Catalogue of herpetological specimens from Meghalaya, India at the Salim Ali Centre for Ornithology and Natural History

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Abstract: We present a catalogue of herpetological specimens collected from select community reserves of Meghalaya, northeastern India. The collection comprises a total of 75 species of the herpetofauna, including 29 species of amphibians from 20 genera in seven families and 46 species of reptiles from 30 genera, in 10 families. We provide the details on number of examples, sex, museum numbers, and collection details including location and collector along with the relevant remarks where applicable. A total of five species of amphibians and four species of reptiles remain to be resolved systematically since no precise name could be attributed to them.

Keywords: Amphibia, Coimbatore, community reserves, museum collection, northeastern India, Reptilia, voucher specimens

The importance of natural history collections in enriching our knowledge on various aspects of organisms such as taxonomic, morphological, ontogenetic, genetic, phylogenetic, ecological, and biogeographic facets have been highlighted since the past (Lane 1996). Apart from serving as the basis for taxonomic entities, such collections of specimens serve as an important repository of historic information on species distribution patterns as well (Shaffer et al. 1998; Rocha et al. 2014; Turney et al. 2015; Yeates et al. 2016; Da Silva et al. 2017; Hill 2017; Ceriaco et al. 2019). Most of the herpetofaunal type collections within India are deposited in two museums, namely, the Zoological Survey of India (ZSI, Kolkata), and the Bombay Natural History Society (BNHS, Mumbai). Although the collections in such major museums have been catalogued at some point (Das & Chaturvedi 1998; Das et al. 1998; Chanda et al. 2000), there are several other institutions that house a sizable collection of specimens that often remain understudied. One such collection is in the Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore, India. SACON is an institution under the Ministry of Environment, Forests and Climate Change, Government of India. A part of the herpetological collections at SACON from peninsular India has recently been catalogued (Ganesh et al. 2020). As a part of an ongoing study in select community reserves of Meghalaya, herpetofaunal specimens were collected by P. Karthik (research fellow of the project...
entitled ‘Characterization of Community Reserves and Assessment of their Conservation Values in Meghalaya’ funded by the National Mission on Himalayan Studies) and RSN and are deposited at SACON as vouchers. Herein, we present a catalogue of those herpetological specimens collected from Meghalaya that are maintained at SACON.

**Materials and Methods**

The herpetological specimens collected between the period 2018 to 2021 as a part of the ongoing surveys in community reserves of Meghalaya were preserved in ethanol and deposited in the collection of the SACON. Here, we list the collected specimens (only whole body, only non-larval) along with their voucher collection numbers. Institutional acronyms follow that of Ganesh et al (2020). Higher classification of amphibians and reptiles follow Frost (2021) and Uetz et al. (2021), respectively. Authorities are not mentioned for species with tentative identities indicated by ‘cf.’ Exceptional cases of more than one specimens catalogued under the same voucher number are distinguished by adding to their collection number the alphabets a, b, c etc. In cases where the specimens could not be identified precisely to the species level, the generic name only is mentioned followed by sp.

Relevant discussions based on recently published information is presented under such species to clarify their identification. Details of the collection localities mentioned below are presented in Table 1.

**Catalogue of the herpetofaunal specimens from Meghalaya deposited at SACON**

**Amphibia Gray, 1825**

Gymnophiona Müller, 1832

Ichthyophiidae Taylor, 1968

1. *Ichthyophis garoensis* Pillai & Ravichandran, 1999 (n= 3)

   SACON VA 79 and VA 87 - two unsexed adult specimens from Dumitdigre and Sasatgre respectively (coll: P. Karthik), VA 169 – an unsexed adult from Dharibokgre (coll. R.S. Naveen).

   Remark: Another putative species, *Ichthyophis hussaini* Pillai & Ravichandran, 1999 from Garo Hills, Meghalaya was synonymized with *I. garoensis* by Kamei & Biju (2016).

2. *Duttaphrynus melanostictus* (Schneider, 1799) (n= 3)

   SACON VA 55 - one adult female and VA 56 and VA 66, two unsexed individuals, of which the former is a subadult, collected from Mongalgre (coll. P. Karthik).

3. *Duttaphrynus* sp. (n= 4)

   SACON VA 103 a, b - two unsexed subadults, and VA 123 and VA 124 - two adult females, from Jirang (coll. P. Karthik).

   Remark: The identity of these specimens still needs resolution. Agarwal & Mistry (2008) reported *D. stuarti* (Smith, 1929) from Arunachal Pradesh, and Das et al. (2013) described *D. chandai* from the Nagaland-Manipur border.

**Microhylidae Günther, 1858**

4. *Microhyla berdmorei* (Blyth, 1856) (n= 1)

   SACON VA 102, an adult female from Meghalaya (precise location unknown) (coll. P. Karthik).

5. *Microhyla cf. mymensinghensis* (n= 4)

   SACON VA 81 a, b, c - three adult females from Dumitdigre (coll. P. Karthik). VA 155 - an unsexed adult from Chimanpara (coll. R.S. Naveen).

   Remark: A species described recently from the *M. ornata* complex (Hasan et al. 2014). The precise identity of these samples requires further study.

**Megophryidae Bonaparte, 1850**


   SACON VA 57, VA 61 - two adult females from Mongalgre; VA 58, VA 59, VA 60 - three unsexed adult specimens and VA 151 - an unsexed adult from Eman Asakgre (coll. R.S. Naveen).

   Remarks: The reports of another species, *L. rakhinense* Wogan, 2012, from Northeast India have been shown by Dutta et al (2013) to represent *L. smithi*. Very recently, populations of the ‘*L.smithi*’ complex were reassessed by Al-Razi et al (2021) and described as a new species. Considering the geographic proximity of our samples to the type locality of *L. sylheticum*, we refer our specimens as *L. cf. sylheticum*.

7. *Leptobrachella* cf. *khasiorum* (n= 1)

   VA 115 - an unsexed subadult from Jirang (coll. P. Karthik).

8. *Xenophrys major* (Boulenger, 1908) (n= 1)

   SACON VA 83 - an adult female from Mongalgre (coll. P. Karthik).

   Remark: The genus *Xenophrys* Günther, 1864, which was placed under the synonymy of *Megophrys* Kuhl & Van Hasselt, 1822 by Mahony et al. (2013) has now been revalidated by Lyu et al (2021).
9. **Xenophrys megacephala** (Mahony, Sengupta, Kamei & Biju, 2011) (n= 1)
   VA 80 - an unsexed adult specimen from Dumitdigre (coll. P. Karthik).
   **Remark:** See above for taxonomic validity of the genus *Xenophrys* Günther, 1864.

10. **Xenophrys oropedion** (Mahony, Teeling & Biju, 2013) (n= 1)
    VA 67 - an adult female from Daribokgre (coll. P. Karthik).
    **Remark:** See above for taxonomic validity of the genus *Xenophrys* Günther, 1864.

11. **Xenophrys sp.** (n= 1)
    VA 86 - an unsexed subadult from Sasatgre (coll. P. Karthik), whose identity could not be determined.

12. **Fejervarya** sp. (n= 5)
    VA 54, VA 82 and VA 98 - three adult females from Mongalgre and Lum Jusong, respectively. VA 75 - an adult male from Dumitdigre. VA 107 - an unsexed subadult from Lum Jusong (coll. P. Karthik).
    **Remark:** A large-bodied *Fejervarya* frog, *F. orissaensis* Dutta, 1997 has recently been shown to occur across most parts of Indochina (Köhler et al. 2019). The identity of our *Fejervarya* specimens still needs taxonomic resolution.

13. **Minervarya sengupti** (Purkayastha & Matsui, 2012) (n= 10)
    **Remark:** A fairly recently described species from Mawphlang, Khasi Hills, Meghalaya (Purkayastha & Matsui 2012).

14. **Minervarya cf. pierrei** (n= 7)
    VA 72, VA 73 and VA 74 - three adult males from Dumitdigre. VA 116 – an adult female from Jirang. VA 92 an adult female from Daribokgre and VA 84–85 - two unsexed adult specimens from Sasatgre (coll. P. Karthik).
    **Remark:** The taxonomic status and distribution of *Minervarya pierrei* (Dubois, 1975) and *Minervarya agricola* (Jerdon, 1853) were recently discussed by...
15. *Minervarya* sp. (n= 1)
   VA 109 - an unsexed juvenile specimen from Meghalaya (coll. P. Karthik) that could not be identified to species level.

16. *Limnonectes khasianus* (Anderson, 1871) (n= 8)
   VA 111, VA 112 - two adult males from Jirang, VA 99 and VA 69 - two adult males from Dimitdigre, VA 68 - an unsexed adult from Meghalaya (precise locality unknown) (coll. P. Karthik), VA 130–131, two unsexed adults from Rongalgre and VA 132, an unsexed subadult from Kitmadamgre (coll. R.S. Naveen).

   **Remark:** Ohler & Deuti (2013) discussed and confirmed the synonymy of *Rana laticeps* Boulenger, 1882 with *Pyxicephalus khasianus* Anderson, 1871, thereby highlighting the seniority of the name combination *Limnonectes khasianus* (Anderson, 1871).

17. *Euphlyctis cyanophlyctis* (Schneider, 1799) (n= 4)

18. *Ingerana borealis* (Annandale, 1912) (n= 5)
   VA 135-138, four unsexed adults from Rongalgre, VA 161 – an adult female from Rongalgre (coll. R.S. Naveen).

19. *Clinotarsus alticola* (Boulenger, 1882) (n= 4)
   VA 95 and VA 106 - two adult females, VA 110 - a juvenile and VA 91 - a subadult from Sasatgre (coll. P. Karthik).

   **Remarks:** Members of the genus *Clinotarsus* Minvart, 1869 show a disjunct pattern of geographic distribution. While *C. curtipes* (Jerdon, 1853) is restricted to the Western Ghats of southwestern peninsular India, the other two congeners *C. alticola* (Boulenger, 1882) and *C. penelope* Grosjean, Bordoloi, Chuaynkern, Chakravarty & Ohler, 2015 occur in the Indocheinese region.

20. *Hylarana tytleri* Theobald, 1868 (n= 1)
   VA 93 - one unsexed subadult from Lum Jusong (coll. P. Karthik).

21. *Hydroplyx leptoglossus* (Cope, 1868) (n= 2)
   VA 100-101 - two adult females from Sasatgre (coll. P. Karthik).

   VA 52 - an unsexed subadult from Jirang,(coll. P. Karthik).

23. *Amolops marmoratus* (Blyth, 1855) (n= 2)
   VA 90a-b - two unsexed juveniles from Sasatgre (coll. P. Karthik).

24. *Amolops* sp. (n= 3)
   VA 120–122 - three subadult females from Jirang. Their identity could not be determined to species level.
VR 230–231, two adult males, from Sasatgre; VR 181–183 three adults from Daribokgre; and VR 153- one juvenile from Mongalgre (coll. P. Karthik).

Remark: Purkayasta et al. (2020) recently reported another species, *C. urbanus* Purkayastha, Das, Bohra, Bauer & Agarwal, 2020 from Nongpoh. Additionally, Purkayasta et al. (2021) described two more new species *C. agarwali* and *C. karsticola* from the Garo Hills.

32. *Hemidactylus platyurus* (Schneider, 1797) (n= 7)

33. *Hemidactylus frenatus* Duméry & Bibron, 1836 (n= 1)
VR 222 - subadult from Meghalaya (no more precise locality) (coll. P. Karthik).

34. *Hemidactylus* sp. (n= 1)
VR 171 - subadult male from Meghalaya (no more precise locality) (coll. P. Karthik).

35. *Gekko gecko* Linnaeus, 1758 (n= 1)
VR 229 - adult male from Meghalaya (no more precise location) (coll. P. Karthik).

Agamidae Gray, 1827

36. *Calotes* cf. *irawadi* (n= 9)
VR 178 a & b - an unsexed and an adult female from Sasatgre; VR 205, VR 240–245- six unsexed subadult specimens respectively from Meghalaya (no more precise location) (coll. P. Karthik).

Remarks: Zug et al. (2006) described *Calotes irawadi* from Myanmar. The exact identity of our samples from Meghalaya still needs further investigation regarding their potential conspecificity with that newly described taxon.

37. *Calotes maria* Gray, 1845 (n= 2)
VR 166, 173 - two adults respectively from Daribokgre and Sasatgre (coll. P. Karthik).

38. *Calotes emma* Gray, 1845 (n= 3)
VR 247, VR 150, VR 151 - one adult from Dumitdigre, two adults respectively from Meghalaya (no more precise location) (coll. P. Karthik).

39. *Calotes* sp. (n= 2)
VR 206, 251 - respectively, an unsexed subadult and adult male from Dumitdigre (coll. P. Karthik).

Remark: Species is uncertain and needs to be determined.

40. *Cristidorsa planidorsata* (Jerdon, 1870) (n= 4)
VR 185 and VR 169 - two adult males from Meghalaya (no more precise location); VR 184 and VR 188- one adult female each from Daribokgre and Sasatgre, respectively (coll. P. Karthik).

41. *Ptyctolaemus gularis* (Peter, 1864) (n= 8)
VR 238, VR 239, VR 207 - three adult males and, VR 201 - an unsexed juvenile from Meghalaya (no more precise location), VR 167, VR 168, VR 179 and VR 180 - four unsexed adults from Daribokgre (coll. P. Karthik).

Lacertidae Oppel, 1811

47. *Takydromus khasiensis* Boulenger, 1917 (n= 2)
VR 155, 208 – two unsexed adults respectively from Mongalgre and Nongsangu (coll. P. Karthik).

Serpentes Linnaeus, 1758

Tyrphlopidae Merrem, 1820

48. *Argyrophis diardii* (Schlegel, 1839) (n= 4)

49. *Indotyphlops* sp. (n= 1)
An unsexed adult specimen (VA 219) from Meghalaya (no more precise location) (coll. P. Karthik).

Remark: Superficially resembles *I. braminus* Daudin, 1803) but the precise identity of this specimen requires further study.

Pseudaspididae Cope, 1893

50. *Psammodynastes pulverulentus* (Boie, 1827) (n= 1)
VR 152 - a subadult specimen from Meghalaya (no more precise location) (coll. P. Karthik).
Colubridae Oppel, 1811

51. *Calamaria parvimentata* Duméril, Bibron & Duméril, 1854 (n= 1)
VR 261 – an unsexed adult from Daribokre (coll. R.S. Naveen).

52. *Lycodon zawi* Slowinski, Pawar, Win, Thin, Gyi, Oo & Tun, 2001 (n= 1)
VR 204 – an unsexed adult specimen from Lum Jusong (coll. P. Karthik).

53. *Lycodon* sp. (n= 2)
VR 213, VR 215 – two subadult specimens from Meghalaya (no more precise location) (coll. P. Karthik). Their specific identity needs further study.

54. *Lycodon jara* (Shaw, 1802) (n= 1)
VR 253, an unsexed adult from Thokpara (coll. R.S. Naveen).

55. *Lycodon cf. aulicus* (n= 1)
VR 254, an unsexed adult from Thokpara (coll. R.S. Naveen).

56. *Oligodon juglandifer* (Wall, 1909) (n= 1)
VR 214 - unsexed adult road killed specimen from Meghalaya (no more precise location) (coll. P. Karthik).

57. *Oligodon cyclurus* (Cantor, 1839) (n= 1)
VR 254 – an unsexed adult from Thokpara.

58. *Boiga cyanea* (Duméril, Bibron & Duméril, 1854) (n= 1)
VR 228 - a large adult specimen from Nongsangu (coll. P. Karthik).

59. *Boiga gocool* (Gray, 1834) (n= 3)

60. *Dendrelaphis proarchos* (Wall, 1909) (n= 1)
VR 210 - adult from Meghalaya (no more precise location) (coll. P. Karthik).

Remark: Vogel & Van Rooijen (2011) revalidated *D. proarchos* from the synonymy of *D. pictus* which has recently been endorsed by Hakim et al. (2020).

61. *Coelognathus radiatus* (Boie, 1827) (n= 1)
VR 189 - subadult from Meghalaya (no more precise location) (coll. P. Karthik).

62. *Elaphe cantoris* (Boulenger, 1894) (n= 1)
VR 211 - an unsexed adult (VR 211) from Meghalaya (no more precise location) (coll. P. Karthik).

Pareidae Romer, 1956

63. *Pareas monticola* (Cantor, 1839) (n= 1)
VR 212 - adult from Meghalaya (no more precise location) (coll. P. Karthik).

Natricidae Bonaparte, 1838

64. *Pseudoxenodon macrops* (Blyth, 1855) (n= 1)
VR 260 – an adult male from Chandigre (coll. R.S. Naveen).

65. *Trachischium monticola* (Cantor, 1839) (n= 3)

66. *Hebius khasiense* (Boulenger, 1890) (n= 8)
VR 162, VR 175–177 four unsexed adults from Sasatgre, VR 209, VR 225, VR 246 - three unsexed adults from Meghalaya (no more precise precise location) (coll. P. Karthik), VR 257 – an unsexed adult from Sasatgre (coll. R.S. Naveen).

67. *Fowlea piscator* (Schneider, 1799) (n= 3)
VR 156 - adult male road killed specimen from Nongsangu. VA 202–203 - adults from Meghalaya (no more precise location) (coll. P. Karthik).


68. *Smithophis bicolor* (Blyth, 1854) (n= 1)
VR 194 - subadult male from Northeastern Hill University Campus, Shillong (coll. P. Karthik).

Remarks: This specimen was recently described in detail by Chandramouli et al. (2021).

Elapidae Boie, 1827

69. *Sinomicrurus macclellandi* (Reinhardt, 1844) (n= 1)
VR 159 - one adult from Meghalaya (no more precise location) (coll. P. Karthik).

70. *Naja kaouthia* Lesson, 1831 (n= 1)
VR 157 - one juvenile from Meghalaya (no more precise location) (coll. P. Karthik).

71. *Ophiophagus hannah* (Cantor, 1836) (n= 1)
VR 252 - an adult male from Meghalaya (no more precise location) (coll. P. Karthik).

Viperidae Oppel, 1811

72. *Ovophis monticola* (Günther, 1864) (n= 3)

73. *Trimeresurus popeiorum* Smith, 1937 (n= 2)
VR 170, VR 174 - two adults, respectively one male and one female from Daribokgre and Sasatgre (coll. P. Karthik).

74. *Trimeresurus erythrurus* (Cantor, 1839) (n= 2)

75. *Trimeresurus* sp. (n= 1)
VR 160 - one subadult, (VR 160) from Meghalaya (no more precise location) (coll. P. Karthik), whose specific identity needs further study.
**Discussion**

Currently, the collection encompasses a total of 75 species of the herpetofauna, including 29 species of amphibians from 20 genera in seven families and 46 species of reptiles from 31 genera, in 10 families. Reptiles are represented by 17 species of lizards and 29 species of snakes. This collection is expected to grow as the field study continues. The collections from peninsular India at SACON have recently been catalogued (Ganesh et al. 2020) and there still are collections from other regions within India that will be catalogued in future. Herpetofaunal collections in other institutions within India are recently being catalogued (e.g., Ganesh 2010; Ganesh & Asokan 2010; Zacharias & Jose 2020) which would aid in supplementing our knowledge on herpetofaunal species and their distribution.

**References**


