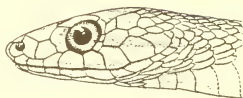


SNAKES OF BURMA

CHECKLIST OF REPORTED SPECIES
&
BIBLIOGRAPHY



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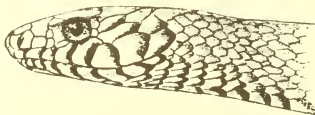
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EDITOR'S NOTE

Dowling's classification of snakes differs substantially from the classification in common use. The use of Dowling's classification in a SHIS "publication" does not represent advocacy, but our willingness to present divergent viewpoints.

G. Zug, September 1988

INTRODUCTION

The snakes of Burma are probably the least-known of the snake faunas in any of the countries of southeastern Asia. The last comprehensive work on the reptiles was that included in Smith's (1943) work in the "Fauna of British India" series, which was written in the 1930's and delayed by World War II. Prior to this work, its fauna was known by a few scattered papers by Frank Wall and others, and by inclusion in the major regional works by Guenther (1864), Theobald (1876), and Boulenger (1890). Only Theobald (1868) has provided an individual catalogue of the reptiles of this country.

Little additional systematic work has been done on Burmese snakes since the British left the country in 1948; actually little has been done since the 1920's. Few specimens have been reported since Wall's (1925, 1926) final series of papers. An important collection made by Ronald Kaulback in 1937-39 in the "Triangle" country of northernmost Burma (26°N, 98°E; not the "Golden Triangle," 21°N, 100°E) was reported by Smith (1940), and small collections made on Mt. Victoria and Mt. Popa by Gerd Heinrich were reported by Shreve (1940). Only a few scattered specimens have made their way into museum collections since that time. The mimeographed list of Burmese snakes prepared by the Burmese Department of Forestries (Hundley, 1964), was merely an abstract from Smith (1943).

The following list was originally prepared (1983) from Malcolm Smith's "Serpentes" volume (1943) in the "Fauna of British India" series, with some additions, and those changes in nomenclature necessitated by more recent publications.

Our recent trips to Burma and India (1984, 1985, 1986, 1987) have allowed us to add to this list and to make some corrections. We have examined most of the Burmese specimens in the collections of the Bombay Natural History Society, Bombay (BNHS), and the Zoological Survey of India at Calcutta (ZSIC). We also have examined the collection of the U. S. National Museum of Natural History (USNM), and recently have received a list of Burmese specimens found in the British Museum (Natural History) (BMNH). Other specimens have been located at the California Academy of Sciences, San Francisco (CAS), the Museum of Comparative Zoology, Harvard University (MCZ), the Naturhistorisches Museum, Vienna (NMW), the University of Michigan Museum of Zoology, Ann Arbor (UMMZ), and the Zoological Museum, Hamburg, Germany (ZMH). We do not suggest that this is a comprehensive list.

The additional species found in these collections and the specific localities for these specimens offer considerably more geographic information than was available from previous literature. Although the list is still incomplete, it indicates that Burma has a very rich snake fauna. There appear to be at least 150 species of snakes (including more than 40 venomous kinds) to be found in this country.

It should be appreciated, however, that most of the present records are based on specimens that were collected more than 50 years ago. Many of these were collected more than 100 years ago.

Acknowledgments. -- We wish to thank our associates in Burma who have encouraged us in this work. Prof. Aung Than Batu, Director-General of the Medical Research Department, Dr. Thein Maung Myint, Deputy Director of Research, and U Hla Pe, Head of the Biochemistry Division, have been particularly helpful and we thank them and their associates for their advice and cooperation. We also thank Prof. U Sein Lwin, Head of the Department of Zoology, Rangoon University, and his associates, U Zaw Win, Head of the Biological Division and U Khin Aung Cho of the Venom Laboratory of the Burma Pharmaceutical Industries. We appreciate the time and effort that all of these people have expended in our behalf.

The members of the American Embassy and U.S. Information Service in Rangoon have made every effort to make our project successful. We wish to thank especially John A. Fredenburg, Michael Betcher, and U Kyaw Nyein, of USIS. We also gratefully remember the efforts of Mr. Fredenburg's predecessor, Jerry Kyle, who guided us in the early days of our studies.

We have been equally fortunate in India, where J. C. Daniel, Curator of the Bombay Natural History Society, T.S.N. Murthy, Zoological Survey of India at Madras, D. P. Sanyal, Zoological Society of India in Calcutta, and their associates have welcomed our work at their institutions. Dr. B. K. Tikader, Director of the Zoological Survey, and more recently Dr. B. S. Lamba, Joint Director in Charge, have kindly made the facilities of the Zoological Survey available to us. We give all of them our grateful thanks.

We are especially grateful to Romulus Whitaker of the Madras Crocodile Bank and Humayun Abdulali of the Bombay Natural History Society for introducing us to something of the natural history of southern Asia. Again, the USIS has been of great aid, through the kind efforts of Carlos E. Aranaga, Vice Consul in Calcutta.

Information has been provided or facilities made available from a number of other institutions. We especially thank A. F. Stimson, British Museum (Natural History), London, and George Zug, National Museum of Natural History, Washington.

None of this work could have been accomplished without the financial support of the Smithsonian Institution in Washington. Through the kind efforts of Miss Francine Berkowitz and her associates the Smithsonian has made monies available through its Special Foreign Currency Program. Miss Berkowitz, Mrs. Sandra Thomas of the Office of Service and Protocol, and Ms. Carol Ailes of the Smithsonian's Travel Office, together with their associates have paved the way for our studies and we deeply appreciate their efforts in our behalf.

The Department of Biology, the Sponsored Programs Department, and the office of the Dean of Arts and Science have been very supportive of our work. We thank them, and especially Dr. Walter Scott, Chairman of the Department of Biology, Dr. Irving Brick, Acting Chairman, Lisa Tate of Sponsored Programs, and Deans Turner and Rice for their aid.

CHECKLIST

ORDER SQUAMATA -- Scaly Reptiles
Suborder SERPENTES -- Snakes

Infraorder HENOPHIDIA -- Primitive Snakes

Superfamily Pythonoidea -- Pythons & Allies

FAMILY PYTHONIDAE -- Pythons

Python Daudin, 1803

1. P. molurus (Linnaeus, 1758) (BMNH, USNM)
2. P. reticulatus Schneider, 1801 (BMNH, BNHS, USNM, ZSIC)

FAMILY XENOPELTIDAE -- Sunbeam Pythons

Xenopeltis Reinwardt, 1827

3. X. unicolor Reinwardt, 1827 (BMNH, BNHS, CAS, ZSIC)

Superfamily Booidea -- Boas & Allies

FAMILY CYLINDROPHIIDAE -- Pipesnakes

Cylindrophis Wagler, 1828

4. C. rufus (Laurenti, 1768) (BMNH, BNHS, ZSIC)

Infraorder SCOLECOPHIDIA -- Blindsnakes

Superfamily Typhlopoidea -- Typical Blindsnakes

FAMILY TYPHLOPIDAE -- Typical Blindsnakes

Ramphotyphlops Fitzinger, 1843

5. R. albiceps Boulenger, 1898 (BMNH)
6. R. braminius Daudin, 1803 (BMNH, BNHS, CAS, ZSIC)

Typhlops

7. T. diardi Schlegel, 1839 (BMNH, BNHS, CAS, ZSIC)
8. T. oatesi Boulenger, 1890 (BMNH)
9. T. jerdoni Boulenger, 1890 (BMNH, BNHS, ZSIC)
10. T. porrectus Stoliczka, 1871 (BMNH)

Infraorder CAENOPHIDIA -- Advanced Snakes

Superfamily Acrochordoidea -- Ancient Watersnakes

Family XENODERMATIDAE -- Pebbled Watersnakes

Xenodermus Reinhardt, 1836

11. X. javanicus Reinhardt, 1836

Family ACROCHORDIDAE -- Asian Wartsnakes

Acrochordus Hornstedt, 1787

12. A. granulatus (Schneider, 1799)

Family HOMALOPSIDAE -- Rearfanged Watersnakes

Enhydris Sonnini & Latrielle, 1802

13. E. enhydris (Schneider, 1799) (BMNH, BNHS, CAS, ZSIC)
14. E. maculosa (Blanford, 1881) (BMNH)
15. E. plumbea (Boie, 1827) (BMNH, BNHS, ZSIC)
16. E. sieboldi (Schlegel, 1837) (ZSIC)

Homalopsis Kuhl & Hasselt, 1822

17. H. buccata (Linnaeus, 1758) (BMNH, BNHS, CAS, ZSIC)

Cerberus Cuvier, 1829

18. C. rhynchops (Schneider, 1799) (BMNH, BNHS, CAS, ZSIC)

Gerarda Gray, 1849

19. G. prevostiana (Eydoux & Gervais, 1832-37) (BMNH, ZSIC).

Fordonia Gray, 1842

20. F. leucobalia (Schlegel, 1837) (BNHS)

Cantoria Girard, 1857

- 21.
- C. violacea
- Girard, 1857 (BMNH, ZSIC)

Bitia Gray, 1842

- 22.
- B. hydroides
- Gray, 1842 (BMNH, BNHS, ZSIC)

Superfamily Dipsadoidea -- Generalized Snakes

FAMILY LAMPROPHIIDAE -- Housesnakes & Allies

Pareas Wagler, 1830

- 23.
- P. margaritophorus
- (Jan, 1866)
-
- 24.
- P. macularius
- Theobald, 1868 (BMNH, BNHS, ZSIC)
-
- 25.
- P. hamptoni
- (Boulenger, 1905) (BMNH)
-
- 26.
- P. carinatus
- (Boie, 1828) (ZSIC)

Aplopeltura Dumeril & Bibron, 1853

- 27.
- A. boa
- (Boie, 1828)

Oligodon Boie, 1827

- 28.
- O. cyclurus
- (Cantor, 1839) (BMNH, BNHS, CAS, ZSIC)
-
- [Also as
- O. purpurascens
- .]
-
- 29.
- O. albocinctus
- (Cantor, 1839) (BMNH, BNHS)
-
- 30.
- O. splendidus
- (Guenther, 1875) (BMNH, BNHS, ZSIC)
-
- 31.
- O. cinereus
- (Guenther, 1864) (BMNH, BNHS)
-
- 32.
- O. torquatus
- (Boulenger, 1888) (BMNH, BNHS)
-
- 33.
- O. theobaldi
- (Guenther, 1868) (BMNH, BNHS, ZSIC)
-
- 34.
- O. cruentatus
- (Guenther, 1868) (BMNH, BNHS)
-
- 35.
- O. planiceps
- (Boulenger, 1888) (BMNH)
-
- 36.
- O. catenata
- (Blyth, 1854) (BMNH, BNHS)
-
- 37.
- O. mcdougalli
- (Wall, 1905) (BNHS)
-
- 38.
- O. dorsalis
- (Gray & Hardwicke, 1834) (BMNH, BNHS)
-
- 39.
- O. hamptoni
- Boulenger, 1918 (BMNH)

Calamaria Boie, 1826

- 40.
- C. pavamentata
- Dumeril, Bibron, & Dumeril, 1854
-
- (BMNH)

Psammodynastes Guenther, 1858

- 41.
- P. pulverulentus
- (Boie, 1827) (BMNH, BNHS, USNM,
-
- ZSIC)

FAMILY PSAMMOPHIIDAE -- Sandsnakes

Psammophis Fitzinger, 1826

- 42.
- P. condanarus
- (Merrem, 1820) (BMNH, BNHS, USNM, ZSIC)
-
- [Also as
- Phayrea isabella
- Theobald]

Superfamily Viperioidea -- Vipers & Allies

FAMILY VIPERIDAE -- Vipers

Azemiops Boulenger, 1888

- 43.
- A. feae
- Boulenger, 1888

Vipera Laurenti, 1768

- 44.
- V. russelii
- (Shaw, 1797) (BNHS, CAS, USNM, ZSIC)

FAMILY CROTALIDAE -- Pitvipers

Trimeresurus Lacepede, 1804

45. T. mucrosquamatus Cantor, 1839 (BMNH)
 46. T. monticola Guenther, 1864 (BMNH, BNHS)
 47. T. jerdoni Guenther, 1875 (BMNH, BNHS)
 48. T. kaulbacki Smith, 1940 (BMNH)
 49. T. stejnegeri Schmidt, 1925 (BMNH)
 50. T. popeorum Smith, 1937 (BMNH)
 51. T. purpureomaculatus Gray & Hardwicke, 1830 (BMNH, BNHS, ZSIC)
 52. T. erythrorus (Cantor, 1839) (BMNH, BNHS, CAS, ZSIC)
 53. T. albolabris Gray, 1842 (BMNH, BNHS, USNM, ZSIC)

Superfamily Elapoidea -- Front-fanged Snakes

FAMILY ELAPIDAE -- Cobras & Allies

Bungarus Daudin, 1803

54. B. bungaroides (Cantor, 1839) (BMNH)
 55. B. flaviceps Reinhardt, 1843 (ZSIC)
 56. B. fasciatus (Schneider, 1801) (BMNH, BNHS, CAS, ZSIC)
 57. B. multicinctus Blyth, 1861 (BNHS, CAS)
 58. B. magnimaculatus Wall & Evans, 1901 (BNHS, CAS, ZSIC)

Calliophis Gray, 1834

59. C. maculiceps (Guenther, 1858) (BMNH, BNHS, ZSIC)
 60. C. maclellandi (Reinhardt, 1844) (BMNH, BNHS, CAS, USNM, ZSIC)

Maticora Gray, 1834

- 61.
- M. bivirgata
- (H. Boie, 1827) (ZSIC)

Naja Laurenti, 1768

- 62.
- N. naja
- (Linnaeus, 1758) (BMNH, BNHS, CAS, USNM, ZSIC)

Ophiophagus Guenther, 1864

- 63.
- O. hannah
- (Cantor, 1836) (BMNH, BNHS)

FAMILY HYDROPHIIDAE -- Seasnakes

Laticauda Laurenti, 1768

64. L. laticaudata (Linnaeus, 1758)
 65. L. colubrina (Schneider, 1799) (ZSIC)

Kerilia Gray, 1849

66. K. jerdoni Gray, 1849 (ZSIC)

Lapemis Gray, 1835

67. L. viperina (Schmidt, 1852) (ZSIC)

Enhydrina Gray, 1849

68. E. schistosa (Daudin, 1803) (BMNH, CAS, ZSIC)

Hydrophis Latreille, 1802

69. H. nigrocinctus Daudin, 1803 (BMNH)
 70. H. spiralis (Shaw, 1802) (ZSIC)
 71. H. obscurus Daudin, 1803 (BMNH)
 72. H. stricticollis Guenther, 1864 (BMNH)
 73. H. ornatus (Gray, 1842) (ZSIC)
 74. H. caerulescens (Shaw, 1802) (ZSIC)
 75. H. fasciatus (Schneider, 1799) (ZSIC)
 76. H. gracilis (Shaw, 1802) (ZSIC)

Lapemis Gray, 1835

77. L. curtus (Shaw, 1802) (ZSIC [Also as L. hardwickii.]

Pelamis Daudin, 1803

78. P. platurus (Linnaeus, 1866)

Superfamily Colubroidea -- Harmless Snakes
 FAMILY COLUBRIDAE -- Racers & Allies

Gonyosoma Wagler, 1828

79. G. prasina (Blyth, 1854) (BMNH, BNHS, USNM, ZSIC)
 80. G. oxycephalum (Boie, 1827) (BMNH, BNHS)

Elaphe Fitzinger, 1833

81. E. radiata (Schlegel, 1837) (BMNH, BNHS, CAS, USNM)
 82. E. flavolineata (Schlegel, 1837) (ZSIC)
 83. E. taeniura (Cope, 1861) (BMNH, BNHS, ZSIC)
 84. E. cantoris (Boulenger, 1895) (BMNH, ZSIC)
 85. E. porphyracea (Cantor, 1839) (BMNH, BNHS)
 86. E. leonardi (Wall, 1921) (BMNH, BNHS)
 87. E. mandarina (Cantor, 1840) (BMNH, BNHS)

Ptyas Fitzinger, 1843

88. P. mucosus (Linnaeus, 1758) (BMNH, BNHS, CAS, USNM, ZSIC)
 89. P. korros (Schlegel, 1837) (BMNH, BNHS, CAS, USNM, ZSIC)

Zaocys Cope, 1860

90. Z. carinatus (Guenther, 1858) (BMNH, USNM, ZSIC)
 91. Z. nigromarginatus (Blyth, 1854) (BMNH, BNHS)

Entechinus Cope, 1895

92. E. hamptoni (Boulenger, 1900) (BMNH)
 93. E. doriae (Boulenger, 1888) (BMNH)

Liopeltis Fitzinger, 1843

94. L. frenatus (Guenther, 1858) (BMNH, BNHS)
 95. L. stoliczkai (Sclater, 1891)

Gongylosoma Fitzinger, 1843

96. G. scriptus (Theobald, 1868) (BMNH, ZSIC)

Dendrelaphis Boulenger, 1890

97. D. pictus (Gmelin, 1789) (BMNH, ZSIC)
 98. D. cyanochloris (Wall, 1921) (BMNH, BNHS)
 99. D. gorei (Wall, 1910) (BNHS)
 100. D. tristis (Daudin, 1803) (BNHS, ZSIC)
 101. D. subocularis (Boulenger, 1888) (BMNH, ZSIC)
 102. D. caudolineatus Gray, 1834) (ZSIC)

Chrysopelea Boie, 1826

103. C. ornata (Shaw, 1802) (BMNH, BNHS, CAS, ZSIC)
 104. C. paradisi Boie, 1827 (BMNH, ZMH, ZSIC)
 105. C. pelias (Linnaeus, 1758) (BMNH, ZSIC)

Lycodon Boie, 1826

106. L. kundui Smith, 1943 (BMNH)
 107. L. aulicus (Linnaeus, 1758) (BMNH, BNHS, CAS, ZSIC)
 108. L. fasciatus (Anderson, 1879) (BMNH, BNHS)

Dinodon Dumeril & Bibron, 1853

109. D. septentrionalis (Guenther, 1875) (BMNH)
 110. D. flavozonatus Pope, 1928 (AMNH, BMNH)

Dryocalamus Guenther, 1858

111. D. davisoni (Blanford, 1878) (BMNH, CAS, ZSIC ?NF)
 112. D. gracilis (Guenther, 1864) (ZSIC)

Subynophis Fitzinger, 1843

113. S. collaris (Gray, 1853) (AMNH, BMNH, BNHS)
 114. S. bistrigatus (Guenther, 1868) (BMNH, ZSIC)

Boiga Fitzinger, 1826

115. B. multimaculata (Boie, 1827) (BMNH, BNHS, CAS, ZSIC)
 116. B. ochracea (Guenther, 1868) (BMNH, BNHS, CAS, ZSIC)
 117. B. quincunciata (Wall, 1908) (BMNH)
 118. B. cyanea (Dumeril & Bibron, 1854) (BMNH, BNHS, ZSIC)
 119. B. cynodon (Boie, 1827) (BMNH [as B. ocellata?], BNHS, ZSIC)

Ahaetulla Link, 1807

120. A. fronticinctus (Guenther, 1858) (BMNH, BNHS, ZSIC)
 121. A. prasinus (Boie, 1827) (BMNH, BNHS, ZSIC)
 122. A. nasutus (Lacepede, 1789) (BMNH, BNHS; ZSIC [As A. mycterizans.])

Family NATRICIDAE -- Modern Watersnakes & Allies

Rhabdophis Fitzinger, 1843

123. R. nuchalis (Boulenger, 1891) (BMNH)
 124. R. himalayana (Guenther, 1864) (BMNH, BNHS, ZSIC)
 125. R. subminiata (Schlegel, 1837) (BMNH, BNHS, ZSIC)
 126. R. nigrocincta (Blyth, 1856) (BMNH, ZSIC)
 127. R. chrysarga (Boie, 1827) (BMNH, ZSIC)

Amphiesma Dumeril & Bibron, 1854

128. A. venningi (Wall, 1910) (BMNH, BNHS, ZSIC)
 129. A. parallela (Boulenger, 1890) (BMNH, BNHS)
 130. A. khasiensis (Boulenger, 1890) (BMNH, BNHS, ZSIC)
 131. A. modesta (Guenther, 1875) (BMNH)
 132. A. stolata (Linnaeus, 1758) (BMNH, BNHS, CAS, ZSIC)

Xenochrophis Guenther, 1864

133. X. flavipunctata (Hallowell, 1860) (BMNH)
 134. X. punctulata (Guenther, 1858) (BMNH, ZSIC)
 135. X. piscator (Schneider, 1799) (BMNH, BNHS, CAS, ZSIC)

Pseudoxenodon Boulenger, 1890

136. P. macrops (Blyth, 1854) (BMNH, BNHS, ZSIC)

Macropisthodon Boulenger, 1893

137. M. plumbicolor (Cantor, 1839) (BNHS)

Sinonatrix Rossman & Eberle, 1977

138. S. trianguligera (Boie, 1827) (ZSIC)
 139. S. bellula (Stoliczka, 1871) (BMNH)
 140. S. percarinata (Boulenger, 1899) (BMNH)

Plagiopholis Boulenger, 1893

141. P. blakewayi Boulenger, 1893 (BMNH, BNHS)
 142. P. nuchalis (Boulenger, 1893) (BMNH, BNHS)

Rhabdops Boulenger, 1893

143. R. bicolor (Blyth, 1854)

Blythia Theobald, 1868

144. B. reticulata (Blyth, 1854) (BMNH, BNHS)

ADDENDA AND CORRIGENDA

In addition to the species above, for which specific Burmese records have been found, there are other species which are likely to occur there. In some cases there are records from countries on either side, but no explicit records from Burma. In other cases the known distributions of the snakes approach Burmese borders on one or more sides, but have not been recorded from Burma proper. In particular this is true of a number of species found in southern Thailand (Taylor, 1965), but which have not been reported from Tenasserim (e.g., Bungarus candidus, Maticora intestinalis, Calloselesma rhodostoma).

The list below provides information on possible additions to the fauna and also offers comments on records that appear to be in error.

Ahaetulla mycterizans (Linnaeus, 1758)

BURMA RECORDS: NONE, but occurs in Thailand at the Isthmus of Kra and may be found in Tenasserim.

Ahaetulla perroteti Dumeril & Bibron, 1854.

BURMA RECORDS: Pegu (ZSIC 12378). The specimen is correctly identified, but the locality is questioned on the label. Inasmuch as this species is restricted to southern India, the locality is undoubtedly in error.

Amphiesma beddomei (Guenther, 1864).

BURMA RECORDS: Chin Hills: Haka (BNHS 1595). This species is restricted to southern India. The specimen is probably misidentified.

Atretium yunnanensis Anderson, 1879.

BURMA RECORDS: NONE, but the genus is known from India and western Yunnan. It is likely to occur in Burma.

Bungarus candidus (Linnaeus, 1758).

BURMA RECORDS: NONE, but this Malayan species has been found above the Isthmus of Kra in adjacent Thailand, and should be looked for in Tenasserim.

Calloselesma rhodostoma (Boie, 1827).

BURMA RECORDS: NONE, but the species occurs in adjacent Thailand, both above and below the Isthmus of Kra, and should be found in Tenasserim.

Cylindrophis maculatus (Linnaeus, 1758)

BURMA RECORDS: "Burma" (USNM 129693). The specimen is correctly identified, but this species is found only in Ceylon, so the locality data are undoubtedly in error.

Gonyosoma frenata (Gray, 1853)

BURMA RECORDS: NONE, but this species is reported from both Assam (India) and Vietnam, and is expected in Burma.

Hydrophis cyanocinctus Daudin, 1803.

BURMA RECORDS: NONE, but the species occurs along the coast from the Persian Gulf to Japan and should be found along the Burmese coast.

Lycodon laoensis Guenther, 1864

BURMA RECORDS: NONE, but occurs in adjacent Thailand as well as in Vietnam and Laos. Probably to be found in Burma.

Lycodon subcinctus (Boie, 1827)

BURMA RECORDS: NONE, but this species occurs in adjacent southern China, Laos, and Thailand, and presumably awaits discovery in Burma.

Maticora intestinalis (Laurenti, 1768)

BURMA RECORDS: NONE, but this species occurs in adjacent southern Thailand and may occur in Tenasserim.

Oligodon quadrilineatus (Jan, 1866)

BURMA RECORDS: Rangoon (CAS-SU 8482). This species is of doubtful validity and previously has not been reported outside Thailand. Until the specimen can be reexamined, it appears best to refrain from adding it to the list.

Opisthotropis spp.

BURMA RECORDS: NONE, but various members of the genus are found in adjacent China, Vietnam, and Thailand. It is reasonable to expect it in northeastern Burma.

Trachischium fuscum (Blyth, 1854).

BURMA RECORDS: Rangoon (ZSIC 7042). The identification of this specimen is correct. Inasmuch as this is a Himalayan species with all other records from Assam and westward, it is evident that the locality data are in error.

Xenelaphis hexagonotus (Cantor, 1847).

BURMA RECORDS: Rangoon; Arakan (Theobald, 1868). This Malayan species has not been found by more recent workers and the report is questioned by Smith (1943). It requires some additional confirmation before its inclusion in the list is warranted.

BIBLIOGRAPHY OF BURMESE SNAKES

This list does not include all of the papers that relate to Burmese snakes, but an attempt has been made to include those that specifically refer to specimens collected in this country, together with some of the works on the snakes of adjacent regions. Additional references will be added when found.

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AN EXPLANATION ON SNAKE CLASSIFICATION

A number of taxa which may be new to the reader are used in the preceding checklist. This classification is based upon my interpretation of new and old data indicating the relationships of snakes. Additional morphological data and the new immunological information have suggested a drastic revision of the classification of snakes. Among the major changes indicated here are the following.

1. The various "burrowing pythons" appear to represent individual entries into a fossorial habitat. Attempts to group them into a single taxon, therefore, are in error.
2. The largest and most ancient division among living snakes is that between pythons and boas.
3. Anilius appears to be related to pythons, whereas Cylindrophis is a boid derivative. Their resemblances to one another are due to convergence toward a fossorial role.
4. The old family "Colubridae" included snakes of many different lineages. Four living families of (mainly Tropical) generalized snakes are distinguished from the advanced colubrids (s.s.) and natricids.
5. The vipers, pitvipers, elapids, and seasnakes retain characteristics that are more primitive than those found in the advanced colubrids and natricids. Therefore, the former cannot be derived from the latter.

These and other proposed changes were outlined in a recent combined meeting of the American herpetological societies (ASIH, HL, SSAR) in Ann Arbor, Michigan (June, 1988). A Prodromus of the changes has been prepared (Dowling, ms) and has been deposited in the Herpetological Library of the U.S. National Museum of Natural History. It will serve as a basic information source on the new classification until the data and classification are published formally.

An outline of this general classification follows.

H. G. Dowling
July 1988

Families and Higher Taxa of the Serpentes:
A New Classification.

ORDER SQUAMATA -- Scaly Reptiles.

SUBORDER SERPENTES -- Snakes.

+INFRAORDER CHOLOPHIDIA -- Extinct Snakelike Vertebrates.

- +Family Lapparentophiidae -- Lower Cretaceous
"Terrestrial Snake" (Precise age unknown; Algeria).
 - +Family Pachyophiidae -- Early Upper Cretaceous "Marine
Snake" (Cenomanian; Yugoslavia).
 - +Family Simoliophiidae -- Early Upper Cretaceous "Marine
Snake" (Cenomanian; France).
- [Two snakelike Upper Cretaceous fossils were described by
Haas (1979, 1980a,b). They were not placed by Carroll
(1988).]

INFRAORDER HENOPHIDIA-- Primitive Snakes.

- +Superfamily PALAEOPHIOIDEA -- Early Snakes.
 - +Family Dinilysiidae -- Upper Cretaceous "Snake"
(Senonian; Argentina).
 - +Family Palaeophiidae -- Early Cenozoic Seaserpents
(Upper Cretaceous to Upper Eocene; Worldwide).
 - [?]+Family Archaeophiidae -- Eocene Scaly Vertebrate
(Ypresian; Italy).

Superfamily PYTHONOIDEA -- Pythons & Allies.

- +Family Madtsoiidae -- Early Cenozoic Henophidian
(Eocene; South America, Africa, Madagascar).
- Family Pythonidae -- Pythons.
- Family Loxocemidae -- Mexican Burrowing Python.
- Family Xenopeltiidae -- Sunbeam Python.
- Family Calabariidae -- African Burrowing Python.
- Family Aniliidae -- Coral Python.

Superfamily BOOIDEA -- Boas & Allies.

- Family Boidae -- Boas.
- Family Erycidae -- Sandboas.
- Family Cylindrophiidae -- Pipesnakes.

Superfamily TROPIDOPHIOIDEA -- Woodsnakes & Allies.

- Family Tropidophiidae -- Woodsnakes.
- Family Bolyeriidae -- Mauritius Snakes.

INFRAORDER SCOLECOPHIDIA -- Blindsnakes.

Superfamily UROPELTOIDEA -- Slender Blindsnakes.

Family Uropeltidae -- Shieldtail Snakes.

Family Leptotyphlopidae -- Threadsnakes.

Superfamily TYPHLOPOIDEA -- Typical Blindsnakes.

Family Anomalepididae -- Primitive Blindsnakes.

Family Typhlopidae -- Typical Blindsnakes.

INFRAORDER CAENOPHIDIA -- Advanced Snakes.

Superfamily ACROCHORDOIDEA -- Ancient Watersnakes.

+Family Nigerophiidae -- Early Watersnakes

([?Lower] Paleocene; Niger).

Family Xenodermatidae -- Pebbled Swampsnakes.

Family Homalopsiidae -- Rearfanged Watersnakes.

Family Acrochordidae -- Asian Wartsnakes.

Superfamily DIPSADIOIDEA -- Generalized Snakes.

+Family Anomalophiidae -- Eocene Watersnake

(Lower Eocene; Italy).

+Family Russellophiidae -- Eocene Watersnake

(Lower Eocene; France).

Family Lamprophiidae -- Housesnakes & Allies

Family Psammophiidae -- Sandsnakes.

Family Xenodontidae -- Neotropical Snakes.

Family Dipsadidae -- Middle American Snakes.

Superfamily VIPEROIDEA -- Vipers & Allies.

Family Viperidae -- Vipers.

Family Crotalidae -- Pitvipers.

Superfamily ELAPOIDEA -- Front-fanged Snakes.

Family Elapidae -- Cobras & Allies.

Family Hydrophiidae -- Seasnakes.

Superfamily COLUBROIDEA -- Harmless Snakes.

Family Colubridae -- Racers & Allies.

Family Natricidae -- Modern Watersnakes.

+ = Extinct taxon.

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