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A CONTRIBUTION TO *Boiga gokool* (GRAY, 1835) (REPTILIA: SQUAMATA: COLUBRIDAE)

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The holotype of *Boiga gokool*, a poorly known species of cat snake having a narrow distributional limit in eastern India and Bangladesh is redescribed. Based on fresh material and museum specimens the taxonomy of the species is revised. Investigations into the literature, museum specimens and new distributional records have enabled corrections of erroneous reports and also mapping the distribution of this species. The study also records data on its microhabitat, behavior and hitherto unknown information on its breeding biology. A distributional summary of sympatric species of *Boiga* occurring in eastern India is also provided and a determination key of the East Indian *Boiga* species is provided.

Keywords: Reptilia, Squamata, Serpentes, Colubridae, Colubrinae, *Boiga gokool*, taxonomy, redescription of holotype, morphology, distribution, new records; determination key of the East Indian *Boiga* species.

INTRODUCTION

The colubrine snake genus *Boiga* Fitzinger, 1826 is currently represented by 32 nominal species (Orlov and Ryabov, 2002; Orlov et al., 2003; Tillack et al., 2004; Manamendra-Arachchi and Pethiyagoda, 2007). In India, the genus is represented by 15 species, of which six viz. *Boiga cyanea* (Duméril, Bibron et Duméril, 1854), *Boiga gokool* (Gray, 1835), *B. multifasciata* (Blyth, 1860), *B. multomaculata* (Boie, 1827), *B. ochracea* (Günther, 1868), *B. quincunciata* (Wall, 1908), *B. siamensis* Nootpand, 1971 [formerly listed as *B. cynodon* (Boie, 1827) or *B. ocellata* Kroon, 1973; see Pauwels et al. (2005)] and *B. trigonata trigonata* (Bechstein, 1802) are so far known from Northeast India (Das, 2003; Whitaker and Captain, 2004; Chettri and Bhupathy, 2007).

Beside *Boiga quincunciata*, *B. gokool* is poorly known, has a narrow distribution and is thus rarely reported in regional inventory reports with only few preserved specimens in scientific collections. Herein, we present a summary of morphology and distributional information of the species based on new records made during recent field studies in Northeast India, our own examination of various museum collections and literature data with notes on its taxonomy, natural history and behavior.

MATERIAL AND METHODS

This contribution is based on a study of 19 preserved specimens of *Boiga gokool* from India and Bangladesh. Locality data for 5 specimens were limited to “India” (1 spec.), “Bengal” (2 spec.), “Himalayas” (1 spec.),

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"without locality data" (1 spec.). The specimens examined are listed in *Appendix 1*. and the exact locality data for specimens mentioned in the text are summarized in the gazetteer (*Appendix 2*). The lists of synonyms and chresonyms are based on the data obtained from different publications (e.g., Boulenger, 1896; Wall, 1924; Smith, 1943) with further corrections, changes and additions.

For the description of the species we used data from 14 sex determined specimens examined by ourselves; additional values derived from literature are given in brackets. Measurements were taken with the help of a digital Mitutoyo dial caliper (to the nearest 0.01 mm) and a meter tape. Dorsal scale rows were counted at one head-length behind the head, at midbody, and at one head-length anterior to the anal scute. The midbody scale count was taken at half of the total number of ventral scales. Ventrals were counted according to Dowling (1951a). The terminal scale is not included in the subcaudal count. Dorsal scale reduction formula according to Dowling (1951b) with the following modifications: "V," vertebral scale row; "–," no reduction. Values of symmetrical pholidotic traits are given in left/right order. For terminology of hemipenis description we follow Keogh (1999) and Zaher (1999).

Abbreviations used are: TL, total length; SVL, snout-vent length; TaL, tail length; DSR, dorsal scale rows; VEN, ventrals; SC, subcaudals; NP, National Park.

Acronyms used follow Leviton et al. (1985), but also include several additions: AVCM, Arya Vidyapeeth College Museum, Guwahati, Assam, India; BMNH, The Natural History Museum, London, UK; BNHS, Bombay Natural History Society, Mumbai, India; CAS, California Academy of Science, San Francisco, USA; CUZ, University of Chittagong, Bangladesh; FMNH, The Field Museum, Chicago, USA; MCZ, Museum of Comparative Zoology, Harvard University, Cambridge, USA; MVZ, Museum of Vertebrate Zoology, University of California, USA; NMBA, Naturhistorisches Museum Basel, Switzerland; NME, Naturkundemuseum Erfurt, Germany; RMNH-BBSR-R: Regional Museum of Natural History (Reptile collection), Bhubaneswar, Orissa, India; ZMB, Museum für Naturkunde, Berlin, Germany; ZMH, Zoologisches Museum der Universität Hamburg, Germany; ZSIC, Zoological Survey of India, Kolkata, India. A single *gokool* specimen killed by villagers is kept in the personal collection of one of the authors (MFA 50055).

RESULTS

Boiga gokool (Gray, 1835) — Eastern Cat Snake or Eastern Gamma

Dipsas gocool Gray, J. E. 1835. Illustrations of Indian zoology; chiefly selected from the collection of Major-General Hardwicke, F. R. S., L. S., M. R. A. S., M. R. I. A., & c., Volume II, Part 19 – 20, Index, Plate 83, Fig. 1, 1a. London, Adolphus Richter and Co. & Parbury, Allen, and Co.; Type specimen: Holotype BMNH 1946.1.2.59. presented by Gen. Thomas Hardwicke; Type locality: not given in the original description, designated as "Bengal" by Günther (1858).

Dipsus [sic] *gocool* Gray, 1835: Plate 83, Fig. 1, 1a; Sawyer 1953:54.

Dipsas gocool. Sherborn 1926:2749.

Dipsas cynodon. Cantor 1847:78 [partim: the "Young" specimen, locality "Great Hill of Pinang," in error].

Dipsadomorphus trigonatus var. A. *Dipsas gokool*. Günther 1858:175 ["Bengal"].

Dipsas gokool. Günther 1864:313; Theobald 1868:56; Stoliczka and Ball 1869:111 [Goalpara]; Anderson 1871:35 ["Assam"]; Anderson 1872:84 ["Samagooting"]; Anderson 1873: 143; Nicholson 1874:102 [partim]; Günther 1875:233; Theobald 1876:197; Boulenger 1890:360; Sclater 1891a: 46 ["Sibsagar"]; Cardew 1896:593 [partim].

Dipsas trigonata. Giebel 1861:113 [partim]; Theobald 1868: 55 [partim: specimen "c, Jessore. Frith, Esq."]; Anderson 1869: 156 [Naga Hills]; Anderson 1871:35 [partim: "Naga Hills and Assam"].

Dipsadomorphus trigonatus. Annandale 1904:209 [partim: "Assam"], Wall 1908c:549, 553 [partim, "Assam, Naga Hills, Shillong"], ? Wall 1909b:352 ["Tindharia"].

Boiga trigonata. Mathew 1983:451 ["Anogiri"]; Mathew 1995:442, Fig. 18; Singh 1995:138; Mathew 1999:129 [partim]; Whitaker and Captain 2004:282 map [partim: Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, West Bengal].

Boiga trigonatus. Mathew and Meetei 2004:12.

Dipsadomorphus gokool. Boulenger 1896:64 f.; Wall 1909a: 151; Wall 1910a:831 ["Dibrugarh; Dejoo"]; Annandale 1912:37, 49; Cazaly 1914:35 [partim]; Inglis et al. 1920:159 ["Jalpaiguri District"]; Phisalix 1922:285; Werner 1924:118; Wall 1924:871 ["Tura; Sadiya; Sonapur; Monacherra; Darjeeling District; Manipur (Burma)"].

Boiga gokool. Shaw and Shebbeare 1930:56 [fide Smith 1943, not seen]; Shaw et al., 1941:64 ["Duars"]; Smith 1943:351 ["Chittagong"]; Swan 1947:82; Swan and Leviton 1962:140 ["Sikkim"]; Deoras 1965:89; Underwood 1967:112; Kroon 1975:427, Fig. I; Waltner 1975:19; Whitaker 1978:124; Koul and Murphy 1979:53; Rasmussen 1979:99; Daniel 1983:100; Mahendra 1984:145; Murthy 1985:66; Khan 1988:6; Welch 1988:40 ["Bhutan"]; Greene 1989:196; Ahmed and Dasgupta 1992:41; Bauer and Günther 1992:32; Negi 1992:130; Swan 1993:143; Das 1994:31; Das 1996:54; Das and Andrews 1997:4; Ahsan 1998:17; Mathew 1999:133; Sharma 1999:97; Shaw et al. 1999:69f; Captain 1997:22 ["Chessa, Papum Pare"]; Das 1997:40; Islam et al. 2000:77; Pawar and Birand 2001:77 ["Balphakram NP"]; Daniel 2002:125; Jha and Thapa 2002:58; Orlov and Ryabov 2002:52; Schleich and Kästle 2002:124; Sharma 2002:54; Shumakov 2002: 158; Das 2003:474; Khan 2004:20; Tillack et al. 2004:9; Whitaker and Captain 2004:284; Borang et al. 2005:24 ["Seijusa; Itanagar"]; Dasgupta and Raha 2006:448; Sanyal and Gayen 2006:274 ["Miao"]; Whitaker 2006:113; Das et al. 2007:2743 [Kaziranga NP]; Chettri and Bhupathy 2007:2; Sharma 2007:252; SACON

[undated]: Annexure III: (2); Groen 2008:72; Sen and Mathew 2008: 161 ["11 km from Wokha town", Nagaland]; Ahmed et al. 2009:83; Kabir et al. 2009:121.

Bioga [sic] *gokool*. Sharma 2003:157.

The year of publication for the name *Dipsas gokool* Gray was usually cited in the past as 1834 [exceptions, given the correct date are Das (1997, 2003), Das and Andrews (1997) and Ahmed et al.(2009)]. In the "Illustrations of Indian Zoology" (Gray 1830 – 1835) the holotypus of *Dipsas gokool* is depicted on Plate 83 [reprinted here in Fig. 1]. According to Dawson (1946), Sherborn (1926), and Sawyer (1953), whom we follow, Plate 83 was issued with part 19 – 20 and delivered on 20th February 1835.

Furthermore the original spelling of the specific epithet is "Gocool" as it appears in the figure caption of the Plate and in the "list of plates" [instructions for the binding] issued with part 20 in 1835. Günther (1858:175) changed the specific name into "*gokool*" and it seems to be an "incorrect subsequent spelling" since no "explicit statement of intention" was given, and the original spelling should be used (see ICZN 1999, Art. 33.2.1; 32.3). But Art. 33.3.1 of the 'Code' defined following exception: "[...] when an incorrect subsequent spelling is in prevailing usage and is attributed to the publication of the original spelling, the subsequent spelling and attribution are to be preserved and the spelling is deemed to be a correct original spelling." After Gray (1835) the spelling "*gocool*" was used only twice by Sherborn (1926) and Sawyer (1953) and as trivial name "Der [The] Gocool" by Giebel (1861) but in contrast to that, "*gokool*" is in prevailing usage, with attribution to the publication of the original spelling (in at least 70 publications, see above). Following the 'Code' (ICZN 1999), *gokool* is deemed to be correct and its use is to be maintained.

The Assamese vernacular name of *B. gokool* is "Gokul Mekuri-sakua Sap" (Ahmed et al., 2009).

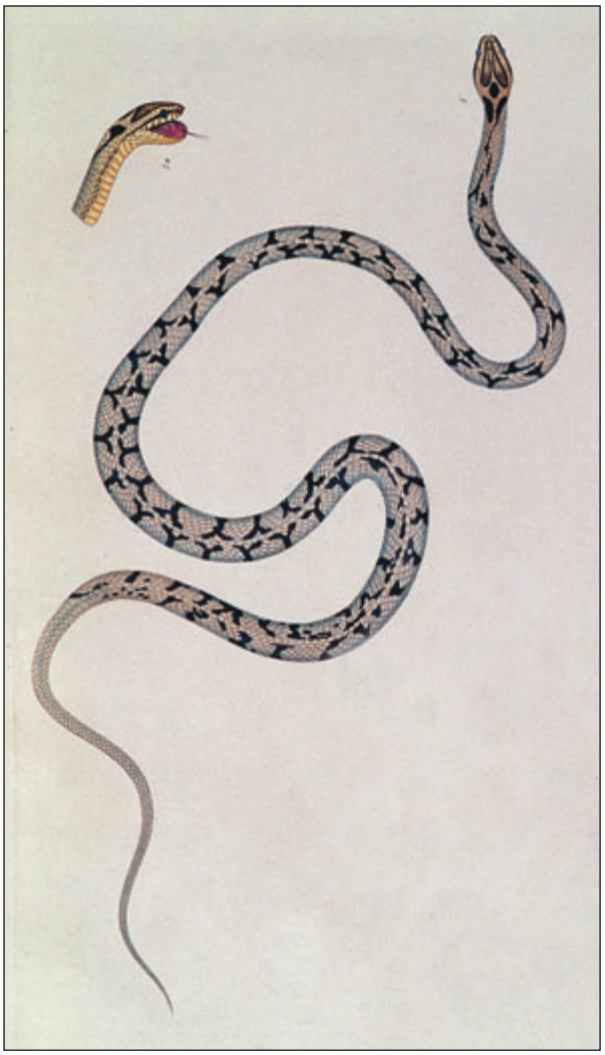

Fig. 1. Section of Plate 83 (Fig. 1, 1*a*) depicted the holotype of *Dipsas gokool* (from Gray 1835).

Species description

(Figs. 2 – 4)

Measurements, morphology, and coloration. TL 474 – 840 mm [females (n = 10): TL 474 – 840 mm; males (n = 4): TL 738 – 787 mm]; ratio TaL/SVL: 0.216 – 0.281 (females 0.216 – 0.281; males 0.240 – 0.277); largest known specimen, a female with 870 mm TL (TaL 175 mm) was reported by Smith (1943); smallest examined individual with 334 mm TL (TaL 54 mm) is a specimen from "India" (ZSIC 20804). The length record of the species reported by Ahmed and Dasgupta (1992:41) with "[...] 2420 mm – 7850 mm; tail 470 – 1630 mm. [!]" is regarded as erroneous.

Head triangular, nearly twice as long as its width, distinctly broader than neck; body dorsolaterally compressed; dorsal ground color (in life) yellowish brown with usually paired dorsolateral series of [44 – 50 (in one specimen 32)] dark brown to black white edged Y-shaped markings that are separated only by the light (yellowish-olive) vertebral scale row. Anteriormost 2 – 6 Y-shaped markings sometimes fuse to form a small black line covering the 1st and 2nd paravertebral row; markings broken down to small irregular black spots on the posterior part of body; interstitial skin dirty whitish; tail with few small irregular brown spots or without markings. A large brown, dark-edged arrow-shaped mark begins at the posterior part of the internasals, cov-

Fig. 2. *Boiga gokool* from Meleng Tea Estate, Gibbon Wildlife Sanctuary, Jorhat District, Assam, India.

Fig. 3. Portrait of *Boiga gokool* from Meleng Tea Estate.

ering the top of head; the arrow mark is followed by a black diamond-shaped or rounded spot on nape, the latter sometimes fused with the posterior branches of the arrow-shaped head mark or the anteriormost dorsolateral Y-shaped markings. Lateral neck scales sometimes with small dark brown spots on the posterior margins. A black postocular stripe runs via the angle of the jaw to the neck and ends at the lower 3rd dorsal scale row; an indistinct dark brown preocular stripe sometimes present. Supralabials, infralabials and submaxillars whitish, with small black markings on their sutures; iris mustard colored; pupil black; tongue light brown with paler tips; ventrals yellowish-white, lighter on the posterior body, with irregular shaped small black spots at the outer lateral edges, which disappear towards the posterior part of body; subcaudals light yellowish-brown, with narrow dark brown margins or patternless.

In alcohol the dorsal ground color fades to light brown, black body markings to dark brown respectively; ventrals and subcaudals turn cream in color.

Lepidosis. DSR smooth, in 21/21/17 (rarely 15), oblique rows, with the exception of a single specimen reported by Smith (1943) from "Chittagong" with 19/19/15 dorsal scale rows; single apical pits on the

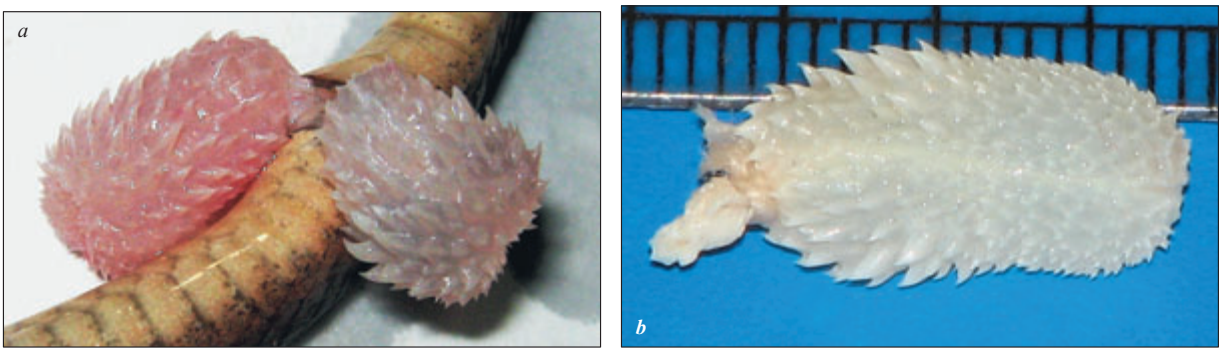

Fig. 4. *a*, Hemipenes of *Boiga gokool* from North Guwahati, Assam, India (AVCM A0961) sulcal view; *b*, left hemipenis of *Boiga gokool* (AVCM A0961), sulcal view. Scale bar is in mm.

posterior margins of some dorsal scales weakly expressed; vertebral scale row strongly enlarged, posterior margins of the vertebral scales concave or some truncate; dorsal scale reduction formula (ZMB 4859, female):

$$23\frac{?}{3+4(8)}21\frac{3+4(155)}{3+4(155)}19\frac{3=3+4(156)}{-}$$

$$20\frac{10+V(159)}{9+V(158)}18\frac{3+4(160)}{-}17(226).$$

Ventrals 215 – 238 [(215 unsexed example AVCM 0940) females: 220 – 238; males: 217 – 229], angulate laterally; subcaudals divided, 89 – 104 [females: 89 – 99 (min. 87 fide Wall, 1910a); males: 92 – 104 (max. 105 fide Mathew, 1983)]; anal scute entire; rostral wider than high, scarcely visible from above; 2 internasals, wider than long; 2 prefrontals, wider than long, longer than the internasals; frontal hexagonal, longer than wide, longer than its distance from the tip of the snout; parietals longer than wide, much longer than the frontal; nasal completely divided or partially divided from below; naris large, between pre- and postnasal; 1 loreal, longer than high, rarely higher than wide; 1, rarely 2 preoculars, the upper one smaller, not reaching top of head; 2, rarely 3 postoculars; 2, rarely 1 anterior temporal scale; 2 – 3, rarely 4 posterior temporal scales; 8, rarely 9 supralabials, the 3rd to 5th, rarely the 4th to 6th [3rd to 6th fide Wall, 1910a] touch the eye; 10 – 12 infralabials, the 1st to 5th, rarely the 1st to 4th in contact with the anterior submaxillars; 2 pairs of submaxillars, nearly equal in size, or posterior pair little longer than anterior one, followed by 2 pairs of gulars leading to the first ventral scale.

Hemipenis (Fig. 4). Simple, subcylindrical organ, extending to the 10th – 12th subcaudal scales; spinous proximally and calyculate distally; distal half calyculate with large cups with spinulate edges; the transition from spines to calyces is at nearly the middle of the hemipenis; the spines are increasing in size from the distal region to the base of hemipenial body, the base of the hemipenial body with strong and exposed spines; sulcus spermaticus simple or undivided; the spine line on the either side of the sulcus spermaticus is very weak; the base of the hemipenes is nude.

Dentition (4 specimens examined). 11 – 14 maxillary teeth, the anterior 9 – 12 curved, fang-like, gradually increasing in size and becoming thicker at the base posteriorly, followed by a diastema and 2 enlarged grooved teeth; palatine with 6 – 7 large teeth, curved backwards, subequal in size, larger than the anterior maxillary teeth; pterygoid with 11 – 12 teeth, curved backwards, decreasing in size posteriorly; dental with 18 – 19 large fang-like teeth, first smaller than second which is the largest, decreasing in size posteriorly. Rasmussen (1979) gives the following variation of teeth for two specimens: maxillary 12 – 13 + 2, palatine 7, pterygoid 11 – 13, mandibular 18 – 20; Smith (1943) counted 9 – 12 + 2 maxillary teeth.

Redescription of the Holotype of *Dipsas gokool* BMNH 1946.1.2.59

(Figs. 1 and 5)

The sparseness of data on this species in both the original and subsequent descriptions necessitates that we redescribe the holotype of this species as follows:

Adult female; TL 840 mm (SVL 672, TaL 168 mm), with slender, laterally compressed body; head distinctly set off from neck (head length 20.74 mm, width 11.38 mm); eyes large (diameter 3.51 mm), with vertical elliptic black pupil; eye diameter twice than its distance from the border of the mouth; distance from the anterior border of eye to tip of snout 5.59 mm; dorsal scales smooth in 21/21/17 oblique rows; weakly developed

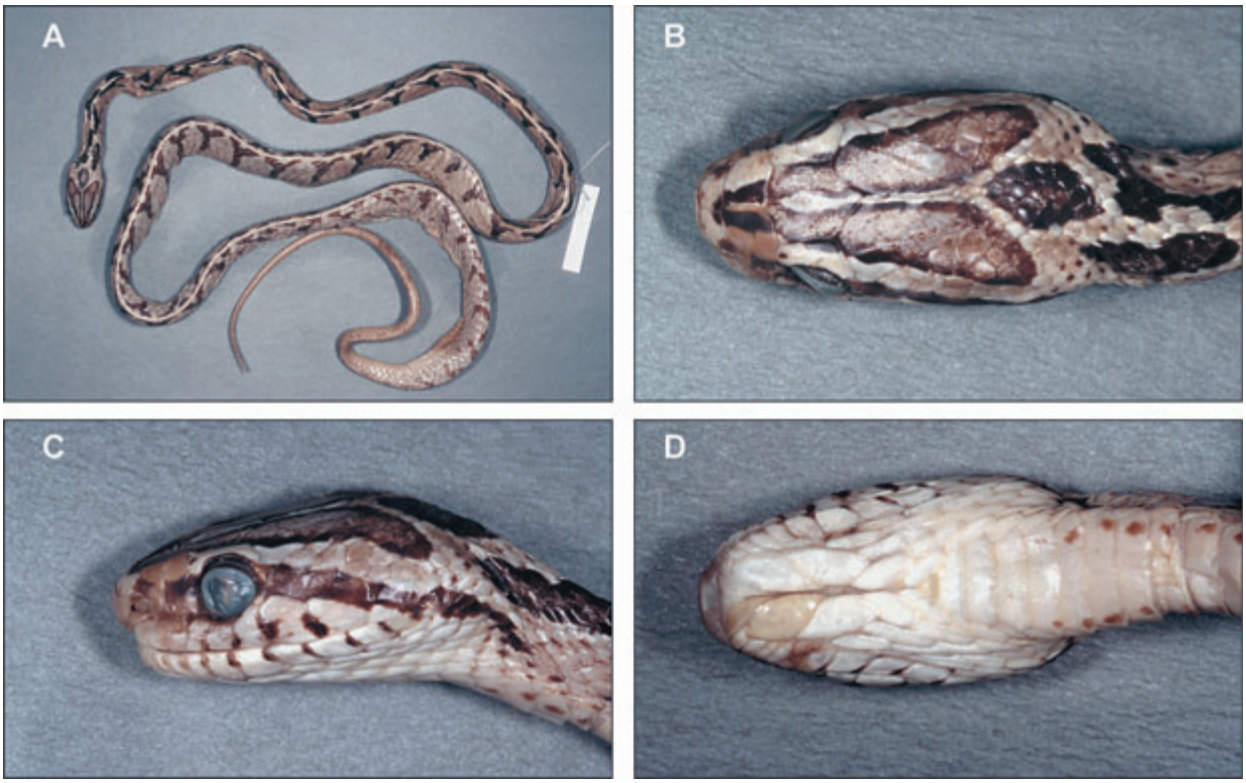

Fig. 5. Holotype of *Dipsas gokool*, from "Bengal" (BMNH 1946.1.2.59).

apical pits are discernable on the posteriormost margin of some dorsal scales; vertebral scales strongly enlarged, their posterior margins mainly concave, some truncate; 1 + 223 ventrals, angulate laterally; 93 pairs of subcaudals; anal scute entire; rostral wider than high, scarcely visible from above; 2 internasals, wider than long; 2 prefrontals, wider than long; suture between prefrontals nearly two times longer than the suture between internasals; frontal hexagonal, little longer than wide (5.28 × 4.15 mm), slightly longer than its distance from the tip of the snout; supraoculars elongate, as long as the frontal, much shorter than the parietals; parietals longer than wide, about two times longer than the frontal; nasals partly divided (below the naris), prenasals little larger than postnasals; naris large, in the middle between pre- and postnasal, its opening lateral, directed backward; 1/1 loreal, little higher than long, in contact with postnasal, prefrontal, lower preocular, and 2nd and 3rd supralabial; 2/2 preoculars, upper one smaller, which does not extend onto dorsal side of head; 2/2 postoculars, lower one little smaller; 2 + 3 temporals, anterior pair larger than the following, lower anterior temporal in contact with 7th and 8th/6th and 7th supralabial; 9/8 supralabials, 4th to 6th/3rd to 5th border the orbit, the first smallest, 8th/7th largest; 12/12 infralabials, 1st to 5th in contact with the anterior submaxillars; mental small, triangular, extends far between the first pair of infralabials; 2 pairs of submaxillars, nearly equal in size, the posterior pair not separated by small gular scales; 2 pairs of gular scales lead to the preventral; 13 maxillary teeth, the anterior 11 increasing in size posteriorly, followed by a diastema and 2 distinctly enlarged grooved fangs; palatine with large fang-like teeth, decreasing in size posteriorly; anterior mandibular teeth enlarged, curved backwards, decreasing in size posteriorly.

Coloration and color pattern largely match the description given earlier: typical head and neck markings, pre- and postocular stripe and a lateral series of 48 dark brown Y-shaped markings separated by the light vertebral scale row are present.

Distribution

Based on our present study, *Boiga gokool* is a South Asian endemic species and known with certainty only from India and Bangladesh. Its center of radiation is Assam with most records from the plains and low hills north and south of the Brahmaputra valley. The outer

distributional limits are marked at the moment as follows: in the West by the record from Darjeeling (or possible Sikkim, see comments below), in the North by Sadiya (Assam), in the East by Manipur and in the South by Jessore (Bangladesh) (see map). Smith's (1943) statement, that *B. gokool* appears to be the Indo-Chinese representative of *Boiga trigonata* is erroneous. *Boiga trigonata* is indeed replaced by *B. gokool* in Northeast India but the latter is not an element of the Indo-Chinese herpetofauna. With certainty Smith's (op. cit.) statement is a lapsus and refers better to *Boiga multomaculata* instead to *B. gokool*.

In India, *Boiga gokool* is reported from the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, West Bengal, and possible Sikkim (see comments below; for specified locality data we refer to *Appendix 2*, gazetteer). The species is listed for Myanmar in the "checklist of snakes" at the web-page of the herpetological Department of CAS on the basis of literature record [see http://research.calacademy.org/research/Herpetology/myanmar/checklist/snakes.html; last accessed August 2009]. With some certainty this record refers to Wall [1924:871 "Burma. Manipur (F.W.)"]. We could not find any other published record of *B. gokool* for Myanmar, no voucher specimen nor the example mentioned by Wall (op. cit.). In 1949, Manipur was merged into independent India and became later [1972] official state of India. Thus the Manipur record nowadays belongs to India. Singh (1995) reported "*Boiga trigonata*" (SVL 650 mm, TaL 180 mm) from Kengchup area of Manipur State and remarked it as a rare species. Most likely this record is based on misidentification and refers to *B. gokool*, but it needs to be verified by further field studies.

Swan and Leviton (1962) and Jha and Thapa (2002) listed Sikkim as part of the distribution range of this species, but the reference quoted by the latter [Smith, 1943] do not provide a clue as to which locality record this might refer to. Actually Smith (op cit.) gave no clear indication to Sikkim. Probably the term "Eastern Himalayas" as used by some authorities like Wall and Smith, and later accepted by Mahendra (1987), Negi (1992), Sharma (2007) and others for the distribution range of some species (including *B. gokool*) led subsequent authors [e.g., Jha and Thapa, 2002; Schleich and Kästle, 2002; Chettri and Bhupathy, 2007; SACON Report (undated)] conclude that these taxa also occur in Sikkim. Although its presence in the lowlands of the southern districts of that state is possible, to our best knowledge, no voucher specimen of *B. gokool* with specified locality from this region was reported in the literature or is deposited in scientific collections.

By analyzing descriptions and images of the specimens listed under the name "*Boiga trigonata*" from Anogiri, Tura and Shillong of Meghalaya state (Mathew, 1983, 1995; Mathew and Meetei, 2004), it becomes evident that these are referable to *Boiga gokool*.

We examined a specimen of *Boiga gokool* with the following entry in the catalogue of the Zoological Survey of India: "7841, Calcutta, [leg.] G. Nevil," as repeated also by Ahmed and Dasgupta (1992). The locality given in the ZSI catalogue is in contrast to the locality data given for the same catalogue number as "Bengal" by Sclater (1891a:46).

From Bangladesh *B. gokool* was first reported under the name *Dipsas trigonata* by Theobald (1868, "Jessore"). Smith (1943) mentioned a specimen of *B. gokool* from "[...] Chittagong (? Chittagong Hills) in the Bombay Coll., has only 19:19:15 dorsal scale-rows." This is actually the only known *gokool* specimen with such a low dorsal scale counts. It was presented by F. Wall to the Bombay Natural History Society, catalogued erroneous as "*Boiga multimaculata* [sic]," under No. 1763 (old No. 194.2) from "Chittagong. E. Pakistan," and is still present in the collection (A. Captain and V. Giri, personal communication, August 2009). Also the record of Wall (1924:869 "*Dipsadomorphus multimaculatus*, Chittagong") refers to this specimen. Subsequently the occurrence in Bangladesh was mentioned in some checklists, but without specified locality data (e.g., Das, 1994, 1996; Islam et al., 2000; Jha and Thapa, 2002; Orlov and Ryabov, 2002; Whitaker and Captain, 2004). Khan (2004) listed *Boiga gokool* from northern and south-eastern Bangladesh, but the given vernacular name for the species as "Sabuj Phonimonosha" is misleading and may be a lapsus of the author. According to Das (1998) this Bengali vernacular name is used for *Boiga cyanea* and means "green cactus snake" where according to native people these snakes like to stay. At present *B. gokool* is known from Divisions of Khulna, Sylhet, and Chittagong (see *Appendix 2*, *note*).

Unproved or Erroneous Locality Records

Records of "*Dipsas gokool*" from "Rutnagiri, Bombay, Saugor and Poona" listed by Phipson (1886, 1887, 1888), "Jhansi" by Traill (1895), and "Ceylon" by Ferguson (1877) refer to *Boiga trigonata* (see comments in Wall, 1909a, 1924). One specimen (ZSI 7842) from "Chotonagpur," listed as first record of *B. gokool* for Bihar state by Dasgupta et al. (2004), was re-examined and refers to *Boiga forsteni*. Müller (1878:613) mentioned two specimens in the herpetological collection of Basle museum as "*D.* [*ipsadomorphus*] *trigonatus*. b. c.

Fig. 6. Biotope of *Boiga gokool*: alluvial grassland and semievergreen hill forest in Kaziranga NP, Assam, India.

var. *gokool*? Gü. R. b.I. — Hubli, Collect. Dharwar, gesch. V. H. Miss. Ziegler. 1876 [2].” The re-examination resulted misidentified specimens of *Boiga t. trigonata* collected at Dharwad [= Dharwar] and Hubli [= Hubbali] (Dharwad District, Karnataka, India).

The distribution of *B. gokool* in the Himalaya Kingdom of Bhutan was introduced in literature by Welch (1988) and subsequently uncritically followed by some authors (e.g., Khan, 1988; Das, 1994, 1996; Orlov and Ryabov, 2002; Shumakov, 2002). Although it is likely that *gokool* occurs in southern Bhutan, we are not aware of any reliable record or recent finds, so that we regard their occurrence there as insufficiently proven [see also comments by Bauer and Günther (1992)].

We could not confirm the occurrence in Myanmar (see comments above).

We examined preserved specimens catalogued as *Boiga gokool* which we identified as *Boiga siamensis* (ZSIC 15997 “Duars”) and *Boiga multomaculata* (ZSIC 24038 “Gibbons land, 16 km east of Miao, Changlang District, Arunachal Pradesh”), respectively.

Habitat, Habit, and Natural History

Boiga gokool is a plain to low hill dwelling species of cat snake. The presence of this species in higher elevations is questionable or a rare exception [e.g., “Shillong” (~1500 m), see Wall, 1924], as the most reports are based either on secondary information (Waltner, 1975; Chettri and Bhupathy, 2007) or assumptions (see Borang et al., 2005; Swan, 1993). The present study shows that *Boiga gokool* is known mainly from elevations as low as 15 m in Bangladesh up to 540 m a.s.l. in the West Garo Hills, Meghalaya, India (see *Appendix 2*, *note*).

It inhabits alluvial grasslands, semi-evergreen forests (Figs. 6 and 7), moist deciduous forests, secondary and degraded forests (sensu Champion and Seth, 1968). It is also tolerant to modified habitats like tea gardens, degraded hill slopes, and human habitations at forest fringes. Most of our sightings revealed a terrestrial life of the species. However it was also observed in low bushes and is capable of climbing tree trunks with rough bark.

Boulenger (1890) reported it as “rare snake” and Annandale (1912) mentioned that this species may be “[...] actually restricted to Assam [...].” Actually 7 specimens were known till the end of the 19th century only. However, Shaw et al. (1941) reported this species as “very common snake in the Duars.” The present study indicates that the species although it has a restricted distribution in northeastern India and Bangladesh, it is common at least in the Brahmaputra valley and around

floodplain grasslands (e.g., Kaziranga NP, Assam) and was reported as the most frequently encountered reptile species on the highway along the southern boundary of this National Park (Das et al., 2007).

During recent field studies in Northeast India, conducted by the authors (AD, MFA, JP, SS) we recorded *Boiga gokool* from the following localities and habitats: (1) Near Mihimukh road, Kaziranga National Park (KNP), female (MFA 50055), April 15, 2004, around 20:00, found while crossing the road bordered by agricultural field/human habitation; (2) Kathpora Tower grassland (KNP), female (AVCM S036), July 2004, around 17:00, encountered on a wooden bridge of forest road at the forest-grassland edge; (3) Panbari Reserved Forest (KNP), adult, unsexed, not collected, 11 March 2004, shed fresh molted skin on Lantana bush at a height of ~1 m above surface near a forest trail; (4) Borjuri village near Panbari RF (KNP), adult, unsexed, not collected, April 17, around 15:00, on a thatched roof, 2.5 m above the ground; (5) Center for Wildlife Rehabilitation and Conservation, Panbari Reserved Forest (KNP), July 13, 2004, gravid female containing 5 matures eggs, found dead on the electric fencing of the rescue center; (6) Haldibari (KNP), July 14, 2004, 19:00, two gravid females containing 8 and 6 eggs respectively, dead on a road segment passing through a semi-evergreen forest patch; (7) Harmoti (KNP), unsexed, July 15, 2004, from human habitation; (8) Amguri (KNP), male, July 28, 2004, 21:30, encountered while crossing paved road bordered by tea garden/agricultural field; (9) Meleng Tea Estate at the fringe of Gibbon Wildlife Sanctuary, adult, unsexed, not collected, July 11, 2005, 19:30, crossing a tea garden gravel road during heavy shower; (10) Singbheti camp, Orang National Park, adult, unsexed, May 18, 2008, 20:30, encountered at the edge (~10 m away from water) of a Beel (perennial wetland) beside large grassland; (11) Garbhanga Reserved forest, adult, unsexed (AVCM A 0939), July 7, 2007, 18:30, found on piled up timbers near forest check gate; (12) Amchang Wildlife Sanctuary, adult male, not collected, August 4, 2007, 19:00, while crossing a forest trail; (13) Hengrabari Reserved Forest, adult unsexed, October 23, 2007, 22:00, observed near human habitation within Guwahati Zoo campus; (14) Kamakhya temple hills, adult unsexed, not collected, inside a hole of *Ficus* tree at 1.2 m above surface, the same tree was found to be inhabited by *Hemidactylus platyurus*; (15) Jalukbari, unsexed, July 11, 2001, 18:30, dead on road near a plantation area; (16) Potasali, Nameri National Park, one adult unsexed, preserved specimen in the collection Forest Department (without collection number); (17) Indian Institute of Technology Campus, North Guwahati, Male (AVCM A0961), June 15, 2009, 19:30, collected from near a roadside plantation area close to wetland and habitation.

Fig. 7. Habitat of *Boiga gokool*: semievergreen forest in Nameri NP, Sonitpur District, Assam, India.

From Eastern India eight other representatives of the genus *Boiga* are reported and found to be occurring in the same states, partly sympatric with *B. gokool*.

Boiga cyanea is known from Arunachal Pradesh: Chessa, Itanagar (Whitaker and Captain, 2004; Borang et al., 2005), from Assam: Cachar, Monacherra, Sonapur, Barail Wildlife Sanctuary, Panbari Reserved Forest, Bongaigaon, Rani Reserved Forest (Sclater, 1891a; Wall, 1924; Smith, 1943; Das, 2008; personal observation), from Meghalaya: Cherrapunji, Kyrdem Kulai, Nongpho (Wall, 1908b: 329; Wall, 1924; Mathew, 1992, 1995), from Sikkim (Jha and Thapa, 2002; Schleich and Kästle, 2002), from West Bengal: Tindharia, Rangnu valley, Darjeeling (Stoliczka, 1871:441; Wall, 1909b; Wall, 1924; Shaw et al., 1941; Smith, 1943; Schleich and Kästle, 2002; Whitaker and Captain, 2004; Chettri and Bhupathy, 2007);

Boiga multifasciata from Arunachal Pradesh: East Kameng (Sanyal and Gayen, 2006), from Sikkim: Gangtok (BNHS 1867; Swan and Leviton, 1962; Jha and Thapa, 2002; Schleich and Kästle, 2002; Whitaker and Captain, 2004; Tillack et al., 2005; Chettry and Bhupathy, 2007), from West Bengal: Pashok, Darjeeling (Sclater, 1891a, 1891b; Wall, 1909b; Smith, 1943; Swan and Leviton, 1962; Ahmed and Dasgupta, 1992; Schleich and Kästle, 2002; Whitaker and Captain 2004);

Boiga multomaculata from Arunachal Pradesh: Miao (Captain and Patel, 1997; Whitaker and Captain, 2004; Borang et al., 2005; own data), from Assam: Manas Tiger Reserve, Margherita (Agrawal et al., 1995;

Whitaker and Captain, 2004; personal observation), from Nagaland: Phek (personal observation);

Boiga ochracea from Assam: Goalpara, Sibsagar, Dilcosh, Cachar, Barail Wildlife Sanctuary (Sclater, 1891a; Wall, 1924; Smith, 1943; Whitaker and Captain 2004; personal observation), from Arunachal Pradesh: Miao, West Kameng Dist., Eagle Nest Wildlife Sanctuary (Captain and Patel, 1997; Borang et al., 2005; Athreya, 2006; Sanyal and Gayen, 2006), from Meghalaya: Balphakram NP (Pawar and Birand, 2001), from Sikkim: (Wall, 1924; Smith, 1943; Swan and Leviton, 1962; Tillack, 1999; Jha and Thapa, 2002; Schleich and Kästle, 2002; Whitaker and Captain, 2004; Chettry and Bhupathy, 2007), from West Bengal: Darjeeling, Pashok, Tindharia, Nagaisuri, Jalpaiguri, Buxar Duars (Sclater, 1891a; Wall, 1909b, 1909c; Inglis et al., 1920; Wall, 1924; Shaw et al., 1941; Smith, 1943; Swan and Leviton, 1962; Ahmed and Dasgupta, 1992; Schleich and Kästle, 2002; Whitaker and Captain, 2004);

Boiga quincunciata from Arunachal Pradesh: Banderdewa, Chessa, Itanagar, Pashighat (Borang et al., 2005; Sanyal and Gayen, 2006), from Assam: Rangagara, Tinsukia, Garbhanga Reserved Forest, Joypore Reserved Forest, Manas Tiger Reserve (Wall, 1908a; Wall, 1910a; Wall, 1924; Smith, 1943; Agrawal et al., 1995; personal observation);

Boiga siamensis from Arunachal Pradesh: Chessa, Itanagar, Miao, Nampong, and Subansiri Dist., Roing (Mathew, 1992; Captain and Patel, 1997; Whitaker and Captain, 2004; David and Mathew, 2005; Borang et al., 2005; Sanyal and Gayen, 2006; personal observation), from Assam: Gibbon Wildlife Sanctuary, Panbari Reserved Forest (KNP), Dibrugarh, Cachar and Nahar Katiya (personal observation; Sclater, 1891a, b; Wall, 1910a; Wall 1910b; Wall, 1924; Smith, 1943; Kroon, 1973), from Meghalaya: Garo Hills, East Khasi Hills (Sclater, 1891a, 1891b; Wall, 1924; Smith, 1943; Mathew, 1995), from Nagaland: Samagooting (Sclater, 1891a, 1891b; Wall, 1924; Smith, 1943; Dasgupta and Raha, 2006), from Sikkim: (Swan and Leviton, 1962; Jha and Thapa, 2002; Chettry and Bhupathy, 2007), and from West Bengal: Tindharia, Darjeeling, Jalpaiguri and Duars (Wall, 1909b, 1910b; Inglis et al., 1920; Wall, 1924; Shaw et al., 1941, Smith, 1943; Swan and Leviton, 1962; Kroon, 1973; Ahmed and Dasgupta, 1992; Jha and Thapa, 2002; Whitaker and Captain, 2004; Chettry and Bhupathy, 2007; own data);

Boiga t. trigonata from Sikkim (Wall, 1924; Swan and Leviton, 1962; Jha and Thapa, 2002; Schleich and Kästle, 2002; Whitaker and Captain, 2004; Chettry and Bhupathy, 2007), West Bengal: Tindharia, Duars, Darjeeling, Barakhar (Anderson, 1871; Wall, 1908c; Sclater, 1891a; Wall, 1924; Shaw et al., 1941; Smith, 1943; Swan and Leviton, 1962; Ahmed and Dasgupta, 1992; Schleich and Kästle, 2002; Whitaker and Captain, 2004).

Reliable reports of *Boiga forsteni* are known from Birbhum and Sijna in West Bengal (Stoliczka, 1871; Wall, 1924), other records from Northeast India (Sikkim, Darjeeling, Assam) most likely refer to other species, e.g., *B. siamensis* or *B. gokool* (see Tillack et al., 2008; Mohapatra et al., 2009).

The occurrence of *Boiga ceylonensis* or *B. nuchalis* in Northeast India (Assam), as sometimes mentioned in literature (e.g., Wall, 1924; Smith, 1943; Hora and Jayaram, 1949; Whitaker, 1978; Daniel, 1983, 2002; Sharma, 1999, 2002; Das, 2002; Sharma, 2007), is questionable and will be discussed elsewhere (Tillack et al., in preparation).

Wall (1910a:832 f) described *B. gokool* as "very plucky snake," and further "[...] coiled itself in the typical figure of 8 fashion, and erected itself and poised, thus awaiting an opportunity to strike at me, quivering the tail with anger. It strucks out several times, but I find that if one is on the alert with these snakes, one can see and evade the stroke, so that it cannot be considered very rapid." This is confirmed by our own observations: it prefers to stay in the dark corners of its enclosure; was aggressive and when agitated, vibrated the tail. The striking posture involved formation of S-shaped loop by its anterior part of body and flattening of fore-body. During the day time, the snake was defensive while at night hours it showed more alacrity to escape.

Little is known about the natural food of *B. gokool*. Greene (1989) summarized the sparse information given by Shaw et al. (1941, 1999) and Wall (1910) who reported a mouse as stomach content. A specimen examined from Sylhet (MCZ R58261) contained a juvenile *Calotes* sp. In captivity *B. gokool* fed on *Hemidactulus frenatus*, *Hemidactylus platyurus* and juvenile *Calotes versicolor* (personal observation).

Nothing was published so far about the reproductive biology of the species. During fieldwork in Kaziranga NP of Assam, we recorded 3 gravid females containing 5, 6, and 8 mature eggs, respectively in mid July.

DISCUSSION

Much confusion existed in the past to distinguish *Boiga gokool* from its closely related congener *B. t. trigonata*. This fact was long ago noted by Nicholson (1874), but he himself was unable to separate both species. Although he gave a relatively good description for

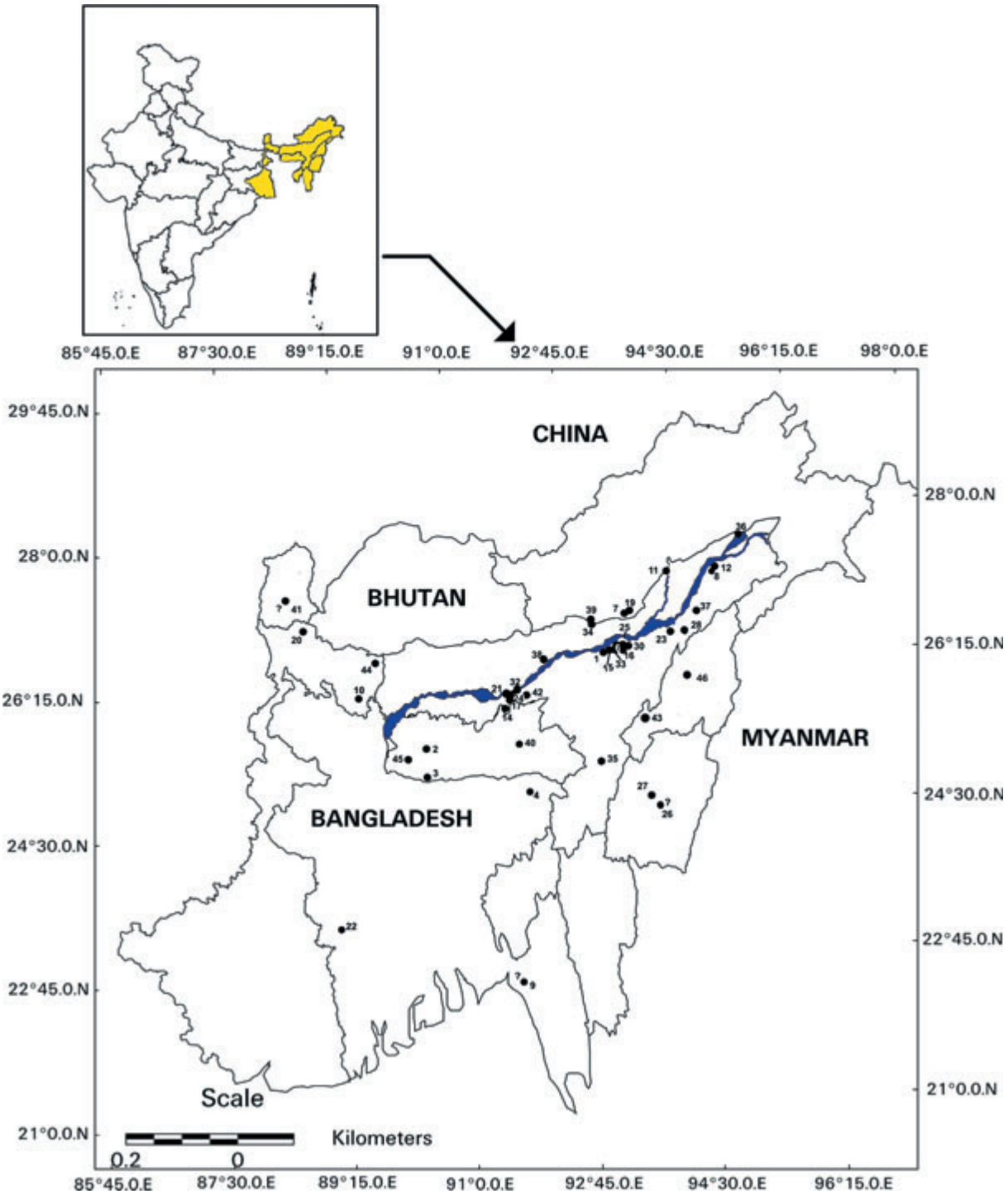

Fig. 8. Map showing locality records of *Boiga gokool* from Northeast India and Bangladesh.

gokool, the only mentioned distribution "Southern India" is completely wrong, and the drawing (plate XVI, Fig. 5) he referred to, depicted *Boiga t. trigonata*. Günther (1875) mentioned similarities of *gokool* with *Boiga nuchalis*, Sharma (2007) with *B. trigonata* and some specimens in museum collections were found to be mis-

identified *B. siamensis*, *multomaculata*, or *trigonata*, respectively. On the other hand the actual eastern distribution limits of *Boiga t. trigonata* are not in the least clarified. This is in so far remarkable since *trigonata* is one of the most common and widely distributed but probably understudied *Boiga* species of the Indian Subcontinent. Therefore it was not unexpected that a portion of snakes reported from Assam, Manipur, Meghalaya, or West Bengal, frequently referred to *B. trigonata*, actually represent *Boiga gokool* (see comments above). As a result of this confusion and the lack of reliable data, some maps for *B. trigonata* are showing a largely incorrect distribution in northeastern India (e.g., Wall, 1908c; Whitaker and Captain, 2004).

Although *B. gokool* shows similarities with *B. t. trigonata* concerning habits, body proportions and coloration, head pattern and lepidosis, the dorsal body color-pattern is completely different and *gokool* can be distinguished from *trigonata* by the following combination of characters: (1) strongly enlarged vertebral scales, with truncate or concave posterior margins (vs. feebly enlarged, with rounded or pointed margins); (2) reduction to 17 DSR at one head–length anterior to the anal scute (vs. reduction to 15); (3) A dorsolateral series of 45 – 50 dark brown to black and whitish edged Y-shaped markings separated by the light vertebral scale row (vs. vertebral series of more than 50 yellowish or whitish dark edged, angular-shaped markings, with irregular branches in varying connections across the vertebral scale row, often connected in a zigzag line); (4) a small black diamond shaped nuchal spot that never extends to sides of neck (vs. a large brown, dark edged, triangular or rounded nuchal spot, often extends to sides of neck).

Key to the *Boiga* species of Eastern India

1 Dorsal scales in 23 – 31 rows at midbody **3**
2 Dorsal scales in 19 – 21 rows at midbody **4**
3 I. Dorsal scales in 23 rows at midbody; dorsum with checkered pattern on grayish-brown ground color, longitudinal dark marking absent on Pileus; ventrals 247 – 270; subcaudals 112 – 129 . . . . . ***siamensis***
II. Dorsal scales in 25 – 31 rows at midbody; dorsal pattern consists of (A) distinct black and white alternating irregular transverse markings on grayish ground color (B) whitish irregular cross bars on reddish ground color (C) irregular narrow black transverse lines on reddish brown ground color, or (D) vertebral and dorsolateral incomplete whitish bars on reddish-brown ground color; longitudinal dark marking on the Pileus present in forms A – C, absent in form D; ventrals 253 – 273; subcaudals 92 – 119 . . . . . * ***forsteni***
4 I. Dorsum unicolor or only indistinctly patterned **5**
II. Dorsum distinctly patterned **6**
5 I. Dorsum without pattern or with indistinct dark transverse dorsolateral bands on yellowish-brown or reddish-brown ground; ventrals 221 – 252; subcaudals 89 – 119; 19 or 21 midbody dorsal scale rows . . . . . ***ochracea***
II. Dorsum green; ventrals 233 – 260; subcaudals 116 – 158; 21 midbody dorsal scale rows . . . . . ***cyanea***
6 I. Dorsal scales in 19 rows at midbody **7**
II. Dorsal scales in 21 rows at midbody **8**
7 I. Dorsal pattern consists of fine dark brown spots and a vertebral series of dark brown, white edged blotches on yellowish or grayish-brown ground; ventrals 237 – 253; subcaudals 118 – 125 . . . . . ***quincunciata***
II. Dorsal pattern consists of a lateral double series of oval or rounded dark alternating spots with light margins on light gray to grayish-brown ground, ventrals 192 – 245; subcaudals 72 – 109. . . . . ***multomaculata***
8 I. Dorsal pattern consists of narrow black irregular transverse bands, separated by the vertebral scale row on reddish-brown or gray ground; ventrals 214 – 251; subcaudals 96 – 118 . . . . . ***multifasciata***
II. Dorsal pattern consists of a vertebral series of more than 50 yellowish or whitish dark edged, angular-shaped markings, with irregular branches in varying connections across the vertebral scale row on brown ground; vertebral scales feebly enlarged; ventrals 206 – 256; subcaudals 75 – 96. . . . . ***trigonata***
III. Dorsal pattern consists of a dorsolateral series of less than 50 dark brown to black, whitish edged Y-shaped markings separated by the light vertebral scale row; vertebral scales strongly enlarged; ventrals 215 – 232; subcaudals 87 – 105 . . . . . ***gokool***

* Occurrence in Northeast India doubtful, known from southern West Bengal state.

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APPENDIX 1. Material examined

Boiga gokool (19: 10 females, 4 males, 5 unsexed) [India]: AVCM S036, Kathpora Tower grassland, Assam; AVCM A0940, Garbhanga Reserved Forest, Assam; AVCM A0961, Indian Institute of Technology Campus, North Guwahati, Assam; BMNH 1946.1.2.59, Bengal (holotype); MFA 50055, Mihimukh road, Assam; ZMB 4859, Himalaya; ZMH R06688, Calcutta (in error); ZSIC 7841, Bengal; ZSIC 7923 and 7925, Samaguting, Nagaland; ZSIC 14746 Rampore Tea Estate, North Cachar Hills, Assam; ZSIC 16903, India; ZSIC 17111, Jalpaiguri, West Bengal; ZSIC 17130, Sonapur, Assam; ZSIC 20804, without locality; ZSIC 23595, Jorhat, Assam. [Bangladesh]: BNHS 1763 (old No. 194.2), Chittagong; MCZ R 58261, Baramchal, Sylhet; ZSIC 7837, Jessore, Khulna.

Comparative material

Boiga cyanea: NMBA 22731, Phuntsholing, Bhutan; ZMB 51324, 51325, 51326, all West Malaysia; ZMB 58755 Khao Lak, Thailand;

Boiga forsteni: RMNH-BBSR-R 103, Khurdha, Orissa, India; RMNH-BBSR-R 104, Nuapada, Orissa, India; RMNH-BBSR-R 105, Kalahandi, Orissa, India; RMNH-BBSR-R 106, Kandhamal, Orissa, India; ZMB 49426, Anaradhpure, Sri Lanka; ZMB 56962, Sri Lanka; ZSIC 7215, Darjeeling, West Bengal, India; ZSIC 7850, Govindpur, Dhenkanal Dist., Orissa, India; ZSIC 7852, Manbhum, Bihar, India; ZSIC 16395, Kaladhungi, Nainital Dist., Uttarakhand, India.

Boiga multifasciata: BMNH 1913.11.11.6, Muktesar W. Himalayas; BMNH 1940.3.7.19, Tindharia, Darjeeling; BMNH 1948.1.4.6, Kasauli, Punjab; BMNH 1923.10.13.51, Mungpoo; FMNH 131957, Kathmandu; MCZ-R 3228, Himachal Pradesh; NME 469/05, Simikot, Humla, Nepal; ZMB 57396, Landrung, Nepal; two living spec. from Birethanti, Nepal and Phulchoki, Nepal, respectively; ZSIC 15822, 15823, Chitlong, Nepal.

Boiga multomaculata: ZSIC 24038, Gibbons land, Miao, Arunachal Pradesh, India; ZMB 7470 N. Celebes; ZMB 30297, China; ZMB 49427, 50879, 52642, all Kwangtung, China; ZMB 55191, Loei, Thailand.

Boiga ochracea ssp.: BMNH 1946.1.12.60 – 61, Pegu, Burma; BMNH 72.4.17.119, BMNH 72.4.17.386, BMNH 94.12.31.55, all Darjeeling; BMNH 74.4.29.1193 – 94, Burma; BMNH 1909.3.9.13, near Darjeeling; BMNH 89.3.25.37 – 39, Bhamo, Upper Burma; CAS 90726, Bhadgaon, Nepal; CAS 95252, Chittagong, Bangladesh; CAS-SU 12366, Bengal, India; CAS 205002, Rakhine State, Myanmar; CAS 210680, Mandalay Div., Myanmar; CAS 210834, 213504, both Yangon Div. Myanmar; CAS 215390, 215542 both Sagaing Div. Myanmar; CAS 220037, Chin State, Myanmar; CUZ 31 and 37, Chittagong, Bangladesh; MCZ-R 3886, Madras [in error]; FMNH 11803, Mangpur, Bengal; NMB 22730, Phuntsholing, Bhutan; ZMB 10335, Darjeeling; ZMB 73660 – 73662, Kaski District, Nepal; ZMH R09334, Bhamo [Banmau], Myanmar.

Boiga quincunciata: CAS 221434, 224439, Kachin State, Myanmar; ZMB 5006, Calcutta [in error].

Boiga siamensis: ZMB 49529, Thailand; ZSIC 15997, Duars, West Bengal, India.

Boiga t. trigonata: NMBA 1791, 1792, Hubli, Dharwar, Vorderindien; NMBA 1793 Malabar, Vorderindien; ZMB 2638, 2639, "Ostindien"; ZMB 51837, Kaski Dist., Nepal; ZMB 65296, Uttar Pradesh, India; ZSM 94/1991, Chitwan NP, Nepal.

APPENDIX 2

No.	Locality name	Current name or equivalent	District or Division/State	Country	Coordinates	Elevation, m a.s.l.
1	Amguri[1]	—	Golaghat Dist./Assam	India	26°35′ N 93°21′ E	~90
2	Anogiri[3]	—	East Garo Hills Dist./Meghalaya	India	25°3′52.8″ N 90°22′54″ E	370
3	Balphakram NP	—	South Garo Hills Dist./Meghalaya	India	25°14′ N 90°49′ E	~500
4	Baramchal[2]	—	Sylhet Div.	Bangladesh	24°36′ N 91°59′ E	~15
5	Bengal[2,3]	—	Region now covered by the Indian States of West Bengal, parts of Bihar and Bangladesh	India/ Bangladesh	—	—
6	Borjuri village	—	Golaghat Dist./Assam	India	26°37′ N 93°32′ E	65
7	Chessa[3]	—	Papum Pare Dist./Arunachal Pradesh	India	27°4′4.9″ N 93°35′38.5″ E	266
8	Chabua[3]	—	Dibrugarh Dist./Assam MVZ 43786	India	27°48′ N 95°18′ E	106
9	? Chittagong[3]	—	Chittagong Div.	Bangladesh	—	—
10	Darjeeling District[3]	—	Darjeeling Dist./West Bengal	India	—	—
11	Dejoo[3]	Diju	Lakhimpur Dist./Assam	India	27°17′ N 94°3′ E	~100
12	Dibrugarh[3]	—	Dibrugarh Dist./Assam	India	27°48′ N 94°9′ E	94
13	Duars[3]	Dooars	Region covering flood plains and foothills of the eastern Himalayas south of Darjeeling and Bhutan	India	—	—

No.	Locality name	Current name or equivalent	District or Division/State	Country	Coordinates	Elevation, m a.s.l.
14	Garbhanga Reserved Forest[1]	—	Kamrup Dist./Assam	India	26°4′ N 91°43′ E	~120
15	Goalpara[1]	—	Goalpara Dist./Assam	India	26°10′ N 90°37′ E	~35
16	Haldibari[1]	—	Golaghat Dist./Assam	India	26°35′ N 93°28′ E	86
17	Harmoti[1]	—	Golaghat Dist./Assam	India	26°34′ N 93°16′ E	55
18	Hengrabari Reserved Forest[1]	—	Kamrup Dist./Assam	India	26°9′ N 91°47′ E	150
19	Himalayas[2]	—	—	—	—	—
20	Itanagar[3]	—	Papum Pare Dist./Arunachal Pradesh	India	27°1′ N 93°62′ E	440
21	Jalpaiguri[2,3]	—	Jalpaiguri Dist./West Bengal	India	26°31′ N 88°44′ E	~85
22	Jalukbari[1]	—	Kamrup Distr./Assam	India	26°9′ N 91°40′ E	90
23	Jessore[2,3]	Jashahor	Khulna Div.	Bangladesh	23°10′ N 89°13′ E	~15
24	Jorhat[2]	—	Jorhat Dist./Assam	India	26°75′ N 94°22′ E	116
25	Kamakhya Temple Hills[1]	—	Kamrup Dist./Assam	India	26°10′ N 91°42′ E	120
26	Kathpora Tower grassland[1]	—	Golaghat Dist./Assam	India	26°36′ N 93°23′ E	50
27	? Kengchup area[3]	Kangchup	Imphal West Dist./Manipur	India	24°52′ N 93°46′ E’	~900
28	Manipur (“Burma”)[3]*	—	—/Manipur	India	—	—
29	Meleng Tea Estate[1]	—	Jorhat Distr./Assam	India	26°44′ N 94°24′ E	~90
30	Mihimukh road[1,2]	—	Golaghat Dist./Assam	India	26°37′ N 93°23′ E	55
31	Monacherra[3]	Monachara	Hailakandi Dist./Assam	India	24°58′ N 91°56′ E	~19
32	North Guwahati[1]	—	Kamrup Dist./Assam	India	26°11′ N 91°44′ E	55
33	Panbari Reserved Forest[1]	—	Golaghat Dist./Assam	India	26°36′ N 93°30′ E	78
34	Potasali[1]	—	Sonitpur Dist./Assam	India	26°56′ N 92°50′ E	88
35	Rampore Tea Estate[2]	—	North Cachar Hills Distr./Assam	India	24°56′ N 92°46′ E	90
36	Sadiya[3]	—	Tinsukia Dist./Assam	India	27°50′ N 95°40′ E	125
37	Sibsagar[2,3]	—	Sibsagar Dist./Assam	India	26°98′ N 94°63′ E	95
38	Singhbeti camp[1]	—	Darang Dist./Assam	India	26°30′ N 92°16′ E	53
39	Seijusa[3]	—	East Kameng Dist./Arunachal Pradesh	India	26°56′2″ N 92°59′4″ E	126
40	Shillong[3]	—	East Khasi Hills Dist./Meghalaya	India	25°57′ N 91°88′ E	1525
41	? Sikkim[3]	—	Sikkim	India	—	—
42	Sonapur[2,3]	—	Kamrup Dist./Assam	India	26°7′ N 91°59′ E	55
43	Samagooting[2,3]	Chumukedima, Samaguting	Dimapur Dist./Nagaland	India	25°48′ N 93°48′ E	~200
44	Tindharia[3]	—	Darjeeling Dist./West Bengal	India	26°49′ N 88°16′ E	~500
45	Tura[3]	—	West Garo Hills Dist./Meghalaya	India	25°31′ N 90°13′ E	~540
46	11 km from Wokha[3]	—	Wokha Dist./Nagaland	India	ca. 26°06′ N 94°20′ E	< 1000

Note. List of localities for *Boiga gokool* based on new collections or observations[1], examined specimens[2], and literature or database records[3]. * For the record “Manipur (Burma)” based on Wall (1924) see discussion in chapter distribution. Coordinates and elevations are given for specified localities only. For authorities of literature records we refer to the list of synonyms and chresonyms.