Journal of Herpetology, Vol. 43, No. 2, pp. 267–274, 2009

Rediscovery and Revalidation of *Takydromus sikkimensis* (Günther, 1888) (Squamata: Lacertidae) from Sikkim, India

SUBRAMANIAN BHUPATHY,[1] BASUNDHARA CHETTRI,[1] AND AARON M. BAUER[2,3]

[1]*Salim Ali Centre for Ornithology and Natural History, Anaikatti (PO), Coimbatore 641 108, Tamil Nadu, India*
[2]*Department of Biology, Villanova University, 800 Lancaster Avenue, Villanova, Pennsylvania 19085 USA; E-mail: aaron.bauer@villanova.edu*

ABSTRACT.—***Takydromus sikkimensis* was named in 1888 by A. Günther on the basis of an 1872 description of grass lizards from Sikkim by F. Stoliczka. Subsequent workers have not considered this species valid and have even doubted the occurrence of *Takydromus* in Sikkim. We confirm the occurrence of grass lizards in the lower Teesta valley of Sikkim. These are consistent with the description of *T. sikkimensis* and are distinguishable from all other congeners on the basis of having 12 rows of enlarged ventral scales across midbody, three pairs of chin shields, 3–6 femoral pores on each thigh, and color pattern lacking stripes, spots, or ocelli. Because the type specimens are lost, and because there has been a persistent confusion regarding the identity, and even the existence, of the taxon described by A. Günther as *T. sikkimensis*, we designate a neotype to stabilize the use of the revalidated name.**

Grass lizards of the genus *Takydromus* are distributed from northeastern India, east to China, Korea, and the Russian far east, and south throughout Indochina. They also occur in Japan, the Ryukyus, Taiwan, and the islands of the Indo-Australian Archipelago as far east as Borneo and Java (Smith, 1935; Schlüter, 2003). Globally, approximately 20 species, several polytypic, are currently recognized (Arnold et al., 2007; Lue and Lin, 2008). Relationships of *Takydromus* to other lacertids have been investigated using both morphological (Arnold, 1989; Arnold et al., 2007) and molecular data (Harris et al., 1998; Fu, 2000; Arnold et al., 2007; Mayer and Pavlicev, 2007), and three intrageneric phylogenies and revisions recently have been completed (Arnold, 1997; Lin et al., 2002; Ota et al., 2002). However, despite this attention the status of the genus in India remains confused, and even the number of species occurring in the country is uncertain.

Jerdon (1870) first recorded *Takydromus* from India, describing *Takydromus haughtonianus* from Goalpara, Assam, and noting *Takydromus sexlineatus* from ''Assam and the Khasi Hills, where they are by no means rare about Shillong.'' Anderson (1871) reported on the same material as Jerdon but provided a more detailed account of the former species. Stoliczka (1872) described a series of 25 specimens from the ''low valleys of Sikkim,'' assigning these to *T. sexlineatus*, a species otherwise known from Southeast Asia and southern China. However, he noted variation in both the number of chin shields and femoral pores among his material. Theobald (1876) recognized *T. haughtonianus* and *T. sexlineatus* from India, placing Stoliczka's Sikkim material in the latter species but noting its difference from typical material in possessing two nasal shields. Boulenger (1887, 1890) considered both *Takydromus septentrionalis* and *T. haughtonianus* as synonyms of *Takydromus tachydromoides*, recognizing this species from Assam and *T. sexlineatus* from the Khasi Hills and Sikkim (based upon Stoliczka's record). In contrast, Günther (1888) considered the range of variation in the characters examined by Stoliczka (1872) to exceed specific boundaries and proposed the name *Tachydromus sikkimensis* for those of Stoliczka's specimens possessing three pairs of chin shields and 3–5 femoral pores. Günther (1888) also recognized *T. sexlineatus* as occurring in India (Khassya = Khasi Hills, Assam) and *T. haughtonianus*, also from Assam. Annandale (1905) concluded that there were only two Indian species—*T. septentrionalis* (with *T. haughtonianus* as a synonym) and *T. sexlineatus*; he made no explicit mention of Günther's *T. sikkimensis* but included ''E. Himalayas'' in the range of *T. sexlineatus*.

Boulenger (1917) described *Takydromus khasiensis* to accommodate specimens from the Khasi Hills previously allocated to *T. sexlineatus* by both himself (Boulenger, 1887, 1890) and others (Jerdon, 1870; Anderson, 1871; Günther, 1888) and revalidated *T. haughtonianus*. He also formally synonymized *T. sikkimensis* with *T. sexlineatus*, based in part on his examination of a specimen from the Indian Museum (now Zoological Survey of India, Kolkata, ZSI) from ''Sittong, Sikkim.'' He repeated these conclu-

[3]Corresponding Author.

sions in his monographic treatment of the Lacertidae (Boulenger, 1921). Smith (1935) recognized *T. haughtonianus* but considered all other Indian specimens to be assignable to *Takydromus sexlineatus sexlineatus* or *Takydromus sexlineatus khasiensis*. The basis for his inclusion of the nominate form in the Indian fauna was Jerdon's (1870) record from Assam. However, Jerdon's specimens became the types of *Takydromus khasiensis*; thus, Smith actually recognized only two taxa from Indian territory. Smith included in his concept of *T. s. khasiensis* one specimen from ''Sittaung, Upper Chindwin, Burma''—the same specimen allocated to *T. sexlineatus* sensu stricto by Boulenger (1917) and stated to be from ''Sittong, Sikkim.'' Although he mentioned Stoliczka's specimens and Günther's (1888) name for them, Smith (1935) neither recognized *T. sikkimensis* as valid nor listed it in synonymy. Indeed, his statement ''no *Takydromus* has yet been found with more than three pores on each side, nor is any member of the genus known from so far west'' suggested that he may have doubted the accuracy of Stoliczka's locality or the description of his specimens.

Thus, among the major authors dealing with the taxonomy of Indian *Takydromus*, each came to different conclusions regarding Stoliczka's Sikkimese specimens. Günther (1888) accorded them specific status as *T. sikkimensis*; Annandale (1905) and Boulenger (1917) allocated them to *T. sexlineatus*; and Smith (1935) considered their identity indeterminate. Modern workers have not critically reexamined the issue, and more recent faunal and taxonomic treatments follow Smith (1935; e.g., Tikader and Sharma, 1992; Sharma, 2002; Das, 2003) or recognize only two Indian species—*T. haughtonianus* and *T. khasiensis* (or *T. s. khasiensis*) (Das, 1994, 1996, 1997; Ota et al., 2002) or even just one—*T. s. khasiensis* (Murthy, 1985, 1990). None of these recent works mentions *T. sikkimensis*, and Sikkim is not included in the range of the genus according to most authors since Boulenger (Gammie, 1928; Waltner, 1973; Swan, 1993; Das, 1996; Ganguli-Lachungpa, 1998; Jha and Thapa, 2002; Sanyal et al., 2006). Indeed, the only recent use of the name has been as a probable synonym of *T. sexlineatus* (Arnold, 1997; Schlüter, 2003; Das and Gayen, 2004). During 2006, one of us (BC) made new collections of *Takydromus* from the Teesta valley, Sikkim, confirming the occurrence of the genus in this area (Chettri, 2007). The rediscovery of Sikkimese *Takydromus* after more than a century, combined with the examination of comparative material from the collection of the Zoological Survey of India, Kolkata, provides the opportunity to reevaluate and resolve the long-standing issue of the identity of *T. sikkimensis*.

Materials and Methods

Study Site.—Twenty-two *Takydromus* were observed during 2003–06 field surveys of reptiles along the Teesta valley, Sikkim (Chettri, 2007). They were restricted to the lower elevations of the valley, which extends from 300–4,800 m asl. Most observations were made in and around Dalep village (27°14′N, 88°28′E) on the banks of the Teesta River at about 550 m asl, near Singtam, South Sikkim, India (Fig. 1). *Takydromus* was found in sympatry with *Sphenomorphus maculatus*, *Calotes versicolor*, *Cyrtodactylus* cf. *khasiensis*, *Hemidactylus* cf. *bowringii*, and *H. garnotii*. The original tropical semideciduous forest (Hooker, 1854) is degraded because of intense agriculture and construction associated with a hydroelectric project. Lizards were observed in areas with open rocks, boulders, and grass amid crop fields of maize (*Zea mays*), millet (*Panicum miliaceum*), and pulses (*Phaseolus* spp.). Both adults and juveniles were highly active during late autumn to early winter (October and November).

Material Examined.—Seven lizards were hand collected and photographed on 22 October 2006. Snout–vent length (SVL) and tail length (TL) of live specimens were measured to the nearest 1 mm using twine and metal rule. Three specimens were euthanized using chloroform and fixed in 7% formaldehyde before being transferred into 70% ethanol for subsequent identification. Two, one each male and female, have been deposited at the Zoological Survey of India, Kolkata (ZSI 25761–25762), the third specimen is at the Salim Ali Centre for Ornithology and Natural History, Coimbatore, India (SACON_WG_001). Available *Takydromus* specimens and associated records were examined at the Zoological Survey of India, Kolkata (see Appendix 1), and additional comparative data were obtained from Boulenger (1917, 1921).

Results

Sikkim Grass Lizard, *Takydromus sikkimensis* (Günther, 1888) (Fig. 2)

Diagnosis.—*Takydromus sikkimensis* may be distinguished from *Takydromus dorsalis*, *Takydromus hani*, *Takydromus intermedius*, *Takydromus kuehnei*, *Takydromus sauteri*, *Takydromus smaragdinus*, *Takydromus sylvaticus*, and *Takydromus toyamai* (formerly allocated to the subgenus *Platyplacopus* sensu Arnold, 1997) by having 12 (vs. 6 or 8) rows of enlarged ventral scales across midbody, from *Takydromus amurensis*, *Takydromus wolteri*, and *Takydromus tachydro-*

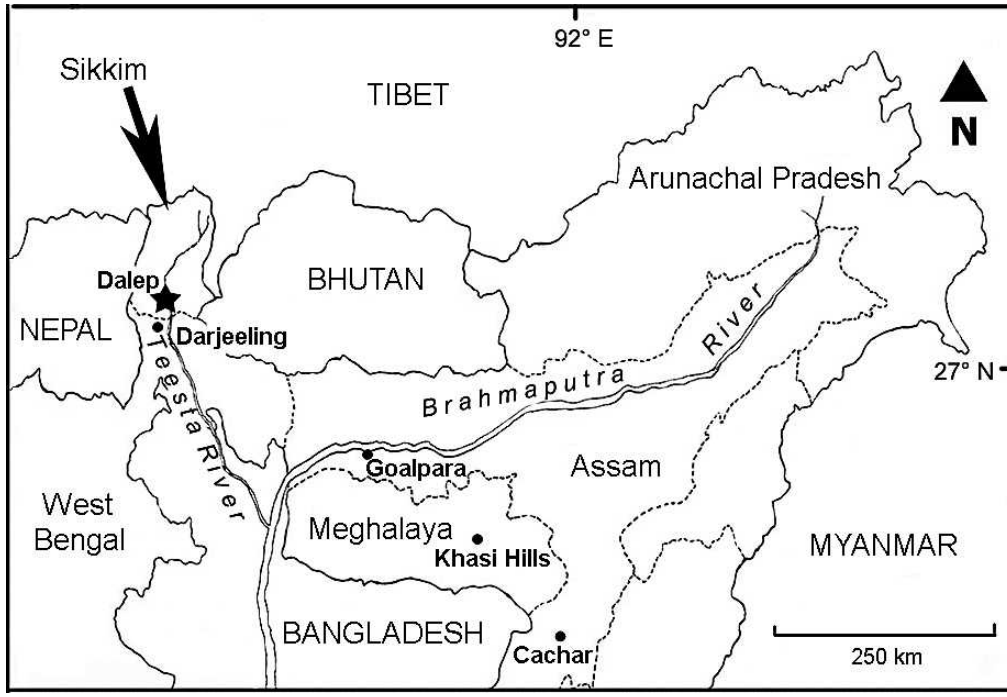

FIG. 1. Map of northeastern India and adjacent regions showing the location of the collection site of *Takydromus sikkimensis* at Dalep village (star) on the Teesta River and other localities relevant to Indian *Takydromus* spp. mentioned in the text (dots). Solid lines indicate international borders; dashed lines indicate borders between Indian states.

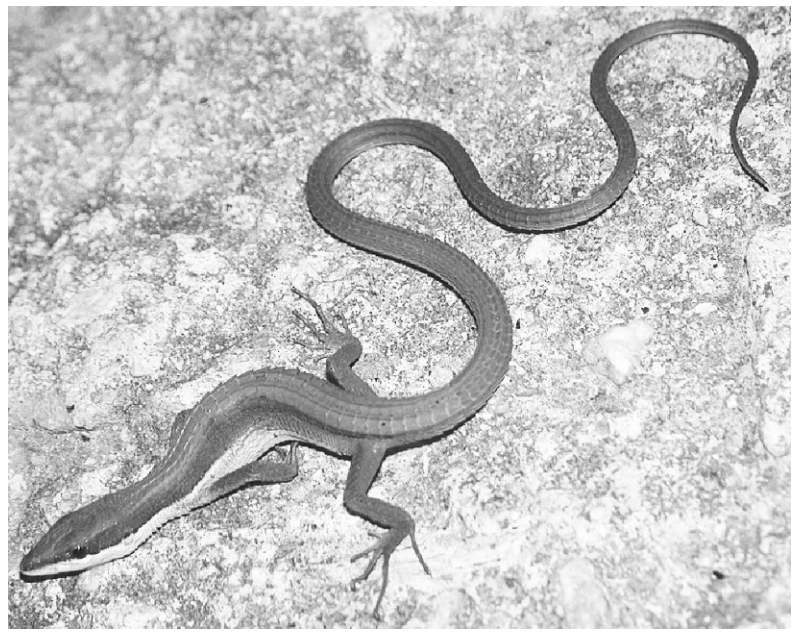

FIG. 2. Live specimen of *Takydromus sikkimensis* collected and released near Dalep village, Sikkim, India, in November 2003. Note the relatively uniform dorsal coloration and elongate tail.

moides by having 3 (vs. 4) pairs of chin shields, and from *Takydromus hsuehshanensis*, *Takydromus septentrionalis*, *Takydromus formosanus*, *Takydromus luyeanus*, *Takydromus viridipunctatus*, *Takydromus stejnegeri*, and *Takydromus sexlineatus ocellatus* by having 3–6 (see Discussion [vs. 1–2]) femoral pores on each side. Among the taxa reported from India, it differs from *T. haughtonianus* by its lower number of enlarged dorsal plates at midbody (4 vs. 6) and chin shields (3 vs. 4), greater number of supraciliary scales (9–11 vs. 5–6), and presence of a collar and from *T. khasiensis* by its greater number of rows of granules on the flank between the enlarged dorsal and ventral scales (11–16 vs. 6–9), longer tail (more than three times SVL vs. approximately twice SVL [data from Boulenger (1917)]), and its life color (dorsum and flanks without obvious markings vs. a light dorsolateral streak from eye to tail base bordered above and below by a black border or series of spots). It may be distinguished from *T. s. sexlineatus*, with which it has previously been confused, by its greater number of enlarged scales across midbody (12 vs. 10), greater number of rows of granules on the flank between the enlarged dorsal and ventral scales (11–16 vs. 7–10), and by its color in life (dorsum and flanks without obvious markings vs. a green dorsolateral stripe from above eye to tail base edged above and below by a black border with white ocelli with black edges sometimes present on flanks [see photos in Schlüter, 2003]). It further differs from all three of these species by its greater number of femoral pores (3–6 vs. 1 in *T. haughtonianus*, 1–2 in *T. s. sexlineatus*, and 2–3 in *T. khasiensis*).

Description.—Specimens measured 46–60 mm SVL. Original tail 150 mm (306% SVL) in the sole intact (female) specimen. All specimens had four active femoral pores on either side, except one, which had five. Dorsal plates keeled, 4 in transverse series at midbody, 6–8 anteriorly, 29–30 in each longitudinal row; 12 rows of enlarged, keeled ventral scales across midbody, 10 anterior to hind limb. Supranasals in contact; frontonasal single; ratio of length to width of frontonasal variable (3 wider, 3 longer, 1 equal), prefrontals in contact; one small and two large supraoculars, anterior largest; 2 large and 2 small supraciliary scales, supraoculars in contact with supraciliaries, 9–11 supraciliary granules; interparietal smaller than frontoparietal and larger than occipital; loreal in contact with supraocular, posterior loreal larger than the anterior; labial scales bilaterally symmetrical—6 supralabials, fifth in subocular position (fourth in a single specimen); 5 (in one case 4) infralabials; three pairs of enlarged chin shields, posteriormost largest and not in contact with each other; maximum of 11–16 rows of granular scales on flanks between enlarged dorsal and ventral scales; single anal plate bordered by single shield on either side, 4 continuous preanal plates; 2 enlarged postanal plates, 2–3 rows of scales between vent and postanal plates; 23–25 ventral plates between collar and groin in a longitudinal row; 14–16 circumcaudal scales at the level of two plates posterior to the postanal.

Dorsum of body and tail brown with a relatively darker head; granular scales of flanks dark brown, bordered below by a narrow darker brown stripe extending from loreal region through eye and tympanum to midbody. Throat and venter pale yellow with a tinge of bronze. Limbs brown dorsally and pale yellow ventrally. Dorsum and flanks without spots, blotches, or pale stripes.

It is evident that *Takydromus* found in Sikkim are distinct from other members of the genus reported from India. Thus, we concur with Günther (1888), who, based on the increased number of femoral pores in Stoliczka's specimens from Sikkim, erected the species *T. sikkimensis*, and we hereby resurrect this name from the synonymy of *T. sexlineatus*.

Discussion

The whereabouts of Stoliczka's Sikkim *Takydromus* specimens is unknown. Annandale (in Boulenger, 1917, 1921) indicated that they were not in the collection of the Indian Museum (now Zoological Survey of India, Kolkata). Neither were they located by Smith (1935). Although Das et al. (1998) also did not find this material during the preparation of the ZSI type catalogue, Das and Gayen (2004) reported that ZSI 5368 was the holotype of *T. sikkimensis*. In fact, Günther (1888), who never saw a specimen of the species he named, did not designate a holotype and all of Stoliczka's material with three pairs of chin shields and 3–5 femoral pores must be considered as syntypes by Günther's indication to Stoliczka's (1872) paper (ICZN, 1999, Article 12.2.1). The question, then, is whether ZSI 5368 is one of the original 25 lizards reported upon by F. Stoliczka. Stoliczka himself did not collect the *Takydromus* about which he reported. He only traveled to the Eastern Himalayan region once, visiting Darjeeling [= Darjiling] (then part of Greater Sikkim; Gammie, 1928) in October 1872 (Kolmaš, 1982), over a year after the original paper mentioning *Takydromus* was received and read at the Asiatic Society of Bengal (6 September 1871). Although he does not mention a collector for these lizards in particular, Stoliczka's introduction acknowledges two collectors, Mr. Mandelli and Mr. Martin, who were based in Darjeeling and Pankabaree [= Pankabari], respectively. Both

places now lie within West Bengal and are close to the current Sikkimese border and the lower reaches of the Teesta River. However, the current label associated with ZSI 5368 indicates that it was collected by J. L. Lister and has the locality ''Sittaung, chinchona garden.'' The tag also mentions that the specimen had been examined by M. Smith in 1934. Thus, Smith, whose familiarity with the geography of Southeast Asia was greater than his familiarity with Indian geography, took the locality to refer to Sittaung, in east central Myanmar. However, Boulenger (1917) interpreted the specimen to come from Sittong [= Singtam] in Sikkim. That his interpretation was correct is supported by the fact that Sittong was, in the 19th century, a leading cinchona plantation (Smith, 1882). Further, J. L. Lister was the manager of the Pashok tea estate (Louis, 1894), which is still extant and lies in the Teesta Bridge district of Darjiling. He is also known to have collected both plants (Urban, 1917) and mammals (Anderson, 1881) in Sikkim.

Because none of Stoliczka's specimens of Sikkimese *Takydromus* appear to be locatable and because there has been a persistent confusion regarding the identity, and even the existence, of the taxon described by Günther (1888) as *T. sikkimensis*, we here designate a neotype to stabilize the use of the revalidated name. Although it does appear that ZSI 5368 was collected in Sikkim, it has fewer femoral pores (3 vs. 4–5) than the seven specimens examined by us from Dalep village. However, this still falls within the range (3–6) reported by Stoliczka (1872) for his 25 specimens, and it agrees in all other aspects with our newly collected material. Nevertheless, Lister's specimen is over a century old, and it does not clearly show the additional diagnostic color pattern noted above in Results. Thus, we select as a neotype ZSI 25761, an adult male specimen (54 mm SVL, incomplete TL 113 mm) bearing four femoral pores on each thigh, from Dalep village, near Singtam, South Sikkim, India, 27°14′N, 88°28′E, 550 m asl; collected by Basundhara Chettri, 22 October 2006.

The recognition of the specific distinctness of *T. sikkimensis* clarifies that the Indian fauna includes at least three, and possibly four, species of *Takydromus*. The specific (or at least subspecific) status of both *T. haughtonianus* and *T. khasiensis* has remained unproblematic since the work of Boulenger (1917). Although the former species remains known only from the unique holotype, ZSI 2195 (Arnold, 1997; Das et al., 1998), *T. khasiensis* appears to be relatively common in the Khasi Hills and Cachar (A. Das, pers. comm.). Nearly all older records of *T. sexlineatus* (or *T. s. sexlineatus*) from India appear to be based entirely on Stoliczka's specimens (e.g., Smith, 1935), now validated as *T. sikkimensis*, or on Jerdon's (1870) statements, unvouchered by specimens, which probably refer to *T. khasiensis*. However, specimens from the Jaintia Hills, eastern Meghalaya (Mathew, 1995) and from several localities throughout Arunachal Pradesh, Assam, Meghalaya, and Mizoram (Pawar and Birand, 2001) have recently been tentatively referred to *T. s. sexlineatus*, although the identities of these specimens have not been critically reviewed. Thus, India may or may not be included in the range of this taxon, which otherwise extends from Myanmar through southern China and south to the islands of the Sunda Shelf (Arnold, 1997; Ziegler et al., 1999; Ota et al., 2002; Schlüter, 2003). Regardless of the specific identity of these northeast Indian *Takydromus*, the present record of *T. sikkimensis* is over 240 km northwest of the sole locality for *T. haughtonianus* and at least 320 km and 375 km northwest of the nearest known point localities for *T.* cf. *sexlineatus* and *T. khasiensis*, respectively, and, therefore, represents the westernmost known limit of genus, both in India and globally.

Sikkim (27°5′–28°10′N, 87°04′–88°58′E) is considered to be a part of the eastern Himalayas (Ali, 1962; Mani, 1974), a recognized global biodiversity hotspot (Mittermeier et al., 1999). The geographic extent of this state is only 7096 km^2, but it has an astonishing level of biodiversity with 4,500 species of flowering plants (Jha and Thapa, 2002), 158 mammals (Avasthe and Jha, 1999), 550 birds (Ali, 1962; Chettri, 2000), 78 reptiles (Chettri and Bhupathy, 2007), 20+ amphibians (Jha and Thapa, 2002; Chanda 2006; probably underestimated), 48 fishes (Tamang, 1993), and 689 butterflies (Haribal, 1992). This high diversity is usually attributed to its location on the border between the Oriental and Palearctic regions and its variation in elevation (300–8,598 m) and climatic regime (tropical to cold desert). The revalidation of *T. sikkimensis* results in the recognition of this species as a putative Sikkimese endemic. Sikkim's proximity to western Bhutan, eastern Nepal, northern West Bengal, and far northern Bangladesh suggest that the species may yet be found in one or more of these areas, although it has yet to be recorded (Bauer and Günther, 1992; Das and Palden, 2000; Schleich and Kästle, 2002; Khan, 2004). Further, recent records from both northeast India and Myanmar (Zug et al., 2003) suggest that *Takydromus* in the Indo-Burmese region are in dire need of a comprehensive revision.

Acknowledgments.—Research was sponsored by the National Hydroelectric Power Corpora-

tion through the Ministry of Environment and Forests, Government of India, and coordinated by the Centre for Interdisciplinary Studies of Mountain and Hill Environment, Delhi University. We are grateful to the Forests, Environment, and Wildlife Management, Government of Sikkim for permission to undertake this study in the state. We thank the director, Sálim Ali Centre for Ornithology and Natural History and L. Vijayan and A. Kumar for their encouragement and facilities provided. We thank the director, Zoological Survey of India (ZSI) for permission to examine specimens and C. K. Murthy and G. Dasgupta, Reptilia Section, and P. Bhatnagar for help rendered and curatorial assistance. N. Kharka and colleagues B. K. Acharya and A. M. A. Nixon assisted in the field.

Literature Cited

Ali, S. 1962. The Birds of Sikkim. Oxford University Press, New Delhi, India.

Anderson, J. 1871. On some Indian reptiles. Proceedings of the Zoological Society of London 1871:149–211.

———. 1881. Catalogue of Mammalia in the Indian Museum, Calcutta. Part I. Primates, Prosimiae, Chiroptera, and Insectivora. Trustees of the Indian Museum, Calcutta, India.

Annandale, N. 1905. Contributions to Oriental herpetology III—Notes on the Oriental lizards in the Indian Museum, with a list of the species recorded from British India and Ceylon. Part 2. Journal and Proceedings of the Asiatic Society of Bengal, Series 2, 1:139–151.

Arnold, E. N. 1989. Towards a phylogeny and biogeography of the Lacertidae: relationships within an Old-World family of lizards derived from morphology. Bulletin of the British Museum of Natural History (Zoology) 55:209–257.

———. 1997. Interrelationships and evolution of the East Asian grass lizards, *Takydromus* (Squamata: Lacertidae). Zoological Journal of Linnean Society 119:267–296.

Arnold, E. N., O. Arribas, and S. Carranza. 2007. Systematics of the Palearctic and Oriental lizard tribe Lacertini (Squamata: Lacertidae: Lacertinae), with descriptions of eight new genera. Zootaxa 1430:1–86.

Avasthe, R., and A. Jha. 1999. Mammals of Sikkim. World Wide Fund for Nature-India, Sikkim Field Office, Deorali, Gangtok, Sikkim.

Bauer, A. M., and R. Günther. 1992. A preliminary report on the reptile fauna of the Kingdom of Bhutan with the description of a new species of scincid lizard (Reptilia: Scincidae). Asiatic Herpetological Research 4:23–36.

Boulenger, G. A. 1887. Catalogue of the Lizards in the British Museum (Natural History). 2nd ed. Vol. III. Lacertidae, Gerrhosauridae, Scincidae, Anelytropidae, Dibamidae, Chamaeleontidae. Trustees of the British Museum (Natural History), London.

———. 1890. The Fauna of British India, Including Ceylon and Burma. Reptilia and Batrachia. Secretary of State for India in Council, London.

———. 1917. A revision of the lizards of the genus *Tachydromus*. Memoirs of the Asiatic Society of Bengal 5:207–235, pls. XLVI–XLVII.

———. 1921. Monograph of the Lacertidae. Vol. II. British Museum (Natural History), London.

Chanda, S. K. 2006. Amphibia. *In* J. R. B. Alfred (ed.), Fauna of Sikkim (Part 1) Vertebrates, pp. 173–183. Zoological Survey of India, Kolkata.

Chettri, B. 2007. Distribution and Resource Use Patterns of Reptiles along the Teesta Valley, Eastern Himalayas, Sikkim, India. Unpubl. Ph.D. diss., Bharathiar University, Coimbatore, India.

Chettri, B., and S. Bhupathy. 2007. Reptile fauna of Sikkim with emphasis to the Teesta valley. Journal of Hill Research 20:1–6.

Chettri, N. 2000. Impact of Habitat Disturbances on Bird and Butterfly Communities along the Yuksam-Dzongri Trail in Khanchendzonga Biosphere Reserve. Unpubl. Ph.D. diss., North Bengal University, Darjeeling, India.

Das, I. 1994. The reptiles of South Asia: checklist and distributional summary. Hamadryad 19:15–40.

———. 1996. Biogeography of the Reptiles of South Asia. Krieger Publishing, Malabar, FL.

———. 1997. Checklist of the reptiles of India with English common names. Hamadryad 22:32–45.

———. 2003. Growth of knowledge on the reptiles of India, with an introduction to systematics, taxonomy and nomenclature. Journal of the Bombay Natural History Society 100:446–501.

Das, I., and N. C. Gayen. 2004. Addenda and corrigenda to the catalogue of reptile types in the collection of the Zoological Survey of India. Hamadryad 28:95–97.

Das, I., and J. Palden. 2000. A herpetological collection from Bhutan, with new country records. Herpetological Review 31:256–258.

Das, I., B. Dattagupta, and N. C. Gayen. 1998. History and catalogue of reptile types in the collection of the Zoological Survey of India. Journal of South Asian Natural History 3:121–172.

Fu, J. 2000. Toward the phylogeny of the family Lacertidae—why 4708 base pairs of mtDNA sequences cannot draw the picture. Biological Journal of the Linnean Society 71:203–217.

Gammie, J. 1928. Reptiles. *In* H. H. Risley (ed.), The Gazetter of Sikhim, pp. 188–190. Low Price Publication, Delhi, India [1993 reprint].

Ganguli-Lachungpa, U. 1998. Faunal diversity in Sikkim: an overview. *In* S. C. Rai, R. C. Sundriyal, and E. Sharma (eds.), Sikkim, Perspectives for Planning and Development, pp. 241–251. Bishen Singh and Mahendrapal Singh, Dehradun, India.

Günther, A. 1888. On a collection of reptiles from China. Annals and Magazine of Natural History, Series 6, 3:165–172, pl. XII.

Haribal, M. 1992. The Butterflies of Sikkim Himalaya and their Natural History. Sikkim Nature Conservation Foundation, Gangtok, India.

Harris, D. J., E. N. Arnold, and R. H. Thomas. 1998. Relationships of lacertid lizards (Reptilia: Lacertidae) estimated from mitochondrial DNA se-

quences and morphology. Proceedings of the Royal Society of London B 265:1939–1948.

HOOKER, J. D. 1854. Himalayan Journals; or, Notes of a Naturalist in Bengal, the Sikkim and Nepal Himalayas, the Khasia Mountains. Vols. I–II. J. Murray, London.

ICZN (INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE). 1999. International Code of Zoological Nomenclature. 4th ed. International Trust for Zoological Nomenclature, London.

JERDON, T. C. 1870. Notes on Indian herpetology. Proceedings of the Asiatic Society of Bengal 1870:66–85.

JHA, A., AND K. THAPA. 2002. Reptiles and Amphibians of Sikkim. Mrs. Shila Jha, Chattisgarh, India.

KHAN, M. A. R. 2004. Checklist of the herpetofauna of Bangladesh. Cobra 57:1–29.

KOLMAŠ, J. 1982. Ferdinand Stoliczka (1838–1874): the life and work of the Czech explorer in India and high Asia. Wiener Studien zur Tibetologie und Buddhismuskunde 9:i–xi + 1–58.

LIN, S.-M., C. A. CHEN, AND K.-Y. LUE. 2002. Molecular phylogeny and biogeography of the grass lizards genus *Takydromus* (Reptilia: Lacertidae) of East Asia. Molecular Phylogenetics and Evolution 22:276–288.

LOUIS, J. A. H. 1894. The Gates of Thibet. A Bird's Eye View of Independent Sikkhim, British Bhootan and the Dooars, as a Doorga Poojah Trip. Catholic Orphan Press, Calcutta, India.

LUE, K.-Y., AND S.-M. LIN. 2008. Two new cryptic species of *Takydromus* (Squamata: Lacertidae) from Taiwan. Herpetologica 64:276–288.

MANI, M. S. 1974. Physical features. *In* M. S. Mani (ed.), Ecology and Biogeography in India, pp. 11–59. Dr. W. Junk b.v. Publishers, The Hague, The Netherlands.

MATHEW, R. 1995. Reptilia. *In* A. K. Ghosh (ed.), Fauna of Meghalaya, Part I (Vertebrates). State Fauna Series 4, pp. 379–454. Zoological Survey of India, Calcutta.

MAYER, W., AND M. PAVLICEV. 2007. The phylogeny of the family Lacertidae (Reptilia) based on nuclear DNA sequences: convergent adaptations to arid habitats within the subfamily Eremiainae. Molecular Phylogenetics and Evolution 44:1155–1163.

MITTERMEIER, R. A., N. MYERS, P. R. GIL, AND C. G. MITTERMEIER. 1999. Hotspots: Earth's Biologically Richest and Most Endangered Terrestrial Ecoregions. CEMEX, Mexico City, Mexico.

MURTHY, T. S. N. 1985. Classification and distribution of the reptiles of India. The Snake 17:48–71.

———. 1990. A field book of the lizards of India. Records of the Zoological Survey of India, Occasional Paper 115:1–122.

OTA, H., M. HONDA, S. L. CHEN, T. HIKIDA, S. PANHA, H. S. OH, AND M. MATSUI. 2002. Phylogenetic relationships, taxonomy, character evolution and biogeography of the lacertid lizards of the genus *Takydromus* (Reptilia: Squamata): a molecular perspective. Biological Journal of the Linnean Society 76:493–509.

PAWAR, S., AND A. BIRAND. 2001. A Survey of Amphibians, Reptiles, and Birds in Northeast India. CERC Technical Report #6, Centre for Ecological Research and Conservation, Mysore, India.

SANYAL, D. P., S. SUR, AND N. C. GAYEN. 2006. Reptilia. *In* J. R. B. Alfred (ed.), Fauna of Sikkim (Part–1) Vertebrates, pp. 157–171. Zoological Survey of India, Kolkata.

SCHLEICH, H. H., AND W. KÄSTLE (EDS.). 2002. Amphibians and Reptiles of Nepal. A. R. G. Gantner Verlag K. G., Ruggell, Liechtenstein.

SCHLÜTER, U. 2003. Die Langschwanzeidechsen der Gattung *Takydromus*, Pflege, Zucht und Lebensweise. Krischner and Seufer Verlag, Kelltern-Weiler, Germany.

SHARMA, R. C. 2002. The Fauna of India and the Adjacent Countries. Reptilia. Vol. II (Sauria). Zoological Survey of India, Kolkata.

SMITH, G. 1882. The Geography of British India, Political and Physical. John Murray, London.

SMITH, M. A. 1935. The Fauna of British India, Including Ceylon and Burma. Reptilia and Amphibia. Vol. II. Sauria. Taylor and Francis, London.

STOLICZKA, F. 1872. Notes on various new or little known Indian lizards [part]. Journal of the Asiatic Society of Bengal 41:86–116, pls. II–V.

SWAN, L. W. 1993. The Satpura Hypothesis: a biogeographical challenge to geology. Journal of the Bombay Natural History Society 90:141–162.

TAMANG, P. 1993. Fish Fauna and River Systems of Sikkim. Unpubl. Ph.D. diss., Guwahati University, Guwahati, India.

THEOBALD, W. 1876. Descriptive Catalogue of the Reptiles of British India. Thacker, Spink and Co., Calcutta, India.

TIKADER, B. K., AND R. C. SHARMA. 1992. Handbook of Indian Lizards. Zoological Survey of India, Calcutta.

URBAN, I. 1917. Geschichte des Königlichen Botanischen Museums zu Berlin-Dahlem (1815–1913) nebst Aufzählung seiner Sammlungen. Beiheft zum Botanischen Centralblatt. Erste Abteilung: Anatomie, Histologie, Morphologie und Physiologie der Pflanzen 34:1–457.

WALTNER, R. C. 1973. Geographical and altitudinal distribution of amphibians and reptiles in the Himalayas (Part I–IV). Cheetal 16(2):28–36.

ZIEGLER, T., BÖHME, W., AND BISCHOFF, W. 1999. Comments on the grass lizards (Lacertidae: *Takydromus*) of Vietnam and Myanmar. Hamadryad 24:39–42.

ZUG, G. R., A. E. LEVITON, J. V. VINDUM, G. O. U. WOGAN, AND M. S. KOO. 2003. Checklist of the Myanmar Herpetofauna from the Myanmar Herpetological Survey Project. Available from (www.calacademy.org/research/herpetology/myanmar/).

Accepted: 25 September 2008.

APPENDIX 1

Specimens examined at the Zoological Survey of India, Kolkata (ZSI).

Takydromus sikkimensis.—ZSI 25761 (neotype), ZSI 25762, Dalep village, nearby Singtam, South Sikkim, India, 27°14′N, 88°28′E, 550 m asl, collected by Basundhara Chettri, 22 October 2006. ZSI 5368, Sittaung, cinchona garden [= Singtam], Sikkim, India, collected by J. L. Lister.

Trachydromus haughtonianus.—ZSI 2195 (holotype), Goalpara, Assam, India, collected by Mr. Houghton.

Takydromus khasiensis.—ZSI 21901, Cherrapunji, Assam, India, collected by S. Biswas, 1964; ZSI 12046, Cachar, Assam, India, collected by J. Wood-Mason.

Takydromus sexlineatus sexlineatus.—ZSI 15093, Borneo; ZSI 31209, Hong Kong, China.