



A remarkable new species of gecko (Squamata: Gekkonidae: *Hemidactylus*) from scrublands at the southern tip of India

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Abstract

We describe a new species of *Hemidactylus* based on an integrative taxonomic framework from scrub habitats at the southern tip of India, in Thoothukudi District, Tamil Nadu. The new species has the most densely packed tubercles among Indian *Hemidactylus*, almost resembling the most tuberculate Indian *Cyrtopodion*. *Hemidactylus quartziticolus* **sp. nov.** is phylogenetically placed within the *brookii* group of Indian *Hemidactylus*, where it is sister to the *H. gleadowi* complex from western-central India. The new species is 14.5–23.7% divergent in ND2 mitochondrial sequence data from other *brookii* group members, and can be easily diagnosed from regional congeners by its unique dorsal scalation, the number and arrangement of precloacal-femoral pores, the number of dorsal tubercle rows at midbody, number of lamellae under digit I and IV of manus and pes. The new species is currently known only from two isolated, low quartzite hillocks 45 km apart with scrubby, thorn forests and loose, stony soil.

Keywords

Hemidactylus brookii, morphology, peninsular India, taxonomy, Tamil Nadu

Introduction

The globally distributed gekkonid genus *Hemidactylus* Goldfuss, 1820 includes ~188 currently recognised species (Uetz et al. 2023). Global phylogenies of the genus reveal five deeply divergent clades that are each more or less broadly geographically circumscribed – the *angulatus* and Afro-Atlantic radiations in Africa and South America, Arid radiation in Saharo-Arabia, *bowringii* radiation in Southeast Asia, and finally the Indo-Sri Lankan radiation

(hereafter Indian radiation) in India and Sri Lanka (Caranza and Arnold 2006; Bansal and Karanth 2010; Bauer et al. 2010). India has over 50 species of *Hemidactylus* and is one of the few countries where three of the broad global clades are naturally distributed – the Arid radiation with three species in northwest India, the *bowringii* radiation with three species in northeast India and one in western peninsular India, while the Indian radiation in-

cludes the remaining species in India and Sri Lanka (Caranza and Arnold 2006; Bansal and Karanth 2010; Bauer et al. 2010; Lajmi et al. 2018a, b; Amarasinghe et al. 2021; Pal and Mirza 2022; Uetz et al. 2023). Phylogenies of the Indian radiation consistently reveal four major groups: *flaviviridis*, *prashadi*, *frenatus* and *brookii* (Bansal and Karanth 2010; Lajmi et al. 2018a; Agarwal et al. 2019). The *brookii* group includes 23 species and has been further divided into four clades: *gleadowi*, *malcolmsmithi* + *parvimaculatus*, *murrayi* and ground-dwelling (Agarwal et al. 2019; Lajmi et al. 2020; Adhikari et al. 2022).

The ground-dwelling clade is morphologically unique within the *brookii* group, with species lacking femoral pores in both sexes, undivided or notched subdigital lamellae, small body size (snout to vent length, SVL < 46 mm) and varied dorsal tuberculation and colour pattern (Smith 1935; Giri and Bauer 2008; Mirza 2018). Though the species from the other three clades of the *brookii* group are not monophyletic, they have been collectively referred to as brookiish geckos, as they are all small to medium-sized (SVL < 80 mm), tuberculate, with a light brown dorsum with darker spots or X-shaped markings (Agarwal et al. 2019). Though the brookiish geckos have had a complex taxonomic history and lack recently collected topotypic material for many nomina, 12 species have been described in just the last 15 years (Mahony 2009, 2011; Lajmi et al. 2016; Agarwal et al. 2019, 2020; Chaitanya et al. 2019; Adhikari et al. 2022). The recent uptick in species discovery of brookiish geckos is in part due to the redescription of all name-bearing types of the group, the use of DNA sequence data as well as concerted fieldwork (Mahony 2009, 2011; Lajmi et al. 2016; Agarwal et al. 2019, 2020; Chaitanya et al. 2019; Adhikari et al. 2022). Most species in the three clades of brookiish geckos are distributed in dry and rocky habitats across India (Fig. 1), and the most morphologically distinct species of the group, *Hemidactylus flavicaudus* Lajmi, Giri, Singh & Agarwal and *H. xericolus* Lajmi, Giri, Singh & Agarwal, with yellow tails and unique dorsal scalation were recently described from such habitats in Telangana (Lajmi et al. 2020).

As part of a survey of geckos in Tamil Nadu, we were surveying open, scrubby habitats in Thoothukudi (formerly Tuticorin) District in April 2022, when we encountered what seemed to be an incredibly tuberculate, brookiish *Hemidactylus*. Mitochondrial sequence data suggest that this is a distinct lineage, and we describe and diagnose *Hemidactylus quartziticolus* **sp. nov.** using morphological data below.

Materials and Methods

Taxon sampling

Ten specimens of the new species were hand-collected, photographed using a Canon 70D DSLR camera mounted with 100 mm macro lens and two external flashes, and

later euthanized using isoflurane. Liver tissues of six individuals (three from each locality) of the new species were collected in molecular grade ethanol and subsequently stored at -20° C for genetic analysis. Later, specimens were fixed in 4% formaldehyde for ~24 hours, washed in water, and transferred to 70% ethanol for long-term storage. Specimens are deposited in the museum and research collection facility at the National Centre for Biological Sciences, Bengaluru (NCBS/NRC).

Molecular data

We extracted DNA from liver tissues of four specimens of the new species from two localities using the Qiagen DNeasy extraction kit (Table 1). Partial ND2 sequences were obtained commercially from Medauxin (Bangalore, India) using the primers L4437 and H5540/ H5934 for PCR amplification and L4437 for sequencing (Macey et al. 1997). Preliminary Maximum Likelihood (ML) analyses with the codon-partitioned data and the GTR + G model of sequence evolution on a dataset including members from all groups of Indian *Hemidactylus* (Table S1) confirmed the initial impression that the species is a member of the *brookii* group (Figs 2, S1). We therefore combined the new sequences with published sequences for all members of the *brookii* group using *H. frenatus* Duméril & Bibron as the outgroup (Table 1; after Agarwal et al. 2019). Sequences were aligned using ClustalW (Thompson et al. 1994) with default settings and uncorrected pairwise % sequence divergence was calculated in MEGA 5.2.2 (Tamura et al. 2011; Table 2). We used PartitionFinder 2.1.1 (Lanfear et al. 2012) to select the best partitioning scheme and models of sequence evolution for both ML and Bayesian Inference (BI) using BIC. The best partitioning scheme was by codon position and the model selected were GTR+I +G, GTR+G, GTR+G models for codon positions 1–3, respectively. Maximum Likelihood analyses were carried out in the raxmlGUI 2.0.10 (Edler et al. 2020) and used RAXML 8.2.12 (Stamatakis 2014) with the GTR + G model applied across partitions, support assessed through 1000 thorough bootstrap replicates, and 10 independent starting trees. MrBayes 3.2.7 (Ronquist and Huelsenbeck 2003) was used to run partitioned BI analyses with two parallel runs and four chains each (one cold and three hot) for 2,000,000 generations sampling every 2000 generations. The first 25% of trees were discarded as burn-in with convergence determined based on the standard deviation of split frequencies (<0.01). We used TreeAnnotator 1.10.4 (Drummond et al. 2012) to generate a Maximum Clade Credibility tree. Branches recovered with posterior probability 1 and bootstrap value >95 were considered ‘strongly supported’.

Morphological and meristic data

Morphological data were collected from 10 specimens of the new species. As preliminary phylogenetic analyses placed the new species within the *Hemidactylus*

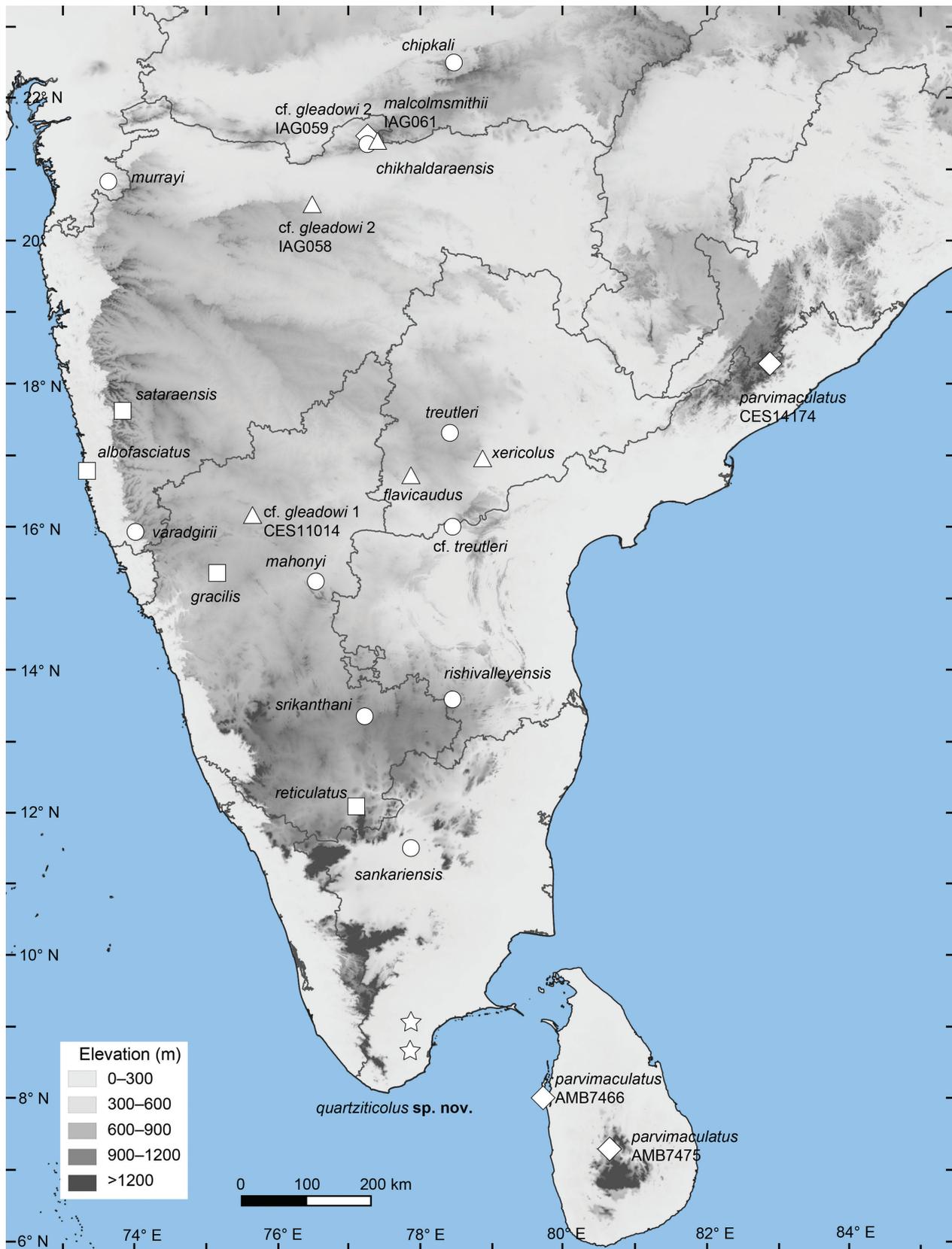


Figure 1. Elevation map showing the distribution of the new species and other members of the *brookii* group distributed in peninsular India (stars, new species; triangles, *gleadowi* clade; circles, *murrayi* clade; diamonds, *malcolmsmithii*-*parvimaaculatus* clade; squares, ground-dwelling clade). The type locality is marked for *H. murrayi*.

brookii group, we restrict morphological comparisons to members of the *brookii* group. Comparative data on most of the described species of *Hemidactylus brookii*

group were taken from type specimens, and/or topotypical specimens and other museum specimens (listed in the material examined section Appendix 1), with data

Table 1. List of sequences used in this study. Museum abbreviations as follows: AK/AK-R Akshay Khandekar field series; AMB, Aaron M. Bauer field series (Sri Lankan specimens deposited in National Museum, Colombo); BNHS, Bombay Natural History Society, Mumbai; CES/ CESG/ CESL/ ESV, Centre for Ecological Sciences, Bangalore; IAG, Ishan Agarwal field series; JS, Jay Sommers private collection; LLG, L. Lee Grismer field series; NCBS/ NRC, National Centre for Biological Sciences, Bangalore; VG, Varad Giri field series.

Species	Voucher	GenBank Accession No.	Locality	Clade
<i>Hemidactylus quartziticolus</i> sp. nov.	NRC-AA-1261 (AK-R 1206)	OQ660175	India, Tamil Nadu, Thoothukudi, Kurumalai	gleadowi
<i>Hemidactylus quartziticolus</i> sp. nov.	NRC-AA-1262 (AK-R 1207)	OQ660176	India, Tamil Nadu, Thoothukudi, Kurumalai	
<i>Hemidactylus quartziticolus</i> sp. nov.	NRC-AA-1257 (AK-R 1214)	OQ660177	India, Tamil Nadu, Thoothukudi, Vallanadu	
<i>Hemidactylus quartziticolus</i> sp. nov.	NRC-AA-1256 (AK-R 1215)	OQ660178	India, Tamil Nadu, Thoothukudi, Vallanadu	
<i>Hemidactylus</i> cf. <i>gleadowi</i> 1	CES11014	MH454761	India, Karnataka, Bagalkot,	
<i>Hemidactylus</i> cf. <i>gleadowi</i> 2	IAG058	MK569811	India, Maharashtra, Buldhana, near Lokhanda	
<i>Hemidactylus</i> cf. <i>gleadowi</i> 2	IAG059	MK569811	India, Maharashtra, Amravati, Chichghat	
<i>Hemidactylus flavicaudus</i>	CES16127	MN482234	India, Telangana, Mahbubnagar, near Guddeguda	
<i>Hemidactylus xericolus</i>	CES16170	MN482235	India, Telangana, Mahbubnagar, near Guddeguda	
<i>Hemidactylus malcolmsmithi</i>	IAG061	MK569842	India, Maharashtra, Amravati, Chikhaldara	
<i>Hemidactylus malcolmsmithi</i>	CES11065	MH454765	India, Himachal Pradesh, Hamirpur, Sujanpur	
<i>Hemidactylus parvimaclatus</i>	CES14174	MH454766	India, Andhra Pradesh, Visakhapatnam, Araku forest guest house	
<i>Hemidactylus parvimaclatus</i>	AMB7475	GQ458055	Sri Lanka, Kandy	
<i>Hemidactylus parvimaclatus</i>	AMB7466	GQ458056	Sri Lanka, Mampuriya,	murrayi
<i>Hemidactylus chikhaldaraensis</i>	NCBS-BH684	MK569807	India, Maharashtra, Amravati, Gawilgarh Fort	
<i>Hemidactylus chipkali</i>	CESG322	MK569808	India, Madhya Pradesh, Hoshangabad, Pachmarhi	
<i>Hemidactylus mahonyi</i>	BNHS2597	OM912578	India, Karnataka, Bellary, Joga	
<i>Hemidactylus murrayi</i>	LLG6754	EU268365	Malaysia, Pulau Pinang, Empangon Air Hitam,	
<i>Hemidactylus rishivalleyensis</i>	NCBS-BH729 (AK 647)	MT773220	India, Andhra Pradesh, Chittoor, Rishi Valley	
<i>Hemidactylus sankariensis</i>	NCBS-BH682	MK569844	India, Tamil Nadu, Erode, Sankari	
<i>Hemidactylus srikanthani</i>	BNHS2640	OM912580	India, Karnataka, Tumkur, Devarayanadurga	
<i>Hemidactylus treutleri</i>	CES14216	MH454770	India, Andhra Pradesh, Hyderabad, Gaganpahad	
<i>Hemidactylus</i> cf. <i>treutleri</i>	CES14116	MN482237	India, Andhra Pradesh, Atmakur, Gummadaipuram	
<i>Hemidactylus varadgirii</i>	VG349	MK569849	India, Maharashtra, Sindhudurg, Amboli	ground-dwelling
<i>Hemidactylus albofasciatus</i>	BNHS1759	EU268378	India, Maharashtra, Ratnagiri, Dorle	
<i>Hemidactylus gracilis</i>	CES13006	MH454762	India, Karnataka, Hubli	
<i>Hemidactylus imbricatus</i>	JS11	EU268353	Pakistan, pet-trade	
<i>Hemidactylus reticulatus</i>	CES13062	MH454767	India, Karnataka, Chamarajanagar, Kollegal	
<i>Hemidactylus sataranaensis</i>	CES14220	MH454768	India, Maharashtra, Satara, Chalkewadi	out-group
<i>Hemidactylus frenatus</i>	AMB7420	EU268359	Sri Lanka, Anuradhapura District, Ritgala	
<i>Hemidactylus frenatus</i>	CESG088	MK559036	India, Tripura, Rowa	

for some species (*H. brookii* Gray, 1845, *H. gleadowi* Murray, 1884, *H. kushmorensis* Murray, 1884, *H. mahonyi* Adhikari et al., 2022, *H. srikanthani* Adhikari et al., 2022, *H. tenkatei* Lidth De Jeude, 1895, *H. treutleri* Mahony, 2009) taken from descriptions of the types (Mahony 2009, 2011; Adhikari et al. 2022). Mensural and meristic data were collected under a ZEISS Stemi 305 stereo dissecting microscope and on the left side of the body where possible. The following measurements were taken with a Mitutoyo digital vernier caliper (to the nearest 0.1 mm): snout vent length (SVL, from tip of snout to vent); axilla to groin length (TRL, from posterior margin of forelimb insertion to anterior margin of hindlimb insertion); body width (BW, maximum body width); body

height (BH, maximum body height); forearm length (FL, from elbow to distal end of wrist); crus length (CL, from knee to heel); tail length (TL, from vent to tip of tail); tail width (TW, measured at widest point of tail); head length (HL, distance between retroarticular process of jaw and snout-tip); head width (HW, maximum width of head); head depth (HD, maximum head depth at occiput); eye diameter (ED, greatest horizontal diameter of eye); eye to nare distance (EN, distance between anterior margin of eye and posterior edge of nare); eye to snout distance (ES, distance between anterior margin of eye and tip of snout); eye to ear distance (EE, distance from anterior edge of ear opening to posterior margin of eye); ear length (EL, maximum length of ear opening); inter-

Table 2. Pairwise uncorrected ND2 sequence divergence within the *gleadowi* clade and between the *gleadowi* clade and other broad clades within the *Hemidactylus brookii* group.

	Species	1	2	3	4	5	6	7	8
1	<i>Hemidactylus quartziticolus</i> sp. nov.	0.5							
2	<i>Hemidactylus</i> cf. <i>gleadowi</i> 1	14.5	—						
3	<i>Hemidactylus</i> cf. <i>gleadowi</i> 2	16.1	7.4	—					
4	<i>Hemidactylus flavicaudus</i>	19.4	22.6	21.5	—				
5	<i>Hemidactylus xericolus</i>	17.5	21.6	20.3	13.0	—			
6	<i>malcolmsmithi</i> + <i>parvimaculatus</i>	19.1	21.9	23.0	21.2	21.4	9.1		
7	<i>murrayi</i> clade	20.6	21.1	21.2	21.6	21.2	19.6	14.1	
8	Ground-dwelling clade	23.7	26.6	26.9	25.5	25.6	23.7	23.1	19.9

narial distance (**IN**, distance between nares); interorbital distance (**IO**, shortest distance between left and right supraciliary scale rows in front of eye). Colour pattern was recorded from photographs taken in life. Meristic data recorded were internasal scales (**INS**, the number of scales behind rostral counted between supranasals); the number of supralabials and infralabials (**SL** and **IL**, from rostral and mental, respectively, to posterior-most enlarged scale at angle of the jaw); supralabials and infralabials at midorbital position (**SL M** and **IL M**, from rostral and mental, respectively, to below the middle of the orbit); dorsal tubercle rows (**DTR**, number of longitudinal rows of enlarged tubercles round the body counted at mid-body); paravertebral tubercles (**PVT**, number of enlarged tubercles between limb insertions counted in a straight line immediately left and right of the vertebral column), ventral scales (**VS**, counted from forearm limb insertion to anterior border of the cloaca); mid-body ventral scale rows (**MVSR**, scales counted between the lowest rows of dorsal scales at mid-body); precloacal-femoral pores (**P-F pores**, number of continuous series of pore bearing scales on lowest row of thigh); transverse subdigital lamellae which are wider than high, counted from the base of the digits to the apical end on finger 1 (**LamF1**), finger 4 (**LamF4**), toe 1 (**LamT1**), and toe 4 (**LamT4**).

Results

Phylogenetic relationships

We recover the *brookii* group and all constituent clades with high support, though relationships among the clades are not well-supported (Fig. 2). *Hemidactylus quartziticolus* sp. nov. is a member of the *gleadowi* clade, sister to two lineages allied to *H. gleadowi*, which are collectively sister group to the clade containing *H. flavicaudus* and *H. xericolus* (Fig. 2). *Hemidactylus quartziticolus* sp. nov. is 14.5–19.4% divergent in uncorrected ND2 sequence data from the other sampled members of the *H. gleadowi* group and 19.1–23.7% divergent from other clades in the *brookii* group (Table 2). We describe this deeply divergent lineage as a new species below.

Systematics

Hemidactylus quartziticolus sp. nov.

<https://zoobank.org/BB88F358-8C4B-4248-8CBA-A27CBC580B67>

Figs 3–7; Tables 3 and 4

Holotype. NRC-AA-1256 (AK-R 1215), adult male, from near Jeya Parvathi Amman Kovil, Vallanadu Reserve Forest, Manakkarai (8.6848° N, 77.8696° E; ca. 120 m asl.), Thoothukudi district, Tamil Nadu state, India, collected by Akshay Khandekar, Ishan Agarwal, Swapnil Pawar and team on 12 April 2022.

Paratypes. (n = 9) NRC-AA-1257 (AK-R 1214), NRC-AA-1258 (AK-R 1218), adult males, same data as holotype; NRC-AA-1259 (AK-R 1220), NRC-AA-1260 (AK-R 1221) adult males, NRC-AA-1264 (AK-R 1216), adult female, same data as holotype except collected from the other side of Jeya Parvathi Amman Kovil, Manakkarai (8.6771° N, 77.8722° E; ca. 90 m asl.); NRC-AA-1261 (AK-R 1206), NRC-AA-1262 (AK-R 1207), NRC-AA-1263 (AK-R 1208), adult males, from Kurumalai Reserve Forest, Kurumalai (9.0919° N, 77.8543° E; ca. 130 m asl.); NRC-AA-1265 (AK-R 1209), adult female, from near Perumal Kovil, Kurumalai (9.0927° N, 77.8519° E; ca. 90 m asl.), Thoothukudi district, Tamil Nadu state, India, collected by same team on 10 April 2022.

Etymology. The specific epithet is a combination of the German noun “quartz” + the Latin suffix -ite (used to denote rocks and minerals) and the Latin suffix -cola that means inhabitant or dweller of, referring to the quartzite rock formations the new species inhabits.

Suggested Common Names. Quartzite brookiish gecko or Thoothukudi brookiish gecko.

Diagnosis. A small-sized *Hemidactylus*, snout to vent length less than 57 mm (n = 10); a single internasal scale behind rostral and between supranasals. Dorsal pholidosis heterogenous, composed of much smaller, subcircular, smooth and flattened granular scales intermixed with 18 regularly arranged rows of distinctly enlarged, subcircu-

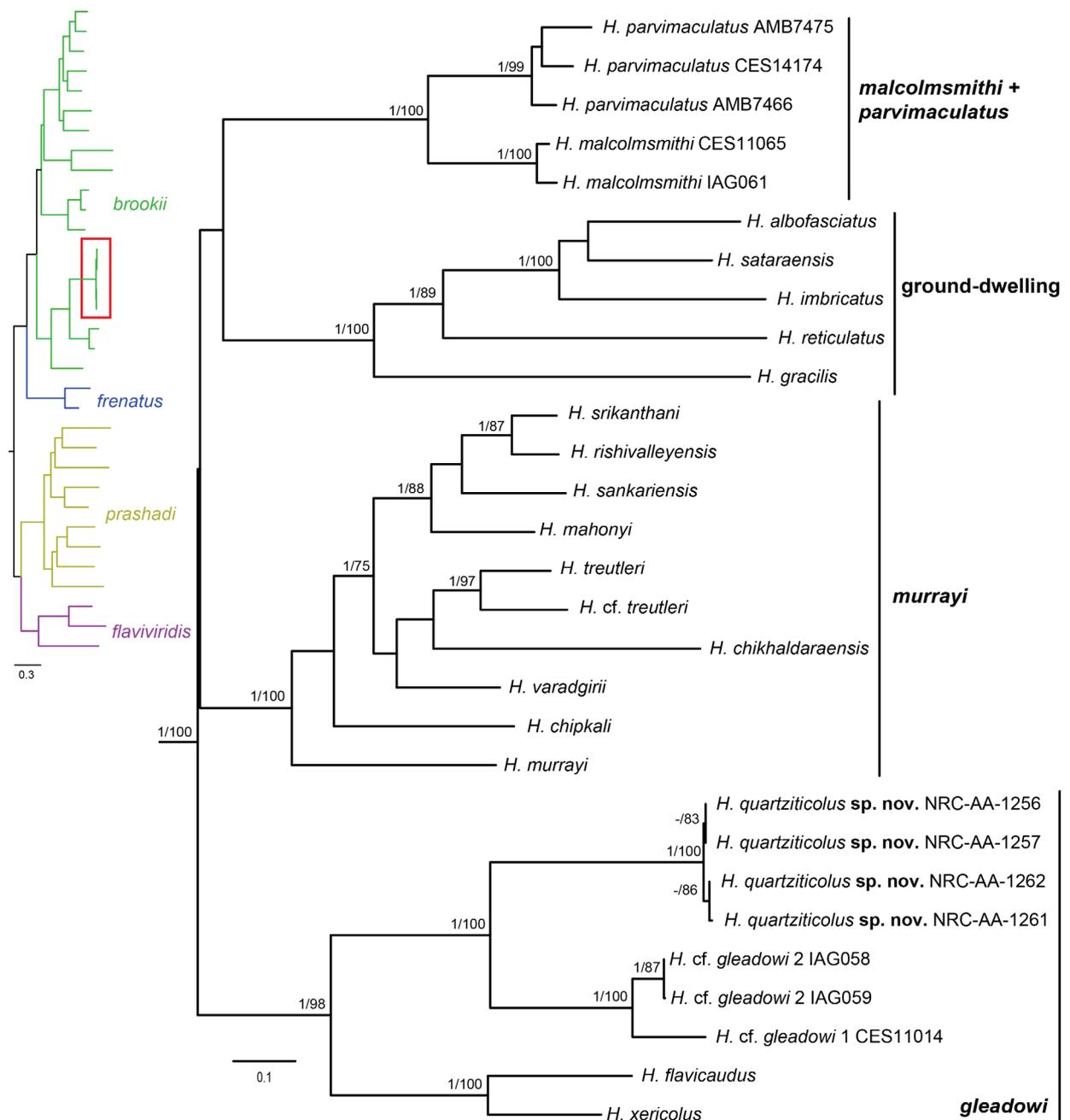


Figure 2. Left, inset, backbone maximum likelihood phylogeny of Indian *Hemidactylus* with major groups marked in different colours; *Hemidactylus quartziticolus sp. nov.* is marked by a red rectangle within the *brookii* group (see Table S1 for GenBank accession numbers). Main figure, Maximum Likelihood phylogeny of the *brookii* group of Indian *Hemidactylus* based on the ND2 gene. Posterior Probability = 1/ bootstrap support ≥ 75 shown at nodes, outgroups not shown.

lar, strongly keeled and pointed tubercles at midbody; tubercles largest on flanks; 18–20 paravertebral tubercles between forelimb and hindlimb insertions; ventral scales much larger than dorsal body granular scales, smooth, subimbricate, sub-equal from chest to vent, 24–29 scales across belly at mid-body, 48–54 longitudinal scales from fore arm insertions to anterior margin of cloaca; subdigital scansors smooth, mostly divided in oblique series; four lamellae under digit I of manus and pes, six or seven lamellae under digit IV of manus and pes; males with continuous series of 35–38 precloacal-femoral pores ($n = 8/10$); dorsal scales at tail base heterogeneous, granular scales similar in size and shape to those on mid-body dor-

sum, gradually becoming larger, pointed and subimbricate posteriorly, intermixed with series of 4–10 much enlarged, keeled, conical tubercles forming whorls; median row of sub-caudals smooth, enlarged, undivided, roughly rectangular, plate-like scales covering almost entire portion of the tail. Dorsal colouration beige to tan, scattered dark blotches on dorsum occasionally forming horizontal X-shaped markings on dorsum.

Comparison with members of the *brookii* group. *Hemidactylus quartziticolus sp. nov.* can be easily distinguished from the Indian members of the *brookii* group based on the following differing or non-overlapping

characters: 18 regularly arranged rows of distinctly enlarged, subcircular, strongly keeled and pointed tubercles at midbody (versus enlarged tubercles completely absent from dorsum in *H. imbricatus* Bauer et al., 2008; tubercles only slightly larger than surrounding granular scales in *H. albofasciatus* Grandison & Soman, 1963, *H. gracilis* Blanford, 1870, *H. reticulatus* Beddome, 1870, and *H. vijayraghavani* Mirza, 2018; 15 rows of dorsal tubercles at mid-body in *H. chikhaldaraensis* Agarwal, Bauer, Giri & Khandekar, 2019, 15 or 16 in *H. chipkali* Mirza & Raju, 2017, *H. rishivalleyensis* Agarwal, Thackeray & Khandekar, 2020 and *H. treutleri*, 11–14 in *H. flavicaudus*, 19 or 20 in *H. kushmorensis*, 13 or 14 in *H. mahonyi*, 11–17 in *H. parvimaculatus* Deraniyagala, 1953, 15–17 in *H. sankariensis* Agarwal, Bauer, Giri & Khandekar, 2019, 14 or 15 in *H. srikanthani*, and 6–8 in *H. xericolus*); males with continuous series of 35–38 precloacal-femoral pores (versus femoral pores absent, only precloacal pores present in *H. albofasciatus*, *H. gracilis*, *H. imbricatus*, *H. reticulatus*, *H. sataraensis* Giri & Bauer, 2008, and *H. vijayraghavani*; precloacal-femoral pores series separated medially by more than four poreless scales in *H. chikhaldaraensis*, *H. chipkali*, *H. mahonyi*, *H. murrayi* Gleadow, 1887, *H. rishivalleyensis*, *H. sankariensis*, *H. srikanthani*, *H. tenkatei*, *H. treutleri*, and *H. varadgirii* Chaitanya, Agarwal, Lajmi & Khandekar, 2019; precloacal-femoral pores series separated medially by at least 1–3 poreless scales in *H. brookii*, *H. gleadowi*, *H. flavicaudus*, *H. kushmorensis*, *H. malcolmsmithi* (Constable, 1949), *H. parvimaculatus*, and *H. xericolus*); 24–29 scales across belly at mid-body (versus 31–33 scales across belly at mid-body in *H. brookii*, 33 in *H. chikhaldaraensis*, 32–34 in *H. gleadowi*, 33–42 in *H. kushmorensis*, 30–35 in *H. rishivalleyensis*, 33–35 in *H. sankariensis*, 37 or 38 in *H. srikanthani*, and 30–33 in *H. varadgirii*); four lamellae under digit I and six or seven lamellae under digit IV of both manus and pes (versus five lamellae under digit I of pes in *H. brookii*; five lamellae under digit I of manus and pes in *H. chipkali*; six lamellae under digit I of manus and pes in *H. sankariensis*; five or six lamellae under digit I of pes in *H. tenkatei*; six lamellae under digit I of manus and seven under digit I of pes, 10 lamellae under digit IV of manus and 11 under digit IV of pes in *H. chikhaldaraensis*; five or six lamellae under digit I and 10 under digit IV of pes in *H. kushmorensis*, five or six lamellae under digit I of both manus and pes, eight or nine lamellae under digit IV of manus and 8–10 under digit IV of pes in *H. mahonyi*; six or seven lamellae under digit I of both manus and pes, nine lamellae under digit IV of manus and 10 under digit IV pes in *H. rishivalleyensis*; seven lamellae under digit I of both manus and pes, nine or 10 lamellae under digit IV of manus and 10 under digit IV of pes in *H. srikanthani*; six or seven lamellae under digit I, nine lamellae under digit IV of manus and pes in *H. treutleri*; and five or six lamellae under digit I of manus and pes in *H. varadgirii*).

Description of holotype. The holotype is in good condition except tail slightly bent towards left, tail tip regenerated, and a 4.7 mm long incision in abdomen for tissue collection (Fig. 3A–E). Adult male, SVL 53.9 mm.

Head short (HL/SVL 0.26), moderately elongate (HW/HL 0.79), not strongly depressed (HD/HL 0.42), distinct from neck. Loreal region inflated, canthus rostralis indistinct (Fig. 4A, C). Snout short (ES/HL 0.42); slightly longer than twice eye diameter (ED/ES 0.49); scales on snout, canthus rostralis, forehead, and inter-orbital region heterogeneous, mostly enlarged and conical; scales on loreal region bordering eye anterior to orbit much larger, more strongly conical, weakly keeled; scales on occiput and temporal region heterogeneous, granular scales intermixed with enlarged, weakly and conical tubercles, enlarged tubercles becoming pronounced, strongly conical and slightly more spaced out on temporal region (Fig. 4A, C). Eye small (ED/HL 0.20); pupil vertical with crenulated margins; supraciliaries small, mucronate, gradually increasing in size towards front of the orbit (Fig. 4C). Ear opening oval (greatest diameter 1.5 mm); eye to ear distance greater than diameter of eye (EE/ED 1.70). Rostral wider (2.1 mm) than high (1.3), divided dorsally by a weakly developed rostral groove for about half of its length; two enlarged supranasals, separated from each other by a single, slightly smaller internasal; upper postnasal present, lower postnasal absent on either side; rostral in contact with nostril, first supralabial, supranasals and internasal; nostrils small (0.4 mm), oval; surrounded by supranasals, rostral, first supralabial and upper postnasal on either side; a single row of scales separate orbit from supralabials on each side. Mental subtriangular, slightly wider (2.2 mm) than high (1.9 mm); two pairs of well-developed postmentals, both roughly rectangular; the inner pair slightly shorter (1.5 mm) than the mental, and in strong contact with each other (0.9 mm) below mental, outer pair slightly smaller (1.1 mm) than inner pair and separated from each other by five small, granular chin scales below inner pair (Fig. 4B). Inner postmentals bordered by mental, infralabial I and II, outer postmental on either side and five small, granular chin scales below; outer postmentals bordered by inner postmental, infralabial II and seven chin scales on left and five on right side; two rows of enlarged, slightly elongate scales below second to fourth infralabials, inner row bordering infralabial with scales slightly larger and elongate than lower row; rest of the gular region with small, subcircular, smooth, more or less flattened, granular scales, becoming slightly larger and imbricate on lateral aspect on either side (Fig. 4B). Twelve supralabials up to angle of jaw and eight at mid-orbital position on either side; nine infralabials up to angle of jaw and seven at mid-orbital position on both sides (Fig. 4C).

Body relatively stout (BW/SVL 0.24), trunk relatively short (TRL/SVL 0.43), without ventrolateral fold on either side (Fig. 5A–C). Dorsal pholidosis heterogenous, composed of much smaller, subcircular, smooth and flattened granular scales intermixed with 18 regularly arranged rows of distinctly enlarged, subcircular, strongly keeled and pointed tubercles at midbody; tubercles increasing in size up to flank and then gradually decreasing ventrolaterally; 19 paravertebral tubercles between limb insertions on either side (Fig. 5A–C). Enlarged tubercles on nape and shoulder slightly smaller and conical than

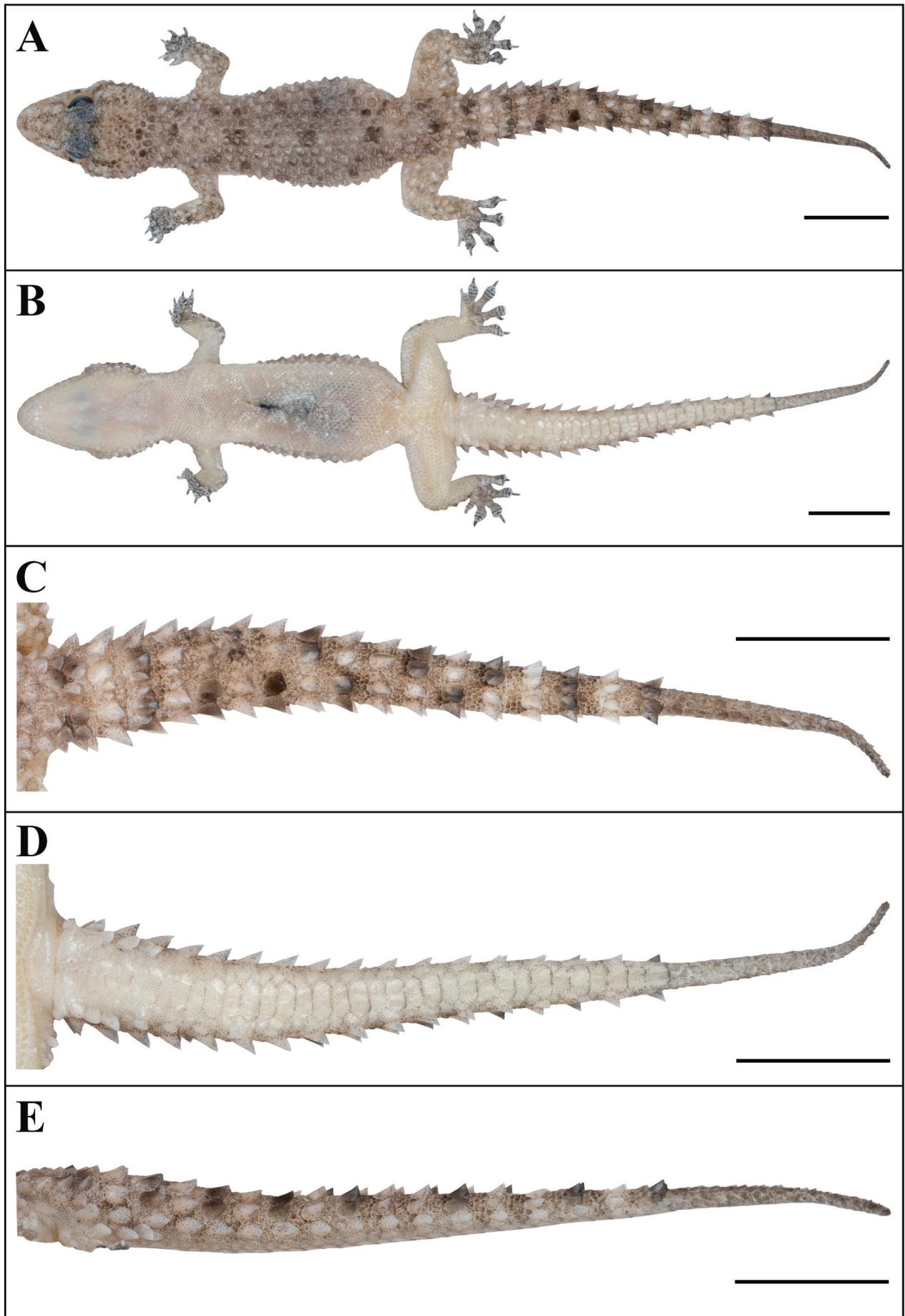


Figure 3. *Hemidactylus quartziticolus* sp. nov. (holotype, NRC-AA-1256): **A** dorsal view of body, **B** ventral view of body, **C** dorsal view of tail, **D** ventral view of tail, and **E** lateral view of tail. Scale bars 10 mm; photos by Akshay Khandekar.

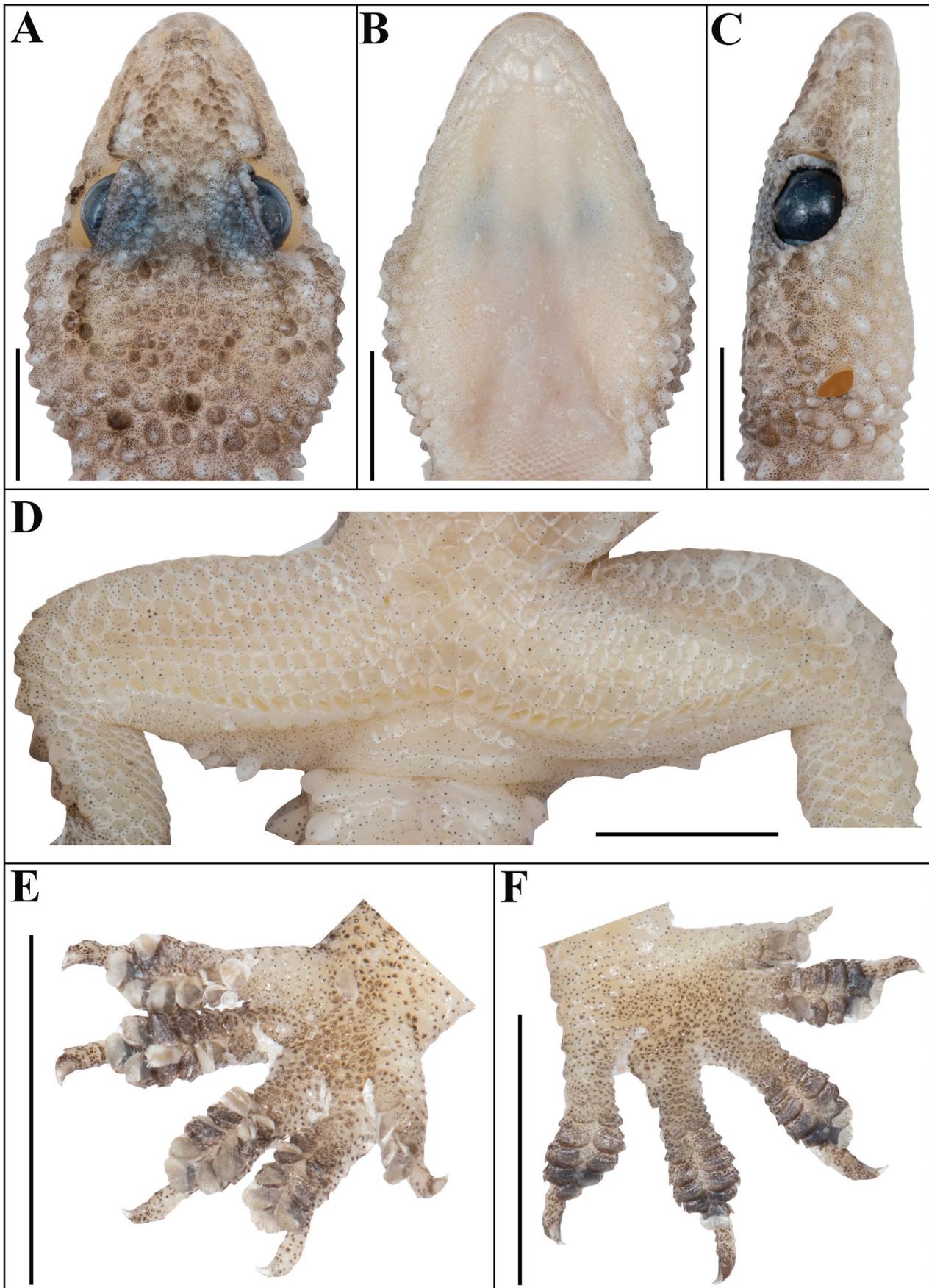


Figure 4. *Hemidactylus quartziticolus* sp. nov. (holotype, NRC-AA-1256): **A** dorsal view of head, **B** ventral view of head, **C** lateral view of head, **D** view of cloacal region showing precloacal-femoral pores and post cloacal spurs, **E** ventral view of left manus, and **F** ventral view of left pes. Scale bars 5 mm; photos by Akshay Khandekar.

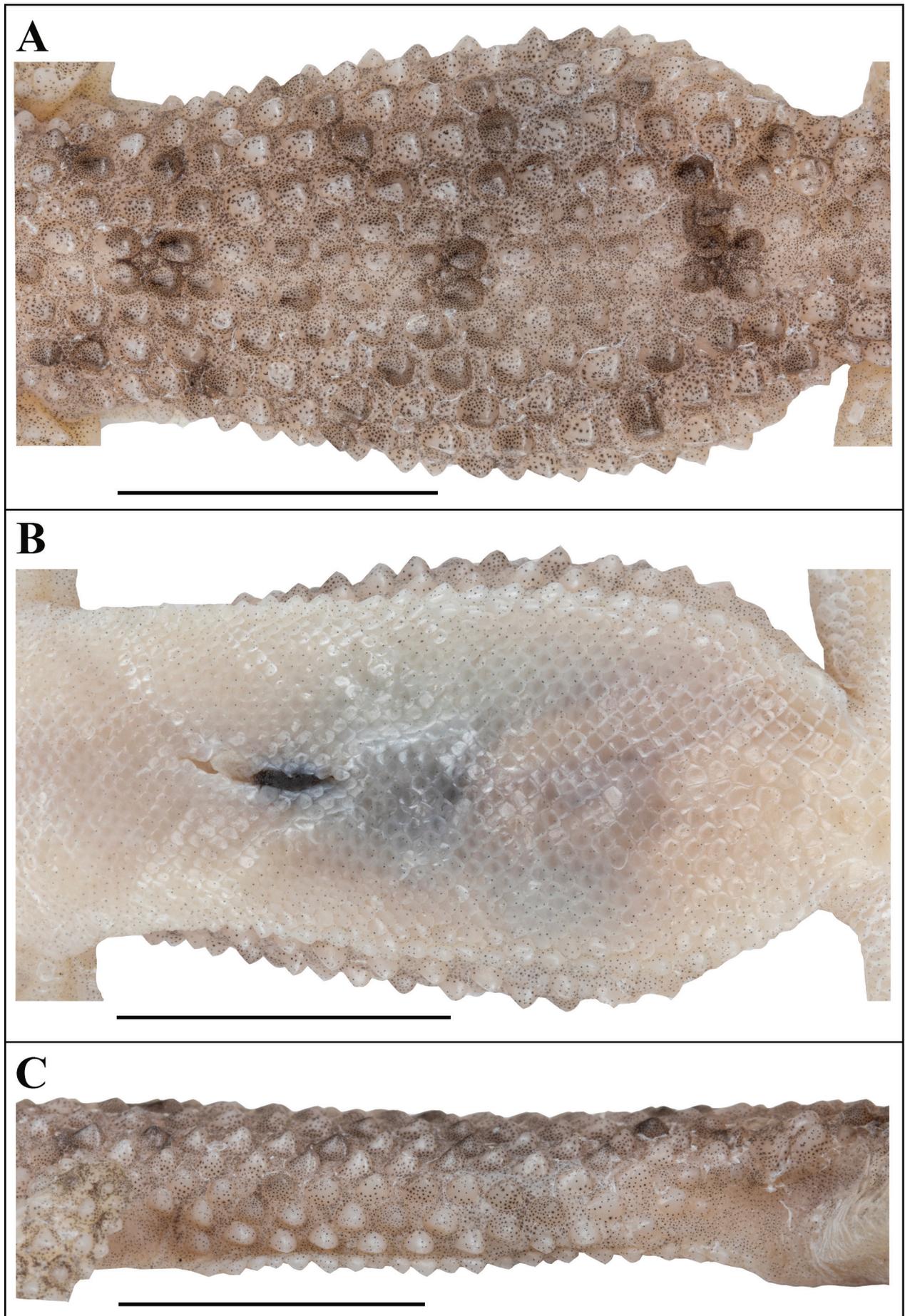


Figure 5. Details at mid-body of *Hemidactylus quartziicolus* sp. nov. (holotype, NRC-AA-1256): **A** dorsal view, **B** ventral view, and **C** lateral view. Scale bars 5 mm; photos by Akshay Khandekar.

those on parasagittal rows, those on occiput still smaller and blunt (Figs 2A, 3A). Ventral scales much larger than granular scales on dorsum, smooth, subimbricate, subequal from pectoral region to cloaca; 27 transverse ventral scales across belly at mid-body; 48 longitudinal scales from forearm insertion to anterior margin of cloaca (Fig. 5B). A continuous series of 35 precloacal-femoral pores on the lower-most enlarged row of femoral scales (Fig. 4D).

Scales on palm and sole similar in size or marginally larger than dorsal body granules, subcircular, smooth and flattened; those on dorsal aspect of forearm heterogeneous, composed of granular scales intermixed with enlarged tubercles that are similar to the enlarged tubercles on dorsum in shape and size, weakly keeled and pointed; scales on dorsal aspect of palm and wrist much larger than those on granular scales on body dorsum, smooth, flattened and subimbricate; scales on ventral aspect of forearm granular, smooth, marginally larger than dorsal body granules (Fig. 2A, B). Scales on dorsal aspect of thigh and shank heterogeneous, consisting of granular scales intermixed with enlarged, weakly keeled and pointed tubercles except those on knee slightly smaller; scales near limb insertions granular, slightly smaller than dorsal body granules; scales on dorsal aspect of sole heterogeneous, slightly larger, flattened, smooth, subimbricate scales intermixed with slightly enlarged weakly keeled and weakly pointed tubercles; scales on ventral aspect of thigh and shank similar to body ventrals, subequal, smooth and subimbricate on thigh and imbricate on shank (Fig. 2A, B).

Fore and hind limbs relatively short, stout; forearm short (FL/SVL 0.11); tibia short (CL/SVL 0.13); digits moderately short, strongly clawed; all digits of manus and digits I–IV of pes indistinctly webbed at base; terminal phalanx of all digits curved, arising angularly from distal portion of expanded lamellar pad, half or more than half as long as associated lamellar pad; scensors beneath each digit in oblique series (the number of undivided basal lamellae excluding apical lamella in parentheses): 4(1)-6(0)-7(1)-7(1)-6(1) (left manus; Fig. 4E), 4(1)-6(0)-7(1)-7(1)-6(1) (right manus); 4(1)-7(1)-7(1)-7(1)-6(1) (left pes; Fig. 4F), 4(1)-7(1)-7(1)-7(1)-6(1) (right pes). Relative length of digits (measurements in mm in parentheses): IV (3.9) > III (3.4) = V (3.4) > II (3.0) > I (2.1) (left manus); IV (4.7) > III (4.2) > V (3.9) > II (3.4) > I (2.7) (left pes).

Tail original except tip (15.4 mm) which is regenerated, depressed, flat beneath, verticillate, with median furrow; tail equal to snout-vent length (TL/SVL 1.00; Fig. 2C–E). Dorsal scales at tail base and on original tail heterogeneous, granular scales similar in size and shape to those on mid-body dorsum, gradually becoming larger, pointed and subimbricate posteriorly, intermixed with series of 4–10 much enlarged, keeled, conical tubercles forming whorls; tubercles in ventrolateral aspect weakly keeled to smooth; 10 enlarged tubercles in first three whorls, eight in fourth whorl, seven in fifth and sixth whorls, six in 7–11 whorls; rest with four enlarged tubercles (Fig. 2C–E). Ventral scales at tail base subequal, smooth, imbricate, slightly larger than midbody ventral

scales; three subequal, smooth postcloacal spurs on each side, smaller than dorsal tubercles at mid-body; slightly increasing in size posteriorly; rest of original tail with large, undivided, roughly rectangular, plate-like subcaudal scales (median row) covering almost entire portion of the tail; median row bordered laterally by one or two rows of large, smooth, imbricate scales (Fig. 2D, E).

Colouration in life (Fig. 6A). Dorsal ground colour of head, body, limbs and tail brown. Two short preorbital streaks anterior to eye; postorbital streaks distinct, upper terminating on temporal region and lower extending onto neck to form a discontinuous collar. Labials with fine black spots and ochre streaks. Head, body and tail with black blotches — few scattered on head, four along vertebral midline between limb insertions — with two X-shaped markings running through spots across centre of back and anterior to hindlimb insertions, and one incomplete X-shaped marking at forelimb insertions; tail with about 11 narrow, black markings which may be paired spots, single spots or crossbars; limbs with dark reticulation and digits with a few crossbars. Venter off-white.

Variation and additional information from paratypes (Figs 6B, C, 7A, B). Mensural and meristic data for the type series is given in Table 3 and 4 respectively. There are eight adult male and two adult female specimens, SVL ranging from 47.0–55.9 mm. All specimens resemble the holotype male (NRC-AA-1256) except for the following variations: inner postmental bordering infralabial I and II on left and infralabial I on right side in NRC-AA-1264, inner postmental bordering infralabial I and II on right and infralabial I on left side in NRC-AA-1261 and NRC-AA-1263, inner postmental bordering infralabial I on either side in NRC-AA-1262 and NRC-AA-1265; chin scales bordering inner postmental (six in NRC-AA-1257, NRC-AA-1260, four in NRC-AA-1264, NRC-AA-1263, three in NRC-AA-1258). Outer postmental bordering infralabial II on left and infralabial I and II on right side in NRC-AA-1264, outer postmental bordering infralabial I on right and infralabial I and II on left side in NRC-AA-1261 and NRC-AA-1263, outer postmental bordering infralabial I and II on either side in NRC-AA-1262 and NRC-AA-1265; chin scales separating left and right outer postmental below inner pair (six in NRC-AA-1257, NRC-AA-1260, four in NRC-AA-1258, NRC-AA-1263). Seven paratypes (NRC-AA-1257, NRC-AA-1264, NRC-AA-1258, NRC-AA-1259, NRC-AA-1260, and NRC-AA-1265) have an original and complete tail, marginally or slightly longer than body (TL/SVL 1.12, 1.03, 1.04, 1.12, 1.14, 1.07 respectively), NRC-AA-1261 and NRC-AA-1262 with complete but partially regenerated tail, and NRC-AA-1263 with partially incomplete tail (Fig. 7A, B). Dorsal ground colouration varies from light pinkish to ochre-brown; dorsal colour pattern varies from series of X-shaped markings to indistinct cross-bars to spots; 12–15 dark markings on original tail; regenerated tail mottled brown.



Figure 6. *Hemidactylus quartziticolus* sp. nov. in life: **A** male, holotype NRC-AA-1256, **B** female, paratype NRC-AA-1264, and **C** uncollected juvenile. Photos by Akshay Khandekar.

Table 3. Mensural data (in mm) for the type series of *Hemidactylus quartziticolus* sp. nov.. Abbreviations are listed in Materials and Methods except * = incomplete tail.

Type	Holotype		Paratypes							
Museum number	NRC-AA-1256	NRC-AA-1257	NRC-AA-1258	NRC-AA-1259	NRC-AA-1260	NRC-AA-1261	NRC-AA-1262	NRC-AA-1263	NRC-AA-1264	NRC-AA-1265
Sex	Male	Female	Female							
SVL	53.9	54.1	52.6	52.0	55.9	56.8	47.0	54.4	52.2	50.3
TRL	23.5	23.6	22.9	23.2	25.0	24.2	19.1	22.5	23.4	22.2
BW	13.0	12.0	11.8	11.7	13.9	11.6	10.5	10.7	12.1	11.8
BH	5.3	5.7	6.1	7.2	8.2	6.4	5.6	6.3	6.8	6.6
TL	54.3	60.6	54.8	58.6	63.9	57.2	47.1	17.4*	53.8	5.9
TW	5.6	5.7	5.8	5.3	6.3	6.0	4.8	5.6	5.4	4.5
HL	14.4	14.9	13.7	13.7	16.4	15.8	12.3	14.7	13.9	13.5
HW	11.4	11.4	11.0	10.6	12.4	11.9	9.4	10.9	10.4	9.2
HD	6.1	6.4	6.1	6.0	7.3	6.0	5.1	5.6	6.1	5.1
FL	6.1	6.9	6.1	6.2	6.6	6.6	5.6	6.6	6.1	6.1
CL	7.4	8.1	7.2	7.5	7.3	8.0	6.5	7.7	7.3	7.0
ED	3.0	2.9	3.0	2.9	3.3	3.0	2.7	3.1	3.1	2.8
EN	4.8	5.1	4.6	4.7	5.3	5.3	4.4	5.1	4.8	4.7
ES	6.1	6.6	6.4	6.1	6.9	7.0	5.6	6.6	6.3	6.2
EE	5.1	5.1	4.7	4.8	5.3	4.9	4.1	4.8	4.5	4.3
EL	1.5	1.4	1.5	1.3	1.6	1.5	1.2	1.4	1.5	1.2
IN	1.5	1.5	1.4	1.4	1.6	1.5	1.4	1.5	1.5	1.5
IO	3.0	3.2	2.9	3.2	3.5	3.3	2.2	2.8	2.9	2.7

Table 4. Meristic data for type series of *Hemidactylus quartziticolus* sp. nov.. Abbreviations are listed in Materials and Methods. L and R = left and right; abs. = absent. Numbers in parenthesis indicates undivided lamellae excluding the apical lamella, left and right.

Type	Holotype		Paratypes							
Museum number	NRC-AA-1256	NRC-AA-1257	NRC-AA-1258	NRC-AA-1259	NRC-AA-1260	NRC-AA-1261	NRC-AA-1262	NRC-AA-1263	NRC-AA-1264	NRC-AA-1265
Sex	Male	Female	Female							
INS	1	1	1	1	1	1	1	1	1	1
SL (L&R)	12&12	11&11	12&12	12&11	12&12	12&13	12&12	12&12	11&11	12&12
IL (L&R)	9&9	9&9	11&10	9&10	9&9	9&10	8&8	8&9	10&9	8&8
SL M (L&R)	8&8	8&8	8&8	8&9	8&9	8&9	9&8	9&8	8&8	8&8
IL M (L&R)	7&7	7&8	7&8	7&8	7&7	7&7	6&6	7&6	8&8	6&6
PVT (L&R)	19&19	20&19	19&19	19&19	20&20	19&20	19&20	19&19	19&19	18&20
DTR	18	18	18	18	18	18	18	18	18	18
MVSR	27	28	26	28	27	25	26	24	29	24
VS	48	52	51	54	52	54	51	48	54	52
P-F pores (L&R)	35	35	35	38	34	36	35	35	abs.	abs.
LamF1 (L&R)	4&4 (1&1)									
LamF4 (L&R)	7&7 (1&1)	7&7 (1&1)	6&6 (0&0)	6&6 (0&0)	6&6 (0&0)	7&7 (1&1)	6&6 (0&0)	6&6 (0&0)	6&7 (1&1)	7&7 (1&1)
LamT1 (L&R)	4&4 (1&1)	4&4 (1&1)	4&4 (1&1)	4&4 (1&1)	4&4 (1&1)	4&4 (0&0)	4&4 (1&1)	4&4 (1&1)	4&4 (0&0)	4&4 (0&0)
LamT4 (L&R)	7&7 (1&1)	6&6 (0&0)	6&6 (0&0)	6&6 (0&0)	6&6 (1&1)	7&7 (1&1)	6&6 (0&0)	7&7 (1&1)	6&6 (0&0)	7&7 (1&1)

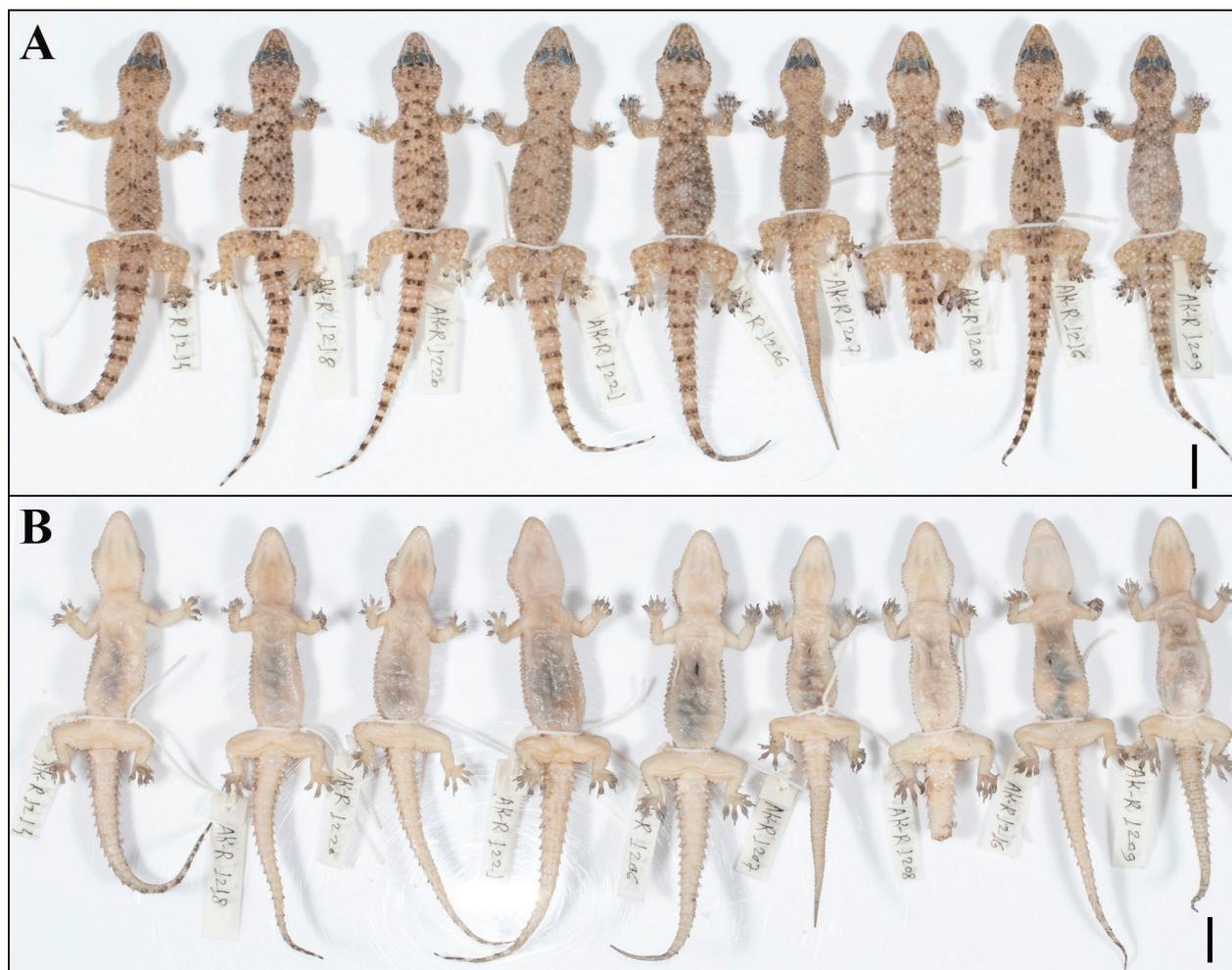


Figure 7. Paratype series of *Hemidactylus quartziticolus* sp. nov. from left to right: NRC-AA-1257–NRC-AA-1265, **A** dorsal view, and **B** ventral view. Scale bar 10 mm; photos by Akshay Khandekar.

Distribution and Natural history. *Hemidactylus quartziticolus* sp. nov. is known from the type locality Vallanadu Reserve Forest and an additional locality 45 km north, Kurumalai Reserve Forest, both in Thoothukudi District, Tamil Nadu, India (Fig. 1). Both localities have low (< 310 m asl.), narrow quartzite ridges with exposed rocks along the ridgeline, and generally stony soil and low, scrubby vegetation (Southern Thorn Forests: 6A/DSI; Champion and Seth 1968) (Fig. 8A–C). The team of five visited these two areas on one night each from about an hour before sunset to two hours after sunset. At Vallanadu, the new species was found in abundance (>15 in one hour). Individuals were seen on quartzite rock formations approximately 0.5–2.0 meter height above from the ground. All the female individuals we spotted ($n = 5$) were gravid, and only a single subadult individual was observed during the entire survey. Sympatric lizards encountered during the survey were *Hemidactylus* cf. *frenatus*, *H.* cf. *leschenaultii*, *H.* cf. *acanthopholis*, *H.* cf. *scabriceps*, *Eutropis* cf. *carinata*, *Psammophilus* cf. *dorsalis*, and *Calotes versicolor* (Daudin, 1802). At Kurumalai it had been raining and was drizzling when we visited and only four individuals of the new species were observed. Two paratypes (an adult male and gravid female) were seen about 50 cm above the ground on the

wall of a small temple situated among the quartzite rock formations, and the other two individuals were observed on rocks about 1–2 m above the ground. Sympatric congeners at Kurumalai includes *Hemidactylus* cf. *frenatus*, *H.* cf. *leschenaultii*, *H.* cf. *triedrus*, *Eutropis* cf. *carinata*, *Psammophilus* cf. *dorsalis*, and *Calotes versicolor*.

Discussion

Hemidactylus quartziticolus sp. nov. is one of the most morphologically distinctive among brookiish congeners, as no other species has such enlarged dorsal tubercles, a continuous series of 34–38 precloacal-femoral pores, and such few lamellae (four) under digit I of manus and pes. This is the 53rd species of *Hemidactylus* known from India, and the seventh that is endemic to Tamil Nadu based on currently available data (Mirza and Sanap 2014; Chaitanya et al. 2018; Agarwal et al. 2019; Khandekar et al. 2020; Pal and Mirza 2022). There are now 37 *Hemidactylus* species of the Indian radiation that are endemic to peninsular India, including 10 from the Western Ghats, two from the Eastern Ghats, and 25 from other regions of

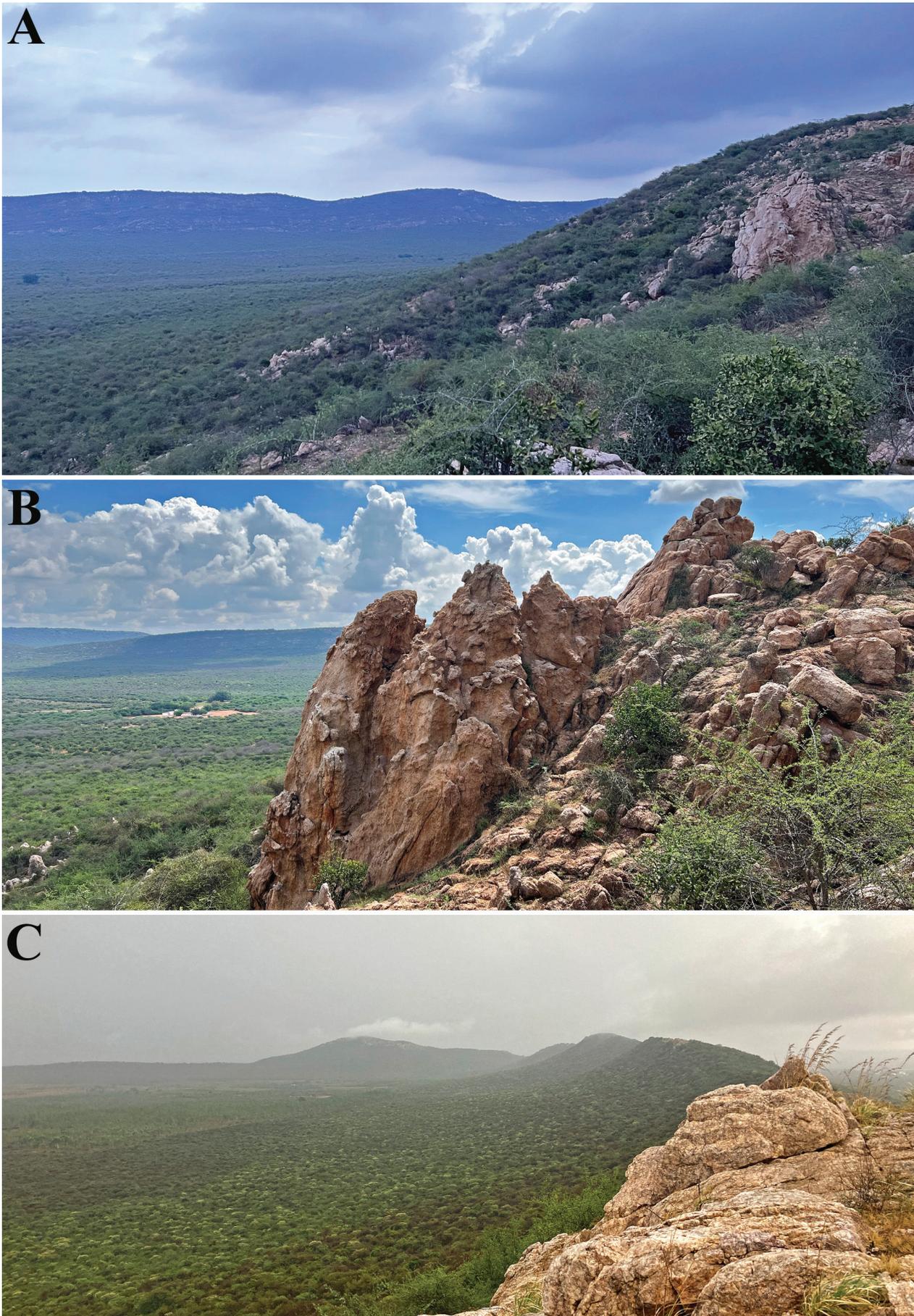


Figure 8. Habitat of *Hemidactylus quartziticolus* sp. nov.: **A** general habitat at the type locality, **B** quartzite rock formation on which individuals of the new species were seen at the type locality, and **C** general habitat at Kurumalai, from where a few paratypes of the new species were collected. Photos by Akshay Khandekar (A and B), and Ishan Agarwal (C).

peninsular India (Uetz et al. 2023). This discovery adds another species to the rapidly growing lizard diversity from the Indian dry zone (e.g. Deepak et al. 2016; Agarwal et al. 2020; Lajmi et al. 2020; Adhikari et al. 2022).

Vallanadu Reserve Forest and the contiguous Blackbuck Sanctuary is the most southern population of the Blackbuck *Antilope cervicapra* (Linnaeus). These scrub habitats are not known for their overall or endemic biodiversity, though Vallanadu is the type locality for an endemic species of shrub *Barleria durairajii* Ravikumar, Narasimhan, Devanathan & Gnanasekaran (Ravikumar et al. 2016) and there are records of the south Indian endemic Madras Hedgehog *Paraechinus nudiventris* (Horsfield) from Vallanadu (Saravanan et al. 2016). The broad habitats that *Hemidactylus quartziticolus* **sp. nov.** was found in are southern thorn forests which are found widely across arid regions of southern India. There are many low hills scattered across scrub and thorn forests in the vast dry zone that could harbour more undiscovered species. Reiterating what has been stated previously, systematic field surveys are needed across the Indian dry zone to understand basic patterns of species diversity and distribution.

The three clades of brookiish geckos within the *brookii* group of Indian *Hemidactylus* have contrasting patterns of morphological variation and distribution: the *malcolmsmithi* + *parvimaculatus* clade has the generic brookiish colour pattern of a light brown dorsum with darker spots or X-shaped markings, slightly enlarged, keeled dorsal tubercles, precloacal-femoral pore series separated by 1–3 poreless scales, and just two species neither of which is endemic to India (Agarwal et al. 2018); the *murrayi* clade has the generic brookiish colour pattern, enlarged, keeled dorsal tubercles and pore series separated by at least four poreless scales with nine species endemic to peninsular India and the widespread commensal *H. murrayi* (Agarwal et al. 2019, 2020; Adhikari et al. 2022). Finally, the *H. gleadowi* clade is perhaps the most diverse in morphology, including a typical brookiish morph with enlarged, keeled dorsal tubercles and precloacal-femoral pores separated by a single poreless scale (*H. gleadowi*), the yellow-tailed *H. flavicaudus* and *H. xericolus* that have flattened dorsal tubercles and pore series separated by one or two poreless scales, and finally *Hemidactylus quartziticolus* **sp. nov.** which is the most tuberculate of all brookiish *Hemidactylus* and with a continuous series of pores. The distributional range of the *H. gleadowi* clade was thought to be central India and interior arid regions of southern India and Pakistan (type locality of *H. gleadowi*), and is now extended by over 800 km to the southern tip of India. It remains to be seen, which, if any, of the Indian *H. cf. gleadowi* lineages represent nominotypical *H. gleadowi*.

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Appendix 1

Material examined

Museum and institutional abbreviations are as follows: National Centre for Biological Sciences, Bengaluru (NCBS-AU/ NCBS-BH/ NCBS-NRC-AA/ Akshay Khandekar field series [AK/ AK R]); Bombay Natural History Society, Mumbai (BNHS); Centre for Ecological Sciences, Bangalore (CES/ CES G).

Hemidactylus albofasciatus: AK 1353–AK 1357 adult males and females, from Dorle, Ratnagiri District, Maharashtra, India.

Hemidactylus chikhaldaraensis: Holotype, NCBS-BH684, adult male; AK 1340, adult male, AK 1337–AK 1340, adult females, from Galwargh Fort, Chikhaldara, Amravati District Maharashtra, India.

Hemidactylus chipkali: Holotype, NCBS AT107, adult male; paratypes, NCBS AT109 adult male, NCBS AT 108, adult female, from Pachmarhi, Hoshangabad District, Madhya Pradesh, India.

Hemidactylus flavicaudus: Holotype, NCBS NRC-AA-1105, adult female; paratypes, CES 17029, CES 17031, adult males, CES 17028,

- adult female, from near Guddeguda, Mahabubnagar District, Telangana, India.
- Hemidactylus gracilis*: AK 1419, adult male, from Devhari, Aurangabad District, Maharashtra, India.
- Hemidactylus malcolmsmithi*: CES11055, CES11057, CES11059, adult males, Kangra-Jwalamukhi Road, Kangra District, Himachal Pradesh; CES11065, adult male, Sujampur, Hamirpur District, Himachal Pradesh; CES11072, adult male, Chamba, Chamba District, Himachal Pradesh; CES11073, adult male, Reasi, Reasi District, Jammu, India.
- Hemidactylus murrayi*: AK 1329–AK 1332, adult males and AK 1328, adult female, from Pimpri, Dang District, Gujarat, India.
- Hemidactylus parvimaculatus*: CES11024, adult male, from Hassan, Hassan District, Karnataka; CES11018, adult male, from Coimbatore, Coimbatore District, Tamil Nadu; CES11029, adult male, from Mollem, South Goa District, Goa, India.
- Hemidactylus reticulatus*: AK 587, adult male, AK 588, adult female, from IISc campus, Challakere, Chitradurga District; AK 594, adult male, AK 595, adult female, from Ballari, Bellary District, Karnataka; AK 901, adult male, AK 902, adult female, from Sirumalai, Dindigul District, India.
- Hemidactylus rishivalleyensis*: Holotype, NCBS-BH728, adult male; paratypes, NCBS-BH731, NCBS-BH732, adult males, NCBS-BH729, NCBS-BH730, NCBS-BH733, NCBS-BH734, NCBS-BH735, adult females, from Cave Rock Hill, Rishi Valley school, Chittoor District, Andhra Pradesh, India.
- Hemidactylus sankariensis*: Holotype, NCBS-BH682, adult male; paratypes, NCBS-BH681, BNHS 2535, adult males, NCBS-BH683, BNHS 2536, adult females, from mined hillock near Kidayur road, Sankari, Salem District, Tamil Nadu, India.
- Hemidactylus sataraensis*: Holotype, BNHS 1743, adult female; paratype, BNHS 1742, adult female, from Chalkewadi, Satara District, Maharashtra, India.
- Hemidactylus vijayraghavani*: Holotype, NCBS-BH 643, adult male; paratype, NCBS-BH 644, adult female, from Bagalkot, Bagalkot District, Karnataka, India.
- Hemidactylus varadgirii*: Holotype, BNHS 2377, adult male; paratypes, BNHS 2375, BNHS 2378, adult males, BNHS 2374, BNHS 2376, adult females, from Amboli, Sindhudurg District, Maharashtra, India.
- Hemidactylus xericolus*: Holotype, NCBS NRC-AA-1110, adult male; paratypes, CES 16170, adult male, NCBS NRC-AA-1111 adult female, from near Marrigudda, Nalgonda District, Telangana, India.

Supplementary Material 1

Table S1

Authors: Khandekar A, Thackeray T, Mariappan R, Gangalmale S, Waghe V, Pawar S, Agarwal I (2023)

Data type: .pdf

Explanation note: List of sequences used for inset, backbone phylogeny in Fig. 2.

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Link: <https://doi.org/vz.73.e101871.suppl1>

Supplementary Material 2

Figure S1

Authors: Khandekar A, Thackeray T, Mariappan R, Gangalmale S, Waghe V, Pawar S, Agarwal I (2023)

Data type: .pdf

Explanation note: Maximum Likelihood phylogeny of Indian *Hemidactylus* based on the ND2 gene partitioned by codon position and with the GTR + G model applied, bootstrap support ≥ 60 shown at nodes.

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