ENTOMON 35(3): 183–190 (2010)
Article No. ent.35306

# A new species of *Hohorstiella* (Phthiraptera: Amblycera: Menoponidae) from Indian Ring Dove, *Streptopelia decaocto decaocto* (Columbiformes)

**Nayanci Bansal, Padam Singh, Aftab Ahmad, Gaurav Arya and Arun Kumar Saxena***

*Department of Zoology, Government Raza Postgraduate College, Rampur 244 901, U.P., India*
*Email: akscsir@rediffmail.com*

ABSTRACT: A new species of the genus *Hohorstiella* (Phthiraptera: Amblycera: Menoponidae) collected from Indian Ring Dove, *Streptopelia decaocto decaocto* in district Rampur, U.P., India, is described and illustrated.


KEYWORDS: Phthiraptera, new species, *Hohorstiella*

## INTRODUCTION

Genus *Hohorstiella* Eichler, 1940 resembles the genus *Menacanthus* (Carriker, 1949) but can be easily differentiated on account of the head spines, style of antennae, nature of pleurites and patches of setae. The generic characters of genus *Hohorstiella* have been listed by Rai (1977). As many as 21 species of *Hohorstiella* reportedly infest the Columbiformes birds (Price *et al.*, 2003). There are two groups in the genus *Hohorstiella,* the first group contains specimens in which pleurites are not prolonged while the members of second group have prolonged pleurites (Cicchino, 1978). Out of 21 species, 10 species belong to the first group and 11, to the second group (Carriker, 1949; Rai, 1977; Hill and Tuff, 1978; Tendeiro, 1980; Mey, 1984; Price and Emerson, 1986).

In the present study, specimens of the genus *Hohorstiella* collected from Indian Ring Dove, *Streptopelia decaocto decaocto* were found to be a new species.

*Corresponding author

## MATERIALS AND METHODS

Twenty four specimens (5 males, 12 females, 7 nymphs) were collected from two Indian Ring Doves (*S. decaocto decaocto*), during 2008, from district Rampur, U.P., India. Lice were macerated (10 % KOH), dehydrated (ethanol series), cleared (clove oil), mounted (Canada balsam), measured (ocular micrometer), and subjected to microscopy. Abbreviations used are TW, Temple Width; HL, Head Length; PW, Pro- thorax Width; ThL, Thorax Length; AL, Abdominal length; AW (IV), Abdominal Width of Segment IV; TL, Total Length.

## *HOHORSTIELLA RAMPURENSIS* NEW SPECIES

*Type material:* **Holotype** one female and one male will be deposited in the Zoological Survey of India, Calcutta. These specimens were collected in district Rampur (located at 28°48′ N 79°00′E 28.8.1979) India, by Aftab Ahmad on 22.05.2008. **Paratypes** 4 males and 11 females, in the collection of Department of Zoology, Govt. Raza Postgraduate College, Rampur, U. P.

*Diagnostic characters:* The new species is characterized by the presence of 5 + 5 gular setae, nature of ocular slit, absence of median notch at the anterior tip of frons, straight margin of meta- thorax and the nature of male genitalia.

*Type Host:* *Streptopelia decaocto decaocto* (Frivaldszky)

**Female** (Figs. 1a and 2a–e)

Body colour pale brownish. Head broader than longer; frons convex in shape and bears two minute setae, anterior margin smooth. Pre- antennal region narrow, ocular slit straight and slightly narrow. Eyes well developed. Ocular fleck trilobed; ocular fringe depressed (composed posteriorly curved 13 setae; 2 long, 2 medium and 9 small), not projecting laterally. Temple narrow, slightly expanded, margin rounded. Setae 24 short, 25 longer in length. Alveoli of setae 26 and 27 closely associated; setae 26 short and fine while setae 27 long reaching up to posterior margin of the prothorax. Setae 28 and 29 long and 30, 31 short. Occipital margin straight with three long setae (21, 22 and 23 with alveoli in straight line) (Fig. 2d). Ventrum with well developed skeleton to support mandibles, reaching as far as on each side of clypeal region; peg like process arising near the base of palpi; clypeus narrow; mandibles weak; gular plate squarish, not well chitinized, bearing five setae on each side. Antennae four segmented, segment I short, antennule larger; segment III calciform, which is immediately inserted in the well marked depression of segment II; segment IV irregularly spherical. Maxillary palp four segmented. Post palpal process spinous. Comb brush with 17 short and fine setae. Gular plate with 5 + 5 setae (Fig. 2c).

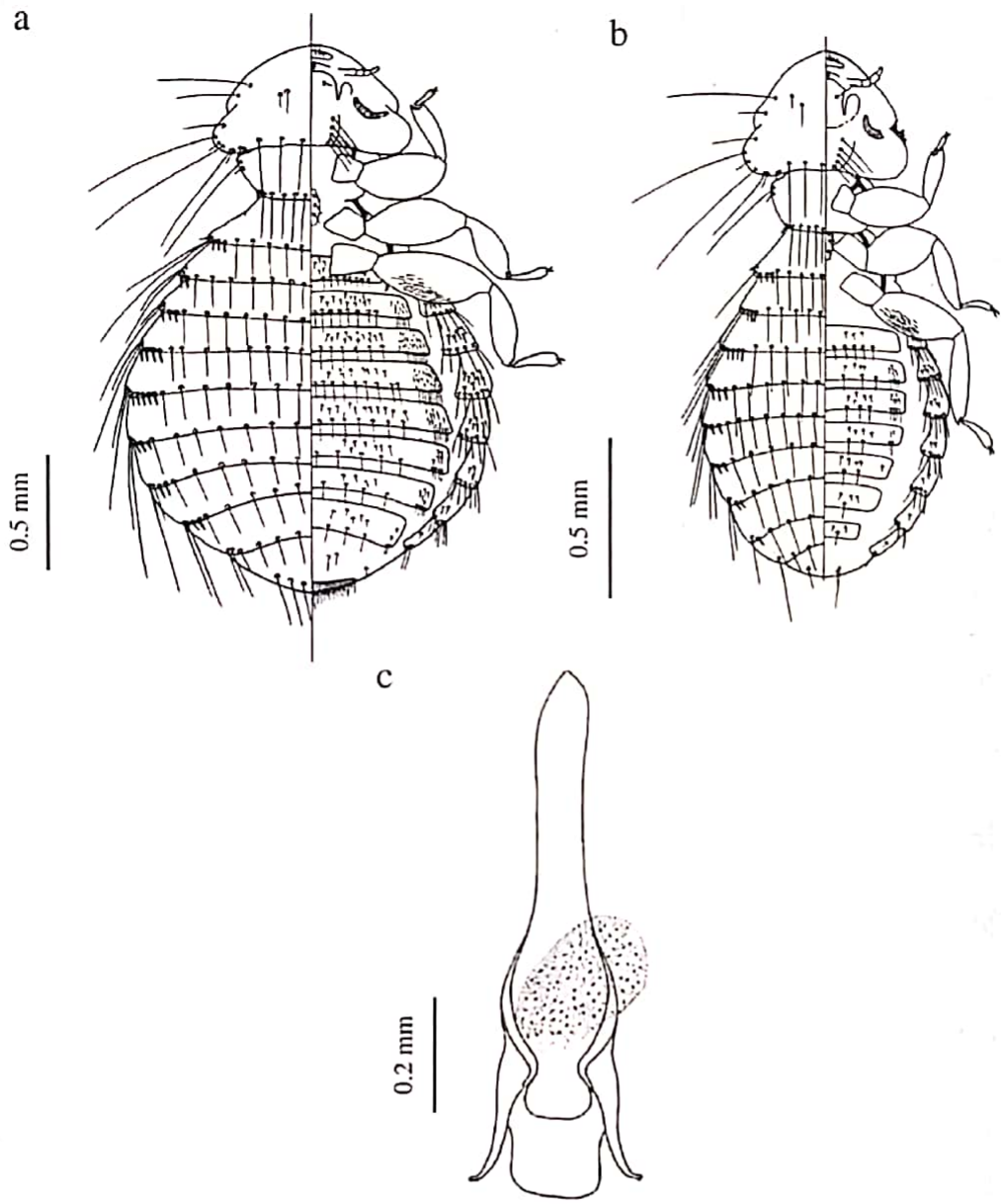


FIGURE 1. *Hohorstiella rampurensis*: a, dorso-ventral aspects of female; b, dorso- ventral aspects of male; c, male genitalia.

Pro-thorax large, expanded, lateral angles obtuse with one short spine and one long seta; posterior lateral margin straight; posterior margin with one short spine and 5 long setae on each half. Prosternal plate with 4+4 setae. Transverse bar and lateral bands well developed. Meso- thorax narrow, suture indistinct. Meta- thorax short, trapezoidal; posterior lateral margin slightly rounded with one spine and two long setae; posterior margin straight with three short spine and 5 long setae on each half. Legs well built, third femora with definite patch of 28 short setae. Inter coxal plate well pigmented.

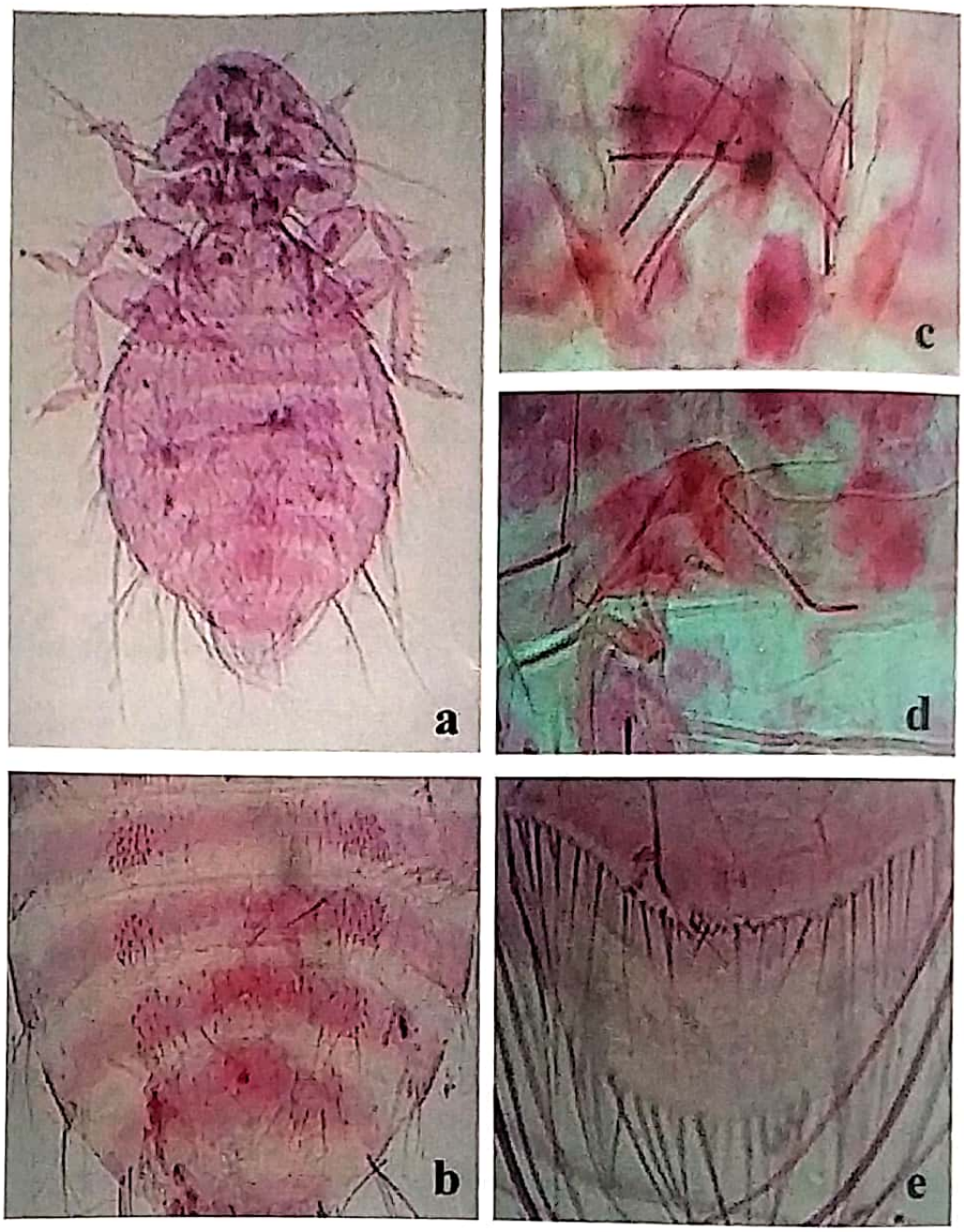


FIGURE 2. LM photograph of adult female *Hohorstiella rampurensis*: a, adult; b, posterior abdominal segments VI- VIII; c, gular plate; d, occipital setae 21,22 and 23; e, female terminalia.

Abdomen broadly rounded, thickest at IVth and Vth segment. Length of all segments almost equal, posterior margin of VIth, VIIth and VIIIth tergal segment concave (Fig. 2b). Sternal plates and pleural plates well marked. Elongation of ventral postero- medial angles of the pleurites absent. Posterior end pointed. Vulval margin

fringe with two rows of setae, upper row has 18 while, lower 20 (Fig. 2c). Abdominal chaetotaxy as follows:

**Tergal setae**: ($n$ = 10), I 6–8 ($\bar{x}$ = 6.7), II 5-8 ($\bar{x}$ = 6.6), III 5–9 ($\bar{x}$ = 6.7), IV 5–8 ($\bar{x}$ = 6.4), V 5–8 ($\bar{x}$ = 6.3), VI 6–8 ($\bar{x}$ = 6.9), VII 4-5 ($\bar{x}$ = 4.8), VIII 3–5 ($\bar{x}$ = 4), IX 3 ($\bar{x}$ = 3). **Pleural Setae, Anterior setae:** II 4, III 5, IV 8, V 8, VI 3, VII 2, VIII 1 each side. **Marginal setae:** III 5, IV 5, V 6, VI 7, VII 6 and VIII 2 each side. **Sternal setae, Anterior setae:** I 4–6 ($\bar{x}$ = 4.6), II 11–15 ($\bar{x}$ = 12.4), III 12–14 ($\bar{x}$ = 12.6), IV 6–8 ($\bar{x}$ = 7.4), V 10–13 ($\bar{x}$ = 11.6), VI 5–8 ($\bar{x}$ = 7.2), VII 3–5 ($\bar{x}$ = 4), VIII 4–5 ($\bar{x}$ = 4.6) and IX 1–2 ($\bar{x}$ = 1.9) each side. **Marginal setae:** I 6–8 ($\bar{x}$ = 7.1), II 6–8 ($\bar{x}$ = 7.1), III 5–7 ($\bar{x}$ = 5.9), IV 7-10 ($\bar{x}$ = 8.7), V 5–8 ($\bar{x}$ = 6.9), VI 4–5 ($\bar{x}$ == 4.8), VII 3–5 ($\bar{x}$ == 4) and VIII 2–3 ($\bar{x}$ == 2.8) each side. **Sternal brushes, Anterior setae**: II 6–10 ($\bar{x}$ == 8.1), III 14-21 ($\bar{x}$ == 18.3), IV 14-21 ($\bar{x}$ == 17.8), V 8–13 ($\bar{x}$ == 10.9), VI 3–6 ($\bar{x}$ = 4.3), VII 3–5 ($\bar{x}$ = 3.3) and VIII 2–4 ($\bar{x}$ = 2.7) each side. **Marginal setae:** II 4–5 ($\bar{x}$ = 4.7), III 6–8 ($\bar{x}$ = 7.3), IV 8–9 ($\bar{x}$ = 8.7), V 4–7 ($\bar{x}$ = 5.7), VI 3–4 ($\bar{x}$ = 3.6), VII 3–5 ($\bar{x}$ = 4.1) and VIII 1–3 ($\bar{x}$ = 2.1) each side.

*Measurements:* ($n$ = 3), TW = 0.62 (0.62–0.63), HL = 0.38 (0.38–0.39), PW = 0.44 (0.44–0.45), ThL = 0.43 (0.39–0.48), AW IV = 1.14 (1.07–1.19), AL = 1.26 (1.24–1.29), TL = 2.07 (2.01 – 2.11).

**Male** (Fig. 2b and 3a–f)

General morphology similar to female, smaller in length. Chaetotaxy more scarce. Frons slightly conical than female without median notch (Fig. 3d). Gular plate short and faintly sclerotized with 5+5 setae (Fig. 3e). Meta- thorax posterior margin straight with three short spine and 5 long setae on each half (Fig. 3b). Meta sternal plate with 3 + 3 setae. Elongation of ventral postero-medial angles of the pleurites absent (Fig. 3c). Femoral brushes have 23 short and fine setae. Terminal segment parabolic. Abdominal chaetotaxy as follows:

**Tergal setae**: ($n$ = 4), I 4–6 ($\bar{x}$ = 5), II 4-5 ($\bar{x}$ = 4.7), III 6–7 ($\bar{x}$ = 6.2), IV 7–9 ($\bar{x}$ = 7.7), V 4–5 ($\bar{x}$ = 4.5), VI 2–4 ($\bar{x}$ = 3.2), VII 2-3 ($\bar{x}$ = 2.7), VIII 2 ($\bar{x}$ = 2). **Pleural Setae, Anterior setae:** II 3, III 5, IV 3, V 2, VI 2, VII 1 and VIII 1 each side. **Marginal setae:** II 5, III 6, IV 6, V 4, VI 4, VII 3 and VIII 1 each side. **Sternal setae, Anterior setae:** II 2–4 ($\bar{x}$ = 3), III 4 ($\bar{x}$ = 4), IV 4–6 ($\bar{x}$ = 5), V 3–4 ($\bar{x}$ = 3.7), VI 2–4 ($\bar{x}$ = 3.2), VII 3–4 ($\bar{x}$ = 3.2) and VIII 2 ($\bar{x}$ = 2) each side. **Marginal setae:** II 4–5 ($\bar{x}$ = 4.7), III 2–3 ($\bar{x}$ = 2.7), IV 2–4 ($\bar{x}$ = 3), V 1–2 ($\bar{x}$ = 1.7), VI 1–3 ($\bar{x}$ = 2), VII 1 ($\bar{x}$ = 1) and VIII 1 ($\bar{x}$ = 1) each side. **Sternal brushes, Anterior setae**: III 4-5 ($\bar{x}$ = 4.2), IV 3-5 ($\bar{x}$ = 4.2), V 2–3 ($\bar{x}$ = 2.2) and VI 1 ($\bar{x}$ = 1) each side. **Marginal setae:** III 4–6 ($\bar{x}$ = 4.7), IV 3–5($\bar{x}$ = 4) and V 2 ($\bar{x}$ = 2) each side.

*Measurements:* ($n$ = 4), TW = 0.51 (0.51– 0.53), HL = 0.32 (0.32– 0.33), PW = 0.35 (0.33–0.37), ThL = 0.33 (0.31– 0.40), AW IV = 0.78 (0.77– 0.80), AL = 0.77 (0.70– 0.82), TL = 1.48 (1.42 – 1.59).

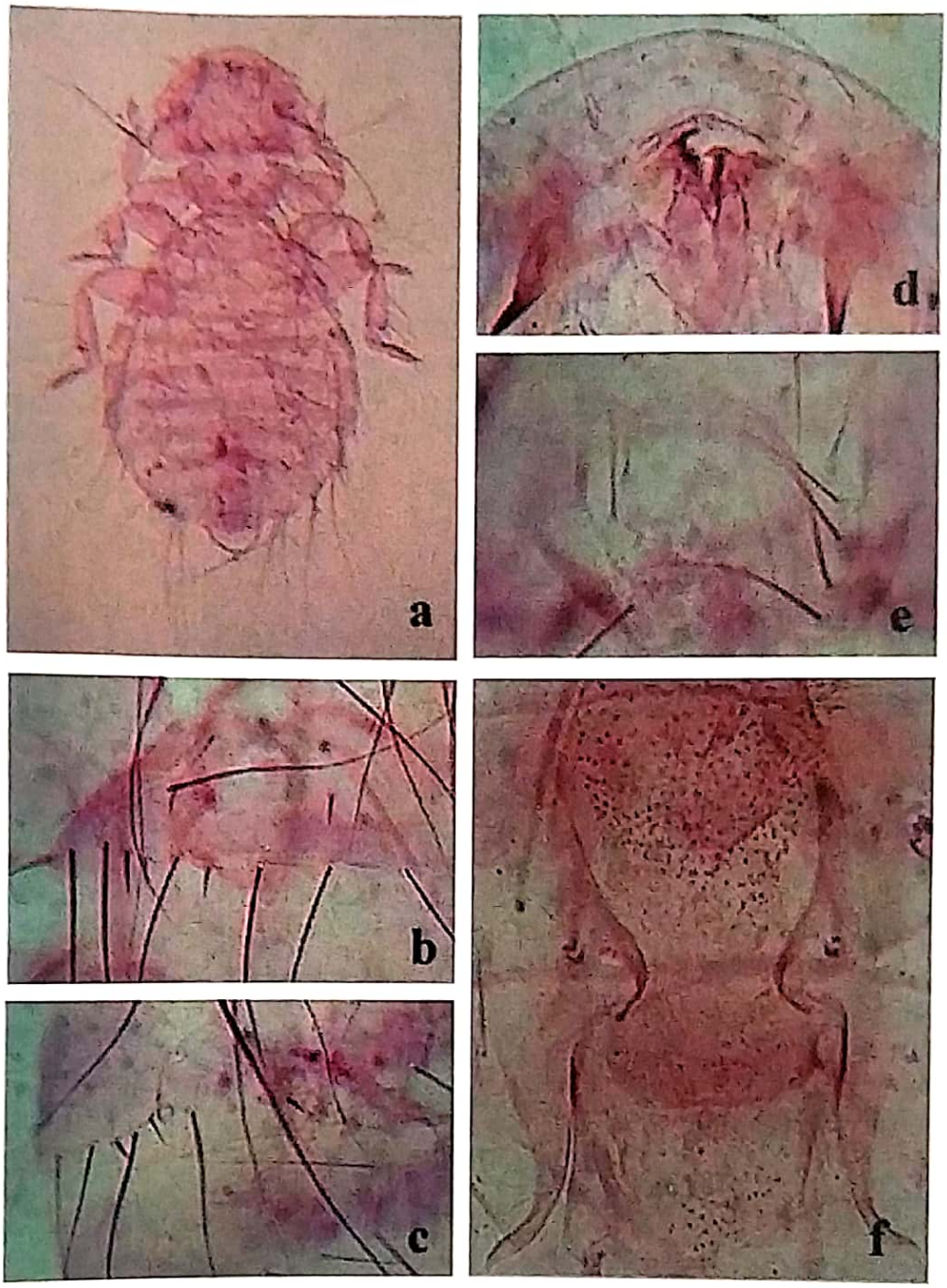


FIGURE 3. LM photograph of adult male *H. rampurensis*: a, adult; b, meta- thorax posterior margin; c, pleurite without elongation; d, frons anterior margin; e, gular plate; f, male genitalia.

*Male genitalia*

The basal apodeme of male genitalia is medium sized and conical at anterior end. Basal plate faintly chitinized. Parameres strong, thick anteriorly and curved outwards at posterior end. Endomeres comparatively thin, 'V' shaped curved at posterior end

and pointed at tip. Endomeral plate broad and rectangular. Nature of genital sclerite as shown in Fig. 1e and Fig. 3f.

## DISCUSSION

Genus *Hohorstiella* is desperately under need of revision and complete characteristics of most of species described by authors have not been given. Even certain species have been described in absence of male specimens. Out of 10 species of *Hohorstiella* in which pleurites are not prolonged, three species reportedly occur on Genus *Streptopelia* (*H. asiatica* Fedorenko & Kekilova, 1978 occurs on *S. senegalensis*; *H. streptopeliae* Eichler, 1953 infests *S. turtur arenicola* and *H. modesta* Ansari, 1951 parasitizes *S. decaocto decaocto*).

The specimens of *H. rampurensis* differ from *H. modesta* in several characteristics i.e. absence of median notch at the anterior tip of frons; straight margins of metathorax (instead of concavo- convex margins); presence of occipital setae 21 (in addition to 22 and 23); 5 + 5 gular setae (instead of 4 + 4); 18 and 20 minute spines on upper and lower margins of vulva (in contrast to 12 and 13); concave posterior tergal margins of abdominal segments VI, VII and VIII (instead of straight margins) and the abdominal chaetotaxy.

The male genitalia of *H. rampurensis* n. sp. also differs from that of *H. modesta*. As far as other two species occurring on genus *Streptopelia* are concerned, *H. rampurensis* n. sp. differs from *H. streptopeliae* (infesting *S. turtur arenicola*) in the nature of ocular slit. It differs from *H. asiatica* (occurring on *S. senegalensis*) in having 5 + 5 gular setae, in contrast to 4 + 4.

Hence, the specimens collected from *S. decaocto decaocto* can be regarded as new species and named *H. rampurensis*.

## ACKNOWLEDGEMENTS

We are indebted to the Principal, Govt. Raza P.G. College, Rampur, U.P., for providing laboratory facilities, to Chief Wild Life Warden of U. P. for permission to catch the birds and to the UGC, New Delhi for providing financial support to A. K. S. in the form of Project No 38- 86/ 2009 (SR).

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*(Received 20 August 2010; accepted 1 September 2010)*