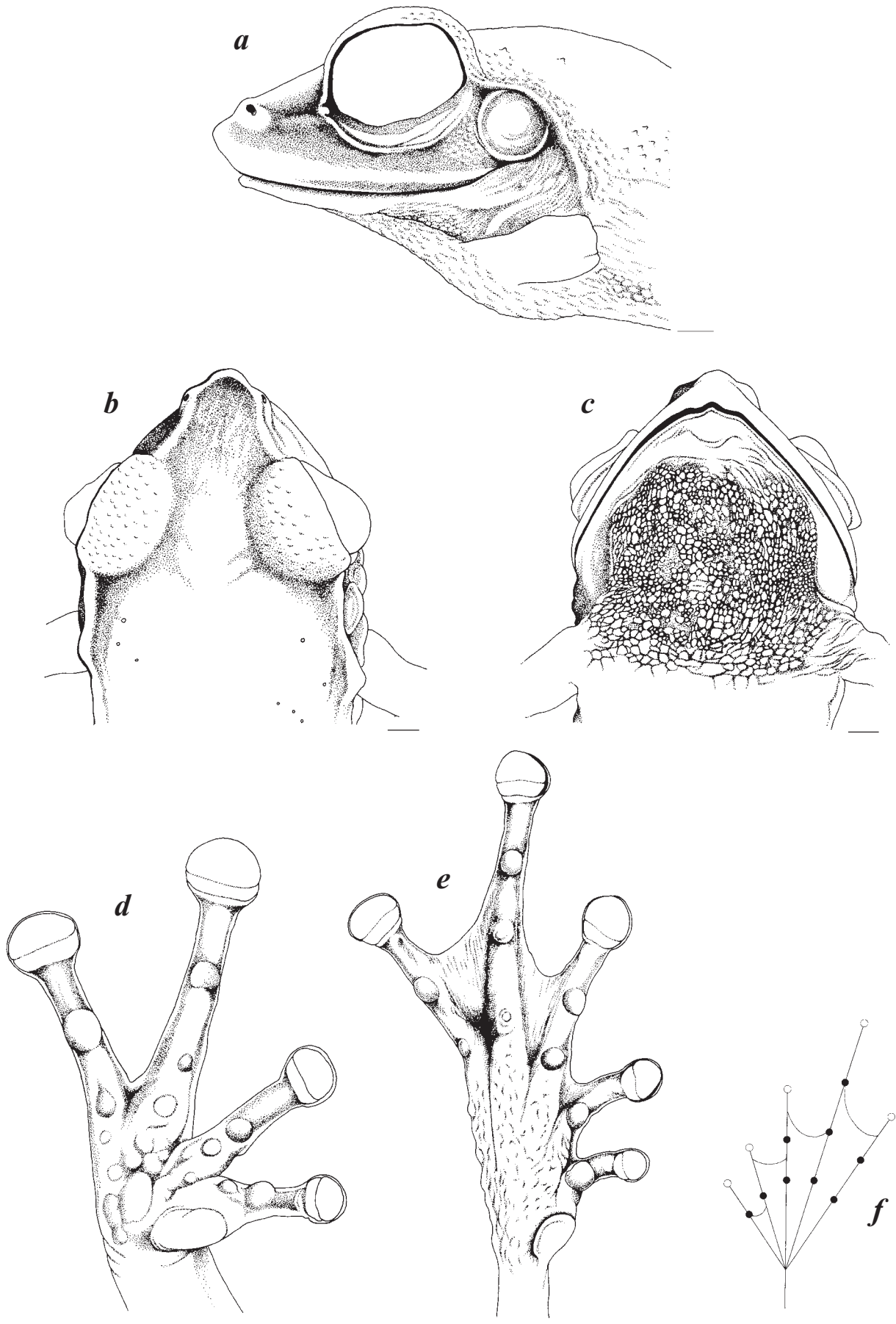


Fig. 134. *Philautus procax*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3279, 26.8 mm SVL. Scale bars: 1 mm.

7.0; MN, 9.5; NS, 2.0; PAL, 8.7; SVL, 26.8; TBL, 13.7; TLI, 2.2; TL II, 2.8; TL III, 4.6; TL IV, 7.4, TL V, 4.7, TYD, 1.2; TYE, 1.6; UAW, 4.5; UEW, 2.7.

Etymology. – The species name *procax* (Latin, ‘audacious, cheeky’) is a reference to the marking on the cheek of this species.

Remarks. – *Philautus procax* (Figs. 132, 134) resembles *P. abundus* (Figs. 135–138) and *Philautus silvaticus* (Figs. 156–158). It differs from *P. abundus* by having snout angle category 5, webbing on fingers absent, and toes medially webbed, vs. snout angle category 6, webbing on fingers present and toes fully webbed, in *P. abundus*. It may be distinguished from *P. silvaticus* by having canthal edges rounded, horny spinules on dorsum present in males, and internarial area concave, vs. canthal edges sharp, horny spinules on dorsum absent in males and internarial area flat, in *P. silvaticus*.

Distribution. – *Philautus procax* is restricted to the Rakwana Hills (altitude: 1060 m, Fig. 133). It is a habitat specialist, found near streams and marshy areas in closed-canopy cloud forest, including forests disturbed by cardamom plantations. At night, males perch up to about 2 m above ground, on leaves, from which they vocalize.

Conservation status. – Extent of Occurrence: 15 km² — Morningside. Outcome: Critically Endangered (criteria B1, a, b (iii)). The restricted habitat of this species is threatened by cardamom cultivation and illegal gem mining.

Philautus abundus, new species

(Figs. 135–138, Table 9)

Material examined. – Holotype: mature male, 28.3 mm SVL, WHT 3006, Labugama Forest Reserve, Labugama, alt. 78 m (06°51'71"N, 80°10'43"E), coll. 11 Sep.2000.

Paratypes: 3 ex., males, 29.4 mm SVL, WHT 3496; 27.2 mm SVL, WHT 2303; female, 37.0 mm SVL, WHT 3494, Dediyaigala Forest Reserve, Akuressa, alt. 150 m (06°10'N, 80°26'E), coll. 17 Oct.1998. Females, 25.4 mm SVL, WHT 1711, 35.1 mm SVL, WHT 3495, Kanneliya (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 27 Apr.1998. 3 ex. female, 28.1 mm SVL, WHT 3457; male, 29.2 mm SVL, WHT 3459; male, 31.0 mm SVL, WHT 2302, Dediyaigala Forest Reserve, Akuressa, alt. 150 m (06°10'N, 80°26'E), coll. 17 Oct.1998. Male, 30.2 mm SVL, WHT 3455, Kanneliya (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 20 Oct.1998. Male, 27.6 mm SVL, WHT 3456, Kanneliya (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 27 Apr.1998.

Diagnosis. – (See Figs. 135–138). Mature individuals are 25.4–37.0 mm SVL. Tympanum discernible. Snout angle category 6. Dorsal surface with horn-like spinules in males and smooth in females. Supratympanic fold distinct. Canthal edges rounded. Nuptial pad absent in males. Lingual papilla present. Calcar absent. Vomerine teeth present. Supernumerary tubercles present on palm. Fingers rudimentarily webbed. Toes fully webbed. Throat and chest finely granular, belly granular. A distinct white patch present between lower margin of eye and upper lip.

Description. – (See Figs. 135–138). Mature males 27.2–31.0 mm SVL; mature females 25.4–37.0 mm SVL. Body slender. Head concave above. Snout angle category 6 (angle of snout ~ 101°); pointed or oval in lateral aspect. Canthal edges rounded. Loreal region concave. Interorbital space flat; internarial space concave. Tympanum distinct, oval, vertical. Pineal ocellus absent. Vomerine ridge present, with about 4 small teeth, angled at about 45° relative to body axis, shorter than distance between them. A conical lingual papilla present. Supratympanic fold distinct. A lateral dermal fringe present on fingers; fingers rudimentarily webbed. Toes fully webbed. Tarsal fold absent. Snout, interorbital area and side of head smooth. Dorsum with horn-like spinules (spinules absent in females). Upper flank smooth; lower flank granular. Dorsal part of forelimb, thigh, shank and foot smooth. Fine granules on throat and chest. Belly and underside of thigh granular. Males with inner vocal slits. Mature males with yellow dermal glands on inner side of prepollex. Nuptial pad absent.

Colour in life: (Figs. 136–138) dorsally pale brown with dark-brown markings, with a light mid-dorsal stripe from tip of snout to vent in some specimens. Loreal and temporal area dark brown. A yellow infraorbital patch. Edge of lower lip yellow. Chin and chest pale brownish yellow. Abdomen light yellow (the colours of the dorsum and venter meet in a well-defined border on the flank). Limbs dorsally dark brown. Anterior and posterior thigh dark brown. Discs dorsally reddish-orange.

Colour in alcohol: (based on holotype, WHT 3006), dorsum ashy brown. Loreal region, tympanic region, tympanum and upper lip brown. A white infraorbital spot. Upper flank ashy brown; lower flank yellow. Inguinal zone ashy-brown. Dorsal and lateral parts of forelimb dark brown with dark crossbars. Dorsal part of thigh, shank, foot and posterior part of thigh brown. Throat, margins of throat, chest, belly and thigh yellow with few brown patches. Webbing ashy brown.

Measurements of holotype: (WHT 3006, in mm), DBE, 10.2; DFE, 5.8; DL, 1.2; DW, 1.3; ED, 4.4; EN, 2.9; ES, 4.7; FEL, 15.2; FL I, 2.2; FL II, 2.9; FL III, 5.7, FL IV, 4.4; FOL, 20.4; HL, 11.4; HW, 11.1; IML, 1.6; IN, 2.6; IO, 2.8; LAL, 6.1; MBE, 4.2; MFE, 7.3; MN, 9.8; NS, 1.8; PAL, 9.4; SVL, 28.3; TBL, 14.6; TLI, 2.1; TL II, 2.7; TL III, 4.6; TL IV, 7.4, TL V, 5.0, TYD, 1.0; TYE, 1.6; UAW, 5.3; UEW, 2.8.

Etymology. – The species epithet *abundus* (Latin, ‘abundant’) is a reference to the fact that this species occurs over a wide range in which it is relatively common.

Remarks. – *Philautus abundus* (Figs. 135–138) resembles *P. procax* (Figs. 132, 134; for diagnosis see Remarks under *P. procax*) and *P. silvaticus* (Figs. 156–158). It differs from *P. silvaticus* however, by having canthal edges rounded, snout angle category 6, webbing on fingers present, toes fully webbed and horn-like spinules present on dorsum in males, vs. canthal edges sharp, snout angle category 5, webbing on fingers absent, toes half webbed, horn-like spinules absent on dorsum in males, in *P. silvaticus*.

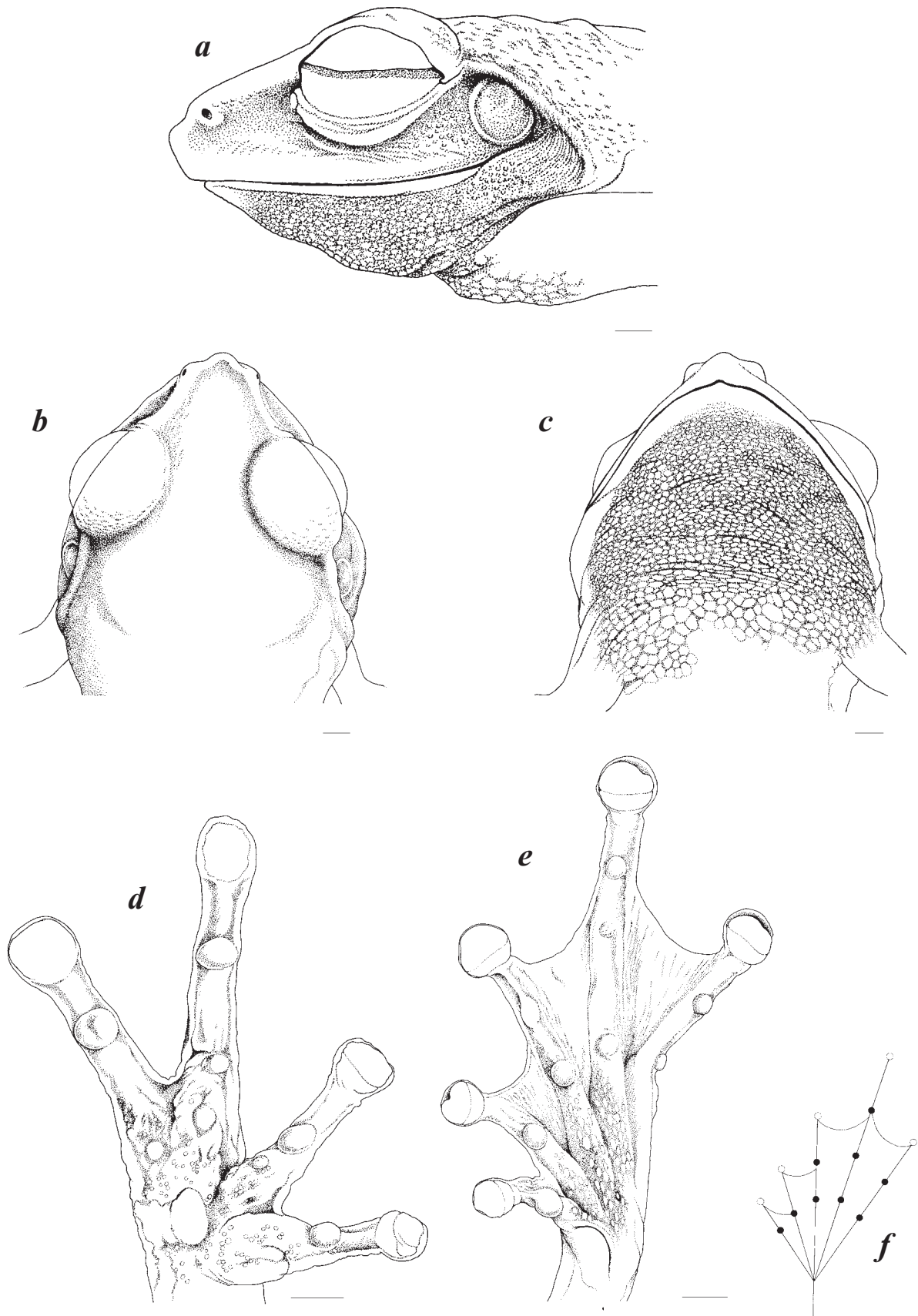


Fig. 135. *Philautus abundus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of left foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3006, 28.3 mm SVL. Scale bars: 1 mm.



Fig. 136. *Philautus abundus*, new species, from Kanneliya (Galle); not preserved.



Fig. 137. *Philautus abundus*, new species, paratype, male, WHT 2302, 31.0 mm SVL.



Fig. 138. *Philautus abundus*, new species, paratype, female, WHT 1711, 25.4 mm SVL.

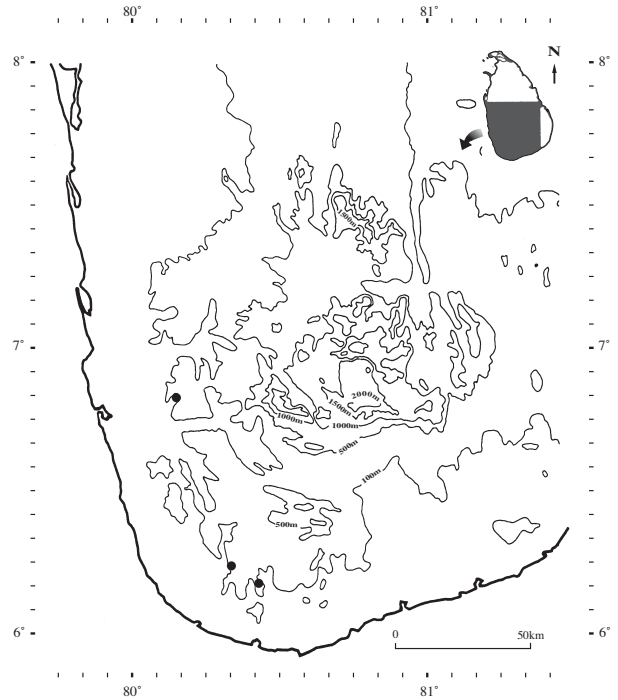


Fig. 139. Distribution of *Philautus abundus*, new species, in Sri Lanka.

Distribution. – *Philautus abundus* is a bush-dwelling species restricted to the southwest lowlands of Sri Lanka, being recorded between elevations of 78–150 m (Fig. 139). It is a habitat generalist, being found in both open and closed canopy forest, and also in disturbed habitats. At night, adult males perch ~ 1 m from ground.

Conservation status. – Extent of Occurrence: 1,500 km² — Labugama, Dediyaigala, Kanneliya. Outcome: Least Concern (its abundance, and the occurrence of this species over a wide range, in all forest types and also in anthropogenic habitats, leads us to conclude it is not immediately threatened).

***Philautus extirpo*, new species**
(Figs. 140, 141; Table 3)

Material examined. – Holotype: mature female, 43.5 mm SVL, NHMB 1236, ‘Ceylon’, Donated by Dr. F. Müller, 1882.

Diagnosis. – (See Figs. 140, 141). Mature female 43.5 mm SVL. Tympanum subdermal. Snout angle category 7. Dorsal surface glandular, with scattered warts. Supratympanic fold prominent. Canthal edges sharp. Calcar absent. Vomerine teeth absent. Lingual papilla present. Supernumerary tubercles present on palm. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Figs. 140, 141). Mature female holotype 43.5 mm. Body stout. Head flat. Snout blunt in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges sharp. Loreal region concave. Interorbital and internarial spaces concave. Tympanum not discernible (subdermal). Pineal ocellus absent. Vomerine ridge absent. A conical papilla present on tongue. Supratympanic fold prominent. Cephalic



Fig. 140. *Philautus extirpo*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, dorsal aspect of tongue (arrow indicates lingual papilla); and *e*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, NHMB 1236, 43.5 mm SVL. Scale bars: 1 mm.



Fig. 141. *Philautus extirpo*, new species, *a*, ventral aspect; *b*, dorsal aspect of holotype female of NHMB 1236, 43.5 mm SVL.

ridges absent. Skin on head not co-ossified with skull. A poorly-developed lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout shagreened, with a few glandular warts. Interorbital area and side of head shagreened. Dorsum shagreened, with a few glandular warts. Flank granular. Dorsal part of forelimb, thigh, shank and foot shagreened, with a few glandular warts. Throat and chest granular, smooth. Belly and underside of thigh granular, rough.

Colour in alcohol: (based on holotype NHMB 1236; Fig. 141), dorsal part of head and body light and dark brown with white patches. Both upper and lower flank, and inguinal zone dark brown with white patches. Loreal and tympanic regions dark brown. Upper lip light brown. Dorsal and lateral area of forelimb brown with dark brown crossbars; dorsal part of thigh and dorsal part of shank brown with dark brown crossbars, posterior part of thigh dark brown with white spots. Throat, margins of throat and chest light brown with dark brown patches; belly and ventral part of thigh dark brown with light brown patches; webbing light brown.

Measurements of holotype: (NHMB 1236, in mm), DBE, 14.2; DFE, 8.1; DL, 1.6; DW, 2.0; ED, 6.0; EN, 3.8; ES, 6.6; FEL, 19.6; FL I, 3.3; FL II, 4.2; FL III, 7.6; FL IV, 5.5; FOL, 27.4; HL, 16.5; HW, 17.0; IML, 1.7; IN, 4.3; IO, 5.0; LAL, 9.1; MBE, 6.4; MFE, 11.3; MN, 14.4; NS, 2.8; PAL, 12.2; SVL, 43.5; TBL, 19.6; TL I, 3.3; TL II, 3.8; TL III, 6.1; TL IV, 10.8, TL V, 6.5, TYD (tympanum

not discernible); TYE (tympanum not discernible); UAW, 7.3; UEW, 4.6.

Etymology. – The species name is a reference to the apparent extinction of this frog (Latin, *extirpo* = ‘destroy, eradicate’), which has not been recorded in Sri Lanka since its original collection ca. 1882.

Remarks. – *Philautus extirpo* resembles *P. schmarida*, *P. cavirostris* and *P. decoris*, for diagnoses from which, see Remarks in those species accounts.

Distribution. – Nothing is known of the distribution of this frog, except that it was collected in Ceylon.

Conservation status. – Extinct.

***Philautus sordidus*, new species**
(Figs. 142, 143; Table 5)

Material examined. – Holotype: mature female, 39.4 mm SVL, WHT 2379, Kanneliya Forest Reserve (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 18 Nov.1997.

Paratypes: 2 ex. males, 31.6 mm SVL, WHT 2380; 27.9 mm SVL, WHT 2381, Haycock (Hiniduma), alt. 660 m (06°20'N, 80°18'E), coll. 18 Nov.1996. Female, 37.4 mm SVL, WHT 2382, Haycock (Hiniduma), alt. 150 m (06°18'N, 80°19'E), coll. 01 Jul.1996. Male, 28.2 mm SVL, WHT 2383, Kanneliya Forest Reserve (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 18 Nov.1997. 10 ex. female, 35.4 mm SVL, WHT 2384; female, 35.3 mm SVL, WHT 2385; female, 34.2 mm SVL, WHT 2386; male, 28.7 mm SVL, WHT 2389; male, 28.2 mm SVL, WHT 2390; male, 30.1 mm SVL, WHT 2391; male, 30.7 mm SVL, WHT 2393; female, 34.6 mm SVL, WHT 2394; male, 28.4 mm SVL, WHT 2397; female, 22.2 mm SVL, WHT 2398, Kanneliya Forest Reserve (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 02 Mar.1996. 2 ex. males, 32.4 mm SVL, WHT 2387; 34.0 mm SVL, WHT 2396, Millawa Forest Reserve (near Morawaka), alt. 150 m (06°17'N, 80°28'E), coll. 1997. Female, 34.3 mm SVL, WHT 2388, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 22 Feb.1996. Female, 35.7 mm SVL, WHT 2392, Kanneliya Forest Reserve (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 09 Jan.1996. Male, 32.2 mm SVL, WHT 2395, Kanneliya Forest Reserve (Galle), alt. 150 m (06°15'N, 80°20'E), coll. 01 Jan.1996. Female, 31.8 mm SVL, WHT 2399, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 22 Feb.1996. Female, 37.7 mm SVL, WHT 2988, Welikanna, Waga (near Labugama), alt. 78 m (06°51'56"N, 80°09'39"E), coll. 11 Sep.2000. Male, 32.6 mm SVL, WHT 2998, Labugama Forest Reserve, alt. 78 m (06°51'70"N, 80°10'43"E), coll. 11 Sep.2000. 3 ex., female, 38.9 mm SVL, WHT 3303; males, 36.8 mm SVL, WHT 3304; 32.2 mm SVL, WHT 3306, Sinharaja Forest Reserve (Halmandiya), alt. 513 m (06°25'01"N, 80°25'26"E), coll., 16 Jul.2001. Female, 32.4 mm SVL, WHT 3387, Tangamalai Sanctuary, near Haputale, alt. 1600 m (06°46'N, 80°55'E), coll. 02 Jul.1999. Female, 29.8 mm SVL, WHT 2485, Bogawanthalawa-Balangoda road (near Udugama), alt. 810 m (06°44'N, 80°41'E), coll. 30 Aug.1999. Female, 29.3 mm SVL, WHT 2487, Bogawanthalawa-Balangoda road (near 25th km post), alt. 1300 m (06°45'N, 80°42'E), coll. 30 Aug.1999.

Diagnosis. – (See Figs. 142, 143). Mature individuals 22.2–39.4 mm SVL. Tympanum discernible. Snout angle category 7. Dorsal surface glandular, warty. Supratympanic fold distinct.

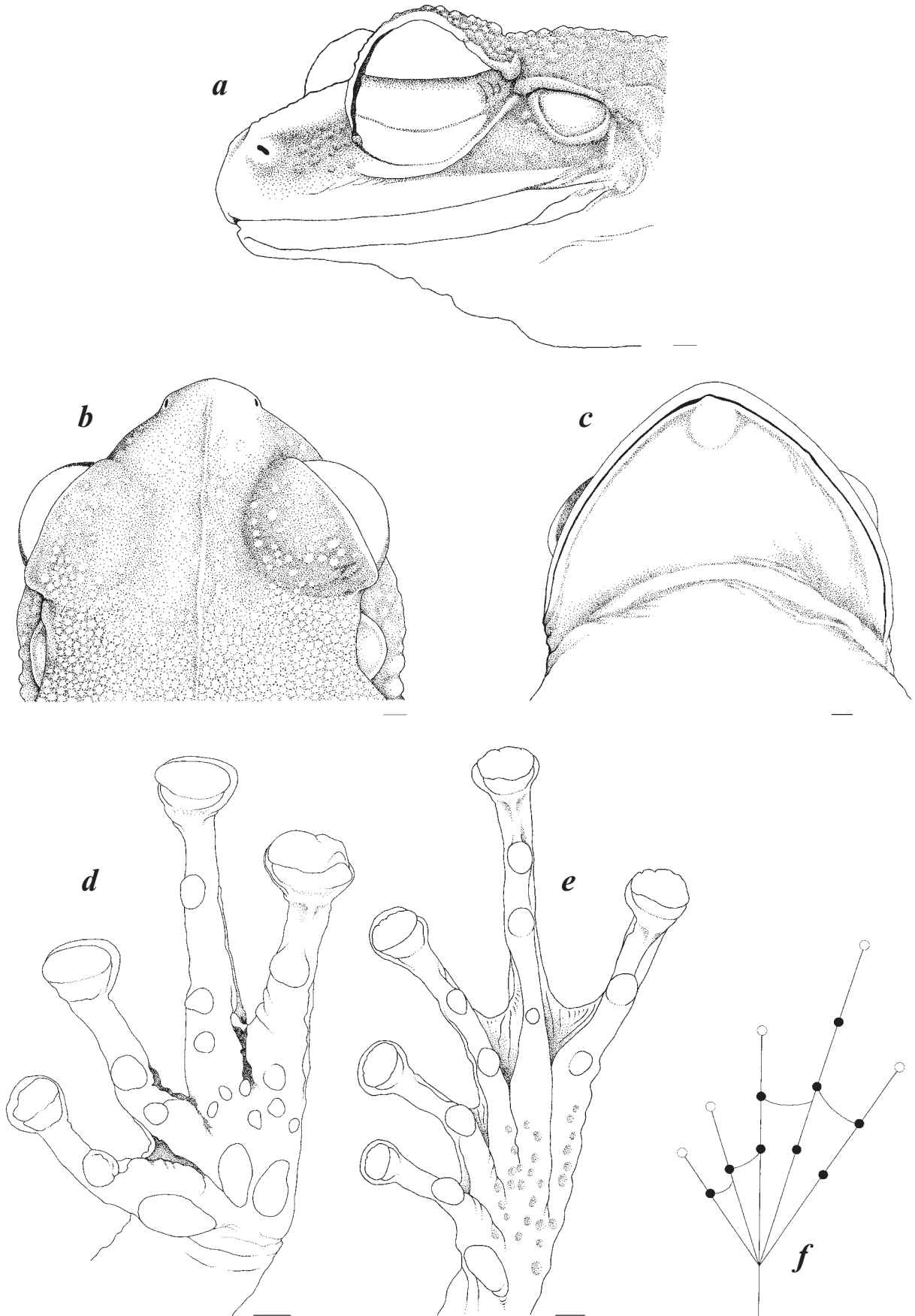


Fig. 142. *Philautus sordidus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of left foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, WHT 2379, 39.4 mm SVL. Scale bars: 1 mm.



Fig. 143. *Philautus sordidus*, new species, Hantane, not preserved.

Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head, dorsum and upper flank with glandular warts. Lower flank granular. Males with horn-like spinules scattered on dorsum and upper flank. Dorsal part of forelimb, thigh and shank with glandular warts. Throat and chest smooth. Belly and under thigh granular. Nuptial pads not observed in males. Males with inner vocal slits.

Colour in life: (Fig. 143), dorsal and lateral parts of head and body varies from chestnut to dark or ashy brown. Interorbital bar black or dark brown. A series of symmetrical black or dark-brown markings on dorsum. Flank chestnut or dark brown, with pale-yellow patches. Inguinal zone chestnut or dark brown. Loreal and tympanic regions chestnut or light brown with dark-brown patches. Tympanum dark brown. Dorsal and lateral parts of forelimb chestnut or brown with dark-brown crossbars. Thigh, shank and foot chestnut brown with dark-brown crossbars. Posterior part of thigh chestnut. Throat brown; margins of throat dark brown with pale-yellow patches. Chest, belly and underside of thigh brown. Webbing ashy-brown. Disks dorsally pale ash or white, a white spot on terminal knuckle.

Colour in alcohol: (based on holotype, WHT 2379), dorsal and lateral parts of head and body chestnut. Interorbital bar black. A series of symmetrical black markings on dorsum. Flank chestnut, with pale-yellow patches. Inguinal zone chestnut. Loreal and tympanic regions light brown with dark-brown patches. Lower area of tympanum pale brown; upper area dark brown. Upper lip dark brown with pale-yellow patches. Dorsal and lateral parts of forelimb pale brown with dark-brown crossbars. Thigh, shank and foot chestnut brown with dark-brown crossbars. Posterior part of thigh chestnut. Throat brown; margins of throat dark brown with pale-yellow patches. Chest, belly and underside of thigh brown. Webbing ashy-brown.

Measurements of holotype: (WHT 2379, in mm), DBE, 12.8; DFE, 7.3; DL, 1.3; DW, 2.1; ED, 6.6; EN, 3.7; ES, 6.1; FEL, 20.7; FL I, 3.4; FL II, 3.9; FL III, 6.6; FL IV, 5.3; FOL, 27.7; HL, 16.4; HW, 15.9; IML, 1.8; IN, 3.6; IO, 3.3; LAL, 10.2; MBE, 6.7; MFE, 11.4; MN, 14.5; NS, 2.0; PAL, 11.6; SVL, 39.4; TBL, 21.1; TL I, 3.2; TL II, 4.0; TL III, 6.0; TL IV, 8.8, TL V, 6.8, TYD, 1.9; TYE, .2.2; UAW, 7.8; UEW, 4.0.

Etymology. – The species-name is a reference to the grubby appearance of this frog: Latin, *sordidus* = ‘dirty’.

Remarks. – *Philautus sordidus* resembles *P. macropus* (for diagnosis, see Remarks under *P. macropus*). We think it likely that the highland and lowland populations of this species (see Fig. 44) may in the future be shown to be distinct species.

Distribution. – *Philautus sordidus* was recorded between elevations of 80–1060 m (Fig. 144). It is a habitat specialist, occurring in streams that traverse both closed and open canopy forests and anthropogenic habitats, being seen most often on boulders and rock crevices adjacent to streams. During the day, these frogs hide among rock crevices on

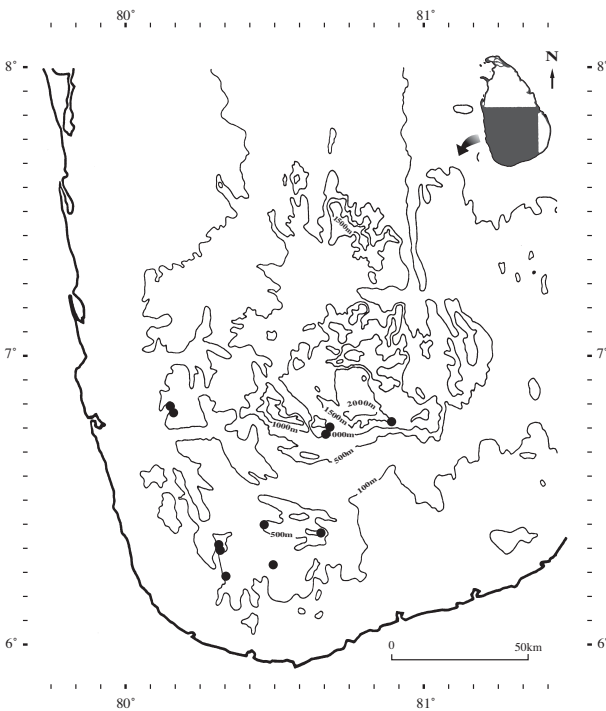


Fig. 144. Distribution of *Philautus sordidus*, new species, in Sri Lanka.

Canthal edges rounded. Nuptial pad absent in males. Lingual papilla present. Calcar absent. Vomerine teeth present. Supernumerary tubercles present on palm. Toes medially webbed. Belly granular.

Description. – (See Figs. 142, 143). Mature males 27.9–36.8 mm SVL; mature females 22.2–39.4 mm SVL. Body elongate. Head dorsally convex. Snout blunt in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges rounded. Loreal region concave. Interorbital space convex. Internarial space flat. Tympanum distinct, oval, oblique. Pineal ocellus present. Vomerine ridge present, with about 6 small teeth, angled at about 60° relative to body axis, shorter than distance between them. Lingual papilla present. Supratympanic fold distinct. Cephalic ridges absent.

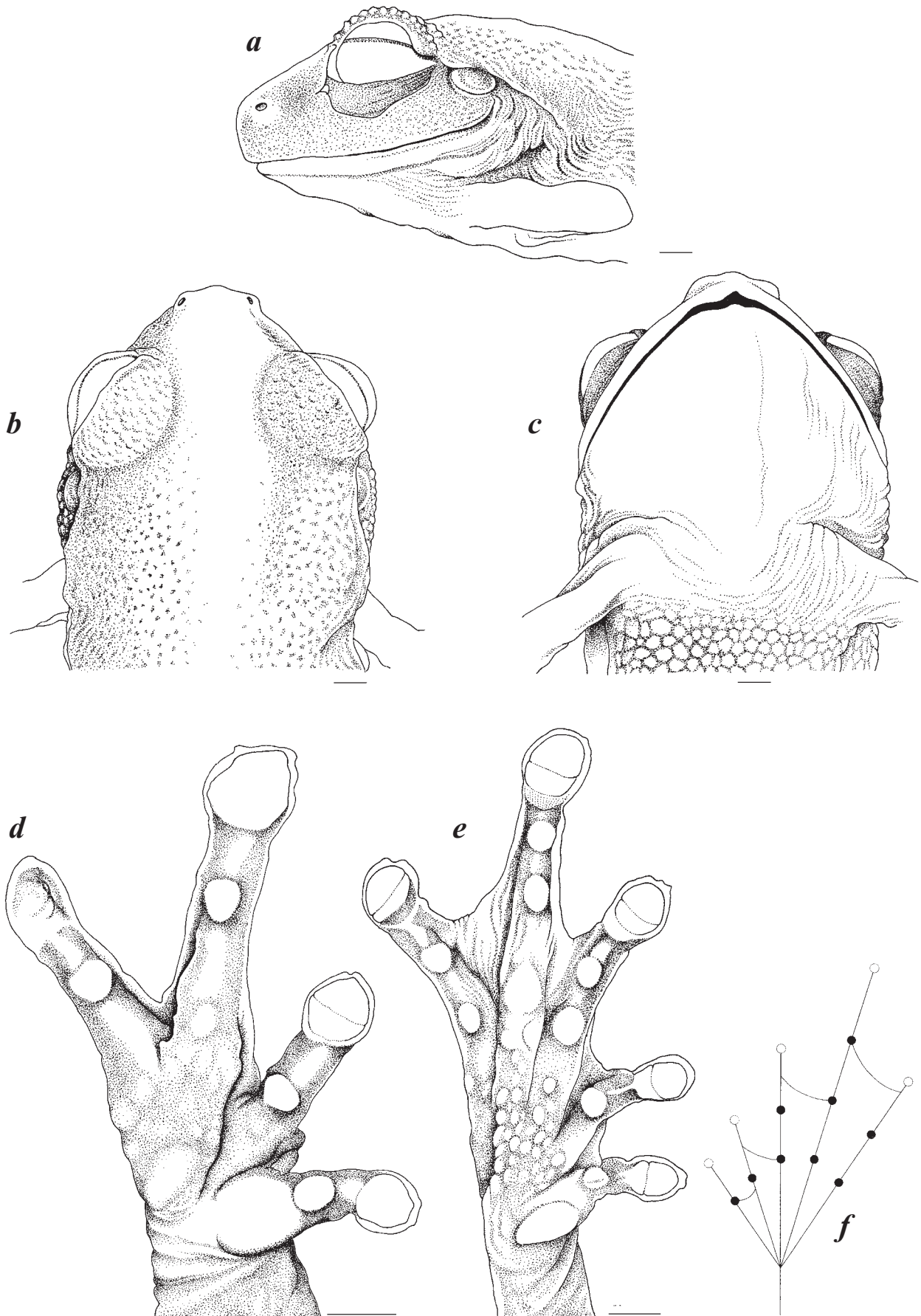


Fig. 145. *Philautus auratus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of left hand; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, WHT 2356, 26.2 mm SVL. Scale bars: 1 mm.

stream margins. A few individuals were found on fallen logs in the stream. Often, several frogs were found living apparently in a fairly tight group. This is a wide-ranging species, common in its preferred habitat.

Conservation status. – Extent of Occurrence: 2,000 km² — Kanneliya, Haycock, Millawa, Morningside, Welikanna, Labugama, Sinharaja. Outcome: Near Threatened (despite its wide distribution, habitat tolerance and abundance, its occurrence essentially near flowing water makes it prone to threat from aquatic pollution, for which reason continuous monitoring is necessary).

***Philautus auratus*, new species**

(Figs. 145–147; Table 8)

Material examined. – Holotype: mature female, 26.2 mm SVL, WHT 2356, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 12 Jan.1999.

Paratypes: females, 21.7 mm SVL, WHT 2375; 26.4 mm SVL, WHT 2357, coll. 12 Jan.1999; male, 21.8 mm SVL, WHT 2433, all from type locality, coll. 30 Jun.1999. Male, 23.3 mm SVL, WHT 3282, Handapan Ella Plains (near Rakwana), alt. 1270 m (06°26'42"N, 80°36'35"E), coll. 15 Jul.2001. Male, 23.3 mm SVL, WHT 3298, Sinharaja World Heritage Site (near Kudawa), alt. 513 m (06°25'01"N, 80°25'26"E), coll. 16 Jul.2001. Male, 22.3 mm SVL, WHT 2782, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 24 Jul.1999.

Diagnosis. – (See Figs. 145–147). Mature individuals 21.7–26.4 mm SVL. Tympanum distinct. Snout angle category 7. Dorsal surface of body shagreened. Canthal edges rounded. Vomerine teeth absent. Supratympanic fold distinct. Supernumerary tubercles present on palm and foot. Toes medially webbed. Nuptial pads absent in male. Lingual papilla absent. Throat, chest and belly granular in males. Throat and chest shagreened, belly granular, in females.

Description. – (See Figs. 145–147). Mature males 21.8–23.3 mm SVL; mature females 21.7–26.4 mm SVL. Body slender. Head dorsally flat. Snout blunt in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges rounded. Loreal region flat. Interorbital space flat. Internarial space concave. Tympanum distinct, half-circle or oval, horizontal. Pineal ocellus absent. Vomerine ridge absent or present, with 4 or 5 small teeth, angled at about 45° relative to body axis. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers, as is rudimentary webbing between Fingers III and IV. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head and dorsum shagreened. Upper flank granular or smooth; lower flank granular. Dorsal part of forelimb and foot shagreened or smooth. Thigh and shank smooth. Throat and chest smooth or granular. Belly and underside of thigh granular. Inner vocal slits present in males; nuptial pad absent.

Colour in life: (based on paratype, WHT 3282, and WHT 3298: Figs. 146, 147), dorsal part of head and body pale



Fig. 146. *Philautus auratus*, new species, paratype, male, WHT 3282, 23.3 mm SVL.



Fig. 147. *Philautus auratus*, new species, paratype, male, WHT 3298, 23.3 mm SVL.

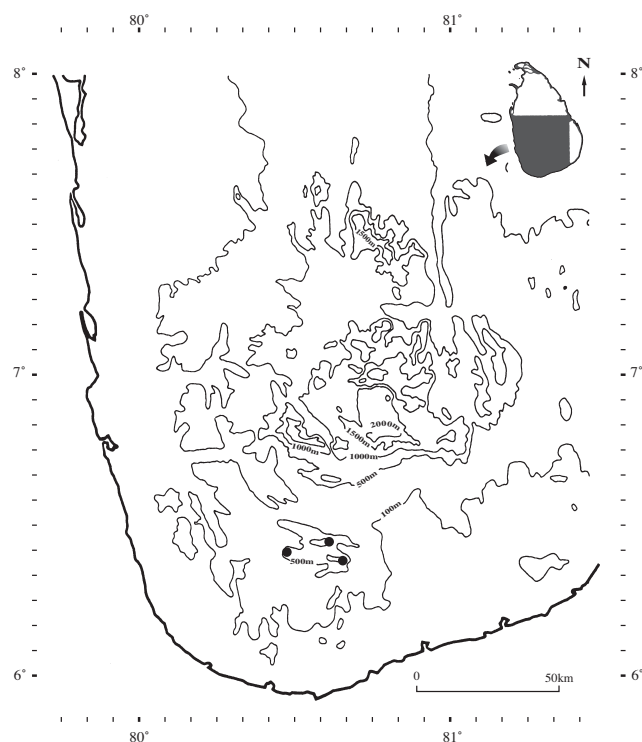


Fig. 148. Distribution of *Philautus auratus*, new species, in Sri Lanka.

yellow with dark-brown spots. Head laterally pale yellow with dark-brown spots. Edges of lower lip golden yellow with brown spots. Limbs dorsally pale yellow with dark-brown crossbars. Disks dorsally ashy pale yellow. Upper and lower arms, palm and fingers pale yellow with or without brown spots. Ventral side of femur, shank, and foot, foot and toes ashy brown with golden pigments. Chin pale yellow with light-brown spots. Chest pink. Abdomen white or pale yellow with golden-yellow granules. Colour in life is highly variable: see Figs. 146, 147, which represent specimens from a single population.

Colour in alcohol: (based on holotype, WHT 2356), dorsal part of head and body pale brown. Mid-dorsum yellowish-brown with dark-brown spots. A thin yellow medial stripe from tip of snout to vent. Upper flank pale brown with dark-brown spots; lower flank pale yellow with black patches. Inguinal zone pale yellow with large black patches. Loreal region, tympanic region and tympanum pale brown with dark-brown spots. Upper lip pale yellow. Dorsal and lateral parts of forelimb, thigh, shank and foot yellowish pale-brown with dark-brown spots. Posterior part of thigh pale brown with dark-brown spots and patches. Throat, margin of throat, chest, belly and underside of thigh pale brown with dark-brown spots. Webbing yellow.

Measurements of holotype: (WHT 2356, in mm), DBE, 9.2; DFE, 4.4; DL, 1.0; DW, 1.1; ED, 4.0; EN, 2.5; ES, 3.9; FEL, 12.5; FL I, 1.8; FL II, 2.2; FL III, 4.1, FL IV, 2.7; FOL, 16.9; HL, 10.3; HW, 10.2; IML, 1.3; IN, 2.0; IO, 3.0; LAL, .5.5; MBE, 4.0; MFE, 7.1; MN, 9.2; NS, 1.3; PAL, 7.0; SVL, 26.2; TBL, 12.7; TL I, 1.7; TL II, 2.1; TL III, 3.4; TL IV, 5.0, TL V, 3.9, TYD, 0.6; TYE, 1.0; UAW, 5.3; UEW, 2.5.

Etymology. – The specific epithet is an allusion to the golden colour of this species; *auratus* (Latin) = golden.

Remarks. – *Philautus auratus* resembles *P. pleurotaenia*, *P. asankai* and *P. hoipolloi*, for diagnoses from which, see Remarks in those species accounts.

Distribution. – *Philautus auratus* is known from the general area of the Sinharaja World Heritage Site: Morningside Forest Reserve (near Rakwana, 06°24'N, 80°38'E, alt. 1060 m), the nearby Handapan Ella Plains (06°26'42"N, 80°36'35"E, alt. 1270 m) and western Sinharaja near Kudawa (06°25'01"N, 80°25'26"E, alt. 513 m, Fig. 148). A habitat specialist, these frogs are only found in closed-canopy rainforest and cloud forests and cardamom plantations within cloud forests, close to streams and marshy areas. Adult males usually perched about 1 m above ground, on understorey shrubs. A fairly restricted range and uncommon.

Conservation status. – Extent of Occurrence: 120 km² — Morningside, Handapan Ella Plains, Sinharaja. Outcome: Endangered (criteria B1 a, b (iii)). Despite its relatively large area of occupancy, its restriction to a single forest site, low abundance and dependence on moist ground makes the species susceptible to stress during periods of drought: continuous population monitoring is recommended.

Philautus ocellaris, new species

(Figs. 149–151; Table 10)

Material examined. – Holotype: mature female, 28.5 mm SVL, WHT 2360, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 12 Jan. 1999.

Paratypes: male, 29.0 mm SVL, WHT 2376; male, 28.8 mm SVL, WHT 2377; female, 24.0 mm SVL, WHT 2378; same data as holotype. Female, 25.8 mm SVL, WHT 3273; Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 14 Jul. 2001. Male, 31.7 mm SVL, WHT 3288; female, 25.0 mm SVL, WHT 3289; female, 23.4 mm SVL, WHT 3290; female, 23.1 mm SVL, WHT 3291; female, 25.2 mm SVL, WHT 3292; female, 33.4 mm SVL, WHT 3293, Handapan Ella Plains (near Suriyakanda), alt. 1270 m (06°26'42"N, 080°36'35"E), coll. 15 Jul. 2001.

Diagnosis. – (See Figs. 149–151). Mature individuals 23.1–33.4 mm SVL. Tympanum discernible (Fig. 149a). Snout angle category 7. Dorsal surface glandular, warty. Vomerine teeth present. Canthal edges rounded. Supratympanic fold distinct. Supernumerary tubercles present on palm. Toes medially webbed. Nuptial pads absent in males. Lingual papilla absent. Throat, chest and belly granular in males; in females throat with 'glandular' folds, chest and belly granular. Dorsal surface dark green in life. Anterior and posterior surface of thigh dark brown or black.

Description. – (See Figs. 149–151). Mature males 28.8–31.7 mm SVL; mature females 23.1–33.4 mm SVL. Body stout. Head dorsally flat. Snout blunt in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges rounded. Loreal region concave. Interorbital space flat. Internarial space concave or flat. Tympanum distinct or indistinct, oval or half circle, horizontal. Pineal ocellus absent. Vomerine ridge present (absent in paratype WHT 2378), with about 5 small teeth, angled at about 45° relative to body axis, shorter than distance between them. Lingual papilla absent. Supratympanic fold distinct or indistinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers; rudimentary webbing present or absent. Toes medially webbed. Tarsal fold absent. Tarsal tubercle present. Snout, interorbital area, side of head, dorsum and upper flank shagreened or with glandular warts. Lower flank granular. Dorsal part of forelimb, thigh, shank and foot with glandular warts. Throat, chest, belly and underside of thigh granular or with glandular folds. Mature males with granular throat (throat shagreened in male paratype WHT 2378). Males with inner vocal slits, but nuptial pad absent.

Colour in life: (based on paratype, WHT 3273, Fig. 150), dorsal and lateral parts of head and body dark (blackish) green with black spots. Upper flank dark green, lower flank yellow. Inguinal zone and thigh black. Lips red-brown. Dorsal side of both upper and lower arms green; ventral side and palm grey. Fingers ventrally pale yellow. Area around vent yellow. Chin and chest yellow. Granules of abdomen yellow. Some mature individuals (e.g. WHT 3288) have a lighter green dorsal colour (e.g. Fig. 151).

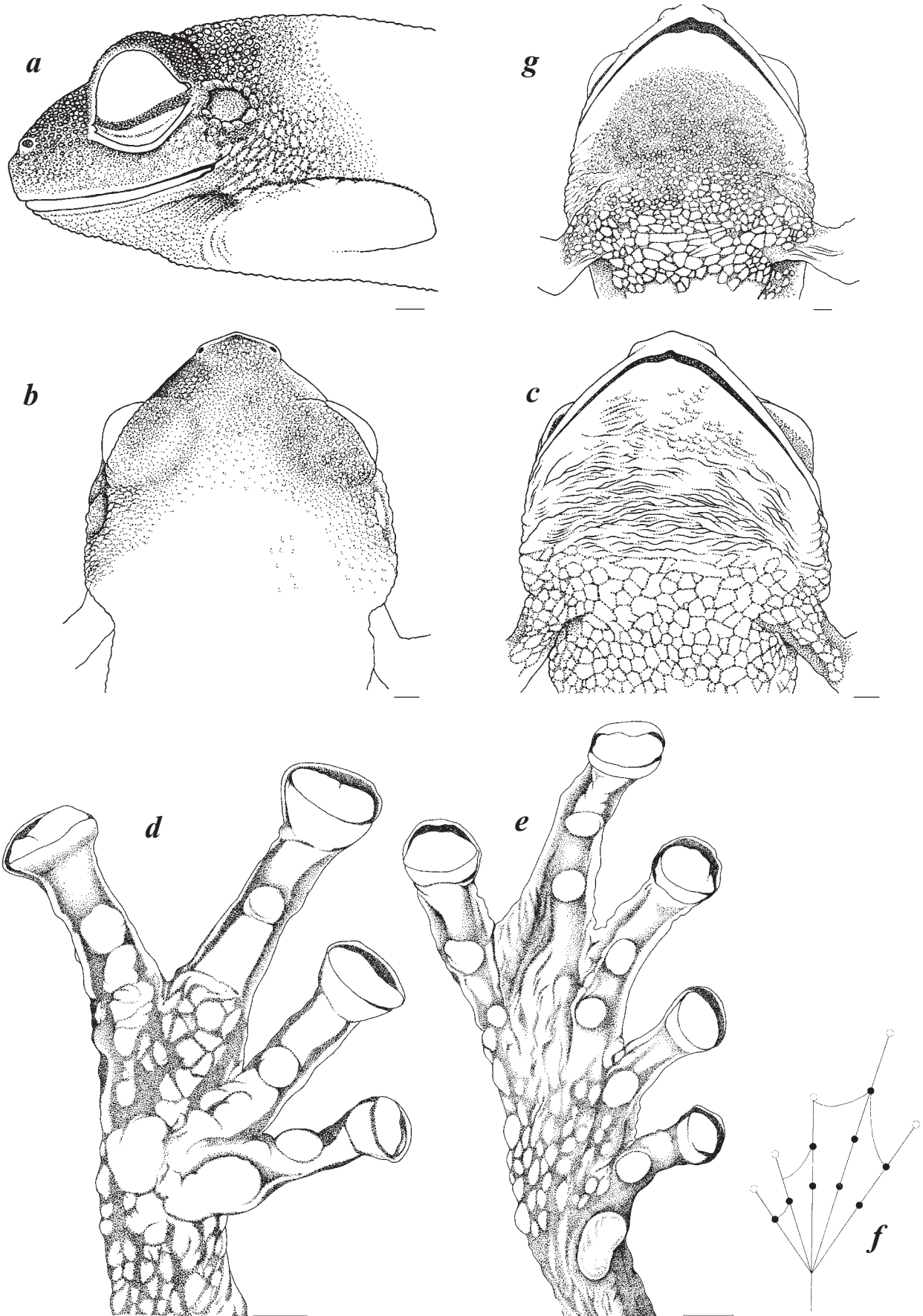


Fig. 149. *Philautus ocularis*, new species: *a–c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, WHT 2360, 28.5 mm SVL; and *g*, ventral aspect of head of paratype, male, WHT 2376, 29.0 mm SVL. Scale bars: 1 mm.



Fig. 150. *Philautus ocularis*, new species, paratype, female, WHT 3273, 25.8 mm SVL.



Fig. 151. *Philautus ocularis*, new species, paratype, male, WHT 3288, 31.7 mm SVL.



Fig. 152. Distribution of *Philautus ocularis*, new species, in Sri Lanka.

Colour in alcohol: (based on paratype, WHT 2376), dorsal part of head and body dark brown with small, pale-brown spots. Upper flank greyish-brown with white spots; lower flank with white granules. Inguinal zone dark brown. Loreal region greyish-brown. Tympanic region and tympanum dark brown. Upper lip orangish brown. Dorsal and lateral parts of forelimb dark brown with white spots. Dorsal part of thigh and shank dark greyish-brown with pale-brown spots. Dorsal part of foot orange-brown. Posterior part of thigh blackish dark-brown with grey spots. Throat brown with white granules. Margins of throat orangish-brown. Chest pale yellow with brown spots. Belly dark brown with pale-yellow granules. Webbing brown.

Measurements of holotype: (WHT 2360, in mm), DBE, 11.0; DFE, 6.9; DL, 1.1; DW, 1.7; ED, 4.1; EN, 3.4; ES, 5.2; FEL, 15.2; FL I, 2.6; FL II, 3.1; FL III, 4.6, FL IV, 3.6; FOL, 20.3; HL, 12.7; HW, 12.8; IML, 1.5; IN, 2.8; IO, 2.8; LAL, 6.5; MBE, 4.9; MFE, 8.2; MN, 11.0; NS, 1.8; PAL, 8.3; SVL, 28.5; TBL, 15.7; TL I, 2.5; TL II, 3.1; TL III, 4.7; TL IV, 6.5, TL V, 5.0, TYD, 0.9; TYE, 1.5; UAW, 5.9; UEW, 3.0.

Etymology. – The specific epithet is a reference to the striking golden eyes of this most attractive frog: Latin, *ocularis*, ‘of the eyes’.

Remarks. – Although *Philautus ocularis* resembles *P. lunatus*, it may readily be diagnosed from that species (see Remarks under *P. lunatus*).

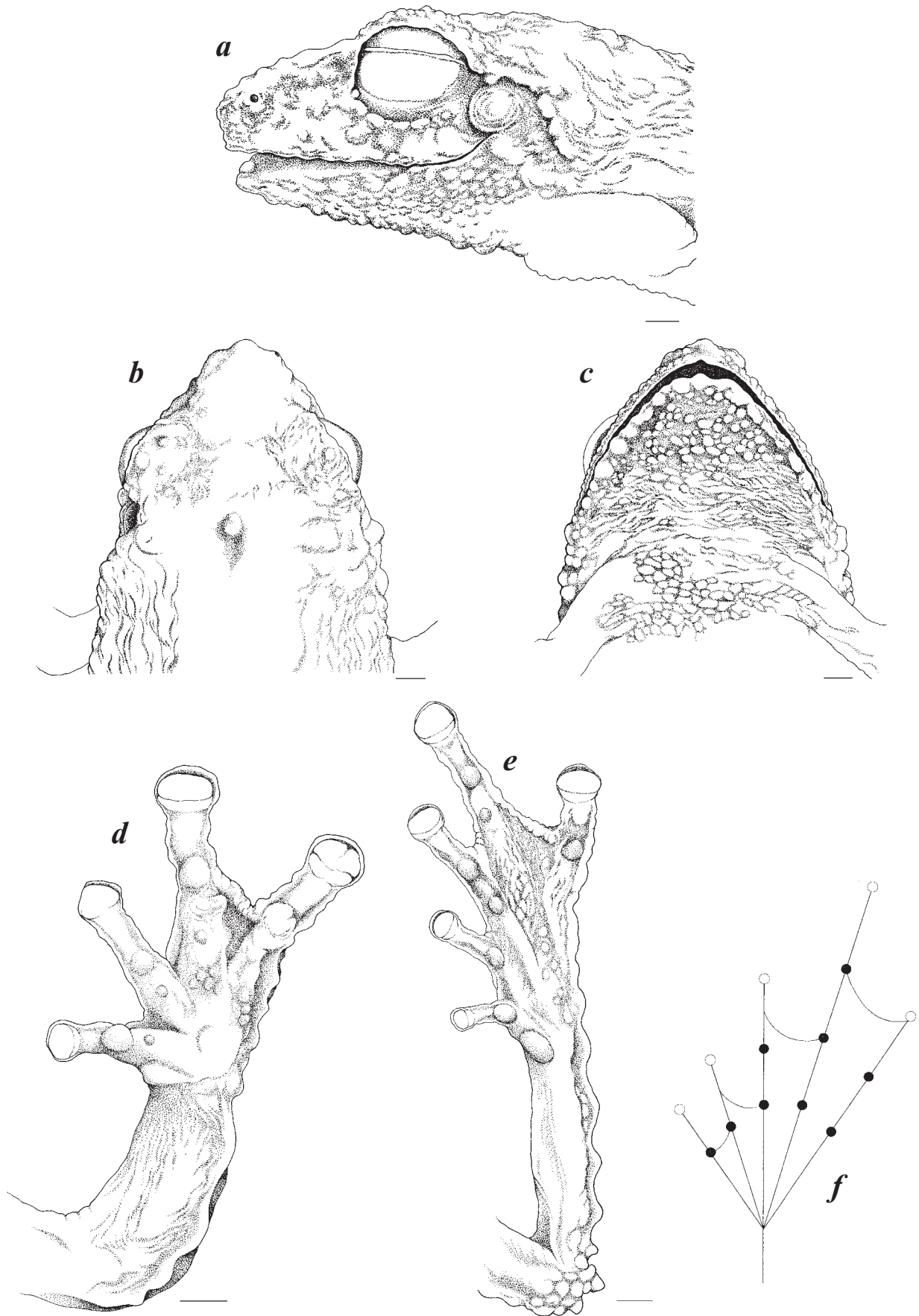
Distribution. – *Philautus ocularis* is restricted to the eastern side of the Sinharaja World Heritage Site, being recorded between elevations of 1060–1270 m (Fig. 152). These frogs are habitat specialists only found in closed canopy cloud forests and Cardamom plantations within the cloud forests. All our specimens were collected from a cardamom plantation, from 1–2 m above ground while perched on shade trees.

Conservation status. – Extent of Occurrence: 100 km² — Morningside, Handapan Ella Plains. Outcome: Endangered (criteria B1 a, b (iii)). This species could be adversely affected by agricultural practices within cardamom plantations, which account for much of the land-use in these sites.

***Philautus decoris*, new species**
(Figs. 153, 154; Table 3)

Material examined. – Holotype: mature female, 23.9 mm SVL, WHT 2358, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24’N, 80°38’E), coll. 12 Jan. 1999.

Paratypes: 3 ex., female, 19.0 mm SVL, WHT 3194; male, 18.3 mm SVL, WHT 3257; male, 19.4 mm SVL, WHT 3258; Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24’N, 80°38’E), coll. 30 May 1999. 8 ex., male, 20.7 mm SVL, WHT 3265; male, 20.4 mm SVL, WHT 3266; female, 22.8 mm SVL, WHT 3267; male, 20.5 mm SVL, WHT 3268; male, 19.9 mm SVL, WHT 3269; male, 19.9 mm SVL, WHT 3271; male, 20.6 mm SVL, WHT 3270; male, 20.4 mm SVL, WHT 3272;



153. *Philautus decoris*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of left foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, WHT 2358, 23.9 mm SVL. Scale bars: 1 mm.



Fig. 154. *Philautus decoris*, new species, holotype, female, WHT 2358, 23.9 mm SVL.

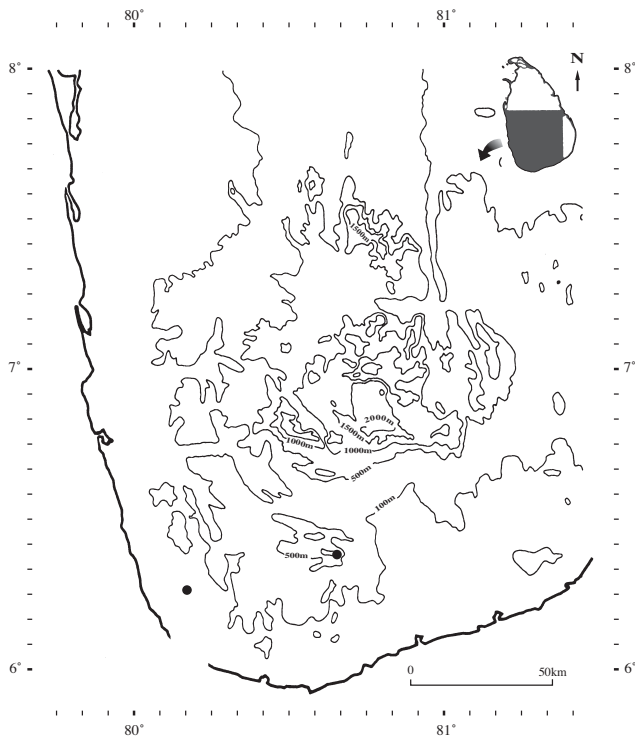


Fig. 155. Distribution of *Philautus decoris*, new species, in Sri Lanka.

Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 14 Jul.2001.

Diagnosis. – (See Figs. 153, 154). Mature individuals 18.3–23.9 mm SVL. Tympanum discernible. Snout angle category 4. Dorsal surface heavily tuberculated. A sheath-like undulating fringe present on posterior margin of foot and lower arm. Vomerine teeth absent. Supernumerary tubercles present on palm. Calcar prominent. Toes medially webbed. Nuptial pads absent in males. Belly granular.

Description. – (Based on holotype, WHT 2358 and paratype WHT 3258; see Figs. 153, 154). Mature males 18.3–20.6 mm

SVL; mature females 19.0–23.9 mm SVL. Body stout. Head dorsally flat. Snout obtusely pointed in lateral aspect, snout angle category 4 (angle of snout ~ 90°). Canthal edges rounded or sharp. Loreal region concave. Interorbital space concave. Internarial space concave or flat. Tympanum distinct, oval, vertical. Pineal ocellus absent. Vomerine ridge absent. A rounded lingual papilla present. Supratympanic fold prominent. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe and rudimentary webbing present on fingers. Posterior edge of lower arm with an undulating dermal fold. Toes medially webbed. Tarsal fold present, undulating. Calcar present. Snout, interorbital area, side of head, dorsum and flank with glandular warts. Dorsal part of forelimb, thigh, shank and foot with glandular warts. Throat glandular, warty, or roughly granular. Chest and belly granular, rough. Underside of thigh granular, not rough. Inner vocal slits present in males; nuptial pad absent.

Colour in life: (Fig. 154), dorsal part of head grey-brown. A symmetrical black marking on occipital. A yellowish-golden patch on shoulder. Background colour of dorsum grey-brown; a red-brown patch at middle; two black bands extend from upper flank to mid-back. Flank greyish yellow with dark-brown markings. Inguinal zone and anterior thigh light blue. Anterior thigh with wide, dark-brown bands. Loreal region grey-brown with dark-brown bands. Canthal edge dark brown. Tympanic region dark brown. Tympanum grey brown. Upper lip grey brown and dark brown. Lower area of supratympanic fold black. Venter ashy yellow with black dots. Lower abdomen dark greenish black with pale-yellow granules. Underside of thigh, shank, foot and foot ashy black with white spots.

Colour in alcohol: (based on paratype, WHT 3258), dorsal part of head, body and flank dark brown with light-brown and ashy patches. Inguinal zone dark brown. Loreal and tympanic regions dark brown with ashy spots. Tympanum dark brown and ash. Upper lip dark brown with white spots. Dorsal and lateral parts of forelimb dark brown with indistinct crossbars in black. Dorsal part of thigh and shank with dark-brown and ashy-brown crossbars. Dorsal part of foot dark brown with ashy patches. Posterior part of thigh dark brown. Throat, vocal sacs, chest and belly pale yellow with black dots. Margins of throat dark brown with white spots. Underside of thigh pale yellow, the anterior and posterior sides dark brown. Webbing dark brown.

Measurements of holotype: (WHT 2358, in mm), DBE, 9.0; DFE, 5.8; DL, 0.8; DW, 1.3; ED, 3.6; EN, 3.1; ES, 4.7; FEL, 12.5; FL I, 1.8; FL II, 2.4; FL III, 3.7, FL IV, 2.9; FOL, 17.2; HL, 10.5; HW, 9.9; IML, 1.0; IN, 2.5; IO, 3.0; LAL, 5.1; MBE, 3.7; MFE, 6.5; MN, 9.4; NS, 1.7; PAL, 7.5; SVL, 23.9; TBL, 13.5; TL I, 1.7; TL II, 2.4; TL III, 3.7; TL IV, 6.2, TL V, 4.1, TYD, 0.6; TYE, 1.6; UAW, 4.2; UEW, 2.5.

Etymology. – The species-name *decoris* is Latin for ‘adorned, elegant, beautiful’: an allusion to the elaborate dermal ornamentation in this species.

Remarks. – *Philautus decoris* (Figs. 153, 154) resembles *P. schmarda* (Figs. 2, 3) and *P. cavirostris* (Figs. 32–35), from which species it is readily differentiated: see Remarks in those species accounts. It also resembles *P. extirpo* (Figs. 140, 141), from which it may be distinguished by having a smaller body size (18.3–23.9 mm SVL), tympanum discernible, snout angle category 4, webbing on fingers present, tarsal tubercle present, tarsal fold present, and lower-arm fold present, vs. larger size (43.5 mm SVL), tympanum absent, snout angle category 7, webbing on fingers absent, tarsal tubercle absent, tarsal fold absent, lower-arm fold absent, in *P. extirpo*.

We feel that future collections of larger series of the population at Elpitiya will show that to be a distinct species.

Distribution. – *Philautus decoris* was recorded only at Morningside Forest Reserve near Rakwana (1060 m). The species inhabits closed-canopy forests and cardamom plantations within forests, usually staying close to water. Adult males were observed at night, vocalizing while perched on low shrubs, 0.3–2 m above ground.

Conservation status. – Extent of Occurrence: 120 km² — Morningside, Pituwala. Outcome: Endangered (criteria B1 a, b (iii)). This species could be adversely affected by agricultural practices within the cardamom plantations in which it occurs, which account for much of the land use in these sites.

Philautus silvaticus, new species

(Figs. 156–158; Table 9)

Material examined. – Holotype: mature female, 29.5 mm SVL, WHT 3295, Handapan Ella Plains (near Suriyakanda), alt. 1270 m (06°26'42"N, 080°36'35"E), coll. 15 Jul.2001.

Paratypes: 2 ex, females, 25.2 mm SVL, WHT 3275; 24.8 mm SVL, WHT 3276, Morningside Forest Reserve (near Rakwana), alt. 1060 m (06°24'N, 80°38'E), coll. 14 Jul.2001. Male, 24.8 mm SVL, WHT 3296, same data as holotype. 4 ex, female, 27.4 mm SVL, WHT 3378; female, 26.8 mm SVL, WHT 3379; male, 24.3 mm SVL, WHT 3461; male, 25.3 mm SVL, WHT 3462, Handapan Ella Plains (near Suriyakanda), alt. 1270 m (06°26'42"N, 080°36'35"E), coll. 28 Oct.2001. 2 ex, female, 31.3 mm SVL, WHT 3310; juvenile, 16.5 mm SVL, WHT 3316, Sinharaja World Heritage Site (near Kudawa), alt. 513 m (06°25'01"N, 80°25'26"E), coll. 16 Jul.2001.

Diagnosis. – (See Figs. 156–158). Mature individuals 24.8–31.3 mm SVL; Tympanum discernible. Snout angle category 5; dorsal surface with glandular warts; supratympanic fold distinct; canthal edges sharp; no nuptial pad in males; a papilla on tongue; calcar absent; vomerine teeth present; Supernumerary tubercles present on palm; toes medially webbed; throat, chest and belly granular.

Description. – Mature males 24.3–25.3 mm SVL; mature females 24.8–31.3 mm SVL. Body elongate. Head dorsally convex. Snout oval in lateral aspect, snout angle category 5 (angle of snout ~ 95°). Canthal edges sharp. Loreal region concave. Interorbital and internarial space flat. Tympanum distinct,

rounded. Pineal ocellus absent. Vomerine ridge present, with about 3 small teeth, angled at about 45° relative to body axis, shorter than the distance between them. A rounded papilla present on tongue. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Lateral dermal fringe absent on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, interorbital area, side of head and anterior dorsum with glandular warts; posterior dorsum smooth. Upper flank with glandular warts. Lower flank granular. Dorsal part of forelimb, shank and foot with glandular warts. Thigh dorsally smooth. Throat, chest, belly and underside of thigh granular in males. Throat and chest smooth in females. Internal vocal slits present in mature males; nuptial pad absent.

Colour in life: (Figs. 157, 158), canthal edges orangish-brown. Loreal and temporal area brownish-grey with black markings. Lips orangish-brown with black markings. Mid-tympanum and lower supratympanic fold black. Mid-dorsum grey brown; several black markings on dorsum. Upper flank grey-brown with a few black spots; lower flank greyish pale-brown. Limbs grey-brown with dark-brown crossbars. Thigh black with dark-brown and white spots. Chin grey-brown. Abdomen pale grey. Ventral area of thigh, shank, foot, and toes grey-brown.

Colour in alcohol: (based on paratype, WHT 3462), snout dorsally ash with brown markings. A narrow black interorbital bar. Dorsum ashy brown. Flank and inguinal zone pale yellow with black pigments. Loreal region dark brown. Tympanic region ashy brown with white spots. Upper area of tympanum dark brown; lower area yellow with black pigments. Upper lip dark brown with white spots. Dorsal and lateral area of forelimb brown with two dark-brown crossbars. Dorsal part of thigh pale yellow with three dark crossbars. Dorsal part of shank ashy brown with three dark crossbars. Dorsal part of foot ashy brown with dark crossbars. Posterior thigh pale yellow with black pigments. Throat, margins of throat, chest, belly, ventral part of thigh and, webbing pale yellow with black dots.

Measurements of holotype: (WHT 3295, in mm), DBE, 10.6; DFE, 6.2; DL, 1.1; DW, 1.3; ED, 4.6; EN, 3.1; ES, 5.1; FEL, 15.9; FL I, 2.9; FL II, 3.3; FL III, 5.1; FL IV, 4.2; FOL, 22.8; HL, 12.7; HW, 11.9; IML, 1.5; IN, 2.9; IO, 3.2; LAL, 6.3; MBE, 4.7; MFE, 8.4; MN, 11.0; NS, 2.2; PAL, 8.8; SVL, 29.5; TBL, 17.3; TL I, 2.7; TL II, 3.1; TL III, 4.0; TL IV, 5.7; TL V, 4.2; TYD, 0.8; TYE, 1.5; UAW, 4.7; UEW, 2.5.

Etymology. – The specific epithet *silvaticus* (Latin, 'of the forest') is a reference to the habitat of this species.

Remarks. – *Philautus silvaticus* resembles *Philautus procax* and *P. abundus*, from both of which it may readily be diagnosed (see Remarks under the relevant species accounts).

Distribution. – *Philautus silvaticus* has been recorded only from the Sinharaja World Heritage Site, between elevations of about 510–1270 m (Fig. 159). It is a habitat specialist, inhabiting closed-canopy rainforest habitats and cardamom plantations within the forest. Adult males were observed calling at night while perched on ferns, 30 cm to 1 m above ground.

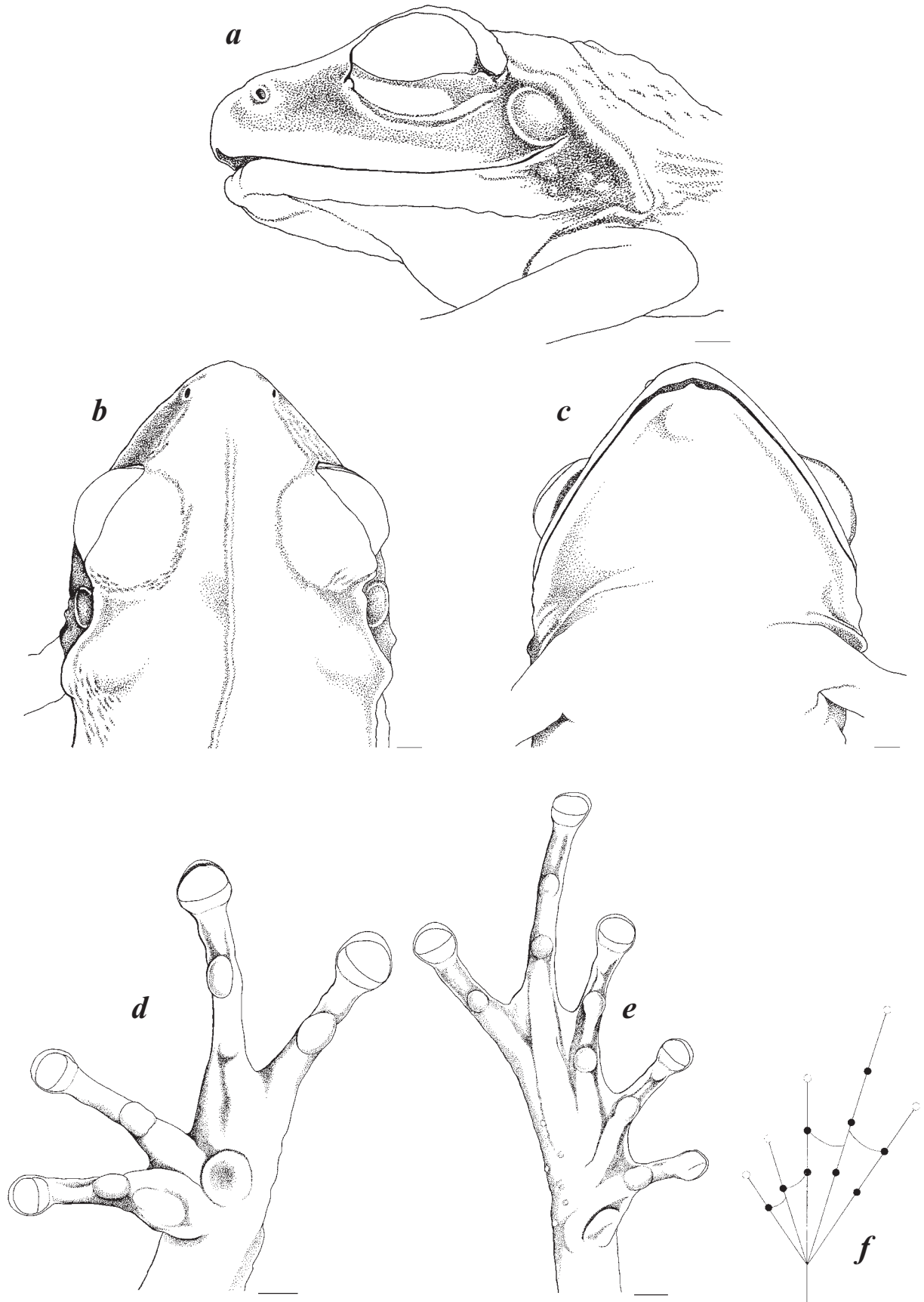


Fig. 156. *Philautus silvaticus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand; *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, female, WHT 3295, 29.5 mm SVL. Scale bars: 1 mm.



Fig. 157. *Philautus silvaticus*, new species, heavily tuberculated female, 31.3 mm SVL, WHT 3310.



Fig. 158. *Philautus silvaticus*, new species, moderately tuberculated female, 24.8 mm SVL, WHT 3276.

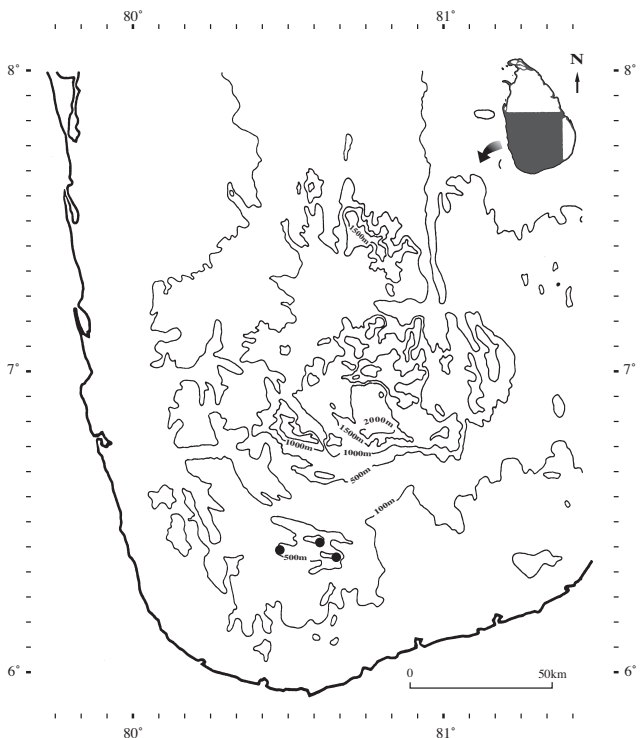


Fig. 159. Distribution of *Philautus silvaticus*, new species, in Sri Lanka.

Conservation status. – Extent of Occurrence: 120 km² — Handapan Ella Plains, Morningside, Sinharaja. Outcome: Near Threatened. Despite its relative abundance and relatively large area of occupancy, habitat dependence and the fact that it is restricted to a single forest site, make it important that the population be continuously monitored.

***Philautus nemus*, new species**
(Figs. 160, 161; Table 10)

Material examined. – Holotype: mature male, 20.7 mm SVL, WHT 1319, Haycock (Hiniduma), alt. 660 m (06°20'N, 80°18'E), coll. 18 Jun. 1996.

Diagnosis. – (See Figs. 160, 161). Mature male (holotype) 20.7 mm SVL. Tympanum discernible. Snout angle category 5. Dorsal surface glandular and warty. Supratympanic fold distinct. Canthal edges rounded. Nuptial pad present. Lingual papilla absent. Lateral dermal fringe absent on fingers. Calcar absent. Vomerine teeth absent. Supernumerary tubercles present on palm. Toes medially webbed. Throat, chest and belly granular.

Description. – (See Figs. 160, 161). Snout vent length of mature male 20.7 mm. Body slender. Head dorsally convex. Snout obtusely pointed in lateral aspect, snout angle category 5 (angle of snout ~ 95°). Canthal edges rounded. Loreal region concave. Interorbital and internarial spaces flat. Tympanum oval, vertical. Pineal ocellus present. Vomerine ridge absent. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. Fingers without lateral dermal fringe. Toes medially webbed. Tarsal fold absent. Calcar absent. Snout, side of head, and dorsum with glandular warts. Area interorbital area and upper flank smooth. Lower flank granular. Dorsal part of forelimb and shank with glandular warts. Thigh and foot dorsally smooth. Throat and under-thigh granular but not rough. Chest and belly granular, rough. Inner vocal slits present. Yellow nuptial pad present on outer and ventral surfaces of prepollex and on 1st finger.

Colour in life: (see Fig. 161). Dorsally reddish brown with black patches. Interorbital bar black or dark brown. Tympanum and temporal region black. Lower rim of tympanum brown. Limbs, fingers and toes with brown crossbars. Tips of tubercles red. Venter pale yellow with black pigments.

Colour in alcohol: (based on holotype, WHT 1319), dorsal part of head and body brown. Interorbital bar yellow and dark brown. Anterior half of dorsum with symmetrical black markings. Upper flank pale yellow and brown with black pigments. Lower flank and tympanic region pale yellow with black pigments. Inguinal zone pale brown. Loreal region brown. Tympanum dark brown, its lower rim pale yellow. Upper lip pale yellow with dark pigments. Supratympanic fold black. Dorsal and lateral parts of

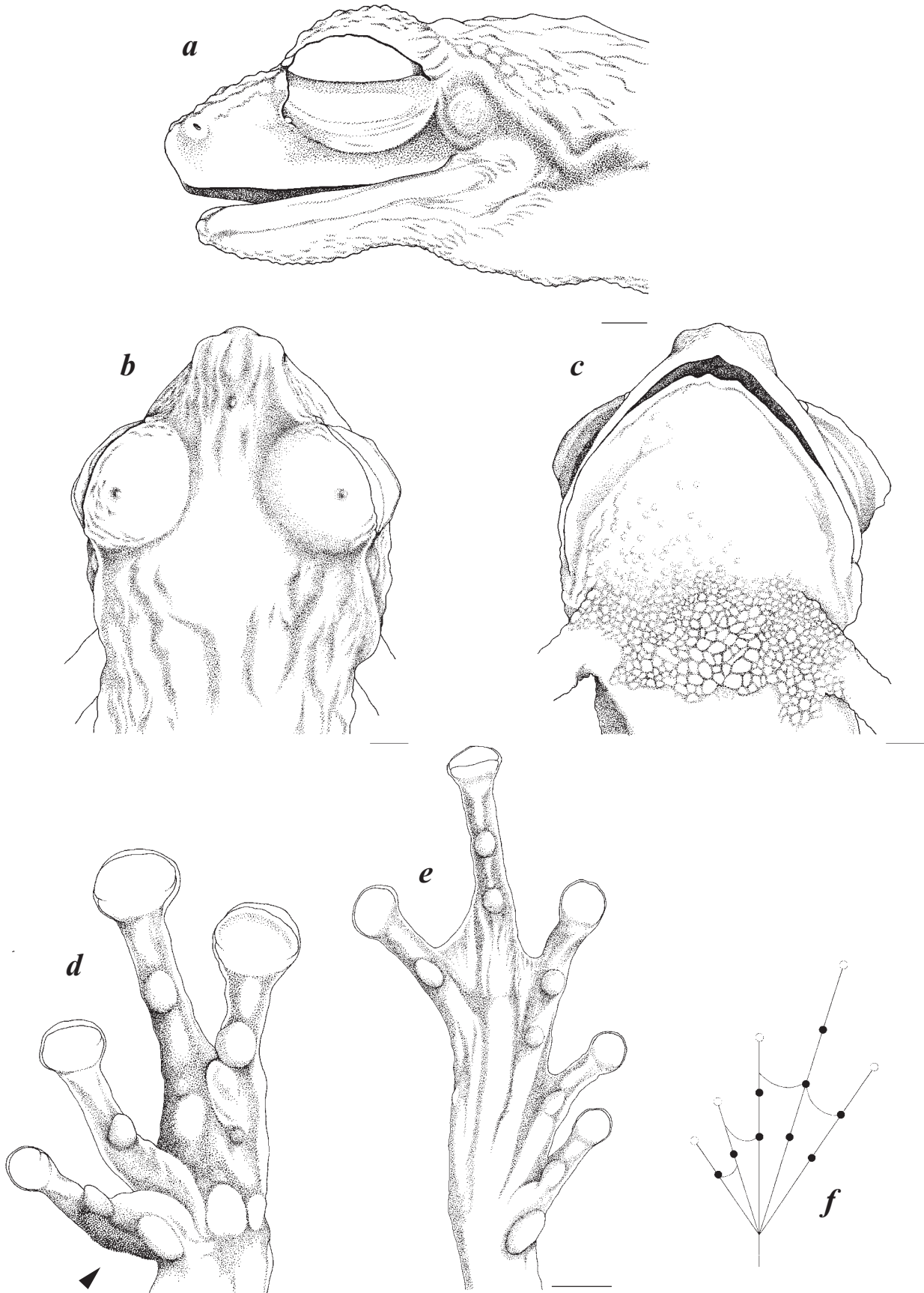


Fig. 160. *Philautus nemus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of left hand (arrow indicates nuptial pad); *e*, ventral aspect of right foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 1319, 20.7 mm SVL. Scale bars: 1 mm.



Fig. 161. *Philautus nemus*, new species, holotype, male, WHT 1319, 20.7 mm SVL.

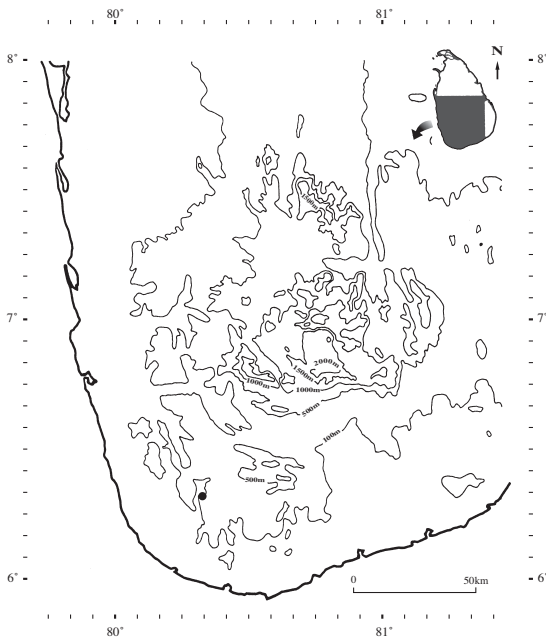


Fig. 162. *Philautus nemus*, new species, in Sri Lanka.

forelimb, dorsal part of thigh, dorsal part of shank and dorsal part of foot pale yellow with brown crossbars. Posterior part of thigh reddish light-brown. Throat, margins of throat, chest, belly, ventral area of thigh and webbing pale yellow with black pigments.

Measurements of holotype: (WHT 1319, in mm), DBE, 8.3; DFE, 4.8; DL, 0.9; DW, 1.2; ED, 3.6; EN, 2.4; ES, 3.7; FEL, 11.7; FL I, 1.7; FL II, 2.0; FL III, 3.4, FL IV, 2.5; FOL, 15.5; HL, 9.3; HW, 8.0; IML, 1.0; IN, 2.4; IO, 2.3; LAL, 5.1; MBE, 3.0; MFE, 5.9; MN, 7.9; NS, 1.4; PAL, 6.4; SVL, 20.7; TBL, 11.9; TL I, 1.5; TL II, 2.0; TL III, 3.6; TL IV, 5.5, TL V, 4.0, TYD, 0.7; TYE, 1.1; UAW, 3.5; UEW, 2.6.

Etymology. – The species-epithet *nemus* (Latin, ‘forest, woods’) alludes to the fact that the only specimen of this species recorded to date was found in dense forest in Haycock Hill (Hiniduma) Forest Reserve.

Remarks. – *Philautus nemus* bears a resemblance to *P. simba*, from which it may be distinguished by the characters mentioned in the Remarks in the account on that species.

Distribution. – *Philautus nemus* is known only from the type specimen and presumed to be restricted to the type locality, Haycock Hill (Hiniduma Forest Reserve), alt. 660 m (Fig. 162). This specimen was found in closed canopy rainforest, on a wet rock.

Conservation status. – Extent of Occurrence: 10 km² — Haycock. Outcome: Critically Endangered (criteria B1 a, b (iii)). The rarity of this species, and its restriction to a single, relatively small and vulnerable forest site necessitate intensive conservation measures.

***Philautus silus*, new species**
(Figs. 163–165; Table 4)

Material examined. – Holotype: mature male, 38.7 mm SVL, WHT 3453, Agra Arboretum, near Agarapatana, alt. 1555 m (06°51’N, 80°41’E.), coll. 02 Dec.2001.

Paratypes: female, 46.2 mm SVL, WHT 3451; female, 51.8 mm SVL, WHT 3452; male, 35.4 mm SVL, WHT 3454, data same as holotype. Female, 46.6 mm SVL, WHT 3412, Tangamalai Sanctuary, near Haputale, alt. 1600 m (06°46’N, 80°55’E.), coll. 02 Jul.1999. Female, 49.1 mm SVL, WHT 3460, Agra Arboretum, near Agarapatana, alt. 1555 m (06°51’N, 80°41’E.), coll. 02 May 2000.

Others - Female, 50.8 mm SVL, WHT 5426; male, 39.0 mm SVL, WHT 5427, Agra Arboretum, near Agarapatana, alt. 1665 m (06°50’N, 80°40’E.), coll. 5 Aug.2003.

Diagnosis. – (See Figs. 163–165). Mature individuals 35.4–51.8 mm SVL. Tympanum discernible. Snout angle category 7. Dorsal surface with glandular warts. Supratympanic fold distinct. Canthal edges sharp. Nuptial pad present in males. Lingual papilla absent. Calcar absent. Vomerine teeth present. Supernumerary tubercles present on palm and foot. Toes medially webbed. Throat, chest and belly granular.

Description. – (Based on holotype, WHT 3453: see Fig. 163). Mature males 35.4–38.4 mm SVL; mature females 46.2–51.8 mm SVL. Body stout. Head convex above. Snout oval in lateral aspect, snout angle category 7 (angle of snout ~ 105°). Canthal edges sharp. Loreal region concave. Interorbital and internarial spaces flat. Tympanum distinct, oval, oblique. Pineal ocellus absent. Vomerine ridge present, with about 5 small teeth, angled at about 60° relative to body axis, closer to choanae than each other, shorter than distance between them. Lingual papilla absent. Supratympanic fold distinct. Cephalic ridges absent. Skin on head not co-ossified with skull. A lateral dermal fringe present on fingers. Toes medially webbed. Tarsal fold absent. Calcar absent. Dorsal and lateral part of snout and interorbital area smooth. Side of head, dorsum, and upper flank with glandular warts. Lower flank granular. Dorsal part of forelimb, thigh, shank and foot smooth. Throat, chest, belly and underside of thigh granular.

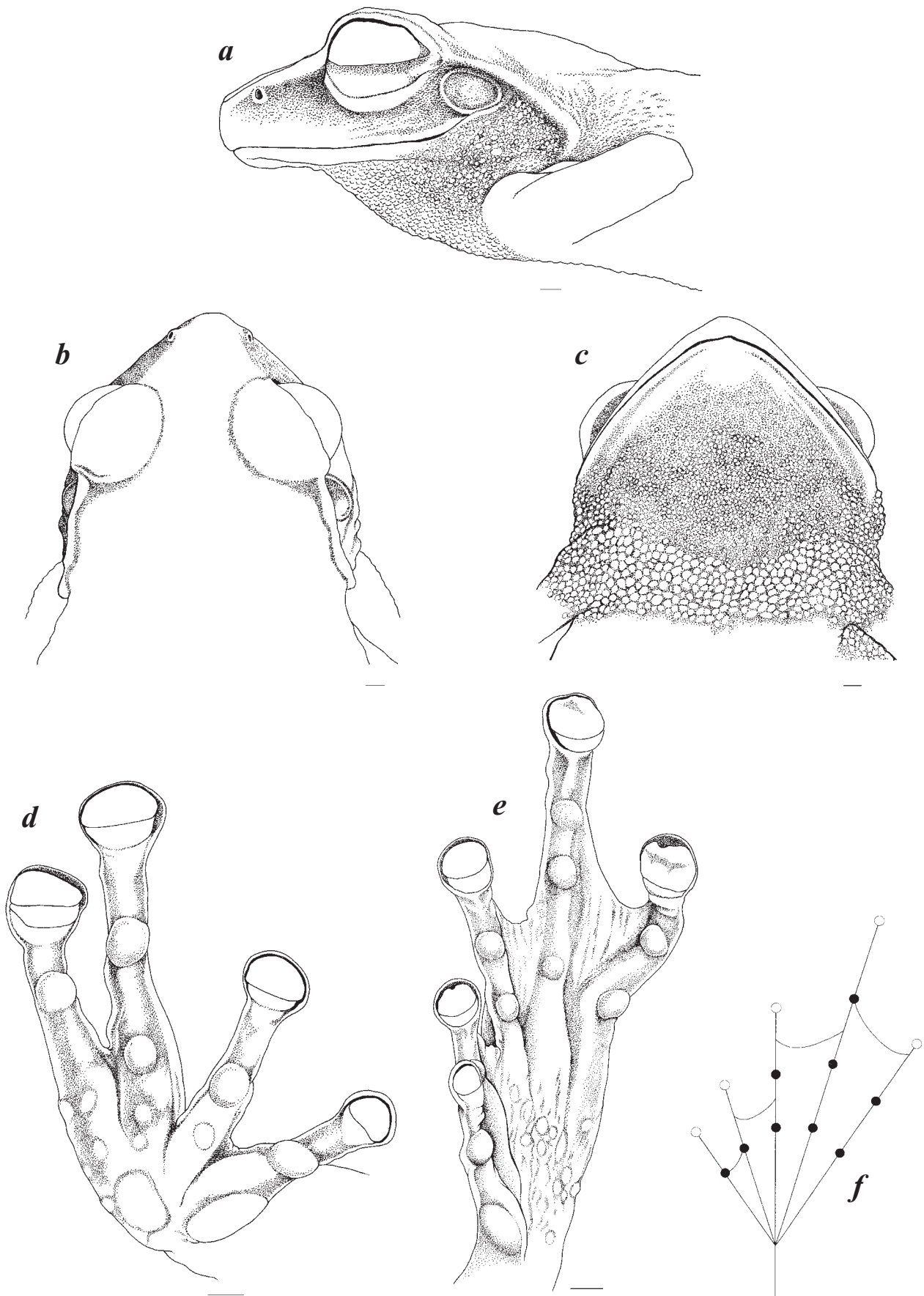


Fig. 163. *Philautus silus*, new species: *a-c*, lateral, dorsal and ventral aspects respectively, of head; *d*, ventral aspect of right hand; *e*, ventral aspect of left foot; *f*, semi-diagrammatic representation of the left-foot webbing pattern of holotype, male, WHT 3453, 38.4 mm SVL. Scale bars: 1 mm.



Fig. 164. *Philautus silus*, new species, female, WHT 5426, 50.8 mm SVL.



Fig. 165. *Philautus silus*, new species, male, WHT 5427, 39.0 mm SVL.

Inner vocal slits present in males. Yellow nuptial pad present on fingers of males.

Colour in life: (Figs. 164, 165), head dorsally yellowish brown. Loreal, temporal and tympanic regions dark brown. Lower edge of supratympanic fold black, its upper edge golden orange. A dark-brown interorbital bar. Dorsum (including limbs) pale ashy brown, with two dark-brown dorsolateral bands. Flanks yellow with dark-brown patches. Chin and chest pale ashy white with pale-brown pigments. Abdomen ashy red. Limbs with pale-brown dorsal crossbars, ventrally pink. Posterior edge of thigh reddish pale-brown, with pale ashy spots. Palm and foot ventrally ashy dark-brown.

Colour in alcohol: (based on holotype, WHT 3453), body dorsally grey with black spots. A dark interorbital bar. A W-shaped dark-grey marking on anterior dorsum; three longitudinal bands on posterior dorsum. Upper flank light grey with black spots; lower flank pale yellow with black spots. Inguinal zone pale yellow with dark-brown or black patches. Loreal and tympanic regions dark brown. Tympanum dark brown. Upper lip grey with black spots. Dorsal part of forelimb, thigh, shank and foot grey with black spots and indistinct dark crossbars. Posterior part of thigh dark brown with pale-yellow patches. Throat, margin of throat and chest pale yellow with black spots. Belly pale yellow. Underside of thigh pale yellow with black pigments. Webbing ventrally dark brown.

Measurements of holotype: (WHT 3453, in mm), DBE, 13.5; DFE, 7.8; DL, 1.7; DW, 2.4; ED, 5.4; EN, 3.4; ES, 6.1; FEL, 22.4; FL I, 3.5; FL II, 4.4; FL III, 7.4; FL IV, 6.0; FOL, 30.1; HL, 14.6; HW, 15.6; IML, 1.8; IN, 3.9; IO, 4.1; LAL, 7.9; MBE, 5.3; MFE, 9.2; MN, 12.3; NS, 3.0; PAL, 12.5; SVL, 38.7; TBL, 22.2; TL I, 3.5; TL II, 4.1; TL III, 6.4; TL IV, 10.0; TL V, 7.6; TYD, 1.2; TYE, 2.2; UAW, 6.6; UEW, 3.7.

Etymology. – The species name *silus* is Latin for ‘pug-nosed’: a reference to the blunt snout of this species.

Remarks. – *Philautus silus* resembles *P. microtympanum* (see Remarks under *P. microtympanum*).

Distribution. – *Philautus silus* is known from only two populations, in the lower central hills (1550–1600 m elevation; Fig. 166) near Agarapatana and Haputale, on either side of the Horton Plains plateau (2,100 m elevation). A habitat generalist, it occurs in both closed-canopy forests and open, anthropogenic habitats. Adult males and females were observed at night on stream banks and perched on branches, 1–4 m above ground.

Conservation status. – Extent of Occurrence: 500 km² — Agra Bopath, Tangamalai Sanctuary. Outcome: Endangered (criteria B1 a, b (iii)). Both sites in which this species occurs are threatened by illegal firewood harvesting.



Fig. 166. Distribution of *Philautus silus*, new species, in Sri Lanka.

Manamendra-Arachchi & Pethiyagoda: Sri Lankan *Philautus*

Table 1. List of nominal Sri Lankan species previously assigned to *Philautus*, in order of specific epithet, showing original name, authorship, typification, subjective taxonomic status, conservation status assessed for the IUCN *Red List of threatened species* based on material collected in the WHT survey (threat categories— Extinct, EX; Critically Endangered, CR; Endangered, EN; Vulnerable, VU; Near Threatened, NT; Least Concern, LC; and Data Deficient, DD) and Red List criteria on which assessment is based. * Indicates specimens that are lost or misplaced.

original name (synonyms indented)	name-bearing type	designation	taxonomic status	conserv. status	Red List criteria
<i>Polypedates schmarda</i> Kelaart, 1854	WHT3353	Neotype	Valid	EN	B1 a, b (iii)
<i>Ixalus poecilopleurus</i> Lichtenstein, Weinland & von Martens, 1856	ZMB3058	Holotype	Synonym	—	—
<i>Ixalus leucorhinus</i> Lichtenstein Weinland & von Martens, 1856	ZMB 3057	Holotype	Valid	EX	—
<i>Ixalus variabilis</i> Günther, 1859	BMNH 1947.2.7.87	Lectotype	Valid	EX	—
<i>Polypedates microtypanum</i> Günther, 1859	BMNH 1947.2.8–48	Lectotype	Valid	EN	B1 a, b (iii)
<i>Polypedates reticulatus</i> Günther, 1864	BMNH 1947.2.8.60	Holotype	Valid	EN	B1 a, b (iii)
<i>Ixalus femoralis</i> Günther, 1864	BMNH 1947.2.26.89	Holotype	Valid	EN	B1 a, b (iii)
<i>Ixalus fergusonii</i> Günther, 1876	BMNH 1947.2.26.91	Holotype	Synonym	—	—
<i>Ixalus pulchellus</i> Günther, 1872	BMNH 1947.2.26.90	Holotype	Synonym	—	—
<i>Ixalus temporalis</i> Günther, 1864	BMNH 1947.2.6.9	Lectotype	Valid	EX	—
<i>Polypedates nanus</i> Günther, 1869	BMNH 1947.2.7.78	Lectotype	Valid	EX	—
<i>Ixalus macropus</i> Günther, 1869	BMNH 1947.2.8.78	Holotype	Valid	CR	B1 a, b (iii)
<i>Polypedates cavirostris</i> Günther, 1869	BMNH 1947.2.7.83	Holotype	Valid	EN	B1 a, b (iii)
<i>Ixalus fimbriatus</i> Günther, 1872	BMNH 1947.2.31.29	Holotype	Synonym	—	—
<i>Ixalus nasutus</i> Günther, 1869	BMNH 1947.2.6.21	Holotype	Valid	EX	—
<i>Ixalus oxyrhynchus</i> Günther, 1872	BMNH 1947.2.6.40	Lectotype	Valid	EX	—
<i>Ixalus adspersus</i> Günther, 1872	BMNH 1947.2.6.23	Holotype	Valid	EX	—
<i>Ixalus hypomelas</i> Günther, 1876	BMNH 1947.2.27.8	Lectotype	Valid	EX	—
<i>Rhacophorus fergusonianii</i> Boulenger, 1882	BMNH 1947.2.27.61	Holotype	Valid	LC	—
<i>Ixalus halyi</i> Boulenger, 1904	BMNH 1947.2.6.16	Holotype	Valid	EX	—
<i>Rhacophorus zimmeri</i> Ahl, 1927	ZMB 6111	Holotype	Valid	EX	—
<i>Rhacophorus malcolmsmithi</i> Ahl, 1927	ZMB 9037	Holotype	Valid	EX	—
<i>Rhacophorus rugatus</i> Ahl, 1927	ZMB 8557	Holotype	Valid	EX	—
<i>Rhacophorus dimbullae</i> Shreve, 1940	MCZ A-20878	Holotype	Valid	EX	—
<i>Philautus eximius</i> Shreve, 1940	MCZ A-20879	Holotype	Valid	EX	—
<i>Polypedates stellata</i> Kelaart, 1853	Not recorded	Holotype	Valid	EX	—
<i>Ixalus sarasinorum</i> Müller, 1887	NHMB 1217	Lectotype*	Valid	EN	B1 a, b (iii)
<i>Rhacophorus pleurotaenia</i> Boulenger, 1904	BMNH 1947.2.7.64	Holotype*	Valid	EN	B1 a, b (iii)
<i>Ixalus stictomerus</i> Günther, 1876	BMNH 1947.2.8.54	Holotype*	Valid	VU	B1 a, b (iii)
<i>Ixalus semiruber</i> Annandale, 1913	ZSIC 17401	Holotype*	Uncertain	DD	—

Table 2. List of new species-names in *Philautus* made available from the present work (in alphabetical order of specific epithet), indicating name-bearing type, approximate range and conservation status assessed for the IUCN *Red List of threatened species* based on material collected in the WHT survey (threat categories: Extinct, EX; Critically Endangered, CR; Endangered, EN; Vulnerable, VU; Near Threatened, NT; and Least Concern, LC).

	name-bearing type	Range	conserv. status	Red List criteria
<i>abundus</i>	WHT3006	78–150 m asl; widely distributed throughout south-western lowlands	LC	—
<i>alto</i>	WHT 2721	1890–2135 m asl; restricted to Horton Plains NP and surrounding forests	EN	B1 a, b (iii)
<i>asankai</i>	WHT 5425	810–1830 m asl; Peak Wilderness, Agra-Bopath FR.	EN	B1 a, b (iii)
<i>auratus</i>	WHT 2356	510–1270 m asl; throughout the Sinharaja WHS, including the eastern sector.	EN	B1 a, b (iii)
<i>caeruleus</i>	WHT 2514	810–1370 m asl; Peak Wilderness Sanctuary.	EN	B1 a, b (iii)
<i>cuspis</i>	WHT 1177(e)	150–660 m asl; Sinharaja WHS and southern closed-canopy forests.	EN	B1 a, b (iii)
<i>decoris</i>	WHT 2358	80–1060 m asl; restricted to Morningside and Pituwela FRs.	EN	B1 a, b (iii)
<i>extirpo</i>	NHMB 1236	‘Ceylon’.	EX	—
<i>folicola</i>	WHT 2645	60–660 m asl; anthropogenic habitats in SW wet zone.	EN	B1 a, b (iii)
<i>fulvus</i>	WHT 2949	450–1220 m asl; the Knuckles Range.	EN	B1 a, b (iii)
<i>hoipolloi</i>	WHT 2673	15–700 m asl; synanthropic, throughout the SW wet zone and mid-hills.	LC	—
<i>limbus</i>	WHT 2700	660 m asl; restricted to vicinity of Haycock (Hiniduma) Forest Reserve.	CR	B1 a, b (iii)
<i>lunatus</i>	WHT 3283	1270 m asl; restricted to Handapan Ella Plains, eastern Sinharaja	CR	B1 a, b (iii)
<i>nemus</i>	WHT1319	660 m asl; restricted to the Hiniduma FR.	CR	B1 a, b (iii)
<i>ocularis</i>	WHT 2360	1060–1270 m asl; restricted to Morningside and Handapan Ella FRs, E. Sinharaja.	EN	B1 a, b (iii)
<i>papillosus</i>	WHT 3284	1270 m asl; restricted to Handapan Ella Plains, eastern Sinharaja	CR	B1 a, b (iii)
<i>popularis</i>	WHT 3469	15–700 m asl; synanthropic, throughout the SW wet zone and mid-hills.	LC	—
<i>procax</i>	WHT 3279	70–1060 m asl; widely distributed throughout the lowland SW wet zone.	CR	B1 a, b (iii)
<i>regius</i>	WHT 3122	100 m asl; presently known only from Polonnaruwa; range probably much wider.	NT	—
<i>rus</i>	WHT 3474	600 m asl; anthropogenic habitats in the outskirts of Kandy.	NT	—
<i>silus</i>	WHT 3451	1550–1600 m asl; restricted to the Agra-Bopath FR and Tangamalai Sanctuary.	EN	B1 a, b (iii)
<i>silvaticus</i>	WHT 3295	510–1270 m asl; throughout the Sinharaja WHS, including the eastern sector.	NT	—
<i>simba</i>	WHT 3464	1060 m asl; restricted to Morningside Forest Reserve, eastern Sinharaja WHS.	CR	B1 a, b (iii)
<i>sordidus</i>	WHT 2379	80–1060 m asl; widely distributed across SW wet zone.	NT	—
<i>viridis</i>	WHT 5127	1555–1830 m asl; Agra-Bopath FR and adjacent forests	EN	B1 a, b (iii)
<i>zal</i>	BMNH 1947.2.8.45	‘Ceylon’	EX	—
<i>zorro</i>	WHT 3169	680 m asl; restricted to the Gannoruwa Forest Reserve.	EN	B1 a, b (iii)

Table 3. Measurements, as a percentage of head length (HL), of neotype male, 25 males and 2 females of *Philaenus schmarda*; holotype female and 10 females of *P. cavirostris*; holotype female, 3 paratype females and 9 paratype males of *P. decoris*; female holotype of *P. extirpo*; holotype female, 9 females and 2 males of *Philaenus reticulatus*; and holotype male of *P. papillosum* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. schmarda</i>		<i>P. cavirostris</i>		<i>P. decoris</i>		<i>P. extirpo</i>		<i>P. reticulatus</i>		<i>P. papillosum</i>	
	male (n=26) range	female (n=2) range	female (n=11) range	male (n=9) range	female (n=4) range	female range	male (n=2) range	female (n=10) range	male holotype			
DBE	83.9 – 93.4	81.1 – 88.0	75.8 – 85.8	78.3 – 86.7	80.0 – 86.6	86.1	88.5 – 89.2	77.7 – 88.3	94.6			
DFE	49.1 – 58.5	54.4 – 54.4	53.0 – 63.8	47.4 – 57.0	53.5 – 55.2	49.1	53.5 – 54.9	47.9 – 55.9	60.1			
DL	6.7 – 10.3	7.8 – 8.8	8.6 – 11.4	7.2 – 12.9	7.3 – 9.0	9.7	9.7 – 11.5	8.8 – 11.5	11.3			
DW	12.7 – 18.8	10.0 – 13.6	10.4 – 17.2	12.4 – 16.5	11.1 – 13.4	12.1	9.9 – 14.6	8.5 – 15.2	17.9			
ED	30.9 – 37.7	32.2 – 33.6	25.9 – 35.4	29.5 – 38.6	34.0 – 37.4	36.4	35.1 – 39.6	29.2 – 39.0	35.7			
EN	28.3 – 31.7	27.8 – 28.8	28.1 – 34.7	25.3 – 31.5	27.3 – 31.7	23.0	24.9 – 26.9	23.2 – 33.0	26.2			
ES	45.5 – 49.4	43.2 – 44.4	41.4 – 49.2	41.1 – 47.7	42.4 – 46.3	40.0	40.7 – 41.6	36.2 – 49.5	44.0			
FEL	107.1 – 125.0	112.2 – 112.8	105.8 – 124.9	96.8 – 122.9	104.0 – 119.5	118.8	115.9 – 116.2	115.2 – 140.1	123.2			
FL I	16.1 – 21.5	16.7 – 18.4	18.1 – 22.2	14.6 – 18.6	14.1 – 17.1	20.0	20.5 – 20.9	18.8 – 24.6	22.0			
FL II	24.4 – 29.0	21.1 – 24.0	21.3 – 27.5	17.9 – 24.1	20.0 – 23.2	25.5	25.4 – 26.9	23.2 – 27.2	25.6			
FL III	38.2 – 47.7	33.3 – 37.6	33.1 – 40.8	31.5 – 44.2	30.3 – 36.6	46.1	44.9 – 45.1	40.2 – 49.3	46.4			
FL IV	30.5 – 40.2	27.8 – 32.0	27.9 – 38.9	27.2 – 31.3	25.3 – 30.5	33.3	34.6 – 35.7	32.6 – 38.5	41.7			
FOL	160.0 – 177.9	145.6 – 160.0	146.5 – 166.8	136.8 – 165.1	144.4 – 163.8	166.1	176.2 – 181.3	18.0 – 192.0	172.0			
HL	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0	100.0 – 100.0	100.0 – 100.0	100.0			
HW	89.3 – 98.9	82.2 – 98.4	94.7 – 104.6	87.0 – 97.6	89.9 – 95.0	103.0	104.9 – 108.1	94.2 – 114.2	103.6			
IML	8.9 – 11.2	6.7 – 10.4	8.7 – 11.5	8.7 – 14.1	8.5 – 10.1	10.3	10.8 – 11.0	9.9 – 12.3	10.7			
IN	21.8 – 26.8	22.4 – 23.3	18.2 – 22.4	20.7 – 24.4	22.0 – 23.8	26.1	23.1 – 24.3	21.9 – 25.9	25.0			
IO	23.6 – 29.0	21.1 – 26.4	19.7 – 26.4	23.9 – 30.1	25.0 – 28.6	30.3	26.4 – 27.6	23.7 – 27.8	30.4			
LAL	46.7 – 53.8	42.2 – 51.2	45.9 – 55.4	42.1 – 49.4	44.4 – 69.5	55.2	48.6 – 59.3	52.3 – 65.8	50.0			
MIB	32.1 – 37.3	35.2 – 37.8	32.7 – 39.3	32.6 – 40.2	32.3 – 35.2	38.8	39.5 – 41.2	36.9 – 42.7	39.9			
MFE	55.1 – 61.8	62.2 – 64.8	56.6 – 63.0	54.5 – 61.8	59.8 – 65.7	68.5	65.9 – 65.9	59.8 – 68.4	65.5			
MN	82.2 – 86.0	87.8 – 88.8	82.3 – 90.7	79.3 – 90.4	86.0 – 89.5	87.3	87.0 – 90.1	81.3 – 92.9	88.1			
NS	15.0 – 19.8	15.6 – 16.0	13.1 – 16.1	13.3 – 18.6	14.6 – 16.2	17.0	14.3 – 17.8	14.3 – 16.8	18.5			
PAL	72.0 – 84.1	60.0 – 68.8	66.3 – 74.2	58.9 – 71.1	62.6 – 71.4	73.9	73.5 – 76.9	67.1 – 84.0	78.6			
SVL	215.9 – 240.9	221.1 – 240.0	205.1 – 246.4	215.8 – 240.0	216.2 – 231.7	263.6	231.4 – 242.3	214.6 – 275.0	238.1			
TBL	117.3 – 129.0	117.8 – 118.4	115.2 – 130.6	97.9 – 126.5	113.0 – 128.6	118.8	132.4 – 144.5	128.1 – 152.9	131.0			
TL I	15.7 – 19.6	15.6 – 16.8	14.2 – 21.2	9.6 – 19.3	14.1 – 17.1	20.0	21.6 – 22.5	18.3 – 22.1	20.8			
TL II	22.5 – 29.0	20.0 – 22.4	19.7 – 26.7	18.1 – 22.9	19.2 – 23.2	23.0	26.4 – 26.5	23.6 – 26.2	24.4			
TL III	36.6 – 43.9	31.1 – 36.8	33.1 – 41.4	32.6 – 36.1	31.3 – 36.6	37.0	40.0 – 40.7	36.6 – 41.4	38.7			
TL IV	50.0 – 66.1	42.2 – 56.8	42.5 – 61.5	47.4 – 62.9	45.0 – 59.0	65.5	56.8 – 59.3	52.7 – 62.4	57.1			
TL V	35.4 – 48.6	31.1 – 38.4	35.4 – 45.3	32.6 – 37.6	32.3 – 39.0	39.4	44.3 – 44.5	40.2 – 47.7	45.8			
TYD	4.7 – 9.1	6.4 – 8.9	5.1 – 10.4	4.5 – 8.4	2.0 – 5.7	—	11.4 – 12.1	9.7 – 15.1	11.9			
TYE	12.3 – 14.4	12.0 – 12.2	11.7 – 15.2	11.6 – 14.1	10.0 – 15.2	—	14.6 – 15.4	12.5 – 18.1	13.1			
UAW	33.7 – 50.0	37.6 – 42.2	32.3 – 50.3	31.6 – 46.1	40.0 – 43.9	44.2	41.6 – 44.0	38.3 – 54.7	50.6			
UEW	23.3 – 27.7	21.1 – 25.6	22.4 – 27.8	16.9 – 23.9	20.0 – 23.8	27.9	24.9 – 26.9	21.9 – 28.8	24.4			

Table 4. Measurements, as a percentage of head length (HL), of lectotype female, 12 females and 2 males of *Philautus microtypanum*; holotype male, 6 paratype males and 5 paratype females of *P. silus*; lectotype female and 2 paralectotype females of *Philautus temporalis*; lectotype male of *P. nanus*; holotype male, 10 paratype males and 1 paratype female of *P. rus*; and holotype male, 8 paratype males and 1 paratype female of *P. popularis* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. microtypanum</i>		<i>P. silus</i>		<i>P. temporalis</i>		<i>P. nanus</i>		<i>P. rus</i>		<i>P. popularis</i>	
	male (n=2) range	female (n=13) range	male (n=7) range	female (n=5) range	female (n=3) range	male lectotype	male (n=11) range	female paratype	male (n=9) range	female		
DBE	89.9 – 92.6	83.1 – 94.8	87.3 – 96.3	82.5 – 92.7	76.3 – 84.9	92.0	81.6 – 89.0	85.7	83.8 – 94.6		83.0	
DFE	53.7 – 53.9	47.9 – 53.4	50.6 – 56.4	51.3 – 55.3	50.0 – 52.0	58.4	48.0 – 53.4	50.5	50.0 – 57.1		51.0	
DL	9.0 – 10.7	6.9 – 13.1	8.5 – 11.6	8.9 – 29.0	9.3 – 10.4	8.0	8.7 – 11.0	8.6	9.0 – 12.3		9.0	
DW	12.4 – 16.1	11.8 – 16.3	13.6 – 16.4	13.0 – 17.4	8.4 – 12.0	8.8	11.2 – 13.7	12.4	10.8 – 14.9		12.0	
ED	33.7 – 37.6	28.7 – 35.4	34.8 – 38.6	28.9 – 36.6	36.0 – 37.0	40.9	33.3 – 40.4	37.1	34.7 – 42.0		34.0	
EN	22.5 – 24.8	19.6 – 23.1	23.3 – 26.4	23.5 – 25.2	26.4 – 28.8	26.3	24.3 – 27.5	26.7	23.0 – 25.3		24.0	
ES	41.6 – 43.6	40.3 – 42.5	17.9 – 42.5	41.0 – 42.6	13.6 – 41.6	40.9	39.8 – 45.1	41.9	40.0 – 45.3		25.0	
FEL	125.8 – 140.3	112.1 – 150.3	124.2 – 153.4	129.3 – 146.3	108.8 – 126.9	138.0	118.2 – 130.7	125.7	120.0 – 133.3		114.0	
FL I	21.3 – 22.8	20.7 – 26.8	19.6 – 24.1	21.0 – 26.4	15.1 – 17.6	18.2	19.2 – 21.4	19.0	17.6 – 21.3		16.0	
FL II	27.5 – 28.1	28.7 – 31.7	24.6 – 30.1	25.5 – 32.5	19.5 – 20.2	23.4	22.1 – 27.3	22.9	24.3 – 27.3		23.0	
FL III	46.3 – 53.9	43.1 – 54.2	43.1 – 50.7	40.7 – 49.7	31.4 – 40.3	38.7	35.0 – 40.9	37.1	35.9 – 50.6		37.0	
FL IV	38.3 – 39.3	36.2 – 41.5	35.9 – 48.6	33.0 – 44.7	26.3 – 28.0	32.8	30.1 – 34.1	30.5	29.3 – 33.8		30.0	
FOL	179.9 – 211.2	189.0 – 206.5	181.7 – 206.2	172.4 – 199.0	154.4 – 168.9	183.2	161.2 – 188.6	176.2	162.8 – 184.0		161.0	
HL	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0	100.0 – 100.0	100.0	100.0 – 100.0		100.0	
HW	98.9 – 102.0	94.1 – 103.8	95.2 – 106.8	96.7 – 107.0	92.8 – 97.5	103.6	91.3 – 97.8	91.4	89.3 – 98.7		91.0	
IML	11.4 – 13.5	9.2 – 13.1	10.0 – 12.7	11.4 – 13.9	7.6 – 9.6	9.5	9.5 – 12.2	9.5	6.4 – 11.1		9.0	
IN	26.2 – 28.1	24.5 – 27.5	24.7 – 26.7	25.5 – 27.6	22.9 – 26.4	24.1	23.5 – 26.3	24.8	25.6 – 28.0		25.0	
IO	25.5 – 31.5	26.5 – 31.5	25.3 – 30.9	25.0 – 28.1	26.4 – 29.7	27.7	24.0 – 28.4	26.7	26.3 – 31.1		31.0	
LAL	49.0 – 58.4	48.8 – 62.8	54.1 – 60.7	52.5 – 55.3	52.9 – 55.2	60.6	46.2 – 52.3	49.5	50.0 – 54.5		48.0	
MIB	34.2 – 42.7	37.7 – 44.8	33.6 – 38.6	35.5 – 39.1	32.8 – 38.4	35.0	34.0 – 40.2	40.0	33.3 – 40.5		38.0	
MFE	63.1 – 68.5	62.0 – 66.1	62.5 – 65.2	61.7 – 65.0	65.3 – 66.4	69.3	62.1 – 64.8	63.8	61.3 – 67.6		63.0	
MN	83.9 – 85.4	81.6 – 84.9	83.8 – 86.4	83.8 – 87.8	27.7 – 89.8	90.5	84.5 – 89.1	87.6	84.0 – 89.6		87.0	
NS	18.8 – 23.6	19.0 – 22.6	16.4 – 20.5	18.4 – 20.8	15.1 – 16.1	14.6	14.8 – 18.7	16.2	17.3 – 20.0		18.0	
PAL	80.5 – 89.9	77.2 – 89.4	71.2 – 85.6	77.2 – 85.1	60.2 – 67.2	76.6	67.7 – 76.9	70.5	69.2 – 79.2		66.0	
SVL	249.0 – 268.5	220.5 – 267.8	239.2 – 265.1	233.0 – 257.7	239.5 – 248.0	254.0	219.2 – 237.3	220.0	230.8 – 263.0		247.0	
TBL	137.6 – 142.7	127.4 – 144.9	133.3 – 152.1	141.0 – 154.1	115.2 – 128.6	138.7	122.2 – 138.6	132.4	13.0 – 138.3		119.0	
TL I	21.5 – 22.5	21.6 – 25.5	20.3 – 24.3	20.5 – 23.4	16.0 – 17.6	18.2	17.4 – 21.6	19.0	17.3 – 20.8		19.0	
TL II	25.5 – 28.1	26.8 – 30.4	25.4 – 29.1	25.2 – 29.4	20.0 – 21.0	24.1	21.7 – 25.5	22.9	21.8 – 24.7		21.0	
TL III	42.3 – 47.2	42.0 – 47.1	41.3 – 46.4	39.8 – 46.8	31.2 – 32.8	34.3	36.4 – 40.8	37.1	33.3 – 41.2		34.0	
TL IV	62.4 – 74.2	66.9 – 73.2	62.1 – 68.5	61.8 – 69.2	48.0 – 54.6	56.2	52.4 – 62.5	61.9	50.0 – 64.7		53.0	
TL V	45.6 – 50.6	46.8 – 52.6	45.2 – 52.1	47.2 – 53.2	30.5 – 36.1	41.6	36.4 – 45.1	39.0	38.7 – 44.6		36.0	
TYD	8.1 – 15.7	9.2 – 14.7	5.7 – 10.3	8.0 – 12.7	6.4 – 6.8	11.7	5.5 – 9.9	5.7	2.7 – 8.1		7.0	
TYE	12.4 – 14.8	11.8 – 14.6	11.8 – 15.1	12.4 – 15.4	13.6 – 16.9	13.9	13.2 – 15.2	14.3	10.7 – 21.2		14.0	
UAW	47.7 – 51.7	40.4 – 56.3	44.3 – 51.6	40.0 – 48.8	44.8 – 48.7	56.9	33.0 – 46.6	42.9	37.2 – 45.9		40.0	
UEW	22.5 – 24.2	20.0 – 26.7	25.3 – 32.9	23.4 – 27.6	21.2 – 26.9	27.0	24.2 – 29.1	23.8	20.3 – 27.0		20.0	

Table 5. Measurements, as a percentage of head length (HL), of holotype male, 3 paratype males and 2 paratype females of *P. hypomelas*; holotype female of *P. oxyrhynchus*; holotype female of *Philaotus variabilis*; holotype female of *P. eximius*; holotype female, 8 females and 10 males of *P. macropus*; and holotype female, 14 paratype females and 7 paratype males of *P. sordidus* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. caeruleus</i>		<i>P. hypomelas</i>		<i>P. oxyrhynchus</i>		<i>P. variabilis</i>		<i>P. eximius</i>		<i>P. macropus</i>		<i>P. sordidus</i>	
	male (n=4) range	female (n=2) range	female holotype	female lectotype	female holotype	female holotype	male (n=10) range	female (n=9) range	male (n=7) range	female (n=15) range				
DBE	76.8 – 82.2	74.4 – 83.6	84.3	—	94.7	90.1	87.1 – 94.7	84.9 – 93.9	82.7 – 93.4	77.8 – 89.9				
DFE	50.0 – 52.9	50.0 – 54.8	56.6	—	54.1	50.7	51.6 – 55.0	26.2 – 58.6	41.2 – 54.4	42.9 – 53.4				
DL	8.2 – 12.1	8.5 – 9.6	10.8	—	12.0	10.6	9.3 – 17.7	10.4 – 12.8	9.2 – 11.8	7.9 – 10.8				
DW	9.6 – 10.6	9.8 – 12.3	9.6	—	11.3	13.4	10.5 – 19.7	15.0 – 17.6	12.3 – 17.6	10.4 – 16.0				
ED	34.8 – 35.6	31.7 – 34.2	36.1	33.0	39.1	32.4	34.7 – 42.5	34.6 – 39.5	37.5 – 49.6	31.1 – 47.2				
EN	21.9 – 25.8	20.7 – 21.9	25.3	23.1	26.3	23.9	25.0 – 28.6	24.5 – 30.1	21.8 – 27.2	21.8 – 27.1				
ES	39.1 – 41.1	36.6 – 42.5	42.2	40.7	43.6	38.7	42.7 – 46.2	40.6 – 45.9	37.0 – 46.3	36.8 – 44.3				
FEL	114.5 – 133.8	130.5 – 131.5	131.3	105.5	139.1	128.9	135.1 – 153.8	134.9 – 169.2	118.5 – 138.9	118.0 – 138.1				
FL I	14.5 – 17.6	15.9 – 17.8	15.7	—	22.6	18.3	21.8 – 24.8	22.0 – 25.2	21.3 – 26.5	16.5 – 25.6				
FL II	20.6 – 21.9	18.3 – 21.9	20.5	—	29.3	23.2	28.4 – 31.6	26.6 – 30.5	24.3 – 30.1	23.8 – 29.3				
FL III	30.3 – 36.2	34.1 – 41.1	33.7	—	49.6	39.4	47.4 – 53.0	39.5 – 51.5	43.7 – 52.2	40.2 – 52.0				
FL IV	26.0 – 29.4	25.6 – 26.0	24.1	—	35.3	31.0	37.9 – 43.4	30.3 – 42.0	34.6 – 41.4	32.3 – 41.6				
FOL	169.6 – 183.8	183.6 – 187.8	—	140.7	188.7	172.5	141.9 – 195.8	176.3 – 206.8	172.3 – 194.9	163.9 – 190.8				
HL	100.0 – 100.0	100.0 – 100.0	100.0	100.0	100.0	100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0				
HW	84.1 – 97.0	86.6 – 90.4	90.4	79.1	111.3	105.6	91.4 – 99.1	89.6 – 102.3	91.7 – 99.3	89.5 – 100.8				
IML	9.1 – 11.6	9.8 – 11.0	9.6	—	114.3	10.6	11.7 – 13.7	10.7 – 14.0	9.6 – 12.5	10.3 – 12.7				
IN	30.1 – 31.9	30.1 – 31.7	28.9	26.4	24.1	21.1	25.0 – 27.1	24.4 – 29.0	22.7 – 24.8	22.0 – 26.3				
IO	30.4 – 33.8	32.9 – 32.9	32.5	—	33.1	26.1	22.0 – 26.4	22.4 – 26.0	21.4 – 24.4	18.4 – 25.4				
LAL	49.3 – 63.6	50.7 – 61.0	—	—	60.2	54.2	47.7 – 56.6	45.3 – 66.2	52.9 – 67.7	48.9 – 68.8				
MIBE	37.0 – 39.7	35.6 – 41.5	47.0	—	43.6	40.1	31.9 – 37.3	31.8 – 38.3	34.4 – 41.5	33.3 – 45.3				
MFE	65.2 – 66.2	63.0 – 64.6	68.7	—	69.9	66.2	61.3 – 66.4	61.2 – 103.1	64.7 – 70.8	61.9 – 74.6				
MN	84.8 – 87.0	84.1 – 84.9	88.0	—	91.0	86.6	84.0 – 99.2	82.1 – 86.9	86.3 – 89.7	86.5 – 90.8				
NS	16.7 – 19.2	17.1 – 20.5	18.1	19.8	20.3	14.8	16.4 – 20.5	16.0 – 19.3	14.6 – 19.1	12.2 – 17.2				
PAL	62.1 – 69.1	62.2 – 67.1	—	—	78.9	71.8	76.3 – 86.7	76.3 – 84.2	73.1 – 86.0	69.1 – 80.6				
SVL	236.2 – 251.5	231.7 – 242.5	251.8	212.1	268.4	248.6	76.3 – 86.7	76.3 – 84.2	73.1 – 86.0	69.1 – 80.6				
TBL	121.7 – 139.7	135.6 – 139.0	144.6	118.7	132.3	122.5	250.8 – 266.7	240.6 – 280.9	232.4 – 270.6	226.9 – 274.4				
TL I	18.2 – 22.1	17.1 – 20.5	15.7	—	21.8	21.1	123.7 – 146.2	125.7 – 160.9	122.6 – 143.1	119.6 – 146.9				
TL II	21.9 – 27.9	23.2 – 23.3	21.7	—	26.3	24.6	22.9 – 26.1	21.1 – 26.7	19.1 – 23.7	17.7 – 23.8				
TL III	36.2 – 41.2	37.0 – 37.8	36.1	—	42.1	35.2	26.7 – 33.0	26.6 – 50.4	24.4 – 29.4	24.4 – 28.0				
TL IV	55.1 – 62.1	57.5 – 61.0	54.2	—	60.9	52.1	43.5 – 49.6	42.1 – 49.6	37.5 – 44.9	35.3 – 42.7				
TL V	35.6 – 38.2	36.6 – 37.0	36.1	—	45.9	38.0	47.3 – 52.9	44.7 – 52.4	41.9 – 50.7	41.5 – 46.6				
TYD	8.2 – 10.3	12.2 – 12.3	12.0	17.6	—	—	9.7 – 13.6	9.2 – 15.8	7.4 – 13.2	7.1 – 14.4				
TYE	11.8 – 14.5	12.3 – 13.4	12.0	—	—	—	7.6 – 11.3	7.3 – 10.0	10.9 – 15.3	11.9 – 15.1				
UAW	42.5 – 55.1	39.7 – 61.0	—	—	55.6	—	45.7 – 57.3	45.9 – 56.4	44.4 – 57.7	45.6 – 64.8				
UEW	19.1 – 21.2	16.4 – 20.7	20.5	—	21.8	24.6	20.4 – 27.5	19.4 – 27.8	23.8 – 27.9	17.6 – 27.2				

Table 6. Measurements, as a percentage of head length (HL), of holotype female, 17 females and 9 males of *Philautus fergusonianus*; holotype male and 3 paratype males of *P. regius*; holotype female, 6 females and 1 ex male of *P. stictomerus*; 3 males and 7 females of *P. sarasinorum*; holotype male of *Philautus nasutus*; holotype female of *P. adspersus*; holotype male of *P. halyi*; holotype female of *P. dimbullae*; and holotype male of *P. zal* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. fergusonianus</i>		<i>P. regius</i>		<i>P. stictomerus</i>		<i>P. sarasinorum</i>		<i>P. nasutus</i>		<i>P. adspersus</i>		<i>P. halyi</i>		<i>P. dimbullae</i>		<i>P. zal</i>	
	male (n=9) range	female (n=18) range	male (n=4) range	male range	female (n=7) range	male (n=3) range	female (n=7) range	male holotype	female holotype	male holotype	female holotype	male holotype	female holotype	male holotype	female holotype	male holotype	female holotype	
DBE	83.3 – 94.8	76.5 – 85.8	82.9 – 90.7	78.4	75.0 – 81.9	83.5 – 88.6	81.5 – 92.4	86.1	86.0	—	—	86.5	—	—	—	—	—	
DFE	44.7 – 56.3	44.4 – 55.8	51.2 – 54.1	46.1	43.4 – 48.3	51.2 – 55.2	50.0 – 59.0	54.4	48.8	—	—	49.4	—	—	—	—	—	
DL	7.6 – 11.3	7.5 – 11.1	7.3 – 10.5	9.8	8.0 – 9.8	9.3 – 17.1	8.5 – 18.8	11.4	10.1	—	—	9.6	—	—	—	—	—	
DW	12.9 – 19.3	11.2 – 18.0	9.8 – 12.8	10.8	10.5 – 14.2	12.4 – 14.3	10.9 – 16.4	10.1	10.9	—	—	11.8	—	—	—	—	—	
ED	35.1 – 39.4	31.2 – 45.1	38.8 – 40.5	41.2	34.6 – 39.2	32.4 – 39.0	35.3 – 39.6	34.2	37.2	—	—	30.3	—	—	—	—	—	
EN	25.8 – 30.7	25.0 – 31.5	22.0 – 24.4	26.5	25.9 – 29.5	25.0 – 27.6	23.8 – 28.0	25.3	22.5	—	—	27.5	—	—	—	—	—	
ES	38.6 – 50.4	39.6 – 46.4	39.5 – 43.2	41.2	37.8 – 43.6	41.3 – 42.9	39.6 – 45.5	43.0	34.9	—	—	43.8	—	—	—	—	—	
FEL	112.3 – 132.8	115.5 – 138.9	114.6 – 131.4	115.7	102.7 – 115.8	113.2 – 155.2	117.7 – 157.5	115.2	117.1	—	—	147.8	—	—	—	—	—	
FL I	18.2 – 25.9	20.9 – 24.7	19.8 – 20.7	16.7	17.3 – 20.3	21.5 – 24.8	20.8 – 25.0	15.2	20.2	—	—	24.2	—	—	—	—	—	
FL II	24.2 – 30.5	25.0 – 32.0	23.2 – 26.3	19.6	20.7 – 23.7	26.4 – 31.4	24.8 – 32.1	21.5	27.1	—	—	25.3	—	—	—	—	—	
FL III	39.4 – 51.8	35.7 – 48.0	38.4 – 40.5	32.4	34.0 – 36.2	45.7 – 49.1	43.6 – 52.2	31.6	46.5	—	—	46.1	—	—	—	—	—	
FL IV	30.3 – 41.8	29.9 – 39.3	28.4 – 35.4	25.5	27.3 – 31.5	33.9 – 44.8	34.6 – 45.8	25.3	38.0	—	—	39.9	—	—	—	—	—	
FOL	156.9 – 177.4	157.5 – 179.3	173.0 – 187.5	161.8	150.7 – 168.4	167.8 – 205.7	175.2 – 200.0	153.2	158.1	—	—	200.6	—	—	—	—	—	
HL	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0	100.0	—	—	100.0	—	—	—	—	—	
HW	96.2 – 105.2	95.5 – 107.9	91.5 – 92.5	88.2	87.3 – 91.4	93.3 – 93.5	93.8 – 102.3	86.1	89.1	—	—	105.6	—	—	—	—	—	
IML	9.8 – 11.7	9.4 – 11.8	8.1 – 9.3	10.8	9.2 – 10.7	9.9 – 12.4	9.8 – 14.2	7.6	10.1	—	—	10.7	—	—	—	—	—	
IN	21.5 – 25.9	19.8 – 23.5	25.6 – 27.5	23.5	20.7 – 23.0	23.1 – 26.7	23.1 – 28.0	25.3	20.9	—	—	23.6	—	—	—	—	—	
IO	23.1 – 28.1	22.9 – 29.2	28.0 – 31.4	23.5	21.6 – 24.3	23.1 – 25.0	23.8 – 30.5	29.1	24.0	—	—	27.0	—	—	—	—	—	
LAL	48.2 – 58.3	45.0 – 64.7	50.0 – 55.0	57.8	45.3 – 66.4	45.5 – 56.2	48.5 – 67.2	57.0	52.7	—	—	60.1	—	—	—	—	—	
MIBE	29.2 – 32.8	30.7 – 37.5	29.7 – 32.9	33.3	31.5 – 38.2	34.3 – 37.0	27.6 – 36.9	40.5	36.4	—	—	37.6	—	—	—	—	—	
MFE	59.0 – 63.6	58.4 – 66.7	58.8 – 63.5	63.7	61.1 – 64.5	62.0 – 65.7	59.7 – 65.8	63.3	69.8	—	—	63.5	—	—	—	—	—	
MN	85.6 – 89.1	29.8 – 89.5	82.5 – 98.6	85.3	86.4 – 88.8	85.2 – 86.0	81.3 – 88.2	97.5	90.7	—	—	87.1	—	—	—	—	—	
NS	14.4 – 16.4	12.5 – 16.4	16.2 – 18.8	14.7	13.8 – 16.0	14.8 – 16.5	16.1 – 18.7	19.0	14.7	—	—	16.9	—	—	—	—	—	
PAL	72.3 – 82.5	65.0 – 82.7	68.3 – 75.7	62.7	62.9 – 68.0	77.7 – 87.6	75.2 – 90.3	55.7	76.0	—	—	82.6	—	—	—	—	—	
SVL	226.1 – 254.0	219.4 – 260.2	237.8 – 252.3	227.5	217.5 – 232.9	234.7 – 269.5	236.9 – 272.0	220.3	258.1	—	—	251.7	—	—	—	—	—	
TBL	123.4 – 139.3	129.9 – 141.3	130.2 – 142.5	125.5	118.5 – 130.9	124.0 – 153.3	129.5 – 152.9	120.3	0.0	—	—	150.6	—	—	—	—	—	
TL I	18.5 – 22.6	17.2 – 23.3	18.3 – 20.3	17.6	17.3 – 20.4	19.8 – 25.7	20.8 – 26.1	15.2	18.6	—	—	20.8	—	—	—	—	—	
TL II	23.8 – 27.7	20.5 – 27.3	21.6 – 24.4	22.5	20.7 – 24.3	25.6 – 31.4	25.5 – 32.8	19.0	22.5	—	—	25.8	—	—	—	—	—	
TL III	35.6 – 42.3	34.3 – 42.0	34.1 – 37.8	35.3	34.7 – 37.1	41.3 – 46.7	42.3 – 50.0	30.4	36.4	—	—	42.7	—	—	—	—	—	
TL IV	55.4 – 62.0	50.8 – 61.3	54.9 – 58.8	52.0	50.7 – 55.9	63.6 – 67.6	60.4 – 75.4	46.8	52.7	—	—	65.2	—	—	—	—	—	
TL V	40.9 – 46.7	36.8 – 45.3	40.0 – 43.0	32.4	36.0 – 39.5	44.6 – 50.5	44.6 – 53.4	30.4	41.1	—	—	48.3	—	—	—	—	—	
TYD	3.1 – 6.8	5.4 – 8.7	3.5 – 6.3	8.8	4.0 – 8.0	9.9 – 11.1	7.5 – 13.7	10.1	—	—	—	10.7	—	—	—	—	—	
TYE	12.4 – 18.5	13.4 – 16.0	12.2 – 16.3	12.7	13.3 – 15.1	9.5 – 13.0	9.2 – 12.8	13.9	—	—	—	11.8	—	—	—	—	—	
UAW	45.5 – 55.5	41.4 – 63.2	39.5 – 47.6	48.0	37.0 – 46.7	40.7 – 51.4	40.8 – 59.3	39.2	48.1	—	—	46.6	—	—	—	—	—	
UEW	22.0 – 27.0	19.3 – 25.3	24.4 – 25.7	29.4	20.4 – 24.8	22.2 – 26.7	23.1 – 29.9	25.3	23.3	—	—	24.7	—	—	—	—	—	

Table 7. Measurements, as a percentage of head length (HL), of holotype female of *Philaenus malcolmsmithi*; holotype female of *P. rugatus*; holotype male, 1 male paratype and 8 female paratypes of *P. cuspis*; holotype male, 2 paratype males and 1 paratype female of *P. zorro*; holotype male, 2 paratype males and 5 paratype females of *P. alto*; holotype female, 2 females and 6 males of *P. femoralis*; and holotype male, 14 paratype males and 2 paratype females of *P. viridis* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. malcolmsmithi</i>		<i>P. rugatus</i>		<i>P. cuspis</i>		<i>P. zorro</i>		<i>P. alto</i>		<i>P. femoralis</i>		<i>P. viridis</i>	
	female holotype	female holotype	male (n=2) range	female (n=8) range	male (n=3) range	female range	male (n=3) range	female (n=5) range	male (n=3) range	female (n=3) range	male (n=6) range	female (n=3) range	male (n=15) range	female (n=2) range
DBE	83.6	90.2	71.4 – 71.7	60.6 – 71.4	78.8 – 80.8	77.9	81.8 – 82.3	74.8 – 84.3	89.1 – 95.1	90.4 – 93.0	89.1 – 95.1	90.4 – 93.0	91.5 – 100.9	93.5 – 98.2
DFE	55.2	53.7	46.4 – 50.0	41.7 – 47.6	51.5 – 53.8	51.1	50.0 – 51.9	49.5 – 55.6	46.5 – 51.5	47.8 – 50.5	46.5 – 51.5	47.8 – 50.5	51.8 – 58.0	55.4 – 55.6
DL	9.0	9.8	7.6 – 8.3	5.5 – 7.1	8.2 – 72.1	6.9	8.3 – 11.7	7.9 – 8.9	9.2 – 13.9	9.6 – 12.2	9.2 – 13.9	9.6 – 12.2	9.9 – 12.4	10.5 – 11.6
DW	—	11.0	6.5 – 7.1	5.5 – 8.3	9.3 – 110.6	9.9	12.5 – 14.3	10.8 – 13.5	14.7 – 18.4	13.3 – 15.7	14.7 – 18.4	13.3 – 15.7	13.9 – 16.8	15.7 – 16.1
ED	35.8	36.6	31.0 – 31.5	25.8 – 31.0	33.0 – 36.5	32.8	31.2 – 34.7	28.2 – 34.5	34.4 – 38.8	35.9 – 41.7	34.4 – 38.8	35.9 – 41.7	34.7 – 39.8	33.3 – 37.5
EN	25.4	23.2	25.0 – 28.3	24.2 – 26.7	25.8 – 26.3	26.7	26.0 – 29.1	26.7 – 29.4	25.2 – 30.1	27.0 – 30.1	25.2 – 30.1	27.0 – 30.1	23.4 – 27.1	24.8 – 25.0
ES	44.8	37.8	44.0 – 45.7	41.4 – 46.6	43.3 – 43.4	42.7	41.6 – 46.8	44.1 – 48.3	41.2 – 45.3	40.9 – 43.7	41.2 – 45.3	40.9 – 43.7	39.6 – 45.4	41.1 – 42.5
FEL	122.4	109.8	114.1 – 115.5	89.8 – 119.0	103.0 – 113.5	101.5	115.6 – 118.1	115.3 – 130.3	117.6 – 128.2	117.4 – 128.7	117.6 – 128.2	117.4 – 128.7	114.4 – 131.5	117.9 – 120.3
FL I	14.9	17.1	14.3 – 15.2	11.7 – 15.0	16.5 – 18.3	15.3	17.7 – 18.2	19.8 – 22.5	19.1 – 23.2	18.3 – 23.5	19.1 – 23.2	18.3 – 23.5	19.4 – 22.8	19.6 – 22.9
FL II	17.9	23.2	17.4 – 17.9	14.6 – 19.0	20.6 – 23.2	18.3	25.3 – 29.2	22.5 – 31.5	23.7 – 31.1	21.7 – 30.4	23.7 – 31.1	21.7 – 30.4	25.7 – 30.5	24.2 – 25.9
FL III	29.9	35.4	28.3 – 28.6	21.9 – 29.1	32.7 – 35.4	29.0	41.7 – 45.6	41.2 – 57.8	36.6 – 49.5	38.3 – 46.1	36.6 – 49.5	38.3 – 46.1	39.4 – 52.2	40.5 – 43.8
FL IV	22.4	29.3	20.2 – 20.7	18.0 – 21.8	26.8 – 29.3	22.1	31.9 – 35.4	33.3 – 41.6	28.2 – 42.6	32.2 – 40.0	28.2 – 42.6	32.2 – 40.0	32.2 – 61.1	33.3 – 34.8
FOL	156.7	143.9	147.8 – 151.2	119.7 – 146.4	148.1 – 159.6	137.4	175.9 – 179.2	170.3 – 198.9	158.0 – 192.2	168.7 – 184.5	158.0 – 192.2	168.7 – 184.5	168.6 – 186.0	172.3 – 178.4
HL	100.0	100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0
HW	91.0	100.0	83.3 – 87.0	74.5 – 83.5	92.3 – 94.9	90.1	87.5 – 93.5	86.5 – 93.1	98.9 – 107.6	98.1 – 105.2	98.9 – 107.6	98.1 – 105.2	99.1 – 112.7	105.2 – 105.4
IML	7.5	8.5	7.1 – 8.7	7.1 – 8.9	9.3 – 85.6	8.4	9.1 – 11.4	9.9 – 12.4	9.2 – 12.6	9.6 – 12.6	9.2 – 12.6	9.6 – 12.6	9.9 – 13.9	9.8 – 12.4
IN	26.9	24.4	26.1 – 26.2	22.6 – 26.2	25.3 – 27.9	25.2	25.3 – 27.8	22.5 – 28.9	19.8 – 23.2	19.1 – 21.4	19.8 – 23.2	19.1 – 21.4	22.1 – 26.0	24.2 – 25.0
IO	28.4	30.5	27.2 – 28.6	21.9 – 28.6	27.9 – 28.9	25.2	29.9 – 30.6	25.2 – 33.3	28.2 – 31.7	27.8 – 33.0	28.2 – 31.7	27.8 – 33.0	27.0 – 31.5	27.5 – 31.3
LAL	41.8	46.3	40.2 – 50.0	35.4 – 44.0	42.4 – 47.4	42.0	53.2 – 56.9	50.5 – 60.7	51.1 – 59.4	52.2 – 53.4	51.1 – 59.4	52.2 – 53.4	46.8 – 56.6	49.1 – 55.6
MBE	38.8	41.5	35.9 – 38.1	34.4 – 39.7	33.7 – 35.1	39.7	35.4 – 38.9	34.2 – 38.8	32.6 – 39.6	38.3 – 40.9	32.6 – 39.6	38.3 – 40.9	34.5 – 41.4	35.7 – 41.8
MFE	64.2	67.1	57.6 – 60.7	55.5 – 60.7	58.7 – 62.9	61.1	58.2 – 63.9	60.0 – 61.8	65.3 – 68.7	67.0 – 70.9	65.3 – 68.7	67.0 – 70.9	62.5 – 66.7	63.4 – 64.3
MN	83.6	84.1	82.1 – 83.7	79.8 – 83.6	82.7 – 86.9	85.5	83.1 – 87.5	82.9 – 88.2	87.8 – 91.3	90.4 – 92.2	87.8 – 91.3	90.4 – 92.2	83.8 – 89.6	85.6 – 86.6
NS	20.9	15.9	19.6 – 20.2	18.0 – 20.2	16.3 – 20.2	18.3	18.2 – 20.8	18.9 – 22.5	12.7 – 16.0	12.2 – 13.6	12.7 – 16.0	12.2 – 13.6	15.0 – 17.6	17.0 – 18.3
PAL	56.7	62.2	53.3 – 53.6	45.3 – 52.4	62.9 – 65.4	57.3	73.4 – 81.8	70.3 – 78.7	71.0 – 98.0	71.3 – 87.4	71.0 – 98.0	71.3 – 87.4	73.7 – 84.1	71.9 – 81.3
SVL	222.4	213.4	220.7 – 226.2	195.6 – 223.3	231.7 – 236.1	229.8	232.5 – 236.1	218.8 – 249.4	238.9 – 255.4	243.7 – 247.0	238.9 – 255.4	243.7 – 247.0	235.1 – 264.9	237.3 – 244.6
TBL	125.4	107.3	119.6 – 125.0	100.7 – 123.8	117.3 – 121.2	109.2	130.4 – 133.3	130.6 – 147.2	114.5 – 138.6	122.6 – 136.9	114.5 – 138.6	122.6 – 136.9	121.2 – 136.7	125.9 – 129.4
TL I	13.4	15.9	14.3 – 15.2	12.4 – 15.5	14.4 – 18.2	14.5	19.4 – 22.1	19.8 – 22.2	18.3 – 24.2	15.7 – 22.3	18.3 – 24.2	15.7 – 22.3	19.5 – 22.0	20.3 – 20.5
TL II	17.9	20.7	16.7 – 17.4	15.3 – 19.0	19.2 – 20.2	18.3	25.3 – 26.4	25.6 – 33.3	22.9 – 27.7	20.9 – 25.2	22.9 – 27.7	20.9 – 25.2	22.9 – 27.0	25.0 – 26.8
TL III	28.4	31.7	26.2 – 28.3	24.8 – 29.8	33.0 – 33.7	29.0	37.5 – 41.6	38.7 – 46.0	27.4 – 44.7	30.4 – 40.9	27.4 – 44.7	30.4 – 40.9	38.1 – 42.6	39.3 – 41.2
TL IV	44.8	43.9	44.6 – 47.6	37.2 – 42.9	46.2 – 55.6	45.8	57.0 – 62.5	58.6 – 68.5	50.4 – 72.8	49.6 – 60.9	50.4 – 72.8	49.6 – 60.9	52.8 – 71.7	56.3 – 61.4
TLV	28.4	32.9	30.4 – 31.0	24.1 – 29.8	33.7 – 38.4	32.8	40.3 – 41.8	36.5 – 48.3	38.9 – 51.9	36.5 – 45.2	38.9 – 51.9	36.5 – 45.2	39.6 – 47.0	44.6 – 47.1
TYD	7.5	—	4.3 – 6.0	4.4 – 7.3	3.8 – 5.2	6.9	6.3 – 6.9	6.7 – 8.2	—	—	—	—	6.3 – 10.6	10.5 – 10.5
TYE	14.9	—	14.3 – 17.4	13.1 – 17.3	17.5 – 22.2	15.3	12.7 – 16.7	13.8 – 15.7	—	—	—	—	11.5 – 14.8	13.1 – 13.1
UAW	43.3	47.6	41.3 – 41.7	33.9 – 48.8	38.5 – 52.5	38.9	45.6 – 48.6	44.8 – 56.2	50.4 – 62.0	56.3 – 61.7	50.4 – 62.0	56.3 – 61.7	34.7 – 67.0	36.6 – 52.9
UEW	37.3	24.4	22.6 – 22.8	18.9 – 21.6	26.0 – 27.8	25.2	20.8 – 21.5	22.4 – 23.6	20.6 – 30.7	23.5 – 26.2	20.6 – 30.7	23.5 – 26.2	21.2 – 28.0	22.9 – 24.1

Table 8. Measurements, as a percentage of head length (HL), of 4 ex. males of *Philautus pleurotaenia*; holotype male, 2 paratype males and 4 paratype females of *P. asankai*; holotype male and 7 paratype males of *P. hoipolloi*; holotype female, 2 female paratype and 4 male paratypes of *P. auratus*; and holotype male, 2 paratype males and 3 paratype females of *P. fulvus*; and holotype male of *P. zimmeri* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. pleurotaenia</i>		<i>P. asankai</i>		<i>P. hoipolloi</i>		<i>P. auratus</i>		<i>P. fulvus</i>		<i>P. zimmeri</i>	
	male (n=4) range	female (n=4) range	male (n=3) range	female (n=4) range	male (n=8) range	male (n=4) range	female (n=3) range	male (n=3) range	female (n=3) range	male (n=3) range	female (n=3) range	male holotype
DBE	89.9 – 97.3	86.4 – 94.0	89.6 – 92.3	86.4 – 94.0	91.1 – 97.0	86.6 – 93.3	83.5 – 89.3	88.9 – 90.6	87.8 – 88.5			83.1
DFE	54.7 – 59.2	50.9 – 58.0	52.1 – 59.3	50.9 – 58.0	50.5 – 60.4	47.6 – 55.6	42.2 – 47.4	53.5 – 55.2	51.6 – 53.3			53.2
DL	10.9 – 14.6	9.9 – 12.0	10.4 – 11.5	9.9 – 12.0	10.0 – 12.1	9.2 – 10.7	9.7 – 11.6	8.7 – 9.1	9.4 – 10.4			11.3
DW	13.2 – 17.2	13.3 – 16.0	14.6 – 15.4	13.3 – 16.0	10.9 – 14.6	10.7 – 12.4	10.7 – 12.6	13.0 – 16.1	14.9 – 16.0			10.5
ED	35.0 – 37.1	31.5 – 35.2	33.0 – 33.3	31.5 – 35.2	34.6 – 37.9	34.0 – 39.3	37.6 – 38.8	32.2 – 34.8	31.9 – 33.7			36.3
EN	22.9 – 27.3	22.5 – 27.5	24.0 – 26.9	22.5 – 27.5	25.0 – 28.6	23.7 – 27.4	24.3 – 26.3	24.3 – 25.4	23.8 – 25.8			23.4
ES	40.6 – 44.5	40.0 – 44.0	40.6 – 45.1	40.0 – 44.0	41.3 – 44.0	40.2 – 42.2	37.9 – 41.1	41.7 – 43.5	41.5 – 44.0			42.7
FEL	107.3 – 127.3	102.7 – 124.2	117.7 – 138.5	102.7 – 124.2	113.0 – 126.3	111.2 – 122.6	113.8 – 121.4	135.0 – 138.9	135.1 – 140.7			123.4
FLI	18.9 – 22.3	18.0 – 22.5	17.7 – 22.0	18.0 – 22.5	15.8 – 18.9	15.3 – 18.6	14.7 – 17.5	21.0 – 23.1	21.8 – 25.3			21.8
FLII	21.7 – 25.9	24.5 – 25.3	24.0 – 28.6	24.5 – 25.3	20.6 – 24.2	18.9 – 21.6	18.9 – 21.4	25.4 – 29.9	25.0 – 29.3			26.6
FLIII	37.6 – 42.7	39.0 – 40.7	36.5 – 44.0	39.0 – 40.7	33.6 – 40.8	33.3 – 47.6	33.7 – 39.8	44.9 – 46.9	44.5 – 45.3			42.7
FLIV	32.7 – 33.6	30.0 – 37.0	30.2 – 38.5	30.0 – 37.0	23.8 – 31.1	26.2 – 30.0	24.8 – 26.3	33.3 – 38.5	33.5 – 36.8			35.5
FOL	163.3 – 177.3	159.0 – 171.2	159.4 – 192.3	159.0 – 171.2	148.5 – 170.9	155.1 – 160.7	150.5 – 164.1	178.3 – 188.1	176.1 – 194.5			192.7
HL	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0	100.0 – 100.0			100.0
HW	100.0 – 102.6	97.3 – 105.4	94.8 – 102.6	97.3 – 105.4	100.0 – 106.7	93.8 – 100.0	94.5 – 99.0	97.1 – 102.8	103.2 – 104.4			102.4
IML	8.6 – 11.9	9.1 – 15.0	11.5 – 13.2	9.1 – 15.0	9.7 – 13.2	6.2 – 11.9	9.2 – 12.6	10.1 – 11.9	11.7 – 12.6			9.7
IN	24.8 – 26.4	21.8 – 24.2	25.0 – 25.6	21.8 – 24.2	24.8 – 26.4	24.4 – 25.5	19.4 – 25.3	25.0 – 25.9	23.4 – 25.3			26.6
IO	29.3 – 33.0	31.0 – 36.9	29.2 – 35.2	31.0 – 36.9	27.4 – 33.0	27.8 – 32.1	26.6 – 29.5	24.6 – 29.4	25.0 – 28.6			29.8
LAL	50.9 – 59.1	49.1 – 54.1	47.9 – 56.0	49.1 – 54.1	51.6 – 128.4	48.9 – 57.1	50.5 – 54.7	49.3 – 51.7	46.8 – 51.6			54.8
MIBE	33.6 – 36.9	36.3 – 40.0	36.5 – 37.4	36.3 – 40.0	34.6 – 37.9	36.9 – 38.1	36.7 – 38.8	35.5 – 37.8	36.3 – 38.1			38.7
MFE	62.1 – 64.2	59.1 – 65.0	60.4 – 64.1	59.1 – 65.0	64.1 – 67.3	64.3 – 66.7	65.3 – 68.9	61.1 – 62.9	60.4 – 63.5			68.5
MN	83.5 – 86.4	81.8 – 87.9	85.4 – 87.2	81.8 – 87.9	87.5 – 90.1	86.7 – 89.3	85.3 – 89.3	84.7 – 85.3	84.6 – 86.2			85.5
NS	16.0 – 18.3	16.4 – 18.0	16.7 – 18.7	16.4 – 18.0	13.7 – 16.8	14.3 – 16.7	12.6 – 14.7	18.1 – 18.8	18.1 – 18.8			19.4
PAL	71.6 – 77.7	73.6 – 79.3	74.0 – 84.6	73.6 – 79.3	63.4 – 75.7	64.3 – 67.3	61.5 – 68.0	75.4 – 80.6	75.5 – 81.3			79.0
SVL	241.5 – 261.2	240.0 – 266.0	236.5 – 262.6	240.0 – 266.0	230.7 – 262.5	237.8 – 259.5	228.4 – 254.4	242.0 – 251.0	247.5 – 253.3			254.8
TBL	116.5 – 130.0	117.3 – 123.4	112.5 – 131.9	117.3 – 123.4	119.0 – 134.0	114.3 – 136.9	112.8 – 123.3	145.1 – 147.6	138.3 – 151.1			140.3
TLI	20.2 – 23.6	17.6 – 19.0	17.7 – 20.9	17.6 – 19.0	16.8 – 19.2	12.4 – 19.0	16.5 – 16.8	19.6 – 23.8	20.2 – 25.8			18.5
TLII	22.9 – 27.2	22.5 – 24.0	22.9 – 27.5	22.5 – 24.0	18.7 – 23.2	19.4 – 23.8	18.3 – 20.4	24.6 – 28.7	25.0 – 28.6			25.8
TLIII	32.1 – 36.8	34.5 – 40.0	39.6 – 44.0	34.5 – 40.0	27.7 – 33.7	30.6 – 34.5	29.4 – 33.0	39.1 – 44.8	41.0 – 44.5			41.9
TLIV	53.4 – 59.5	54.5 – 58.2	55.2 – 72.5	54.5 – 58.2	44.0 – 54.4	46.7 – 53.1	45.3 – 49.5	56.5 – 64.6	58.5 – 63.2			63.7
TLV	41.5 – 45.5	38.2 – 45.1	42.7 – 50.5	38.2 – 45.1	27.4 – 37.5	34.5 – 39.2	33.0 – 37.9	44.2 – 50.3	44.7 – 50.0			41.9
TYD	2.7 – 7.8	11.8 – 11.8	11.5 – 11.5	11.8 – 11.8	5.3 – 8.4	5.6 – 8.3	5.8 – 9.5	7.2 – 11.1	8.5 – 12.1			10.5
TYE	10.1 – 12.7	12.6 – 12.6	11.5 – 11.5	12.6 – 12.6	10.9 – 14.0	10.7 – 13.3	9.7 – 10.5	12.5 – 16.1	11.7 – 14.3			14.5
UAW	43.1 – 51.9	42.7 – 53.0	33.3 – 50.0	42.7 – 53.0	49.5 – 61.1	33.7 – 53.6	51.5 – 56.0	39.1 – 48.6	43.6 – 46.2			54.8
UEW	22.6 – 27.5	18.0 – 22.0	19.8 – 23.1	18.0 – 22.0	23.2 – 28.4	20.6 – 27.8	24.3 – 26.3	23.9 – 27.3	22.1 – 25.0			21.0

Table 9. Measurements, as a percentage of head length (HL), of holotype male and 6 paratype males and 6 paratype females of *Philaenus procax*; holotype male, 9 paratype males and 1 paratype female of *P. abundus*; holotype female, 6 paratype females and 3 paratype males of *P. silvaticus*; holotype female of *P. leucorhinus*; holotype female and 6 male paratypes of *P. follicola*; holotype male of *P. limbus* and lectotype male of *P. nanus* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. procax</i>		<i>P. abundus</i>		<i>P. silvaticus</i>		<i>P. leucorhinus</i>		<i>P. follicola</i>		<i>P. limbus</i>		<i>P. nanus</i>	
	male (n=7) range	female range	male (n=10) range	female range	male (n=3) range	female (n=7) range	female holotype	male (n=6) range	female holotype	male holotype	female holotype	male holotype	male lectotype	
DBE	86.1 – 93.4	88.1	86.5 – 92.7	88.1	83.3 – 88.6	81.3 – 85.2	89.9	80.2 – 85.3	74.2	76.4	74.2	76.4	92.0	
DFE	52.7 – 58.5	53.4	50.9 – 55.5	53.4	44.4 – 52.4	47.8 – 49.5	51.7	49.1 – 51.9	47.0	41.8	47.0	41.8	58.4	
DL	8.5 – 12.7	9.3	7.8 – 10.8	9.3	7.4 – 10.5	8.2 – 10.6	7.9	8.9 – 10.8	9.1	9.1	9.1	9.1	8.0	
DW	11.9 – 15.5	11.9	10.9 – 15.6	11.9	10.2 – 15.9	10.2 – 13.3	11.2	9.1 – 11.9	9.1	10.9	9.1	10.9	8.0	
ED	36.4 – 42.7	38.1	34.5 – 41.9	38.1	34.6 – 38.1	32.0 – 36.4	39.3	32.1 – 37.7	34.1	39.1	34.1	39.1	40.9	
EN	24.3 – 27.4	26.3	22.8 – 27.9	26.3	23.1 – 26.7	24.4 – 26.4	22.5	27.4 – 28.8	29.5	24.5	29.5	24.5	26.3	
ES	40.6 – 43.5	41.5	40.0 – 43.2	41.5	38.9 – 43.0	40.2 – 42.7	34.8	40.9 – 42.9	43.9	41.8	43.9	41.8	40.9	
FEL	116.0 – 122.2	117.8	110.1 – 133.3	117.8	125.2 – 133.3	123.4 – 135.9	113.5	101.9 – 119.8	115.2	111.8	115.2	111.8	138.0	
FL I	18.4 – 21.8	19.5	18.7 – 22.4	19.5	19.6 – 21.3	17.9 – 22.8	18.0	16.4 – 18.9	18.2	19.1	18.2	19.1	18.2	
FL II	25.2 – 27.8	22.9	22.7 – 25.6	22.9	22.4 – 24.8	22.4 – 26.0	22.5	8.8 – 11.4	23.5	20.9	23.5	20.9	23.4	
FL III	44.6 – 49.1	41.5	38.7 – 50.0	41.5	36.1 – 40.0	37.3 – 42.1	22.5	20.0 – 25.5	23.5	20.9	23.5	20.9	38.7	
FL IV	32.0 – 38.6	33.1	32.2 – 39.7	33.1	29.6 – 30.5	27.1 – 33.1	30.3	28.6 – 34.9	32.6	29.1	32.6	29.1	32.8	
FOL	164.8 – 180.8	173.7	164.9 – 186.4	173.7	172.9 – 183.8	175.7 – 184.5	152.8	148.2 – 163.2	165.9	160.9	165.9	160.9	183.2	
HL	100.0 – 100.0	100.0	100.0 – 100.0	100.0	100.0 – 100.0	100.0 – 100.0	100.0	100.0 – 100.0	100.0	100.0	100.0	100.0	100.0	
HW	90.9 – 95.3	97.5	90.2 – 102.2	97.5	93.5 – 99.0	93.7 – 98.5	96.6	91.5 – 97.2	88.6	95.5	88.6	95.5	103.6	
IML	9.9 – 13.2	10.2	9.9 – 14.0	10.2	10.3 – 12.0	9.7 – 11.8	10.1	9.4 – 11.9	9.8	10.9	9.8	10.9	9.5	
IN	23.6 – 25.7	22.9	22.1 – 24.2	22.9	24.1 – 25.2	22.4 – 25.8	21.3	23.2 – 25.5	22.0	22.7	22.0	22.7	24.1	
IO	25.0 – 26.9	25.4	22.6 – 27.3	25.4	23.8 – 26.9	22.4 – 25.2	27.0	24.5 – 26.4	23.5	25.5	23.5	25.5	27.7	
LAL	43.6 – 56.6	49.2	46.8 – 53.5	49.2	47.7 – 53.3	48.5 – 72.7	50.6	51.8 – 57.8	53.8	52.7	53.8	52.7	60.6	
MBE	32.4 – 42.5	39.0	34.4 – 39.7	39.0	35.5 – 38.9	35.5 – 39.1E	42.7	33.3 – 36.6	34.8	36.4	34.8	36.4	35.0	
MFE	63.6 – 68.9	67.8	64.0 – 67.4	67.8	62.9 – 72.2	62.9 – 66.4	69.7	61.5 – 65.1	62.1	67.3	62.1	67.3	69.3	
MN	86.1 – 89.1	89.8	85.4 – 89.2	89.8	86.0 – 88.0	84.8 – 89.1	88.8	87.2 – 90.6	88.6	85.5	88.6	85.5	90.5	
NS	15.5 – 18.5	15.3	14.5 – 18.8	15.3	16.7 – 20.0	15.7 – 17.3	14.6	12.6 – 14.7	15.2	15.5	15.2	15.5	14.6	
PAL	75.5 – 81.1	74.6	74.4 – 85.3	74.6	66.4 – 73.3	68.0 – 72.7	68.5	55.5 – 67.9	64.4	67.3	64.4	67.3	76.6	
SVL	242.5 – 252.9	238.1	227.9 – 252.5	238.1	227.1 – 241.0	207.6 – 233.6	222.5	223.6 – 239.3	222.7	233.6	222.7	233.6	254.0	
TBL	116.0 – 134.7	136.4	127.4 – 146.4	136.4	131.8 – 141.0	133.6 – 141.8	114.6	120.5 – 131.1	128.8	127.3	128.8	127.3	138.7	
TL I	18.4 – 20.8	20.3	17.1 – 22.4	20.3	18.5 – 21.5	18.8 – 21.3	16.9	16.1 – 19.3	20.5	19.1	20.5	19.1	18.2	
TL II	23.3 – 25.7	24.6	21.8 – 26.7	24.6	23.4 – 24.1	23.1 – 25.5	19.1	18.2 – 21.1	26.5	21.8	26.5	21.8	24.1	
TL III	37.9 – 41.8	39.0	35.1 – 42.2	39.0	36.2 – 37.4	36.4 – 39.3	30.3	28.3 – 33.0	37.1	32.7	37.1	32.7	34.3	
TL IV	52.8 – 67.3	60.2	57.4 – 69.0	60.2	52.8 – 59.0	54.7 – 60.0	48.3	44.3 – 52.3	54.5	55.5	54.5	55.5	56.2	
TLV	38.0 – 47.2	40.7	39.0 – 48.3	40.7	36.2 – 38.9	32.8 – 43.3	37.1	33.0 – 36.8	38.6	31.8	38.6	31.8	41.7	
TYD	5.8 – 13.2	10.2	7.3 – 10.3	10.2	7.4 – 9.3	7.5 – 9.4	—	4.5 – 8.9	6.8	6.4	6.8	6.4	11.7	
TYE	13.9 – 17.5	12.7	11.0 – 17.2	12.7	13.9 – 18.1	13.4 – 15.9	—	12.8 – 15.3	12.1	13.6	12.1	13.6	13.9	
UAW	40.7 – 55.4	41.5	35.7 – 55.2	41.5	34.6 – 49.5	37.3 – 47.0	53.9	41.1 – 54.5	49.2	49.1	49.2	49.1	56.9	
UEW	23.1 – 29.2	27.1	23.4 – 29.0	27.1	23.1 – 35.2	20.9 – 25.2	28.1	19.8 – 25.0	22.0	23.6	22.0	23.6	27.0	

Table 10. Measurements, as a percentage of head length (HL), of holotype male and 3 paratype females of *Philautus simba*; holotype male of *P. nemus*; holotype female, 7 paratype females and 3 paratype males of *P.ocularis*; and holotype female of *P. lunatus* (see species accounts for specimen details, and Materials and Methods for abbreviations).

	<i>P. simba</i>		<i>P. nemus</i>	<i>P.ocularis</i>		<i>P. lunatus</i>
	male	female (n=3) range	male holotype	male (n=3) range	female (n=8) range	female holotype
DBE	80.0	80.0 – 88.3	89.2	84.9 – 90.0	85.0 – 93.1	87.2
DFE	54.0	51.7 – 56.7	51.6	54.0 – 56.2	50.4 – 57.1	49.4
DL	8.0	6.6 – 8.3	9.7	8.0 – 10.0	7.6 – 10.9	8.5
DW	10.0	9.8 – 10.0	12.9	12.7 – 13.8	12.4 – 14.9	15.2
ED	36.0	31.1 – 36.7	38.7	33.3 – 36.2	31.9 – 37.3	34.8
EN	18.0	16.7 – 18.3	25.8	27.0 – 28.0	25.0 – 27.7	22.6
ES	36.0	36.1 – 36.7	39.8	42.3 – 43.2	38.9 – 43.3	38.4
FEL	130.0	118.3 – 125.0	125.8	103.2 – 115.4	109.7 – 121.1	124.4
FL I	12.0	13.3 – 16.4	18.3	15.9 – 21.5	17.1 – 21.8	22.6
FL II	20.0	19.7 – 20.0	21.5	22.4 – 24.6	21.9 – 26.8	26.2
FL III	30.0	28.3 – 31.1	36.6	34.1 – 40.0	34.5 – 43.4	45.7
FL IV	24.0	20.0 – 21.7	26.9	27.8 – 32.3	28.3 – 37.2	40.2
FOL	170.0	166.7 – 171.7	166.7	151.6 – 158.5	155.4 – 164.9	187.2
HL	100.0	100.0 – 100.0	100.0	100.0 – 100.0	100.0 – 100.0	100.0
HW	90.0	86.7 – 91.7	86.0	97.6 – 105.4	96.2 – 102.8	101.8
IML	10.0	8.3 – 11.7	10.8	10.3 – 11.5	8.9 – 11.8	13.4
IN	34.0	33.3 – 38.3	25.8	21.5 – 22.4	21.5 – 23.8	22.6
IO	30.0	35.0 – 36.7	24.7	26.4 – 28.5	22.0 – 28.9	24.4
LAL	54.0	46.7 – 50.8	54.8	47.7 – 53.2	42.6 – 54.3	53.7
MBE	48.0	41.7 – 46.7	32.3	33.8 – 36.0	35.1 – 41.6	39.0
MFE	68.0	66.7 – 68.3	63.4	61.9 – 65.6	63.2 – 67.3	72.0
MN	86.0	81.7 – 85.0	84.9	84.9 – 89.2	85.7 – 93.1	87.2
NS	16.0	20.0 – 21.7	15.1	13.6 – 16.2	14.2 – 16.8	15.2
PAL	56.0	55.7 – 60.0	68.8	62.7 – 73.8	65.4 – 75.3	81.1
SVL	252.0	241.7 – 260.0	222.6	230.2 – 243.8	223.0 – 238.1	249.4
TBL	132.0	120.0 – 125.0	128.0	108.7 – 115.4	108.8 – 123.8	135.4
TL I	18.0	18.0 – 20.0	16.1	18.3 – 19.2	17.3 – 21.6	21.3
TL II	24.0	20.0 – 25.0	21.5	21.4 – 23.1	20.9 – 26.8	24.4
TL III	38.0	31.7 – 35.0	38.7	34.1 – 39.2	33.6 – 39.2	40.2
TL IV	58.0	50.0 – 55.7	59.1	50.0 – 56.9	51.2 – 58.8	61.6
TL V	32.0	31.7 – 37.7	43.0	37.6 – 41.5	36.4 – 43.6	45.7
TYD	10.0	11.7 – 13.3	7.5	5.4 – 6.4	5.6 – 10.3	12.2
TYE	16.0	11.7 – 15.0	11.8	12.0 – 13.8	9.5 – 16.0	12.8
UAW	60.0	36.7 – 50.8	37.6	31.7 – 51.5	39.8 – 50.9	46.3
UEW	26.0	18.0 – 21.7	28.0	23.1 – 24.0	19.3 – 25.7	23.8

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