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SOME MORPHOLOGICAL ASPECTS OF THE HIND EXTREMITY OF THE ABDOMEN IN THE SPECIES *FALCOLIPEURUS QUADRIPUSTULATUS* (BURMEISTER, 1838) (PHTHIRAPTERA: ISCHNOCERA)*

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Abstract. For the first time, in the species *Falcolipeurus quadripustulatus* (Burmeister, 1838) the detailed morphology of the hind extremity of the abdomen is presented, in male, female and female larva in the third stage of its development. In this species this section of the body has a specific structure and chetotaxy.

Résumé. Pour la première fois on présent pour l'espèce *Falcolipeurus quadripustulatus* (Burmeister, 1838) la morphologie détaillée de l'extrémité postérieure de l'abdomen du mâle, de la femelle et de la larve de femelle dans le troisième stade de développement. Cette région du corp a une structure et chétotaxie spécifiques.

Key words: Phthiraptera, *Falcolipeurus quadripustulatus*, hind extremity of the abdomen, morphology.

Data on the morphology of this species are relatively a few in the specialized literature. Besides Burmeister's (1838) initial description of this species other data on its morphology are also given by Bedford (1931), Tandan (1964) and Złotorzycka (1963). Bedford (1931) described a new species named *Falcolipeurus africanus*, which, later on, proved to be similar to *Falcolipeurus quadripustulatus* (Burmeister, 1838), his denomination becoming synonymy (Ledger, 1980). In 1963, Złotorzycka described several new species of *Falcolipeurus*, among them also being *Falcolipeurus jaczewskii*, which proved to be identical with *Falcolipeurus quadripustulatus* (Burmeister, 1838), its name becoming a synonym, too (Ledger, 1980). Morphological descriptions made by these authors refer especially to the general habitus of the body and the detailed structure of the head and of the male and female genitalia.

Hopkins & Clay (1952), mention that the typical host of this species is *Aegypius monachus*, but often it was found on other falconiforme species as: *Aegypius tracheliotus, Circaetus gallicus, Gyps coprotheres, G. fulvus, G. himalayensis, G. indicus* and *G. rueppelli* (Ledger, 1980; Tandan, 1964).

MATERIAL AND METHODS

Our material was collected by Angela Petrescu, ornithologist of "Grigore Antipa" National Museum of Natural History (Bucharest), on 24.10.1998, from an adult of *Aegypius monachus* from the Zoo of Bucharest. Also 31 chewing louse

* English translation by Mihaela Barcan Achim.

specimens were collected and identified as belonging to the species *Falcolipeurus quadripustulatus*. From the 31 specimens 13 are females, 12 males and 6 larvae. For identification a part of the collected material was mounted in Canada balm, using the classic technics. The rest of the material is preserved in 80% alcohol.

For the species identification I used Złotorzycka's (1963) and Ledger's (1980) papers. Latin name of this species is according to Hopkins & Clay's (1952) chewing louse list.

The drawings were made using a "Carl Zeiss" microscope, equiped with a system of image projection, with a 5X ocular and a 40X objective. The drawings were made using a part of the material mounted in Canada balm: an adult male (size: 4.1 mm), an adult female (size: 4.4 mm) and a female in the 3rd larval developing stage (size: 3.8 mm). Then, the features given by these drawings were also verified in other specimens. Photos were made using the binocular "Olympus", with a "Fujicolor" DX200 film.

RESULTS AND DISCUSSIONS

In this paper I agree Richards & Davies's (1977) interpretation, cited by Smith (2001) and which, as a matter of fact, it is accepted by most of the specialists. According to this interpretation the terminal segments of the chewing louse abdomens, also named genital segments, are the segments IX, X and XI. In most of the Ischnocera specimens, parasite on birds, the segments IX and X are fused and the soldering lines are not visible. Also, in *Falcolipeurus quadripustulatus* (Fig. 3) the segments IX and X are fused. Tergal plates of the segments IX and X are also completely fused antero-posteriorly and medianly. As regards the segment XI, it can be clearly delimited by the anterior segments in male (Fig. 1 A), but in female (Fig. 1 B) its delimitation cannot be precise. Tergal plates of the segment XI are much more reduced than those on the anterior segments, medianly separated, of an oval shape and larger in females. Sternal plates are absent both in male and female.

In figures 1 and 2 the detalied morphology of the ventral side of the abdominal terminal segments is shown, in male (Fig. 1 A), female (Fig. 1 B) and immature female in the 3rd larval stage (Fig. 2).

In male (Figs 1 A, 3 A) it can be observed the strong sclerotization of the pleural plates at the level of the last abdominal segment. They have the hind extremity innerly recurved and pointed like a claw. Several spiniform setae are displayed on them, their number and position being constant: 8 larger spiniform setae and 6 smaller displayed on the inner terminal side. On the inner terminal side of the segment XI pleurites two elongated sclerites are articulated, distally narrowed, each of them with 3 small setae. Maybe, these two sclerites has an important part in the mating process. In the lateral-posterior angles of the segment XI a pair of long setae is present and another pair, as long as the other one, is ventrally and subterminally placed. Anal opening is placed at the level of the invagination of the hind margin of the segment XI. At the level of the ventral side of

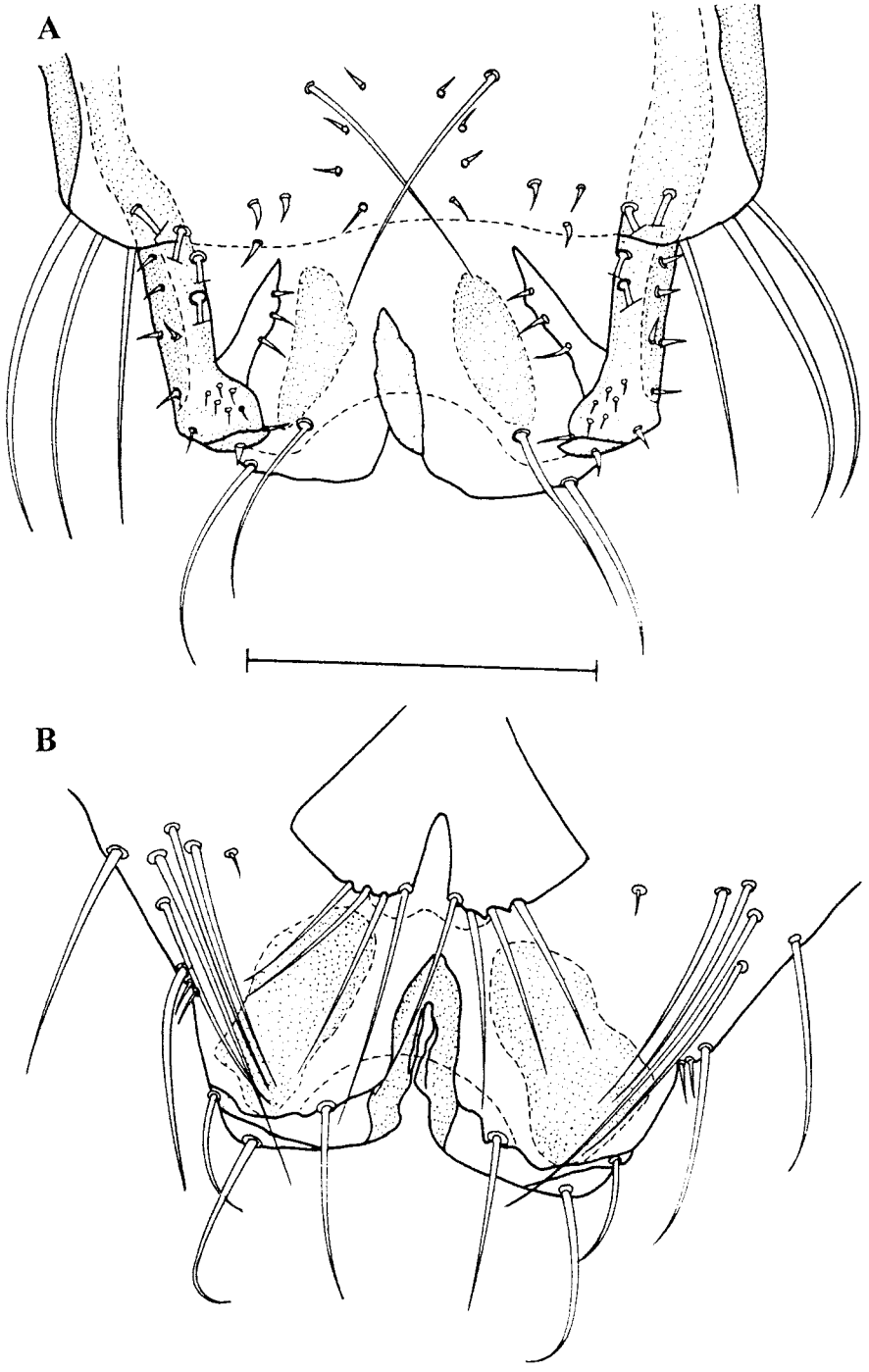

Fig. 1 – *Falcolipeurus quadripustulatus* (Burmeister, 1838). Hind extremity of the abdomen (ventral view): A, male; B, female; Scale: 0.2 mm.

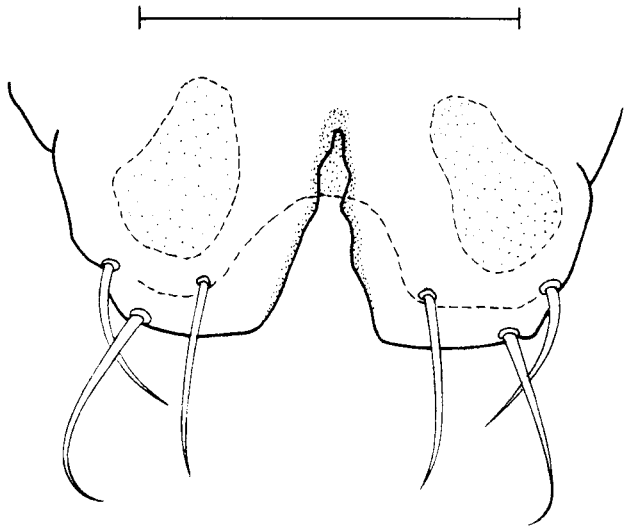

Fig. 2 – *Falcolipeurus quadripustulatus* (Burmeister, 1838). Hind extremity of the abdomen (ventral view): female in the 3rd larval developing stage; Scale: 0.2 mm.

the segments IX - X a pair of long setae is present, medianly displayed, as well several spiniform setae with a characteristic and constant displaying (Fig. 1 A).

In the female (Figs 1 B, 3 B), at the level of the segment XI, in the lateral-posterior angles a pair of long setae is present, with recurved tips like a hook; on the ventral side another pair of setae, as long as the other one, is subterminally displayed, and unlike the male there is also another pair of shorter setae, displayed on the lateral margins. Hind wall of the segment XI has a deep and sinuous invagination where, at the same level, also there is the anal opening. At the level of the segments IX–X, in figure 1 B, it can be observed the terminal part of the female genital plate, on whose hind margins are displayed 4 pairs of long setae. On the one side and another of the female genital plate there are a spiniform seta and several long setae.

In the female in the 3rd larval developing stage (Fig. 2), the invagination opening of the hind wall of the segment XI is much larger and less sinuous than in the adult female. Also, the tergal plates of the segment XI are smaller and less sclerotized than in the adult female. Chetotaxy is identical with that of the adult female.

Finally, it can be said that the detailed structure and the chetotaxy of the hind extremity of the abdomen are different in male and in female. Chetotaxy of the pleural plates and the presence of the articulated sclerites on the inner posterior side of the segment XI pleurites of the male is characteristic and can be used in making the difference with other species.

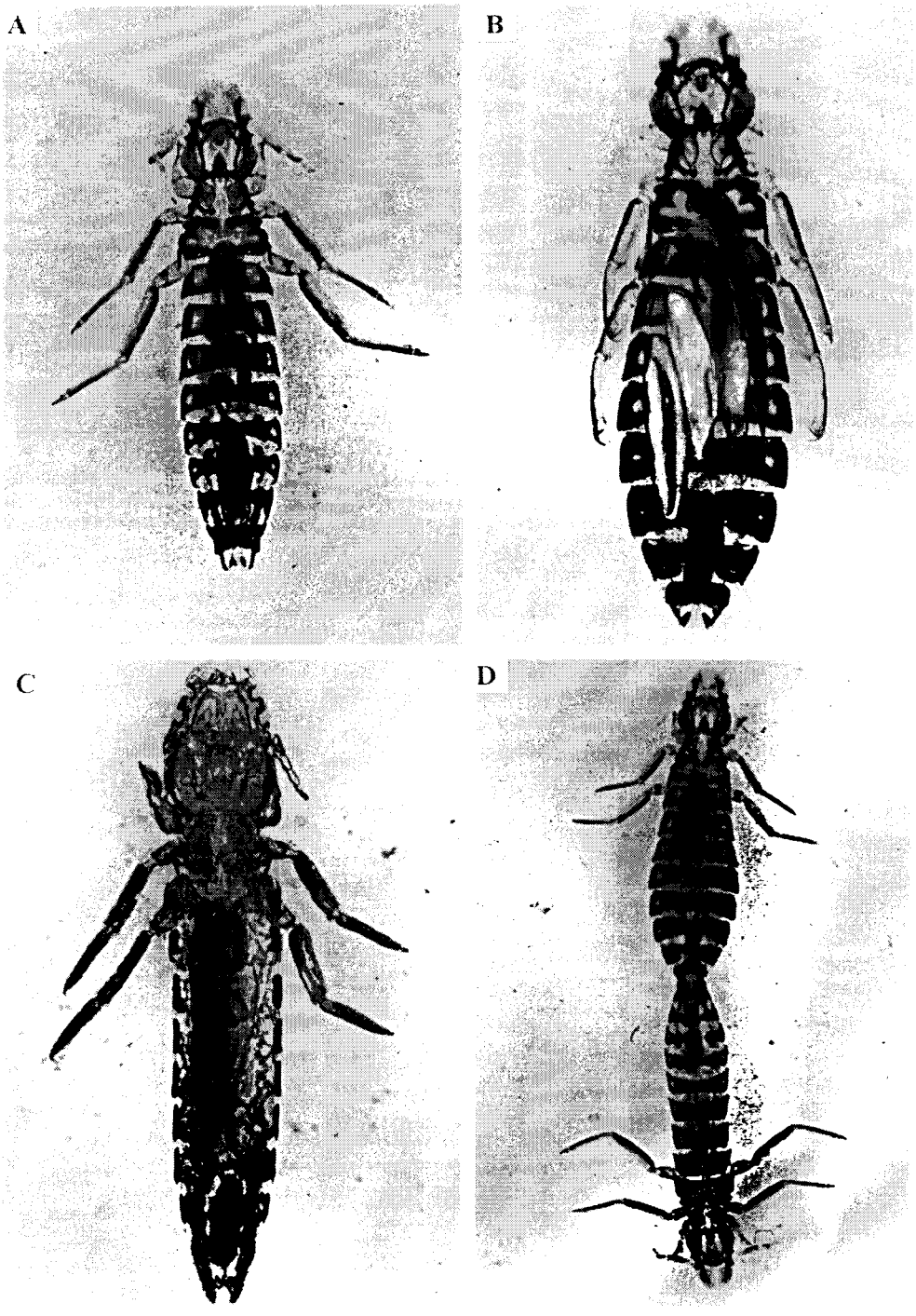

Fig. 3 – *Falcolipeurus quadripustulatus* (Burmeister, 1838): A, male; B, female; C, larva; D, copulated male and female.

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CÂTEVA ASPECTE MORFOLOGICE ALE EXTREMITĂȚII POSTERIOARE A ABDOMENULUI LA SPECIA *FALCOLIPEURUS QUADRIPUSTULATUS* (BURMEISTER, 1838) (PHTHIRAPTERA: ISCHNOCERA)

REZUMAT

La specia *Falcolipeurus quadripustulatus* (Burmeister, 1838) este prezentată morfologia detaliată a extremității posterioare a abdomenului la mascul, la femelă și la larva de femelă aflată în stadiul III de dezvoltare. Structura detaliată și chetotaxia extremității posterioare a abdomenului sunt diferite la mascul față de femelă. Chetotaxia plăcilor pleurale și prezența scleritelor articulate la fața intern-posterioară a pleuritelor segmentului XI de la mascul este caracteristică și poate fi folosită în diferențierea față de alte specii. De asemenea, la femela aflată în diferite stadii larvare de dezvoltare deschiderea invaginării peretelui posterior al segmentului XI este mult mai largă decât la femela adultă.

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