

ON A COLLECTION OF CHEWING-LICE (PHTHIRAPTERA :
INSECTA) FROM NEPAL

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Piaget (1881) is the earliest report on the chewing-lice from Nepal. Kellogg & Paine (1914) is the first systematic work dealing with Indian Museum collections (now National Zoological collections of the Zoological Survey of India), some of which were collections from Nepal. Unfortunately, the four species from Nepal included in it were lost during River Varuna floods at Varanasi (cf. Lakshminarayana, 1982a), and no longer available in Z. S. I., collections. Since then stray reports appeared from time to time. Emerson (1971, 1973) also include species reported from Nepal, on birds and mammals respectively based on his collections. In addition to these published records, a few species are available in the British Museum (Nat. History), London, which the author examined during his visit, and some of them have also not been reported in print. Lakshminarayana (1979a, 1982b) included so far known species including the non-recorded species referred to. Thus so far, 32 genera and 83 species have been recorded on Nepalese birds and mammals.

My erstwhile esteemed colleague Dr Biswamoy Biswas carried out an ornithological survey in Nepal during 1947, and incidentally collected some specimens from these birds. These collections were placed at the author's disposal for study. The following is a report on this material together with some species generously donated by Dr. K. C. Emerson, and now incorporated in Z. S. I. collections. Some of the species have now been recorded for the first time from Nepal, while others are on new host species/subspecies, and therefore of interest.

Reference is invited to Lakshminarayana (1972, 1975) for literature from India and adjacent countries including Nepal. In the literature cited in the end, all references mentioned under synonymy, those references listed in Keler (1960), Eichler *et al.* (1969, 1973), and Lakshminarayana (1972, 1975) have not been provided for brevity, and references not given in these works alone are cited. The measurements are given in mm.

SYSTEMATIC ACCOUNT

Order : PHTHIRAPTERA
 Sub-order : AMBLYCEROPHTHIRINA
 Family : LAEMOBOTHRIIDAE

1. *Laemobothrion maximum* (Scopoli, 1763)

(Pl. I, figs. 1-2 ; Pl. II, figs. 1-4)

Pediculus maximus Scopoli, 1763. *Ent. Carniolica* : 382. Type host : (*Falco buteo*)
Buteo buteo (Linne).

Liotheum (*Laemobothrion*) *giganteum* Nitzsch, 1818. *German's Mag. Ent.*, 3 : 301.
Nomen novum for *maximus* Scopoli, etc.

Laemobothrion indica Sen, 1942. *Indian J. vet. Sci. Anim. Husb.*, 12 : 169. Type host :
Milvus migrans govinda Sykes.

"*Pediculus maximus*" : Clay & Hopkins, 1951. *Bull. Br. Mus. nat. (Ent.)*, 2 (1) : 5.

Laemobothrion maximum : Hopkins & Clay, 1952. *A Check List of Genera and species of Mallophaga* : 185 ; Nelson & Price, 1965. *J. Med. Entomol.*, 2 (3) : 253, figs. 1, 2, 8, 12, & 16-18 ; Price & Emerson, 1969. *Proc. ent. Soc. Wash.*, 69 (3) : 251 ; Lakshminarayana, 1979. *Rec. zool. Surv. India*, 75 : 115.

Only the more important synonymies are given here, and for a fuller list attention is invited to Nelson & Price (1965). These authors thoroughly reviewed the species of *Laemobothrion* off Falconiformes and concluded only four species are valid though several names were given to local populations or on hosts in various parts of the world. Lakshminarayana (1970) discussed the evolutionary trends in the *Laemobothrion*--complex, and recognized the following genera, viz., *Laemobothrion* Nitzsch parasitic on Falconiformes, *Eulaemobothrion* Ewing on Gruiformes, *Ciconicola* Lakshminarayana on Ciconiiformes (*Hagedashia*), and *Ornithopeplechthos* Eichler on Galliformes (*Opisthocormus* only).

Clay & Hopkins (1951, 1954, 1960) discussed the early literature and recognized *L. maximum* Scopoli as the valid name for this species. Nelson & Price (*op. cit.*) provided excellent redescription.

The specimens collected now from *Milvus migrans lineatus* (J. E. Gray) are referable to *L. maximum* (Scopoli) (Pl. 1 figs 1-2 ; Pl. 2 figs. 1-4) by the key characters, viz., sitophore sclerite of the hypopharynx with two large holes and more or less reduced U-shaped structure (Pl. 1 fig. 1) ; spiniform setae on the proximodorsal aspect of the femora II less than 4 ; a medial unpigmented area to the abdominal tergites absent ; and absence of a postvulval pigment spot (cf. Nelson & Price, 1965). Male genitalia as in Pl. 1 fig. 2 ; Pl. 2 fig. 2.

Material : Four ♂♂ and eight ♀♀ off *Milvus migrans lineatus* (J. E. Gray) (B 1/21.vi.1947), Hitaura, 21.vi.1947, coll. B. Biswas (Reg. Nos. 679/H 16 (2♂♂, 1♀), 680/H 16 (2♀♀), 904/H 16 (1♀), 905/H 16 (1♀), & 906/H 16 (1♀), & 907/H 16 (1♂, 2♀♀).

Measurements

| | <i>Male</i> | | <i>Female</i> | |
|-------------------------|-------------|-----------|---------------|-----------|
| | Length | Width | Length | Width |
| Head | 1.02-1.05 | | 1.16-1.30 | |
| Pre-antennal Temples | | 0.88-0.95 | | 0.98-1.02 |
| | | 1.09-1.28 | | 1.30-1.33 |
| Prothorax | 0.63-0.88 | | 0.81-0.84 | 0.98-1.02 |
| Pterothorax | 0.91-1.02 | 1.26-1.33 | 1.02-1.05 | 1.58-1.65 |
| Abdomen | 3.2-3.6 | 1.65-1.75 | 4.24-4.77 | 2.1 |
| Genitalia | 1.37-1.61 | | | |
| Total | 5.8-6.3 | | | |

Remarks : This species has been reported from various parts of the world on different species of Falconiformes including *Milvus migrans lineatus* (J. E. Gray) on which the present collections were made and attention is invited to Nelson & Price (*op. cit.*) for known hosts.

In India and adjacent, the species was reported as *L. titan* on (*Baza jerdoni*) *Aviceda jerdoni* (Blyth) from Kurseong (Kellogg & Nakayama, 1916), as *L. giganteum* from Shembaganur and Madurai (Kéler, 1937), as *L. indicum* on *Milvus migrans govinda* Sykes from India (Sen, 1952), on the same host from Lyallpur, Pakistan, (Ansari, 1951), as *L. circi* on *Circus ae. aeruginosus* (Linne) from India (Clay & Hopkins, 1954), as *L. siddiqui* on *Circaetus g. gallicas* (Gmelin) from Pakistan, and as *L. hieraeti* on (*Hieraetis pennatus*) *Hieraetis pennatus* (Gmelin) from Shujaval, Pakistan (Ansari, 1955, 1956 a, b); *L. maximum* from *Milvus/migrans/lineatus* from Burma, *Haliastur indus* (Boddaert) from Sri Lanka and India, *Accipiter badius* (Gmelin), *Buteo rufinus* (Cretzschmar) and *Butastur teesa* (Franklin) from India (Nelson & Price, 1965). The find on *M. migrans lineatus* (Gray) though on a known host is the first record from Nepal. These specimens are also slightly smaller than those studied by Nelson & Price (1965) and Clay & Hopkins (1954).

Lakshminarayana (1970) while discussing the evolutionary trends in *Laemobothrion*-complex, placed *L. maximum* (Scopoli) at a higher plane than *L. vulturis* (J. C. Fabricius) on the basis of sitophore sclerite with in *Laemobothrion sens. str.*

Family : MENOPONIDAE

2. *Amyrsidea minuta* Emerson, 1961

(Pl. I, fig. 3 ; Pl. II, fig. 5)

Amyrsidea minuta Emerson, 1961. *Fla. Entomol.*, 44 (3) : 117, figs. 1-3. Type host : *Pavo cristatus* Linne.

Clay (1947) pointed that *Amyrsidea* off *Pavo cristatus* contain apparently two species of which the larger one was described as *A. phaeostoma* (Nitzsch), while the smaller remained undescribed. The smaller form was described as *A. minuta* in Emerson (1961) from material collected on the type host from Canada, British Isles, and United States of America. While working on *Amyrsidea* from India, the present author requested Dr Emerson for a ♂ and ♀ of *A. minuta*. Dr Emerson was kind enough to donate them from material collected from Nepal in his project.

Though the description was meagre, the excellent figures of Emerson (1961) readily help us in identifying the species.

These specimens along with those collected by Dr B. Biswas from Halon Valley, Madhya Pradesh (India) showed some minor variations which may be worth mentioning. (Pl. 2 fig. 5). Occipital margin bears 8 long setae, posterior prothoracic margin is fringed with 12-13 setae in ♀ and 14 in ♂, plus a spine-like seta in the middle. Hind femora with brush of setae of 15 in ♀, and 19-23 in ♂. Male genitalia as in (Pl. 1 fig. 3). Vulval margin is provided with 8 setae.

Material : One ♂ and one ♀ off *Pavo cristatus* Linne, Bhogbhanpur, Banke Dist., Nepal, 5.v. 1968, coll K. C. Emerson (coll. No. NP 460) Reg. No. 776/H16).

Measurements

| | <i>Male</i> | | <i>Female</i> | |
|-------------|-------------|-------|---------------|-------|
| | Length | Width | Length | Width |
| Head | 0.21 | | 0.25 | |
| Pre-ocular | | 0.32 | | 0.29 |
| Temples | | 0.35 | | 0.42 |
| Prothorax | 0.18 | 0.31 | 0.21 | 0.36 |
| Pterothorax | 0.18 | 0.31 | 0.18 | 0.45 |
| Abdomen | 0.79 | 0.37 | 0.86 | 0.59 |
| Genitalia | 0.31 | | | |
| Total | 1.33 | | | |

Remarks : Emerson (1961) stated that this species can be easily recognized by its short parameres which are little curved distally, and endomeres in male. It has been reported from Vancouver ; London ; Bridgnorth, Shropshire ; New Orleans, Louisiana : Portland, Oregon ; McAllen, Texas. The credit of the present record from Nepal should infact, goes to Dr Emerson, though not reported by himself. Further it also confirms, *P. cristatus* as a natural host for this species, since the type material was collected from zoo garden host. The present record is the first report from Nepal, which together with Halon Valley material also forms the first report from the Indian Region.

Sub-Order : ISCHNOCEROPHTHIRINA

Family : PHILOPTERIDAE

3. *Goniodes ocellatus* (Rudow, 1869)

(Pl. I, figs 4-6 ; Pl. II, figs 6-7)

Goniocotes ocellatus Rudow, 1869. *Beitr. Kennt. Malloph.* : 23. Type host : (*Nycthemerus linearis*) *Lophura nycthemerus lineatus* (Vigors).

Goniocotes dentatus Rudow, 1870. *Z. ges. Nat. Wiss.*, 35 : 476. Type host : (*Nycthemerus linearis*) *Lophura nycthemerus lineatus* (Vigors).

Goniocotes dentatus : Piaget, 1880. *Pediculines* : 232.

Goniodes dentatus : Clay, 1940. *Proc. zool. Soc. Lond.*, (B) 110 : 53, figs. 35, 36, & 37 ; Emerson, 1973. In McClure & Ratanaworabhan's *Some ectoparasitee of the birds of Asia* : 91.

Goniodes ocellatus : Hopkins & Clay, 1952. *A Check List of Genera and species of Mallophaga* : 157 ; In McClure & Ratanaworabhan's *Some ectoparasites of the birds of Asia* : 91 ; Lakshminarayana, 1979. *Rec. zool. Surv. India*, 75 : 107.

Rudow (1869) described the species from (*Nycthemerus linearis*) *Lophura nycthemerus lineatus* (Vigors) as *Gonicotes ocellatus*, and in a later paper as *G. dentatus* (Rudow, 1870). Since the original description seems to be that of a female *Goniodes* from that host, and the author himself compared with related *Goniodes* spp., Clay (1940) treated it as *Goniodes* and not as *Goniocotes* and used the specific appellation *dentatus*. This was however, corrected to *G. ocellatus* (Rudow) for priority reasons in Hopkins & Clay (1952). Emerson (1973) unfortunately used both the names in his list of ectoparasites of the birds of Asia.

Clay (1940) included this species in Group I of *Goniodes* in her revisionary studies. This group is fairly a large one with species having larger bodies, head showing sexual dimorphism, male (Pl. 1 fig. 4 ; Pl. 2 fig. 6) with little and female with greatly expanded temples, (Pl. 2 fig. 7) ; partly membraneous coni, antenna with or without an appendage

to the enlarged segment I, III produced in male, but simple and filiform in female. Meso-metasternal setae absent. Male genital opening unmodified, bifid process to the internal genital organs absent in the female, vulva with setae concentrated at the lateral corners, a spinous process present on the genital region. The specimens under discussion are referable to this group and *G. ocellatus* in particular. It is characterised as follows: Head as in Pl. 1 fig 4 and Pl. 2 figs 6 & 7. Coni small, antennal segment I enlarged bearing a small appendix, occipital angles in female sharp and temples produced. Prothorax rectangular, pterothorax trapezoidal with two lateral and four marginal setae on each side. Abdomen oval with two sterno-central setae to segments I-VII, and the anterior ones may have 2-4 additional setae, tergo-central setae to the female 6-8. Male genitalia characteristic (Pl. 1 fig. 5) reaching near the base of hind coxae. Terminal segments of the female as in (Pl. 1 fig. 6). with setae at the lateral corners of the vulva and with pediculate spiniform setae.

Material: Four ♂♂ and four ♀♀ from *Lophura leucomelana* (Latham), Nepal, 18.vi.1947, coll. *B. Biswas* (Reg. Nos. 628/H 16 (♂), 629/H 16 (♂, ♀), 630/H 16 (1♂, 2♀♀, 1 X), 824/H 16 (1♂, 2♀♀), 825/H 16 (2♂♂, 1♀)).

Measurements

| | <i>Male</i> | | <i>Female</i> | |
|-------------|-------------|-----------|---------------|-----------|
| | Length | Width | Length | Width |
| Head | 0.66-0.69 | 0.72-0.76 | 0.72-0.76 | 0.94-1.08 |
| Prothorax | 0.32-0.36 | 0.43-0.47 | 0.32-0.36 | 0.40-0.47 |
| Pterothorax | 0.29-0.36 | 1.04-1.12 | 0.32-0.43 | 1.01-1.22 |
| Abdomen | 1.22-1.33 | 2.09-2.23 | 1.22-1.33 | 1.26-1.33 |
| Genitalia | 0.81-0.86 | | | |
| Total | 2.09-2.23 | | 2.09-2.66 | |

Remarks: Clay (1940) reported the species off (*Gennaeus leucomelanas hamiltonii*) *Lophura leucomelana hamiltonii* (J. E. Gray) on a captive bird from Himalaya in London zoo, and also Central Himalaya (Nepal?), on (*G. l. leucomelanos*) *L. leucomelana* (Latham) from Nepal, (*G. nyctemerus horsfieldii*) *L. leucomelana lathamii* (J. E. Gray) from Assam, (*G. n. oatesi*) *L. leucomelana oatesi* (Ogilvie-Grant) from Burma. Specimens off *Pucrasia m. macrolopha* (Lesson) from Himalaya, and *P. m. biddulphi* Marshall from Kashmir, India according to that author are indistinguishable from *G. ocellatus*. Piaget (1880) reported it on the

type host. The present material off *Lophura leucomelana* (Latham) was collected from a wild bird shot by Dr. Biswas confirms it as a natural host.

4. *Goniodes mayuri* (Lakshminarayana & Emerson, 1971)

(Pl. I, figs. 7 & 8 ; Pl. II, fig 8)

Goniocotes mayuri Lakshminarayana & Emerson, 1971. *Oriental Ins.*, 5 (1) : 98, figs. 5-9. Type host : *Pavo cristatus* Linne.

Goniocotes rectangulatus Nitzsch : Emerson & Elbel, 1957, *Proc. Ent. Soc. Wash.*, 59 (5) : 241, fig. 11 (Figure only) ; Emerson, 1964. *Check List of the Mallophaga of North America (North of Mexico)*, Pt. I : 60 (Error).

Goniocotes mayuri : Lakshminarayana, 1979. *Rec. zool. Surv. India*, 75 : 102 ; Lakshminarayana, 1982. *Misc. Publ. Occ. pap. Rec. zool. Surv. India*, No. 33 : 13.

Goniodes mayuri : Lakshminarayana, 1982. *Rec. zool. Surv. India*, 80 : 78.

Goniodes mayuri was originally well described and figured by Lakshminarayana & Emerson (1971). Following after Hopkins & Clay (1952) it was placed under the genus *Goniocotes* along with *Gc. parviceps* (Piaget) the other member in the sympatric pair with which it was confused. The male of *G. mayuri* is separable from *G. parviceps* in the temporal margin slightly constricted, marginal temporal carina narrow, provided with smaller and thinner temporal marginal setae, antennal appendage with a lanceolate seta ; nearly rectangular prothoracic margins ; abdominal tergite strongly projecting into thorax anterolaterally, tergite VII with 4 setae, terminal abdominal tergite with 6 long setae, and by the presence of characteristic symmetrical genitalia (Pl. 1 fig. 8 ; Pl. 2 fig. 8) as against the asymmetrical ones in *parviceps*. The females of both the species are difficult to separate : however, the female of *mayuri* is usually of larger size, the terminal abdominal tergite provided with 8 setae, and a prominent internal circular-shaped vulval chamber.

Material : One ♂ off *Pavo cristatus* Linne, Tamispur, Navalpur, Parasi Dist., 15.ii.1968, Coll. R. E. Lewis (Iowa State Univ. Ames). Coll. No. Np. 313 (Paratype), (Reg. No. 668/H 16 (♂) (Dr Emerson's donation).

For measurements cf. Lakshminarayana & Emerson, 1971.

Remarks : Lakshminarayana & Emerson (1971, 1978), Lakshminarayana (1977, 1979 b, c), Lakshminarayana & Price (1980) discussed the evolutionary trend in *G. mayuri* and *G. parviceps* and the evolution of the hosts involved viz., *Pavo cristatus* Linne and *P. muticus* Linne, the secondary infestation and establishment, and the role of Asymmetry in the speciation of the lice.

5. *Lipeurus brunneipictus* (Giebel, 1877)

(Pl. I, fig. 9 ; Pl. II, fig. 9)

Nirmus brunneipictus Giebel, 1877. *Z. ges. Nat. Wiss.*, 49 : 530. Type host : (*Lophalector vieillotii*) *Lophura rufa* (Raffles).

Lipeurus intermedius Piaget, 1880. *Pediculines* : 368, Pl. 29 fig. 7. Type host : (*Euplocamus ignitus*) *Lophura ignita* (partim).

Degeeriella brunneipicta : Harrison, 1916. *Parasitology*, 9 : 109.

Lipeurus brunneipictus : Clay, 1938. *Proc. zool. Soc. Lond.*, (B) 108 : 121, figs. 4e, 5e, 7c & 9a ; pl. 2 fig. 1 ; Hopkins & Clay, 1952. *A Check List of Genera and species of Mallophaga* : 192.

Clay (1938) while revising the mallophaga of gallinaceous hosts, stated that *Lipeurus intermedius* Piaget (1880) was based on composite species viz., a male of *brunneipictus* and female of *Oxylipeurus piageti* Clay (later emended to *piagetinus* in Hopkins, 1950). The author further remarked that some of the females in Piaget's collections resemble the drawings of *L. brunneipictus* provided by Dr Kéler based on Giebel's material (before part of it was destroyed in the Halle Museum now housed in Museum fuer Naturkunden der Humboldt Universität, Berlin and not available during the present author's visit and apparently lost (of. Goellner-Scheiding, 1973).

The material under study comprise four ♀ ♀ from *Lophura leucomelana* (Latham) (Pl. 2 Fig. 9) resemble very much the female of *L. brunneipictus* (Giebel) *sensu* Clay (1939), with very minor variations. The ♀ of this species is quite close to the ♀ of *L. keleri* Clay, but differs from the latter by the narrow preantennal region and chaetotaxy of the genital region (Pl. 1 Fig. 9). The vulval setae are longer ranging from 8-10 in a row and another series of 4-6 spiniform setae above.

Material : Four ♀ ♀ from *Lophura leucomelana leucomelana* (Latham) (B.15/18/4/47), Nepal, 18.iv.1947. Coll. B. Biswas (Reg. Nos. 620/H 16 (♀), 621/H 16 (2 ♀ ♀), 622/H 16 (♀)).

Measurements

| | | <i>Female</i> |
|--------------|-----------|---------------|
| Head | 0.48-0.52 | |
| Pre-antennal | | 0.28-0.35 |
| Temples | | 0.35-0.38 |
| Prothorax | 0.14-0.16 | 0.22-0.27 |
| Pterothorax | 0.25-0.26 | 0.46 |
| Abdomen | 1.22-2.0 | 0.39-0.49 |
| Total | 2.16-2.25 | |

Remarks : Clay (1939) reported the species from skins of *Lophura rufa* (Raffles) from Sumatra, and one male from *L. i. ignita* (Shaw) in Piaget's collections. Though, Kellogg reported the occurrence of *L. Intermedius* Piaget on *Pucrasia melanolopha* (Lesson), on examination the material was found conspecific with *Reticuligeurus pucrasia* (Clay). The present record is therefore interesting for two reasons viz., firstly, the host is a new record, and secondly the species is reported for the first time from the Indian Region. Although Emerson (1973b) recorded *L. introductus* Kellogg on *Lophura leucomelana* the present specimens appear more like *brunneipictus* only.

6. *Upupicola upupae* (Schrank, 1803)

(Pl. I, fig. 10 ; Pl. II, fig. 10)

Pediculus upupae Schrank, 1803. *Fauna Boica* : 189. Type host : (Wiedehopf) *Upupa e. epops* Linne.

Docophorus upupae Denny, 1842. *Mon. Anopl. Brit.* : 45, 92, pl. 8, fig. 1. Type host : *Upupa e. epops* Linne.

Nirmus melanophrys Nitzsch, 1866. In Giebel's *Z. ges. Nat. Wiss.* 28 : 369. Type host : *Upupa e. epops* Linne.

Nirmus melanophrys : Giebel, 1874. *Insecta Epizoa* : 146 ; Piaget, 1880. *Pediculines* : 149, pl. 12 fig. 7 ; Kellogg, 1908. *Genera Insectorum (Mallophaga)*, 66 : 27.

Philopterus upupae : Harrison, 1916. *Parasitology*, 9 : 106.

Degeeriella upupae : Harrison, 1916. *Parasitology*, 9. Not mentioned under *Degeeriella*, though a reference was indicated on p. 106 ; Harrison, 1916, *Parasitology*, 9 : 125, a *nomen nudum* ; Séguy, 1944, *Faune de France*, 43 : 309, fig. 470.

Degeeriella melanophrys : Harrison, 1916, *Parasitology*, 9 : 117.

Upupicola melanophrys : Ansari, 1947. *Proc. nat. Inst. Sci. India*, 13 (6) : 283 ; Hopkins & Clay, 1952. *A Check List of Genera and species of Mallophaga* : 360.

Upupicola upupae : Hopkins & Clay, 1952. *A Check list of Genera and species of Mallophaga* : 361 ; Ansari, 1966. *Indian J. Ent.*, (1955), 17 (9) : 397 ; Ansari, 1959. *Indian J. Ent.*, (1958), 20 (2) : 91 ; Clay, & Hopkins, 1960. *Bull. Br. Mus. nat. Hist. (Ent.)*, 9 (1) : 12, figs. 13-18, pl. 2 figs. 1 & 2.

Schrank (1803) described the species from *Upupa e. epops* Linne, which was believed identical with Piaget's figure of *Nirmus melanophrys* Nitzsch (Piaget, 1880), and the description in Giebel (1866, 1874), a sketch in Nitzsch's manuscript, and Piaget's specimens labelled as *N. melanophrys* in British museum (Nat. Hist.) (cf. Clay & Hopkins, 1960). Denny (1842) independently described *Docophorus npupae* for specimens off the same host. His syntypes found in British Museum (Nat. Hist.) were also found to be identical with *U. upupae*. Harrison (1916) considered *upupae* Schrank as a *Philopterus*, and *upupae* Denny as a *Degeeriella*, and *melanophrys* Nitzsch as conspecific with *D. upupae*.

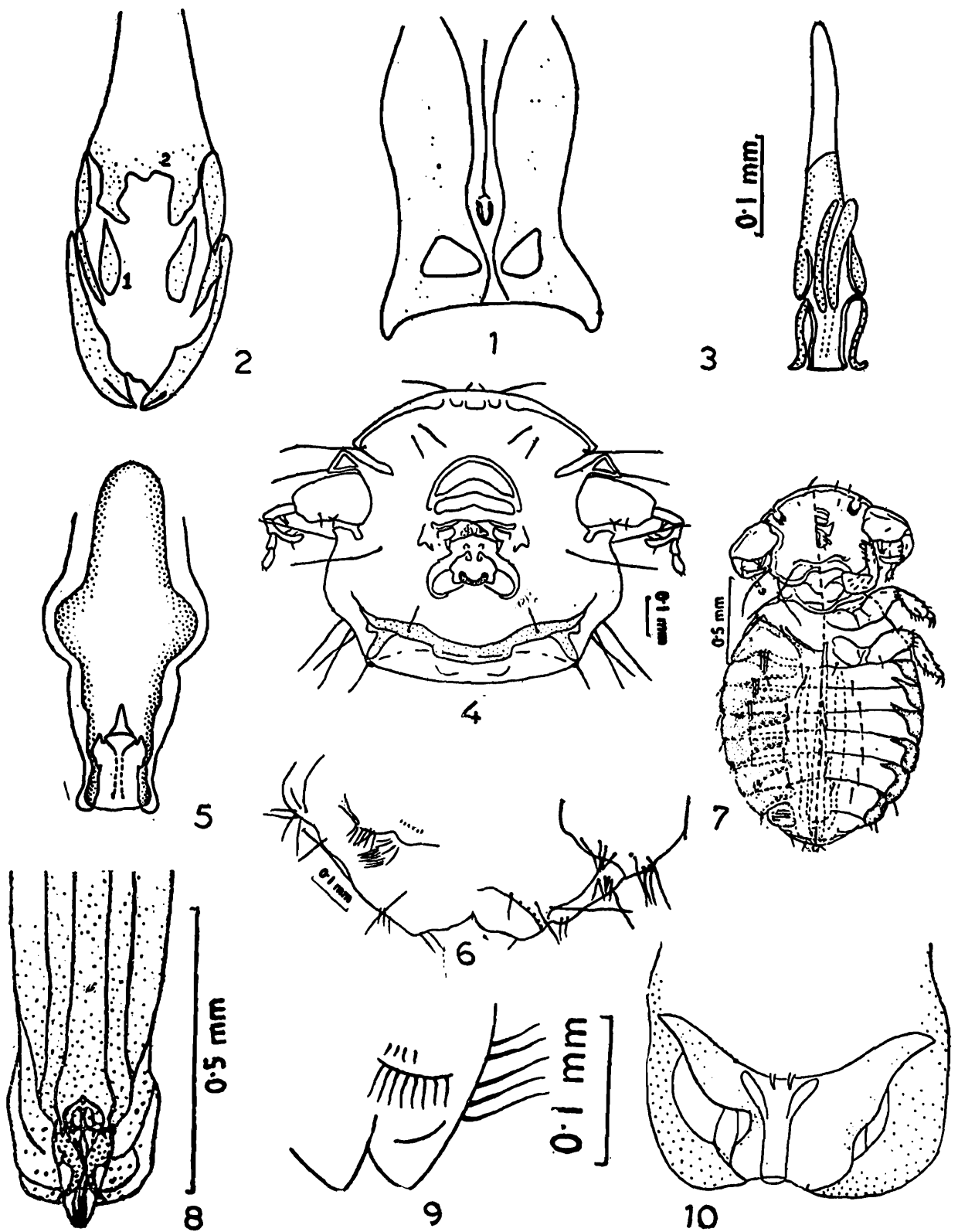


Fig. 1-10. 1-2. *Laemobothrion maximum* : 1. Sitophore sclerite ; 2. ♂ genitalia.
 3. *Amyrsidea minuta* : ♂ genitalia.
 4-6. *Goniodes ocellatus* : 4. ♂ head ; 5. ♂ genitalia ; 6. Terminal abdominal segments of the ♀
 7-8. *Goniodes mayuri* : 7. ♂ entire ; 8. ♂ genitalia.
 9. *Lipeurus brunneipictus* : ♀ terminal sternal chaetotaxy.
 10. *Upupicola upupae* : Distal portion of ♂ genitalia.

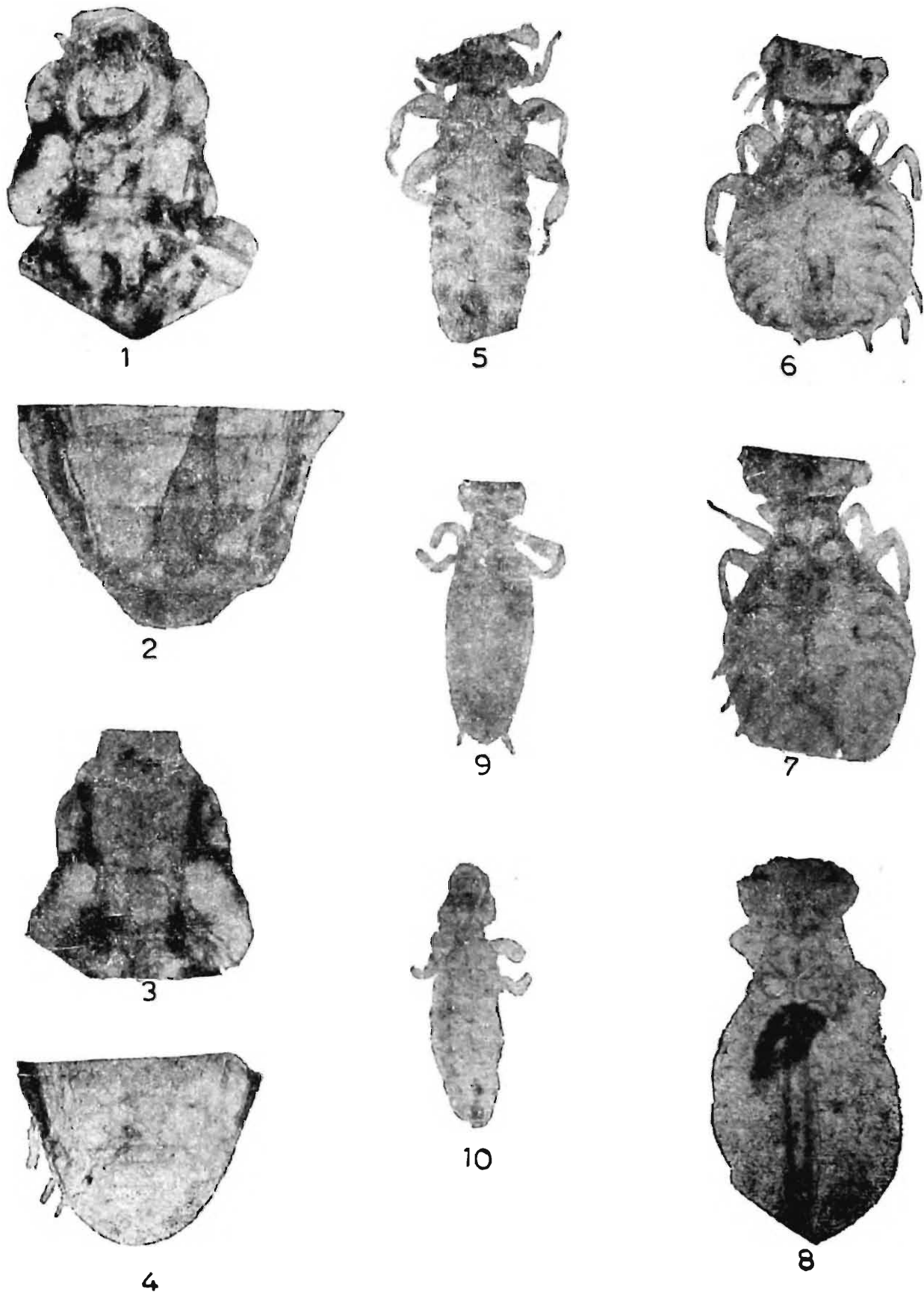


Fig. 1-10. 1-4. *Laemobothrion maximum* : 1. ♂ head ; 2. Terminal abdominal segments showing ♂ genitalia ; 3. ♀ head ; 4. Terminal ♀ abdominal segments.

- 5. *Amyrsidea minuta* ; ♂.
- 6-7. *Goniodes ocellatus* : 6. ♂ : 7. ♀.
- 8. *Goniodes mayuri* : ♂.
- 9. *L. brunneipictus* : ♀.
- 10. *Upupicola upupae* : ♂.

Clay & Meinertzhagen (1939) established the genus *Upupicola* with *D. melanophrys* (Nitzsch) as the type species. Now that *upupae* Schrank, *upupae* Denny, and *melanophrys* Nitzsch are all conspecific the genus contains a single species.

The single male and female from *Upupa epops saturata* Lönningberg (Pl. 2 fig. 10) in the present collections agree with redescription and figures of *U. upupae* (Schrank) *sensu* Clay & Hopkins (1960) and the generic description of *Upupicola* Clay & Meinertzhagen (1939). Male genitalia as in Pl. 1 fig. 10.

Material: One ♂ and ♀ from *Upupa epops saturata* Lönningberg (B6/5.4.47), Gowcharan, Nepal, 5.iv.1947, Coll. B. Biswas.

Measurements

| | Male | | Female | |
|-------------|--------|-------|--------|-------|
| | Length | Width | Length | Width |
| Head | 0.39 | 0.25 | 0.47 | 0.43 |
| Prothorax | 0.13 | 0.18 | 0.14 | 0.22 |
| Pterothorax | 0.16 | 0.25 | 0.20 | 0.40 |
| Abdomen | 0.94 | 0.51 | 1.15 | 0.59 |
| Genitalia | 0.31 | | | |
| Total | 1.56 | | | |

Remarks: Schrank (1803), Denny (1842), 'Nitzsch' (1866), Piaget (1880), and Séguy (1944) recorded the species on *Upupa epops* Linne. Blagoveshtchenskii (1951) reported on the same host from Kondora as *D. upupae* (Denny). Bedford (1932) also reported under the latter name on *U. africana* Bechst from S. Africa. Clay & Hopkins (1960) designated neotype from material off the type host from Hodonin, Czechoslovakia and neoparatypes from France, Italy, Portugal. Czechoslovakia, Asia Minor, India and Pakistan. Ansari (1947) reported it as *U. melanophrys* (Nitzsch) on (*U. e. orientalis*) *Upupa epops ceylonensis* Reichenbach from Lyallpur (Pakistan) and later corrected it to *U. upupae* (Schrank).

The present record from *Upupa epops saturata* Lönningberg is the first report Nepal and also on a new subspecies of the type host. The specimens are smaller than those of clay & Hopkins (1960), but the male is smaller and female is larger than those of Ansari (1947). The male however, agrees with the size of the male but the female is larger than those of Piaget (1880), and Séguy (1944).

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