

VALIDITY OF THE MOUNTAIN GECKO *GYMNODACTYLUS WALLI* INGOLDBY, 1922

M. S. KHAN

Herp laboratory, 15/6 Darul Sadar N., Rabwah 35460, Pakistan

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ABSTRACT

New material of *Gymnodactylus* from Chitral, Pakistan has been compared with that already in museums. *Gymnodactylus walli* which has been synonymized with *G. stoliczkai* by several authors was found to be a valid species. *G. walli* is redescribed, with notes on its habitat.

INTRODUCTION

Ingoldby (1922) described *Gymnodactylus walli* from a juvenile specimen (BMNH 1910.7.12.1.), collected from Drosh Fort, Chitral, North West Frontier Province (NWFP), Pakistan. Later Smith (1935) described *G. chitralensis* on the basis of two geckos collected from Karakal, Bumhoet Valley, Chitral. The types of both taxa are in the British Museum (Natural History), London.

In 1986, Mr K. J. Baig, Research Associate, Pakistan Museum of Natural History, Islamabad, Pakistan, collected a pair of geckos from Ghariet, a small village near Drosh Fort, Chitral. Both geckos were found to conform to *Gymnodactylus walli* and *G. chitralensis*. Later the type and syntype were received from the British Museum (Natural History), London, and a comparison confirmed that these geckos were conspecific, validating *G. walli* which has priority over *G. chitralensis*.

Ingoldby's account (1922) of the morphology of *Gymnodactylus walli* is brief and inadequate since it is based on a juvenile specimen. It has created ambiguity in the literature, so that *G. walli* was placed in synonymy of *G. stoliczkai* Steindachner, 1869 by almost all herpetologists (Smith, 1935; Minton, 1966; Mertens 1969; Khan & Mirza, 1977; Szczerbak & Golubev, 1986). Collection of the new material from Chitral, has made possible a redescription of *G. walli*. The following description is based on BMNH 1946.8.23.19.

The chaotic taxonomy of angular-toed geckos of the circum-Himalayan region has recently been augmented by further partitioning of them into several genera and subgenera (Szczerbak, 1986, 1988; Szczerbak & Golubev, 1984, 1986). I prefer to use the original generic designation for *Gymnodactylus walli*, *Gymnodactylus stoliczkai* and *Crytodactylus yarkandensis* Anderson 1872.

SPECIES DESCRIPTIONS

Gymnodactylus walli Ingoldby, 1922

Gymnodactylus walli Ingoldby, 1922. J. Bombay Nat. Hist. Soc., 28:1051

Gymnodactylus chitralensis Smith, 1935. Fauna British India, vol. 2, 46–47.

Tenuidactylus chitralensis Szczerbak and Golubev, 1986, Geckos of USSR and adjoining countries, 201.

Material examined. Holotype BMNH 1910.7.12.1., a juvenile collected from Drosh Fort, Chitral, NWFP, Pakistan,

by Frank Wall: BMNH 1946.8.23.19. (Fig. 1), an adult female, collected from Karakal, Bumhoet Valley, Chitral, NWFP, Pakistan; MSK 0484.86 and MSK 0485.86, both males, collected from Ghariet, Chitral, NWFP, Pakistan, by K. J. Baig, July, 1986.

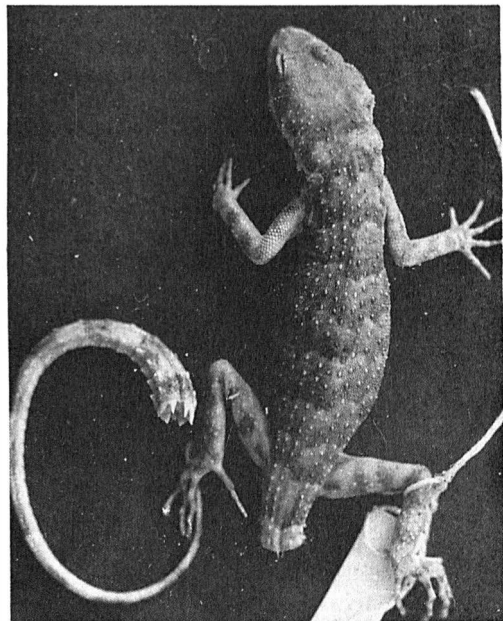


Fig. 1. *Gymnodactylus walli* Ingoldby, 1922, BMNH 1946.8.23.1., dorsal view.

Diagnosis. Medium sized geckos; tail longer than body; 20–21 interorbital scale rows; body dorsum with oval to round, nontridhedral, keel-less tubercles, arranged in 10–13 longitudinal rows, 21–23 in paravertebral row; 38–40 scale rows across midabdomen 160–170 scales along midventrum of body; 4–5 preanal pores in male.

Description of BMNH 1946.8.23.1. Habitus slightly depressed; rostral scale pentagonal; a patch of five postrostral large tuberculated scales; a pair of nasal scales on each side; few large tuberculated scales scattered on temporal region; 19–20 heterogenous interorbital scales; supralabials 11, progressively decreasing in size from first to last; 9–10 infralabials, first three equal in size; a prominent depression at postnarial, frontal and loreal region lined with distinctly smaller scales; body dorsum with 12 longitudinal rows of large oval tubercles which are 23–24 in a paravertebral row, those of four medial rows longer than broad, while laterals smaller and round, separated by 3–4 granular scales which are broader than long and arranged in irregular transverse rows, slightly imbricate, with lifted posterior ends.

Mental scale large, pentagonal, with acute angle, three pairs of postmentals on right and two on left side, first pair in contact by a suture length of which is one third the length of mental scale; 30–40 scales across midbelly which are hexagonal and strongly imbricate; 174–180 scales along midventrum of body from postmental to anterior of vent. No preanal or femoral pores, since BMNH 1946.8.23. is a female, instead there is a row of four large scales at the site of preanal pores, six oblique rows of large juxtaposed scales are anterior to vent.

When limbs are extended forward tips of toes hardly reach the axilla and fingers the snout tip; fourth finger with 20 and fourth toe with 23 subdigital lamellae, those on basal part much broader than those on compressed part of the digits, swollen at the angles of the digit, claws small fine and curved. Limb dorsum with large keel-less imbricate scales, several tubercles on thigh and shank, those on shank larger and slightly keeled; no postfemoral or subfemoral tubercles.

Tail longer than body, depressed, segmented which are more distinct at the basal part of the tail; dorsum of each caudal segment with 5–6 transverse rows of slightly keeled, heterogenous, imbricate granular scales with acute tips; three rows of large,

slightly keeled tubercles on each side of the tail, six to a segment arising from its middle, becoming gradually imperceptible by the middle of the tail; subcaudals broader than long, two to a segment, however first two caudal segments have three subcaudals each, first subcaudal of second and third segment fragmented into five and four smaller scales respectively.

Colour. Dorsum of formalin preserved specimens light grey with nine transverse brown wavy bands from posterior of nape to the level of vent. A dark stripe from eye joins the band on the nape. Limb dorsum barred. Tail with 13 dark and 12 light bars.

Measurements. Total length 129.9 mm; body length (SVL) 51.5 mm; tail length 78.4 mm; head length 13.1 mm; head breadth 9.5 mm; snout length 5.4 mm; diameter of eye (not bony orbit) 3.25 mm; vertical diameter of ear opening 1.3 mm; length of oculo-orbital space 3.6 mm.

Variations. Table 1 quantifies differences in the morphology of specimens of *Gymnodactylus walli* examined. BMNH 1910.7.12.1., is a juvenile (Total length 57.65 mm), while BMNH 1946.8.23.1., is an adult female while MSK 0784.86 is

Character	1	2	3	4
Snout vent length (SVL)	51.5	26.65	54.7	46.7
Tail length	78.4	31	Br	52R
Supralabials	11/11	11/9	10	11/11
Infralabials	9/10	9/8	8	8
Interorbitals	21	20	20	21
Scales across midbelly	38	40	40	40
Dorsal tubercle row at midbody	13	10	12	12
Paravertebral row of tubercles	23	23	22	21
Lamellae under - fourth finger	20	20	20	19
Lamellae under - fourth toe	23	25	23	23
Midventral scale counts	174	169	162	160
Preanal pores	4(2–2) scales	4(2–2) scales	4	4
Postmentals	3/2	3/3	3/2	3/3
Head length	13.1	8.9	11.4	13.95
Head breadth	9.5	5.6	10.5	9.3
Head Height	5.75	3.9	5.5	5.5
Eye diameter	3.25	2.6	3.1	3.1
Ear diameter	1.3	2	1.5	1.5

TABLE 1. Variation in pholidosis and measurements (mm) of specimens of *Gymnodactylus walli* studied. (Br=broken; R=regenerated; 1=BMNH 1946.8.23.1.; 2=BMNH 1910.7.12.1.; 3=MSK 0484.86; 4=MSK 0485.86).

an adult male with regenerated tail, and MSK 0785.86 is a tail-less adult male. Except for slight pholidotic variations, this series of geckos appear to be morphologically similar. MSK 0784.86 appears to be oldest of the series, as it is longer (SVL 54.7) and most robust. BMNH 1910.7.12.1 is morphologically abnormal at rostral region where a series of four postrostrals scales is present. Moreover, the tail is not proportional to the body. It appears as if the body of the gecko has become associated with a tail that does not belong to it.

Comparison. Palaearctic trihedral tuberculated geckos of genus *Tenuidactylus* and *Cyrtopodion* (see Khan & Tasnim, 1990 for complete list), differ from *Gymnodactylus walli* in having dorsal trihedral strongly keeled tubercles, both preanal and femoral pores in a continuous series; fewer (8–18) interorbital scales; 2–10 post femoral tubercles; caudal tubercles trihedral, six to a segment arising from the end of the segment. While Tibeto-Himalayan geckos of genus *Cyrtodactylus* (sensu lato): *C. tibetinus*, *C. mintoni*, *C. dattanensis*, *C. sp* (Khan, in press), differ from *G. walli* due to plump round body and tail which are equal in length; unsegmented tail with reduced caudal tubercles and small subcaudals; 6–10 preanal pores; higher (106–205) midventral scale, and scales across midabdomen (30–54).

The high altitude gecko *Gymnodactylus stoliczkai* Steindachner, 1869, differs from *G. walli* in having 17–20 interorbital scales; 27–32 scales across midbelly, 120–149 along midventrum of body; no preanal or femoral pores; flat, strongly tapered tail, deeply sected laterally. In tail scalation *G. stoliczkai* and *G. walli* are similar to each other. There is distinct endolymphatic swelling on each side of head in *G. stoliczkai* and regenerated tail is much flattened.

Recently described sandstone geckos *Tenuidactylus indusoani* (Khan, 1988) and *T. rohtasfortai* (Khan & Tasnim, 1990), differ from *Gymnodactylus walli* in having much depressed and thin body, long tail with trihedral keeled tubercles, arising from the end of the segment, and a series of much broader subcaudals; body dorsum with flat, slightly keeled tubercles; fewer (13–16) interorbital scales; 21–33 scales across midabdomen; 103–135 mid-ventral scales; 6–7 preanal pores in *T. indusoani*, while a continuous series of 18–27 preanal and femoral pores in *T. rohtasfortai*.

Gymnodactylus walli is well differentiated by the following meristic characters:

Body moderately depressed; body dorsum with scattered oval keel-less tubercles, well differentiated from granular scales; subcaudals broader than long; small caudal tubercles arise from middle of caudal segment; 4–5 preanal pores:

..... *Gymnodactylus walli*

Body moderately depressed; body dorsum with large strongly trihedral keeled tubercles, arranged in longitudinal series; preanal as well as femoral pores; tail strongly segmented, caudal tubercles trihedral and keeled, subcaudals broad:

..... genus *Tenuidactylus*
and genus *Cyrtopodion*.

Body much depressed and thin; body dorsum with scattered flat, round feebly keeled tubercles; with preanal or both preanal and femoral pores in a continuous series;

tail strongly segmented; caudal tubercles trihedral keeled, arising from the end of the caudal segment, subcaudal broad:

..... *Tenuidactylus indusoani*
and *T. rohtasfortai*

Body and tail round, plump; body dorsum with scattered, round to oval keel-less tubercles; only preanal pores; tail unsegmented, caudal tubercles small keel-less flat structures, subcaudals not broader than long:

..... genus *Cyrtodactylus*

Body moderately depressed; body dorsum with scattered keel-less oval tubercles, slightly distinct from granular scales; no preanal or femoral pores; tail flat, laterally sected, caudal tubercles weak arising from the middle of the segment; subcaudals not broader than long:

..... *G. stoliczkai*
and *G. yarkandensis*.

Habitat. The specimens of *Gymnodactylus walli* from Gharriet, Chitral were collected from the walls of a roadside thatched house, near Gharriet village, in July, 1986, just after sunset. Chitral occupies the northwestern tip of Pakistan (Fig.2, inset). It stretches between 35°15' to 36°55'N, 71°21' to 73°55'E, over an area of 320 km of rugged mountains with an elevation ranging from 1500 m to 1850 m. (Adamson & Shaw, 1981). Maximum summer temperature 24°C, winter –50°C.

Two reports exist on the herpetofauna of Chitral, McMahon (1901) records *Spalerosophis diadema*, *Ptyas mucosus*, *Coluber rhodorachis*, *Echis carinatus*, *Naja naja*, *Xenochrophis piscator*, *Bungarus caeruleus*, *Amphiesma stolata*, *Lycodon striatus*, *Gongylophis conicus*, *Typhlops braminus*, *Varanus flavescens*, *Cyrtopodion scaber*, *Varanus bengalensis*, *Eublepharus macularius*, *Calotes versicolor*, While Wall (1911) records *Gymnodactylus stoliczkai* (= *G. walli*), *Agama tuberculata*, *A. himalayana*, *Varanus griseus*, *Liolopisma himalayana*, *Natrix tessellata*, *Coluber ravergieri*, *Agkistrodon himalayanus*.

DISCUSSION

Mertens (1969) reported SMF 63548 from Abbotabad, Hazara Division, NWFP, Pakistan, and identified it as *Gymnodactylus chitralensis*. Later Khan (1980) showed it to be *G. dattanensis*. Szczerbak and Golubev (1986), apparently unaware of Khan's work, followed Mertens' identification and along with SMF 63548 from Abbotabad they illustrated their account of *G. chitralensis* by MNHN 1916.63 and wrongly noted its type locality as "Upper Indus valley" (Golubev, pers. comm.), when in fact it is "Central Provinces, India" (Brygoo, pers. comm.). This specimen was identified by Chabanaud as *Gymnodactylus nebulosus* (1919, Bull. Mus. Nat. Hist. nat, Paris, 25, 452). Apparently Szczerbak & Golubev, (1986) were unaware of the presence of syntype of *G. chitralensis* in the British Museum (Natural History), London, despite clear reference by Smith (1935) to its depository.

Ingoldby (1922) compared *Gymnodactylus walli* with *G. stoliczkai*. Smith (1935) disregarded the differences and pushed

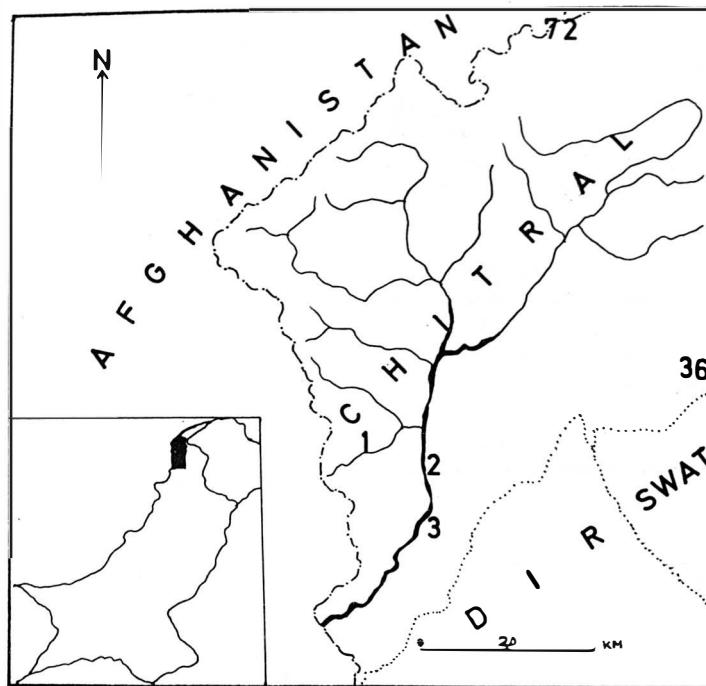


Fig. 2. Map of the part of Chitral, NWFP, Pakistan, showing collection localities of *Gymnodactylus walli* Ingoldby: 1=Bumburet (Bumhoet); 2=Ghariet; 3=Drosh Fort, (inset: Pakistan, shaded part showing position of Fig. 2).

G. walli in to the synonymy of *G. stoliczkae* to pave the way for his *G. chitralensis*. Ingoldby based his *G. walli* on a type series comprising of one adult male, two adult females, one half grown and one young specimen (1922, 1051). Logically he should have designated the adult male as type, but what we have as type is the youngest of the series, a juvenile about 1–2 week old (BMNH 1910.7.12.1.). There is no sign of preanal pores in this specimen neither it has been dissected for examination of its gonads, while in the description Ingoldby sexed it as male.

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APPENDIX: MUSEUM ACRONYMS

BMNH = British Museum (Natural History), London; MNHN = Museum National d'Histoire Naturelle, Paris; MSK = Herp Laboratory, Rabwah 35460, Pakistan; SMF = Senckenberg Museum, Frankfurt.

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