*Measurements :* Body length varies from 35 mm. to 44 mm.

*Distribution :* INDIA : Nicobar Island.

*Remarks :* This species is endemic. Out of seven species and one subspecies belonging to the genus *Scolopocryptops,* only one is found to occur in Andaman and Nicobar Islands.

## SUMMARY

This paper gives a systematic account of Scolopendridae and Cryptopidae from Andaman and Nicobar Islands, India dealing with 17 species under 7 genera. Out of these, 8 species are recorded for the first time from Andaman and Nicobar Islands. Distributional records of all the species are, included.

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# THE CHEWING-LICE (PHTHIRAPTERA : INSECTA) FROM ANDAMAN AND NICOBAR ISLANDS WITH REMARKS ON SOME HOST RELATIONSHIPS

*By*

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During the survey tours of Drs. K. K. Tiwari, A. K. Mukherjee, and Mr. S. S. Saha of the Zoological Survey of India, they collected three samples of the chewing-lice comprising of three species from *Megapodius freycinet* Gaimard and *Collocalia esculenta affinis* Beavan. Of these, the former host has two subspecies in these Islands, and has considerable range of distribution in the Indo-Pacific, while the latter is endemic to the islands. Therefore, their parasites are of considerable interest from the point of distribution and study of host relationships, since the fauna of this region generally shows affinities with Burmese and Malayan fauna. Hither to, only three genera and species, viz., *Goniodes minor confusio* Clay, *Oxylipeurus appendiculatus* (Piaget) (Clay, 1938 ; 1940), and *Columbicola cavifrons* (Taschenberg) (Tendeiro, 1962) have been reported from these islands. The two first named species together with *Dennyus* (*Collodennyus*) *medwayi* Ledger (Ledger, 1970) are now reported from the above collection, and form the first new additions of chewing-lice from these islands to the National Zoological collections.

The material is mounted on slides, and the measurements are given in mm.

Suborder *AMBLYCEROPHTHIRINA* Lakshminarayana, 1976

(= *AMBLYCERA* Kellogg, 1896)

Family MENOPONIDAE Mjoeberg, 1910

Genus **Dennyus** Neumann, 1906

**Dennyus (Collodennyus) medwayi** Ledger, 1970

*Dennyus (Collodennyus) medwayi* Ledger, 1970. *J. ent. Soc. S. Afr.*, **33** (2) ; 245, figs. 8-11. Type host ; *Collocalia gigas* Hartert & Butler.

*Material examined.*—3 ♀ ♀, from *Collocalia esculenta affinis* Beavan, (ANB/72/186-190), Parka, *c* 14 km. off s. w. Malaka, Car Nicobar, 16. ii. 1972, coll. *A. K. Mukherjee* (Z. S. I. Reg. Nos. 706-708 H16).

*Measurements :*

| | ♀ Length | ♀ Width |
|---|---|---|
| Head | 0.37-0.40 | 0.44-0.46 |
| Prothorax | 0.19-0.21 | 0.27-0.29 |
| Mesothorax | 0.10-0.11 | 0.42-0.44 |
| Metathorax | 1.12-0.19 | 0.47-0.48 |
| Abdomen | 1.24-1.30 | 0.63-0.66 |
| Total | 1.88-1.97 | |

*Remarks.*—Ledger (1970) described this species in detail from specimens off *Collocalia gigas* (Hartert & Butler), from Fraser's Hill, Pahang, Malaya, coll. *Lord Medway*, and named it after the collector. The present record on *Collocalia esculenta affinis* Beavan is quite interesting.

*Dennyus* (*Collodennyus*) *distinctus* Ferris is the normal species of lice that harbours on *C. esculenta* and its different subspecies *cyanoptila,* and *desiderata* (Ledger, 1970). Ledger (*op. cit.*) examined material from Malaya, North Borneo, Java, New Guinea, Rennell Is. and New Hebrides. The specimens under discussion are referred however, to *D.* (*C.*) *medwayi* Ledger, instead of the usual species *D.* (*C.*) *distinctus* Ferris because of the following diagnostic characters which make it distinct from the latter : the sternite II wider in the middle. the presence of fewer tergocentral setae on abdominal tergites I & II, and the subgenital plate without any additional and smaller central setae in the female. The setae in the lateral brushes of the abdomen vary not only from individual to individual, but also from segment to segment and on the two sides.

*D. (C.) medwayi* comes very close to *D. (C.) distinctus.* Ledger *(op. cit.)* while discussing the host relationship of *Collocalia gigas,* the type host of *D. (C.) medwayi,* quoted Medway & Well (1969) than the non-echolocating *gigas* shows morphological affinities with echo-locating 'grey swiftlets', though by behaviour it shows affinities with non-echolocating 'glossy swiftlets' to which group *C. esculenta* belongs. Medway & Wells (1969) contended that *gigas* may be a member of a monophyletic 'grey swiftlet' group which lost its capability of echolocation, or it evolved from an ancient non-echolocating 'glossy swiftlet' stock, which later acquired the features of the 'grey swiftlets' by convergence. Ledger (1970) supported the latter relationship, because *D. (C.) medwayi* found on *C. gigas* has its nearest relative in *D. (C.) distinctus* found on the 'glossy swiftlet', *D. esculenta.*

The present record helps us to go further to what Ledger suggested above. Here *D. (C.) medwayi* has been reported on a 'glossy swiftlet'

of the non-echolocating *esculenta* group viz., *C. esculenta affinis* Beavan, an endemic bird to these islands. The parasite species is also now being reported for the first time from Indian limits. *C. esculenta* as already stated is common in the Indo-Pacific, with its own parasite species, *D. (C.) distinctus*. We can only account for the present record in that possibly *D. (C.) medwayi* and *D. (C.) distinctus* are both sympatric species evolved on an ancestral stock of *C. esculenta* - *C. gigas*, and one of them might have been disappeared, and the other retained by different subspecies of *C. esculenta* and *C. gigas* ; or the second species *D. (C.) distinctus*, has not so far been encountered on *C. e. affinis* and *C. gigas* or *vice versa*. It indicates however, that *C. esculenta* and *C. gigas* possibly belong to the non-echolocating 'glossy swiftlet' stock, and *gigas* acquired the characters of 'grey swiftlet' group as has been contended by Medway & Wells and Ledger.

Suborder *ISCHNOCEROPHTHIRINA* Lakshminarayana, 1976

(= *ISCHNOCERA* Kellogg, 1896)

Family PHILOPTERIDAE Burmeister, 1838

Genus **Goniodes** Nitzsch, 1818

**Goniodes minor** (Piaget, 1880)

*Goniodes minor* (Piaget) (*Goniocotes*) 1880. *Pediculines* : 241, pl. 21 fig. 2. *(partim)*. Type host ; (*Megapodius rubripes* var. *duperreyi*) *Megapodius r. reinwardt* Dumont.

*Homocerus minor* (Piaget) *(Goniocotes)* 1880 ; Kéler, 1939. *Nova Acta Leop.* (n. f.) **8** (51) : 120, fig. 64.

*Goniodes minor* (Piaget) : Clay, 1940. *Proc. zool. Soc. Lond.* (B), **110** : 102, figs. 69 & 70 a ; Hopkins & Clay, 1952. *Bull. Br. Mus. (nat. Hist.)* : 156.

*Material examined.*—10 ♂♂, 9 ♀♀, 4 ex (.), from *Megapodius freycinet* Gaimard, Campbell Bay, Great Nicobar Is., 4. iv. 1977, coll. *K. K. Tiwari* (Reg. Nos. 709-726/H 16) ; (on slides with 4 nymphs in alcohol) 8 ♂♂, 7 ♀♀, 5 ex (.), from the same host, 24 km. on N. S. Road, Nicobar, 9. iv. 1977, coll. *S. S. Saha* (Reg. Nos. 727-740 H 16) (both on slides and nymphs in alcohol).

*Measurements :*

| | ♂ | | ♀ | |
|---|---|---|---|---|
| | Length | Width | Length | Width |
| **Head** | 0.43-0.48 | 0.64-0.69 | 0.45-0.50 | 0.67-0.73 |
| **Prothorax** | 0.15-0.19 | 0.39-0.43 | 0.15-0.19 | 0.39-0.45 |
| **Pterothorax** | 0.25-0.29 | 0.48-0.51 | 0.25-0.29 | 0.48-0.53 |
| **Abdomen** | 0.67-0.86 | 0.70-0.86 | 0.86-0.95 | 0.82-0.93 |
| **Genitalia** | 0.53-0.63 | | | |
| **Total** | 1.43-1.62 | | 1.68-1.88 | |

*Remarks.*—Piaget (1880) collections according to Clay (1940) contain atleast three closely related species collected from different species and subspecies of *Megapodius*, though all of them were labelled as *Goniocotes minor* Piaget. Clay (1940) restricted the name *Goniodes minor* (Piaget) to those forms reported from *Megapodius r. reinwardt* Dumont. Another ♂ from the same series was assigned the name *G. ocrea* (Piaget), and Hopkins & Clay (1952) suggested that the type host was "probably *Eulipoa wallacei* (G. R. Gray)" Clay (1940) described another subspecies *G. minor confusio* Clay from *(M.n. nicobariensis) M. freycinet nicobariensis* Blyth from Nicobar Island. Kéler (1939) included this species in his new genus *Homocerus*.

We refer our material to *M. minor* (Piaget), although the material has been collected from *M. freycinet*, and the measurements are slightly smaller (or some of them are identical) than with *G. minor s. str.*, or *G. m. confusio*, by the shape of the head, laterally drawn prothorax which is nearer to the pterothoracic width, without continuous rows of setae on IV abdominal segment, and the long and broader basal plate in the male and the flattened posterior margin of the 'valve' and its chaetotaxy, the minute spines and striations on the genital region in the female. We have examined a paratype slide of *G. minor confusio* Clay with 2 ♂ ♂, 2 ♀ ♀, from (*M. nicobariensis*) *M. f. nicobariensis* Blyth, Katchell, Nicobar Is., coll. *Dr R. Meinertzhagen* (BMNH No. 3008) lent to the senior author by the British Museum (Nat. History), and though our specimens are smaller than these specimens, the male genitalia appear distinctly sclerotized and stouter in proportion.

The present host *M. freycinet* Gaimard, otherwise harbours three more species of *Geniodes* besides *G. minor* viz., *G. major* (Piaget), *G. discogaster* (Taschenberg), (*vide* Clay, 1940), and *G. biordinatus* Clay (Emerson & Ward, 1958). *G. major* as the name indicates is a large form than *minor*, its prothorax not laterally produced, with numerous short setae on tergite IX, the very distinct male genitalia, and the shape of the female 'valve' and the chaetotaxy of the female genital region enables us to distinguish it from *minor*. *G. discogaster* can be recognized by the smaller size, expanded temples, large truncated coni, and the male genitalia which differ in *minor*. *G. biordinatus* can be recognized by the chaetotaxy of tergite IV, and female genital region. *G. ocrea* from *Eulipoa wallacei* (?) can be readily distinguished from all other species of *Goniodes* from the Megapodidae, by the distal prolongation of the post axial angle of the third antennal segment in the male at a glance.

The present record of *G. minor* (Piaget) collected from *M. freycinet* at two different places is interesting. In Nicobar Islands two subspecies are known, viz., *M. f. nicobariensis* Blyth and *M. f. abbotti* Oberholser from Great Nicobar. *G. minor s. str.*, is so far known from the type host, *M. reinwardt* Dumont (New Guinea), *M. r. yorki* Mathews (N. Queensland), *M. r. tumulus* Gould (no data), *M. f. cumingii* Dillwyn (Labuan & S. E. Celebes), and *M. f. pusillus* Tweeddale (Philippine Islands), and *G. m. confusio* Clay from *M. f.*

*nicobariensis* Blyth (Nicobar). The subspecific determination was not available for the two hosts, but since one of them is from Great Nicobar, it is likely that it may be identical with *M. f. abbotti* Oberholser, and if it turns out to be the same species as we expect, then it is a new host for *G. minor* (Piaget). Emerson & Price (1972) while describing a new genus *Megapodiella* from *Megapodius* provided a list of all species known to that date on Megapodidae.

## Genus **Oxylipeurus** Mjoeberg, 1910

### sp. near **Oxylipeurus appendiculatus** (Piaget, 1880)

*Oxylipeurus appendiculatus* (Piaget) (*Lipeurus*), 1880. *Pediculines* : 356, pl. 28 fig 8. Type host : (*Megapodium rubripes* var *gilberti*) *Megapodius freycinet gilbertii* G. R. Gray.

*Oxylipeurus major* (Piaget) (*Lipeurus*), 1880. *Pediculines* : 357 *nec* p. 346. Type host : (*Tinamus canus*. Error). *M. f. nicobariensis* Blyth.

*Oxylipeurus oxycephalus* (Taschenberg), (*Lipeurus*), 1882. *Nova Acta Leop*, **44** : 178, pl 6 fig. 7. Type hosts : *Oxylipeurus oxycephalus* (Taschenberg) ; Mjoeberg, 1910. *Arc Zool*, 6 (13) : 92 *Megapodius freycinet* Gaimard & *M. reinwadt* Dumont.

*Oxylipeurus appendiculatus* (Piaget) : Clay, 1938. *Proc. zool. Soc. Lond.* (B), 108 : 160 ; Hopkins & Clay, 1952. *Check List of Genera & Species of Mallophaga*, Bull. Brit. Mus. [nat. Hist.] ; 256, 258, 259.

*Material examined.*—2 ♂♂, 7 ♀♀, 9 ex (.), from *Megapodius freycinet* Gaimard, 24 km on N. S. Road, Nicobar, 9. iv. 1977, Coll. *S. S. Saha*. (Reg. Nos 741-749/H 16).

*Measurements* :

| | ♂ | | ♀ | |
|---|---|---|---|---|
| | Length | Width | Length | Width |
| Head | 0.53-0.55 | 0.27-0.28 | 0.57-0.61 | 0.28-0.34 |
| Prothorax | 0.13-0.14 | 0.22-0.23 | 0.14-0.18 | 0.24-0.27 |
| Pterothorax | 0.28-0.29 | 0.32 | 0.28-0.29 | 0.33-0.35 |
| Abdomen | 1.59-1.61 | 0.39-0.42 | 1.67-1.76 | 0.41-0.49 |
| Genitalia | | | | |
| Total | 2.53-2.56 | | 2.70-2.89 | |

*Remarks*.—Two species of *Oxylipeurus* are known from *Megapodius reinwardt* Dumont, and *M. freycinet* Gaimard viz., *O. inaequalis* (Piaget) (the type species of the genus) on the former, and *O. appendiculatus* (Piaget) on the latter host. Taschenberg (1882) reported *O. appendiculatus* both on *M. reinwardt* and *M. freycinet* as *L. oxycephalus*. Clay (1938) revised the genus and grouped both the species in a single group, and redescribed the species.

The specimens before us approach very near to *O. appendiculatus* (Piaget), although our specimens exhibit minor differences from *O. appendiculatus*, we are not describing any new subspecies, since our material is not in good condition. We have also examined the slide with specimens (2 ♂ ♂, 2 ♀ ♀) from *M. f. nicobariensis* from Katchall Nicobar, Coll. *Dr. R. Meinertzhagen* (BMNH No. 3008) Our specimens are elongated, and narrow, with the first antennal segment stout and elongated in the male, the dorsal setae to the middle of the pre-antennal head are finer as indicated by Clay (1938), prothoracic margin straight, pterothoracic margin distinctly truncated and elongated, abdominal pluerites are with complicated head (simple in *inaequalis*) ; the male genitalia however, nearer to *inaequalis* ; the female 'valve' with finer and fewer setae, the lobes of the apical segment are narrower in our specimens unlike *inaequalis*,

Clay (1938) examined Piaget's type material of *(M. nicobariensis gilbertii) M. f. gilbertii* G. R. Gray and *(M. n. nicobariensis) M. f. nicobariensis* Blyth from Katchall, Nicobar. The present record can be considered at best as a new valuable addition to the National Zoological collections of the Z. S. I.

## Summary

This paper deals with a small interesting collection of chewing-lice from Andaman & Nicobar group of Islands. One of the species is now being reported for the first time since its description and from India on a new host which throws considerable light on the host relationship ; the other two species are valuable new additions to the National zoological collections of the Zoological Survey of India.

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