

TAXONOMIC STATUS OF *HARPIOCEPHALUS HARPIA*
MADRASSIUS THOMAS, 1923 [CHIROPTERA, VESPERTI-
LIONIDAE] WITH COMMENTS ON OTHER DESCRIBED
FORMS UNDER THE GENUS *HARPIOCEPHALUS*
GRAY, 1842¹

P. K. DAS²

Based on a recently collected specimen from an ancient rain forest area of the Silent Valley, Kerala, *Harpiocephalus harpia madrassius* Thomas, 1923, has been synonymized with *Harpiocephalus harpia lasyurus* (Hodgson, 1847). Characters given for different described forms under the genus *Harpiocephalus* Gray, 1842, have been discussed and their external and skull-measurements appended. Since characters (e.g., size, colour and dental features) of different described forms overlap, further studies on fresh material might possibly prove that both the genus *Harpiocephalus* and the species *Harpiocephalus harpia* (Temminck) are monotypic. Distribution of *Harpiocephalus harpia* as also a note on its biology have been added.

INTRODUCTION

Harpiocephalus harpia madrassius Thomas, 1923, was described on the basis of two female specimens: one, the holotype, collected by Charles McCann of the Bombay Natural History Society from Perumal, Palni Hills, Madurai District, Tamil Nadu, India, and the other from the Malabar coast, Kerala, India, already present at the British Museum. Ever since McCann collected the female specimen mentioned above, on 29th March, 1922, no further specimen of *Harpiocephalus* was obtained from that part of the country. The Silent Valley Expedition of the Zoological Survey of India was able to procure a male example of this bat on 23rd January, 1980, from the original rain forest area. Attempts to identify this third and the only specimen beyond the types of this subspecies demanded fresh evaluation of the taxonomic status of *Harpiocephalus harpia*

madrassius Thomas in particular and the problem of subspecies in *Harpiocephalus harpia* (Temminck) in general.

TAXONOMIC STATUS OF *Harpiocephalus harpia*
madrassius THOMAS

Harpiocephalus harpia madrassius was established by Thomas (1923) on the basis of its differences in size (longer forearm) and colour from the nominate subspecies (type locality Java), and from the northeastern Indian population which he recognized as a distinct subspecies of *Harpiocephalus harpia*, namely *H. h. lasyurus* (Hodgson, 1847), type locality Darjiling, Darjiling District, West Bengal, India. An examination of these two parameters, viz., size and colour in the northeastern and southern Indian populations reveals the following:—

SIZE: Table 1 gives the external and skull-measurements of the Indian material of *Harpiocephalus harpia* present in the National Zoological Collections of India (Zoological Survey of India) along with those of other

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² Zoological Survey of India, 8, Lindsay Street, Calcutta 700 087.

material of this species present elsewhere (on the basis of published literature and personal communications).

A careful perusal of Table 1 shows that Thomas's (1923) contention of the alleged size differences between the northeastern and southern Indian populations is not correct. Again, according to Thomas (op. cit.), the females of *Harpiocephalus* are larger than the males, the difference being conspicuous in the skulls. Measurements shown in Tables 1 and 2 indicate that the females do have a tendency of being larger than the males. The male specimen from the Silent Valley, being a representative of the larger-sized subspecies *madrassius*, is expected to be larger than the males of the northeastern Indian subspecies *lasyurus*. But, this adult specimen, in fact, has a forearm-length (44.7) much smaller than those of the northeastern Indian males and is only slightly longer than that of the unsexed holotype of *Noctilinia lasyura* Hodgson, 1847, from Darjiling. The alleged size differences between these two Indian populations are, therefore, not borne out.

COLOUR: While describing his *Noctilinia lasyura*, presently regarded as *Harpiocephalus harpia lasyurus*, Hodgson (1847) gave its colour as "bright rusty above, sooty below; the hairs tipped hoary" to which Thomas (1923) adds, "the ground colour is much browner". The colour of *H. h. madrassius* has been given as "bright rufous, the grey woolly underfur contrasting with the red of the tips of the hairs" (Thomas 1923). The material (three skins and four specimens preserved in spirit) at my disposal provides an opportunity to examine the colour in the Indian examples of *Harpiocephalus harpia*. The original colour of the older specimens has certainly changed to some extent — that of the dry skins due to "foxing" which is but natural under the

tropical conditions of India and of the specimens preserved in spirit due to the dissolution of certain pigments of their pelage. Nevertheless, if these specimens are arranged in the descending order of depth of their coat-colour, the skins and specimens preserved in spirit can be arranged in the following manner (dates of collection are given in parentheses) —

Sikkim ♀ (skin, 1946), Silent Valley ♂ (skin, 1980), Darjiling ♂ (skin, 1851), Karsiyang ♀ (spirit, after 1881), Cherrapunji ♀ (spirit, 1868), Karsiyang ♂ (spirit, after 1881), Darjiling ♂ (spirit, 1872).

It is seen that no two specimens of the above lot are exactly of the same colour, and the male from the Silent Valley cannot be separated from the northeastern Indian population on the basis of its colour. In fact, that colour in Chiroptera is not of much taxonomic value has aptly been stated long ago by Dobson (1878), and in recent years subspecies based on colour differences are being synonymised (Agrawal 1973, Sinha 1980).

Also, the baculum of the specimen from the Silent Valley in structure and dimensions is similar to that of *H. h. lasyurus* studied by Agrawal and Sinha (1973).

Under these circumstances where the northeastern Indian population does neither differ in size, in the structure and measurements of the baculum nor in colour from the southern Indian population, I do not hesitate to synonymize *Harpiocephalus harpia madrassius* Thomas, 1923, with *Harpiocephalus harpia lasyurus* (Hodgson, 1847).

Following Tate (1941), Ellerman and Morrison-Scott (1951) doubtfully placed "*Vespertilio pearsonii* Tones, 1858" instead of *Lasiurus pearsonii* Horsfield, 1851, as a synonym of *Harpiocephalus harpia lasyurus* (Hodgson). Horsfield (1851) while describing his *Lasiurus pearsonii* gives sufficient description with

measurements and mentions the donor and the locality of the lone specimen on which his taxon is based. These are enough to date this species from Horsfield (1851). Tomes (1858) simply transferred *pearsonii* Horsfield, 1851, from *Lasiurus* to *Vespertilio*, re-examined and gave further descriptions of Horsfield's type (from Darjiling) as also of two other specimens, one from "Nepal" and the other from "Ambonya" (=Ambon), Molucca Isles, Indonesia. As such, Ellerman and Morrison-Scott's (1951) statement regarding the type locality, "Locality unknown" is erroneous and *Lasiurus pearsonii* Horsfield, 1851, should be brought back under the synonymy of *Harpiocephalus harpia* (Temminck), as was done by Dobson (1876, 1878) and Blanford (1891).

COMMENTS ON THE DESCRIBED FORMS UNDER THE GENUS *Harpiocephalus* GRAY

The genus *Harpiocephalus* was established by Gray (1842) to accommodate *Vespertilio harpia* Temminck, 1840, indicated by him as *H. rufus*, a *nomen nudum*. Dobson (1876, 1878) and Blanford (1891) considered *Noctilinia lasyura* Hodgson, 1847, as a synonym of *Harpiocephalus harpia* (Temminck), who also included species now maintained under the genus *Murina* Gray, 1842. Miller (1907) restricted *Harpiocephalus* to the type species only. Thomas and Wroughton (1909) considered the Himalayan form *H. lasyurus* (Hodgson) as a species distinct from the Javan *Harpiocephalus harpia*. Allen (1913) described his *Harpiocephalus rufulus* from Tonkin, Vietnam, on the basis of it being smaller than the Javan species, besides some differences in colour between these two forms. Wroughton (1918) also treated *lasyurus* as a full species. Thomas (1923) was not aware of *H. rufulus* Allen, 1913, and described his *Harpiocephalus mordax* from Mogok, northern Burma, as the

second species under the genus, *lasyurus* being considered by him as only a subspecies of *H. harpia*. He characterized *mordax* as being larger than *harpia*, "brightest rufous" in colour and having some structural peculiarities. Tate (1941) pointed out that one of the syntypes of *Vespertilio harpia* Temminck, 1840, was tagged with a skull of a *Myotis*. Ellerman and Morrison-Scott (1951) who treated *Harpiocephalus* as monotypic with *lasyurus* (Hodgson), *rufulus* Allen, *madrassius* Thomas and *mordax* Thomas as subspecies of *Harpiocephalus harpia*, had some doubt regarding the specific distinctness of *mordax*. Husson (1955) could trace out the original skull of one of the two syntypes of *Vespertilio harpia* Temminck, 1840, the skin of which was tagged with a skull of a *Myotis*, and designated the other syntype, the one already with its original skull, as the lectotype of *Vespertilio harpia* Temminck.

An analysis of characters given for different forms of *Harpiocephalus* show that they all, excepting *mordax*, differ from each other only in size and colour — *mordax*, in addition, is said to have some dental peculiarities.

Table 2 gives measurements of non-Indian forms of *Harpiocephalus* (compiled from published literature). It would be seen that the adult male holotype of *rufulus* Allen has a forearm-length (44.0) nearly equal to that of the holotype (unsexed, presumably a male) of *N. lasyura* Hodgson (44.3) or the male from the Silent Valley (44.7) (Table 1). Again, the type (a female) of *mordax* from northern Burma with a forearm-length of (54.0) closely approaches that of the type specimen (female) of *madrassius* (53.5) (Table 1). It would, therefore, follow that differences between the different described forms with respect to size are not of much consequence.

Again, different authors have described the colour of various species and subspecies of *Harpiocephalus* in different ways. Thus, the colour of *harpia* has been stated as bright rufous (Thomas 1923) and as orange rufous (Tate 1941), that of *lasyurus* as bright rusty (Hodgson 1847), of *rufulus* as duller red than *harpia* (Allen 1913) and of *mordax* as brightest rufous (Thomas 1923). All these colour descriptions are based on one or two specimens. But when a number of specimens from the same geographical area are examined for their colour, this character appears to be highly variable, as has been seen in the small series from northeastern India (*vide supra*). The variation in colour cannot be attributed to age, sex, season or to locality with certainty. Until the contrary is proved, the differences in colour should better be treated as individual variation only.

As has been claimed by Thomas (1923), the premolars of his *Harpiocephalus mordax* are slightly broader than the first molar, but in *H. harpia* they are narrower than the first molar. In two of the seven skulls of the Indian material at my disposal the last premolar of the upper jaw (pm^4) is slightly smaller than the first molar of the upper jaw (m^1), in two others they are almost equal in size, in still two others they are equal in size while in one specimen pm^4 is slightly larger than m^1 . Therefore, the dental peculiarity claimed for *mordax* is not tenable.

It is, therefore, seen that all the forms (species and subspecies) described under the genus *Harpiocephalus* vary widely in size (Walker *et al.* 1964, give the forearm-length as 40 to 54), colour and even in relative sizes of molars and premolars. These variations cannot be correlated with geographical areas (Kuroda, cited by Ellerman and Morrison-Scott 1951, and Lehmann 1955, reported *H.*

h. harpia from Taiwan and Fukien respectively). Further, it is quite pertinent here to recall Allen's (1913) statement that intergradation between the Indian and the Tonkin forms might be expected, and Tate's (1941) statement, "A specimen labelled as *H. lasyurus*, from Darjiling,, is at best a weak subspecies of *harpia*". Examination of further, preferably freshly collected material from all over its range of distribution (*vide infra*) is likely to prove that not only the genus *Harpiocephalus* is monotypic but *Harpiocephalus harpia* is also a monotypic species (as was thought by Dobson 1876, 1878, and Blanford 1891) in which growth possibly continues till late in the ontogeny.

DISTRIBUTION OF *Harpiocephalus harpia* (TEMMINCK)

Harpiocephalus harpia (Temminck), as understood above, has, so far, been reported from Kerala (Malabar coast, Silent Valley), Tamil Nadu (Palni Hills), West Bengal (Jalpaiguri District and Darjiling District), Sikkim (hereby reported for the first time, see above and Table 1) and Meghalaya (Cherapunji) in India; northern Burma (Mogok); southeastern China (Fukien); Taiwan; Viet-nam (Laokai); Thailand (Lekagul and McNeely 1977); Andalus (=Sumatra), Java and Molucca Isles (Ambon) in Indonesia. Tomes (1858) mentions a specimen from Nepal. This specimen was sent by Hodgson who, incidentally, never collected this species in Nepal but did so only in Darjiling (Scully 1888). Thomas's (1923) "Bhotan" refers to the "Bhutan Duars" of the Bombay Natural History Society's Mammal Survey which is to be identified with the present Jalpaiguri District of northern West Bengal and not with the sovereign State of Bhutan.

TABLE

EXTERNAL AND SKULL-MEASUREMENTS (IN MILLIMETRES) OF *P*

Sl. No.	Coll. No./ Regd. No.	Collector & Date of collection	Locality	Sex	<i>Fa</i>	<i>Tl</i>	<i>E</i>	<i>Tr</i>	<i>Tb</i>	<i>F&Cl</i>
1.	ZFMF —	— 27 Sep 1946	Kuatun, Fukien, China	♂	48.0					
2.	MCZ 14206	— 3 Jan 1912	Lao-kai, Tonkin, Viet-nam	♂	44.0					
3.	RMNH 14984	M. Bartels 21 Apr 1935	Mount Pangrango, northeast of Mount Géde, western Java	♂	45.6			7.0	19.5	11.0
4.	RMNH 15324	M. Bartels 29 May 1934	Tjigoenoeng river, south of Mount Géde, western Java	♂						
5.	BM(NH) 4.4.27.1	H. Hampton —	Mogok, northern Burma	♀	54.0	46.0	19.0			
6.	RMNH 13472	J. D. Pasteur — Oct 1891	Mount Géde, western Java	♀	48.5	47.0		8.5	22.0	10.0
7.	USNM 154681	— —	Buitenzorg, Java	♀	48.0					
8.	BM(NH) —	— —	Java	♀	49.5					
9.	BM(NH) —	— —	-do-	♀	50.0					
10.	BM(NH) —	— —	-do-	♀	50.5					
11.	USNM —	Owen Bryant Expe- dition to Java, 1909	Buitenzorg, Java	?	49.0					
12.	RMNH 13470	S. Müller 1826-1836	Southeastern side of Mount Géde, western Java	?	45.0	45.0		7.5	20.0	11.0
13.	RMNH 13471	-do-	-do-	?	49.5				21.5	12.0



Das, P K. 1986. "TAXONOMIC STATUS OF HARPIOCEPHALUS-HARPIA-MADRASSIUS THOMAS 1923 CHIROPTERA VESPERTILIONIDAE WITH COMMENTS ON OTHER DESCRIBED FORMS UNDER THE GENUS HARPIOCEPHALUS GRAY 1842." *The journal of the Bombay Natural History Society* 83, 311–316.

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