NORTH CAROLINA REPTILES AND AMPHIBIANS OF HISTORICAL NOTE IN THE COLLECTION OF THE ZOOLOGICAL SURVEY OF INDIA

AARON M. BAUER

Department of Biology, Villanova University
Villanova, PA 19085-1699

INDRANEIL DAS

Institute of Biodiversity and Environmental Conservation,
Universiti Malaysia Sarawak, Sarawak, Malaysia

Abstract: The collection of the Zoological Survey of India in Calcutta contains several North American reptile and amphibian specimens of historical note. Three type specimens of snakes, two of which are still extant, currently regarded as junior synonyms of Farancia abacura, F. erytrogramma, and Virginia striatula, are among these specimens. The bulk of the mid-19th Century American herpetological material in Calcutta was obtained through a donation of a collection from the North Carolina Coastal Plain, probably from the vicinity of Jackson, Northampton County, to the Asiatic Society of Bengal in the mid-1850s.

Key words: Reptilia; Serpentes; North Carolina; Zoological Survey of India.

INTRODUCTION

The collection of the Zoological Survey of India (formerly the Indian Museum, and earlier, the Asiatic Society of Bengal) is large and historically significant and contains the type material associated with a large number of amphibian and reptile species. Among the noteworthy portions of the collection are specimens amassed by and/or reported on by workers such as Theodore Cantor (1809–1860), Edward Blyth (1810–1873), Thomas Jerdon (1811–1872), John Anderson (1833–1900), William Blanford (1832–1905), William Theobald (1829–1908), Ferdinand Stoliczka (1838–1874), William Sclater (1863–1944), and Thomas Nelson Annandale (1876–1924). The last herpetologist to make a comprehensive examination of the collection was Malcolm Smith, who reviewed much of the Indian Museum reptile material in preparing his volumes in the Fauna of British India series (1931, 1935, 1943). Unfortunately, Smith provided few explicit details about the status of the Asian types he borrowed and did not investigate the types of extralimital species. As a result, the condition of many of the 19th Century specimens in the Zoological Survey of India (ZSI) had, until the present, remained unknown—a situation exacerbated by the loan policies and curatorial inadequacies of the institution. Reptile types, however, have recently been reviewed by Das et al. (1998), who located many specimens previous thought or assumed to have been lost.

Although the bulk of the Zoological Survey of India herpetological collections, and its types, are based on material from India and adjacent Asian countries,
several specimens from North America, including the holotypes of two species of snakes, are also housed in Calcutta. A type of a third North American snake was once present in the collection, but appears now to be lost. Names associated with these type specimens have appeared sporadically in synonymies since their descriptions, but it appears that no workers in this century have examined them directly. We take this opportunity to present data on the two extant holotypes and to comment on the remaining North American amphibian and reptile specimens originally reported in the collection by Theobald (1868) and Sclater (1891). Although specimens from a number of American states and Canadian provinces are represented, the largest single collection is derived from North Carolina and is worthy of special note.

HISTORY

The first North American snakes to be reported on in the collection of the Asiatic Society of Bengal were Homolopsis crassa and Homolopsis parviceps, both described by Blyth in 1854. Both specimens were obtained by the Reverend F. Fitzgerald in North Carolina and donated to the Asiatic Society through the American consul. These specimens may have been accessioned into the Asiatic Society’s collection during the year prior to Blyth’s description (although an earlier date of accession is also possible). Blyth’s descriptions are short and incomplete, but are sufficient to identify the taxa concerned as the colubrids Farancia abacura and F. erytrogramma, respectively.

Theobald (1868) reviewed the herpetological specimens in the Asiatic Society’s collection and recorded the presence of the type of Homolopsis parviceps, but he did not mention the type of H. crassa. He also noted a wide variety of additional specimens collected by the Rev. F. Fitzgerald (occasionally listed incorrectly as J. Fitzgerald or T. Fitzgerald) in North Carolina. These primarily included common southern and mid-Atlantic lowland species (Table 1). Although he made little comment about most of these specimens, Theobald discussed three specimens of Cenchris contortrix [Agkistrodon contortrix]. One adult specimen was described as having keeled scales on the head and being pale brown with large squarish, dark brown blotches down each side, not united along vertebral line. Another adult and one young specimen “prob. of the variety named C. atrofuscus, Troost” were characterized by weakly keeled head scales, and large, smooth scales behind the eye. Theobald’s difficulty in assigning a name to these specimens may stem from the fact that the populations of eastern and central North Carolina have been identified as intergrading between the forms A. c. contortrix and A. c. mokasen (Palmer and Braswell, 1995).

Theobald listed two other snakes from North America in addition to the specimens attributed to Fitzgerald, including one Coluber quadriovittatus [Elaphe obsoleta quadriovittata], a specimen of unknown provenance. Theobald (1868) was doubtful of the identification of this specimen and provided some details of size, coloration, and squamation: 27 midbody scale rows; back keeled; no strips large, pierced between two nasals; small, squarish loreals; one large anteocular [preocular] scale; two small, equal postoculars; bifid anal; posterior frontals large; eight labials, with 3–4 entering the orbit; buff, darker on back, chain of darker oval spots on sides; spotless belly; 42 inches [total length?]. The features do not match typical yellow rat snakes precisely; however, they are consistent with a young
Table 1. Zoological Survey of India specimens of amphibians and reptiles collected in North Carolina by the Reverend F. Fitzgerald.

<table>
<thead>
<tr>
<th>Theobald (1868)</th>
<th>Sclater (1891)</th>
<th>Current Name</th>
<th>ZSI Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notophthalmus viridescens</td>
<td>—</td>
<td>Notophthalmus viridescens</td>
<td>?</td>
</tr>
<tr>
<td>Desmognathus niger*</td>
<td>—</td>
<td>Desmognathus</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>quadramaculatus</td>
<td></td>
</tr>
<tr>
<td>Spelerpes salmonae*</td>
<td>—</td>
<td>Gyrinophilus porphyriticus</td>
<td>?</td>
</tr>
<tr>
<td>Rana pipiens (tadpoles)</td>
<td>—</td>
<td>Rana sphenoecephala urticaria</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyla carolinensis</td>
<td>—</td>
<td>Hyla cinerea</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emys guttata</td>
<td>—</td>
<td>Clemmys guttata</td>
<td>?</td>
</tr>
<tr>
<td>Plestiodon laticeps</td>
<td>—</td>
<td>Eumeces laticeps</td>
<td>?</td>
</tr>
<tr>
<td>Abastor erythrogrammus</td>
<td>Hydrops erythrogrammus</td>
<td>Farancia erythrogramma</td>
<td></td>
</tr>
<tr>
<td>Holotype of Homolopsis parviceps Blyth 1854</td>
<td>8177</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coluber quadrivittatussb</td>
<td>Coluber obsoleta</td>
<td>Elaphe obsoleta quadrivittata</td>
<td>7349</td>
</tr>
<tr>
<td>Coronella sayi</td>
<td>Ophiobolus getulus</td>
<td>Lampropelis getula</td>
<td>7213–4</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>Cyclophis aestivus</td>
<td>7209–10</td>
</tr>
<tr>
<td>Farancia fasciata</td>
<td>Hydrops abacurus</td>
<td>Farancia abacura</td>
<td>8196</td>
</tr>
<tr>
<td>Holotype of Homolopsis crassa Blyth 1854</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Falconeria bengalensis*</td>
<td>Virginia striatula</td>
<td>Virginia striatula</td>
<td>7027</td>
</tr>
<tr>
<td>Tropidonotus fasciata</td>
<td>Tropidonotus sipedon</td>
<td>Nerodia sipedon</td>
<td>7518–22</td>
</tr>
<tr>
<td>Tropidonotus ordinatus</td>
<td>Tropidonotus sirtalis</td>
<td>Thamnophis sirtalis</td>
<td>7523–5</td>
</tr>
<tr>
<td>Cenchrus contortrix?</td>
<td>Ancistrodon contortrix</td>
<td>Agkistrodon contortrix</td>
<td>3090</td>
</tr>
<tr>
<td>Cenchrus atratusc</td>
<td>Ancistrodon contortrixc</td>
<td>Agkistrodon contortrix</td>
<td>3093</td>
</tr>
</tbody>
</table>

* Probably misidentified (see text); b Listed by Theobald without collector or locality; c Holotype of Falconeria bengalensis, catalogued as having been collected by A. Grote, but possibly collected by Fitzgerald; d Listed by Sclater (1891) as a specimen derived from the Asiatic Society of Bengal without data.

individual of this form and it is possible that this too, may have been collected by Fitzgerald. The second snake was not recognized by Theobald as North American, but was described as a new genus and species, Falconeria bengalensis, and was believed to have been obtained from A. Grote and to have been collected at Parinsnath (West Bengal). The true provenance of this specimen was not recognized until the specimen was reexamined by Sclater in 1891.

Sclater (1891), in his catalogue of snakes in the Indian Museum, provided further details about the North Carolinian specimens listed earlier by Theobald (1868), giving catalogue numbers for each and updating or correcting identifications (Table 1). He also listed more extensive snake collections from North America, including more than 120 specimens from Texas, Louisiana, Tennessee, Alabama, Minnesota, Massachusetts, Iowa, Oregon, Michigan, Kansas, Prince Edward Island, and especially Ontario, as well as the North Carolina specimens recorded by Theobald a generation earlier.

**TYPE STATUS**

Although we have not assessed the current status of most of the North American amphibian and reptile specimens in the Zoological Survey of India, a specific search was made for the three holotypes of the snakes mentioned above. Two of
the specimens were located and the third, the type of *Homolopsis crassa*, appears to have been lost or destroyed. We here provide comments on the types and on their nomenclatural histories.


*Holotype*: ZSI 8196. “North Carolina.” Presented by the Rev. F. Fitzgerald. The type of this species was not located in the ZSI collections during 1997–98.

*Present name*: *Farancia abacura abacura* (Holbrook, 1836).

*Remarks*: Neither Theobald (1868), who listed this specimen as *Farancia fasciata*, nor Sclater (1891), who listed it as *Hydrops abacurus*, indicated that the specimen had type status. ZSI 8196, however, appears to be the only specimen of *Farancia abacura* ever catalogued into the collection in Calcutta and it is clear that this was the specimen upon which Blyth (1854) based his description. Blyth’s counts of 200 ventral scales and 37 subcaudals clearly indicate that the holotype was a female.

Boulenger (1894) overlooked *Homolopsis crassa* in the second volume of the *Catalogue of Snakes*, but included it as a synonym of *Farancia abacura* in an addendum in Volume III (1896), without comment. The name *Homolopsis crassa* has not appeared in the synonymy of subsequent reviews of *F. abacura* (Cope, 1900; Smith, 1938; Karges and McDaniel, 1982; McDaniel and Karges, 1983).


*Holotype*: ZSI 8177. “North Carolina.” Presented by the Rev. F. Fitzgerald. Currently present in Calcutta and in good physical condition, although a kink in the neck, apparently the artifact of the removal of a tag, is present.

*Present name*: *Farancia erythrogramma erythrogramma* (Latreille in Sonnini and Latreille, 1802).

*Remarks*: The holotype measures 628 mm SVL, 137 mm tail length and possesses 19:19:19 scale rows around the body, 46 subcaudals, 166 ventrals, 2 anals, 7 supralabials (3rd and 4th in orbital contact), and 8 infralabials. Although the number of ventrals as well as the presence of 19 posterior scale rows are more typical of females, the large number of subcaudals confirms that the specimen is male (Palmer and Braswell, 1995).

Theobald (1868) listed the type as *Abastor erythrogrammus* with the indication that the name *Homalopsis parsicips* [sic] Blyth was a synonym. This same specimen was cited by Sclater (1891) as *Hydrops erythrogrammus* [sic] but was indicated as having originally been from the collections of the Asiatic Society of Bengal with no history, and as having originated only from “N. America.” Boulenger (1894), as with *H. crassa*, originally overlooked Blyth’s description, but subsequently included *H. parviceps* in the synonymy of *Abastor erythrogrammus* (Boulenger, 1896), without comment. *Homolopsis parviceps* has not been cited in subsequent taxonomic and nomenclatural reviews of *Farancia erythrogramma* (e.g., Cope, 1900; Neill, 1964; Mitchell, 1982).

*Falconeria bengalensis* Theobald, 1868.

*J. Asiatic Soc. Bengal* (extra number 88) 37:44.

*Holotype*: ZSI 7027 (formerly 13a ASB [Asiatic Society of Bengal]). “Parisnath” (West Bengal State, eastern India), subsequently emended to “N. America” by Sclater (1891). Collected by A. Grote, Esq. (fide Theobald 1868), changed or corrected to “purchased” by Sclater (1891). The specimen is present in Calcutta, but in poor condition. The holotype appears to have dried out at least once in the past.

*Present name*: *Virginia striatula* (Linnaeus, 1766).

*Remarks*: The holotype is apparently a juvenile, measuring only 134 mm SVL + 42 mm tail length.
Its 40 subcaudals and 117 ventrals fall within the ranges typical for males of the species (Palmer and Braswell, 1995).

*Falconeria bengalensis* continued to be treated as an Indian taxon by Theobald (1876) for some time, but Sclater’s (1891) inclusion of the name in the synonymy of *Virginia striatula* appears to have been accepted by the few subsequent authors who commented on the name. Boulenger (1893), for example, included it within the synonymy of *Haldea striatula* [=*Virginia striatula*] without comment. Although omitted from most subsequent synonymies (e.g., Cope, 1900), several recent publications reviewing the nomenclatural history of *Virginia* (Williams and Wallach, 1989; Rossman and Wallach, 1991; Powell et al., 1994) have included *Falconeria bengalensis* in the synonymy of *V. striatula*.

**DISCUSSION**

Palmer and Braswell (1995) reviewed the early history of herpetology in North Carolina, discussing several workers, among them Moses Ashley Curtis, an Episcopal minister, who prepared a manuscript on the herpetology of North Carolina in 1866. The manuscript was never published, but the document was preserved in the University of North Carolina Library, and Curtis has been remembered because of his substantial contributions to ornithology in the state (Simpson and Simpson, 1983). The Rev. F. Fitzgerald seems to have published nothing on herpetology himself and his contributions as a collector appear to have been overlooked because his material, sent to Calcutta, went unstudied by American herpetologists. Even Blyth’s (1854) names based on the snake types collected by Fitzgerald have faded into obscurity, as indicated by their absence from most modern synonymies (see above). Nonetheless, Fitzgerald’s collections were important—especially at the time, as herpetological specimens from North Carolina were poorly represented in museums. Indeed Baird and Girard’s (1853) catalogue of snakes in the Smithsonian Institution, published only one year before the description of *Homolopsis crassa* and *H. parviceps*, listed no snakes of any species from North Carolina. Further, one of the species collected by Fitzgerald, *Farancia erytrogramma*, has been considered as uncommon in North Carolina throughout the present century (Brimley, 1915; Palmer and Braswell, 1995).

Nothing is known of the Rev. F. Fitzgerald, his interest in natural history, or his connection to the Asiatic Society of Bengal (although he may have been an overseas member of the Society or a former visitor to or resident of Calcutta). It appears likely, however, that as a minister, Fitzgerald primarily lived and worked in a single area during the period in which his collections were made. If this is so, the species composition of his material (Table 1) clearly identifies his area of activity as the Coastal Plain of eastern North Carolina. Most of the species he collected are either widespread or restricted to the lower elevations of the eastern part of the state. Two exceptions are the salamanders, *Desmognathus quadramaculatus* and *Gyrinophilus porphyriticus*, which are upland species. These, however, may be misidentifications for *D. auriculatus* and *Pseudotriton montanus*, respectively. Such misidentifications might be reasonable given the limited sources and material available to Theobald in the 1860s. Of the reptile species collected by Fitzgerald, *Farancia erytrogramma* has the most restricted range in North Carolina, with specimen or literature records from only 29 countries, all of which
except Moore, in the Sandhills region, fall at least partly into the Coastal Plain region of the state (Palmer and Braswell, 1995).

Although precise identification of the localities of Fitzgerald’s specimens is not possible, information permitting the further restriction of the sites is provided by Yarrow (1883), who listed specimens of five species of snakes and one toad donated to the United States National Museum by a Fitzgerald (no initials or title). All of the snakes (Thamnophis sirtalis, Nerodia erythrogaster, Lampropeltis calligaster rhombomaculata, Carphophis amoenus, and Crotalus adamanteus [sic]) were apparently collected at Jackson, North Carolina (the locality of Jackson County given by Yarrow for Carphophis amoenus is obviously in error). All of these specimens were registered in the Museum catalogue in 1858, and had apparently been received sometime between the release of Baird and Girard’s catalogue in 1853 and January 1858. This dating strongly suggests that the donor is the same Fitzgerald whose specimens are present in Calcutta. Jackson, on the Roanoke River in Northampton County, is within the range of all of the species donated to the Asiatic Society by the Rev. F. Fitzgerald. However, two of the species donated by Fitzgerald, Farancia erythrogramma and Agkistrodon contortrix, as well as Virginia striatula, which he may have collected, have not previously been recorded from Northampton County (Palmer and Braswell, 1995). If indeed Jackson was the point of collection for these specimens, the holotypes of Homolops parviceps and Falconeria bengalensis serve as voucher specimens for new county records.

Rev. Fitzgerald’s donation, in addition to providing the holotype specimens of two, or perhaps three, snakes to the Asiatic Society of Bengal in 1854, was perhaps the largest herpetological collection from the Coastal Plain of North Carolina yet to enter a museum. Although the reason for Fitzgerald’s donation to this particular museum remains obscure, the use of these specimens by Blyth, Theobald, and Sclater and the rediscovery of the types in the Zoological Survey of India have shed light on a previously unappreciated chapter in the early herpetology of North Carolina.

Acknowledgments: We thank J. R. B. Alfred, Director, and S. K. Chanda, Officer-in-Charge, for permission to examine the Zoological Survey of India collection, and B. Datta-Gupta and N. Gayen for curatorial assistance. K. de Queiroz provided information regarding the Fitzgerald specimens in the collection of the U.S. National Museum.

REFERENCES CITED


Received 28 October 1998