The dusty lacewings (Neuroptera: Coniopterygidae) of the Arabian Peninsula

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Abstract: The descriptions of nine new coniopterygid species (Cryptoscenea stylaris n. sp., Coniopteryx (Xeroconiopteryx) platypus n. sp., C. (X.) caudata n. sp., C. (X.) dudichi n. sp., C. (X.) stylobasalis n. sp., C. (X.) arnata n. sp., C. (X.) lokset n. sp., C. (Coniopteryx) gozmanyi n. sp., Conwentzia obscura n. sp.), and an annotated list of 53 other species of dusty lacewings found in the Arabian Peninsula are given, together with an identification key. Nine described species (Aleuropteryx wawrikae, Coniocompsa smithersi, Nimba espanoli, N. kasyi, N. ressii, Coniopteryx (X) aegyptiaca, C. (X) hastata, C. (X) kerzhneri, C. (X) mongolica) are also new to the fauna of the Arabian Peninsula. Aleuropteryx cruciata Sziráki, 1990 is regarded as a junior synonym of A. arabica Meinander, 1977, while Helicoconis serrata Meinander, 1979 is transferred to the genus Cryptoscenea. A new informal species-group (the unguhipandriata-group) is proposed within the subgenus Xeroconiopteryx. Coniopteryx (X) martinmeinanderi nom. nov. is proposed for C. (X) furcata Meinander, 1998, which is a junior primary homonym.

INTRODUCTION

In Meinander’s first monograph on the Coniopterygidae (MEINANDER 1972) no data from the Arabian Peninsula were included, but during the 1970s 14 species were reported (MEINANDER 1977, 1979), some of them newly described. Since then, as a result of the work by SZIRÁKI (1992, 1997), MONSERRAT (1995, 1996) and MEINANDER (1998), this number has greatly increased. At the end of
the 1990s, 41 species of dusty lacewings were listed from this area (Hölzel 1998). In the present paper, a full list of the 62 species (nine of them new to science) now known from the Arabian Peninsula is given, together with a key for the males and with additional data on the basis of the newly examined specimens. Females are mentioned only if they could be identified to species, but the keys to subfamilies and genera are also valid for females.

**MATERIAL AND METHODS**

All the specimens examined were collected in Yemen, mainly with the help of Malaise traps and light traps which were operated in various parts of the country (Table 1).

**Table 1:** List, data and description of collecting sites

<table>
<thead>
<tr>
<th>Locality</th>
<th>Coordinates</th>
<th>Alt. [m]</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Kowd</td>
<td>13°05'N 45°22'E</td>
<td>20</td>
<td>Light trap, placed on the first floor of the regional agricultural office, in the middle of an agricultural area, where mainly fruit crops (mango, banana, guava, sorghum, cotton, sesame and some vegetables are grown; only a few kilometres from the Indian Ocean</td>
</tr>
<tr>
<td>Hammam' Ali</td>
<td>14°41'N 44°08'E</td>
<td>1600</td>
<td>Citrus orchard (caught individually)</td>
</tr>
<tr>
<td>Lahj</td>
<td>13°04'N 44°53'E</td>
<td>100</td>
<td>Malaise trap, placed within the compound of the Naser Agricultural College of the University of Aden, on the southern outskirts of Lahj; compound with stables for farm animals and ornamental trees</td>
</tr>
<tr>
<td>Mayfa'ah</td>
<td>14°15'N 47°35'E</td>
<td>400</td>
<td>Light trap, placed within the residential compound of a World Bank agricultural project, just east of the village of Mayfa'ah, surrounded by agricultural fields</td>
</tr>
<tr>
<td>Sana'a</td>
<td>15°21'N 44°13'E</td>
<td>2300</td>
<td>Malaise trap and light trap, placed within the compound of the General Department of Plant Protection (GDP), town quarter Shaub, almost in the town centre; compound with offices and laboratories surrounded by agricultural fields where cereals and vegetables are grown</td>
</tr>
<tr>
<td>Ta'izz</td>
<td>13°35'N 44°02'E</td>
<td>1400</td>
<td>Light trap, placed within the AREA experimental farm, town quarter Uzaifira, on the northern outskirts of town; farm with permanent fruit crops (citrus, mango) and cultivation of cereals and vegetables</td>
</tr>
</tbody>
</table>

As regards the male terminalia, we follow the terminology used by Meinander (1972), with a few changes as indicated in the text. The male terminalia are figured in their entirety and in detail – with the necessary captions – for all the newly described species, but otherwise it is usually only the structures used in the keys that are illustrated. For the wing venation, the generally accepted abbreviations are used in the text and in the figures (Figs 1, 15, 22, 31, 48, 114). As regards the distribution of the species outside the Arabian Peninsula, data from the papers by Meinander (1972, 1990), Monserrat (1995, 2002), and Aspöck et al. (2001) have been used.

All the specimens examined will be deposited in the collection of the Hungarian Natural History Museum, Budapest (HNHM).
IDENTIFICATION KEYS

Key to the subfamilies of Coniopterygidae from the Arabian Peninsula

1   Two radio-medial cross veins in the middle of fore wing; hind wing with Rs branching from R very close to the base of wing (Figs 1, 15)  Aleuropteryginae
   – One radio-medial cross vein in the middle of fore wing; hind wing with Rs not branching from R very close to the base of wing (Fig. 48)  Coniopteryginae

Key to the genera of Aleuropteryginae from the Arabian Peninsula

1  Radial cross vein in hind wing meeting Rs on stem or fork ........................................  2
   – Radial cross vein in hind wing meeting Rs on branch R$_{2+3}$ ........................................  3
2  Wings very narrow; median setae of fore wing present and arising from large thickenings (Fig. 15)  Coniocompsa
   – Wings more or less broad; median setae of fore wing absent, or present but not arising from thickenings (Fig. 1); with a ventral spine on the pedicel of male antennae (Fig. 8)  Aleuropteryx
3  Setae present on M in fore wings; M and Cu$_1$ in the hind wing well separated, and the two veins diverging evenly from each other (Fig. 31)  Helicoconis
   – No setae visible on M in fore wings; Cu$_1$ running for more than half its length so close to M in the hind wing that no membrane is visible between them; distal part of these two veins diverging abruptly from each other (Fig. 22)  Cryptoscenea

Key to the Aleuropteryx species from the Arabian Peninsula

1  In male genitalia, the ninth sternite without a widened caudal lobe (Figs 2, 9) ........  2
   – In male genitalia, the ninth sternite with a widened caudal lobe (Figs 6, 11) ........  3
2  With an elongated dorsal plate above the penis (Fig. 10)  A. vartianorum
   – With no dorsal plate above the penis  A. arabica
3  Caudal lobe of ninth sternite T-shaped (Fig. 6)  A. mestrei
   – Caudal lobe of ninth sternite broadly rounded ........................................  4
4  Dorsal plate above penis small, and ending in two apophyses (Fig. 5)  A. felix
   – Dorsal plate above penis broad (Figs 13-14)  A. wawrikae

Key to the Coniocompsa species from the Arabian Peninsula

1  No cross vein Rs-M at the knee of Rs; penis distinctly tapering in both lateral and dorsal views (Figs 18-19)  C. smithersi
   – Cross vein Rs-M at the knee of Rs present (Fig. 15); penis in dorsal view bulb-like (Fig. 17)  C. arabica
Key to the Cryptoscenea species from the Arabian Peninsula

1. Stylus present as a curved tooth, or plate-like with a small curved tooth (Figs 20, 23, 25)  
   2. Stylus with four projections (Figs 28-29)  
   3. Caudal part of paramere tongue-like (Fig. 21)  
   4. Caudal part of paramere widened in lateral view ...................................................... 
   5. Caudal part of paramere crenulated; penis longer than paramere (Fig. 24)  
   6. Caudal part of paramere serrated; penis about as long as paramere (Figs 26-27)  

Key to the Helicoconis species from the Arabian Peninsula

1. Paramere with a strong dorsal projection (Fig. 33)  
   2. Paramere without a dorsal projection (Fig. 34)  

Key to the genera of Coniopteryginae from the Arabian Peninsula

1. Hind wing reduced, fore wing normal (Fig. 224)  
   2. Both wings normal, or exceptionally both wings shortened........................................  
   3. M of hind wing unforked (Fig. 114)  
   4. Rs of both wings unforked (Fig. 48)  
   5. Cross vein M-Cu₁ of both wings oblique, usually meeting posterior branch of M (Fig. 241)  
   6. Cross vein M-Cu₁ in fore wing meeting the longitudinal veins usually at a right angle, and always on the stem of M (Fig. 234)  

Key to the Nimboa species from the Arabian Peninsula

1. Wing membrane spotted (Fig. 48)  
   2. Wing membrane unspotted .......................................................... 
   3. Dorsal arch of parameres absent (Figs 37-38)  
   4. Dorsal arch of parameres present (Figs 45-46)  
   5. Median incision of hypandrium very wide and deep (Fig. 51)  
   6. Median incision of hypandrium small, shallow or absent (Figs 39, 42)......................  
   7. Fused part of parameres very broad in lateral view (Fig. 58)  
   8. Fused part of parameres moderately broad or narrow ..............................................  
   9. Fused part of parameres narrow, in lateral view curved upwards, with a rounded tip (Figs 55-56)  
  10. Fused part of parameres in lateral view with a pointed caudal edge ..........................  
  11. Dorsal arch of parameres prominent (Figs 44-45)  
  12. Dorsal arch of parameres low (Fig. 40)  

C. stylaris n. sp.  
C. hoelzeli  
C. ohmi  
C. serrata  
H. beata  
H. iberica  
Conwentzia  
Coniopteryx  
Nimboa  
Semidalis  
Hemisemidalis  
N. marroquina  
N. espanoli  
N. ressli  
N. yemenica  
N. sumaran  
N. macropiera  
N. kasyi
Key to the subgenera of *Coniopteryx* from the Arabian Peninsula

1 Two arms of gonarcus caudally connected by a distinctly sclerotised band (Fig. 213)

   - Two arms of gonarcus separated ........................................................................... 2

2 Styli originating from the apex of gonarcus (Figs 193-194)

   - Styli originating basally of the apex of gonarcus .................................................. Xeroconiopteryx

Key to the species of *Coniopteryx* (*Xeroconiopteryx*) from the Arabian Peninsula

1 Long, well-sclerotised thorn-like or narrowly tongue-like processus lateralis originating from the lower half of hypandrium; no scale-like hairs on male antennae........ 23

   - Processus lateralis not thornt-like or narrowly tongue like; scale-like hairs usually present .......................................................................................................................... 2

2 Processus apicalis of paramere with a dorsal and a pointed ventral branch (Fig. 149)

   - Processus apicalis of paramere without a pointed ventral branch ......................... 3

3 Penis more than two-thirds as long as paramere ......................................................... 4

   - Penis not more (usually distinctly less) than two-thirds as long as paramere ........... 5

4 Penis narrow, and curving dorsally (Fig. 88)

   - Penis in lateral view broad, and curving ventrally (Fig. 76) ................................... C. (*X.*) caudata n. sp.

5 Styli (or one of their branches) forming an arch below the parameres...................... 6

   - Styli without an arch below the parameres .............................................................. 22

6 Arch of styli below the parameres broad, with a tapering, forwardly-directed median apophysis (Fig. 168)................................................................. 7

   - Arch of styli below the parameres without a tapering median apophysis (Fig. 128) (if a median apophysis present, it is knob-like (Fig. 173))................. 9

7 Hypandrium rather long, with distinct processus terminalis (Figs 163, 165-166)

   - Hypandrium short, without distinct processus terminalis (Figs 182, 184)............. 8

8 Processus lateralis of hypandrium short but prominent; lateral part of the inner branch of styli very broad; parameres stout (Figs 90, 93)

   - Processus lateralis indistinct; lateral part of the inner branch of styli narrow; parameres slender (Figs 182, 185-186)................................. C. (*X.*) venustula

9 Processus apicalis of paramere forked ....................................................................... 15

   - Processus apicalis of paramere unforked .................................................................. 10

10 Gonarcus without internal projection ......................................................................... 11

   - Gonarcus with internal projection................................................................................ 12

11 With a low, broadly rounded lobe before the caudal projection of processus apicalis (Fig. 118)

   - No rounded lobe before the caudal projection of processus apicalis (Fig. 112) C. (*X.*) ketiae

12 Internal projection of gonarcus plate-like (Figs 144, 147)

   - Internal projection of gonarcus thorn-like................................................................................. C. (*X.*) platyarcus n. sp.

13 Internal projection of gonarcus subapical (Fig. 135)

   - Internal projection of gonarcus basal............................................................................. C. (*X.*) mucrogonarcuata
Internal projection very close to the gonarcus, consequently the gonarcus appearing to be forked (Figs 99-100) \( C. (X.) \) martini\_meinanderi

Internal projection of gonarcus situated almost medially (Figs 67-68) \( C. (X.) \) appendiculata

With a collar-like structure connecting the parameres dorsally (Figs 83-84) \( C. (X.) \) collars

No collar-like structure dorsally of parameres

The inner (anterior) branch of processus apicalis extremely long (Figs 158-159) \( C. (X.) \) stylobasalis n. sp.

The inner (anterior) branch of processus apicalis short

The inner branch of processus apicalis lobe-like (Fig. 94) \( C. (X.) \) dudichi n. sp.

The inner branch of processus apicalis either with two teeth or pointed

The inner branch of processus apicalis with two teeth (Fig. 64) \( C. (X.) \) aegyptiaca

The inner branch of processus apicalis pointed in lateral view

Processus apicalis extremely small (Fig. 127) \( C. (X.) \) makarkini

Processus apicalis normally developed

With a special sclerite with a serrated caudal edge connected to the styli and parameres (Fig. 132) \( C. (X.) \) mongolica

No special sclerite connected to the styli and parameres

Gonarcus very long, paramere with prominent processus ventralis (Figs 169, 172) \( C. (X.) \) unguignonarcuata

Gonarcus moderately long, paramere without distinct processus ventralis (Figs 187, 191) \( C. (X.) \) wittmeri

Parameres supported by a U-shaped sclerite (Figs 156-157) \( C. (X.) \) sanana

No U-shaped sclerite below the parameres (Fig. 143) \( C. (X.) \) orba

Processus lateralis of hypandrium narrowly tongue-like (Fig. 119) \( C. (X.) \) loksai n. sp.

Processus lateralis of hypandrium thorn-like

Thorn-like processus lateralis simple (Figs 71, 104)

Thorn-like processus lateralis hooked or forked (Figs 174, 178)

Branches of processus apicalis of paramere wide (Figs 71-72) \( C. (X.) \) armata n. sp.

Branches of processus apicalis of paramere narrow (Fig. 107)

Processus lateralis forked (Fig. 178)

Processus lateralis hooked (Fig. 174)

\( C. (X.) \) unguibipandriata

Key to the species of Coniopteryx (Coniopteryx) from the Arabian Peninsula

1 Hypandrium short (Figs 207, 209). Vertex with three setose areas (Fig. 206) \( C. (C.) \) vanharteni

Hypandrium long

2 Anterior apodeme of hypandrium straight in ventral view; tip of processus apicalis of paramere sharply bent outwards (Figs 199-200) \( C. (C.) \) exigua

Anterior apodeme of hypandrium curving backwards; processus apicalis slightly sinuous (Figs 195, 197)

3 Processus terminalis (in lateral view) hooked, outer branch of stylus without chitinous spines (Fig. 193) \( C. (C.) \) curvicauda

Processus terminalis not hooked, outer branch of stylus with chitinous spines (Figs 201-202) \( C. (C.) \) gozmannyi n. sp.
Key to the species of Coniopteryx (Holoconiopteryx) from the Arabian Peninsula

1 Processus lateralis of hypandrium truncate, penis broad (Figs 213, 215); male antennae without scale-like hairs  
   – Processus lateralis of hypandrium rounded, penis slender (Figs 217-218); male antennae with scale-like hairs  
   \textit{C. (H.) tenuicornis}

\textit{C. (H.) turneri}

Key to the species of Conwentzia from the Arabian Peninsula

1 Hypandrium with a strong anterior apodeme, and with a narrow membranous caudal part. Inner process of ectoproct broad (Figs 221, 223) \textit{C. obscura} n. sp.
   – Hypandrium without an anterior apodeme, and with a wide membranous caudal part. Inner process of ectoproct narrow (Figs 228-229) \textit{C. sabae}

Key to species of Hemisemidalis from the Arabian Peninsula

1 Processus terminalis of hypandrium protruding, with a dorsal knob in lateral view, and with a heavily sclerotised band in lateral view (Figs 238-239) \textit{H. pallida}
   – Processus terminalis short or rudimentary ................................................................. 2

2 Processus terminalis short, with a shallow median incision (Fig. 232) \textit{H. fulvipennis}
   – Processus terminalis rudimentary, without a median incision (Fig. 236) \textit{H. kasyi}

Key to the species of Semidalis from the Arabian Peninsula

1 Hypandrium with two strong, outstanding setae (Figs 244-245) ....................................................... 2
   – Hypandrium without strong, outstanding setae (only with ordinary hairs or with several rather short setae) ................................................................. 3

2 Processus apicalis of paramere extremely large (Fig. 256) \textit{S. tenuipennis}
   – Processus apicalis rather narrow, membraneous (Figs 246-247) \textit{S. pluriramosa}

3 Ventrally of uncini with a heavily sclerotised transverse plate (Figs 248, 250-252) \textit{S. scotti}
   – Ventrally of uncini without a transverse plate (Fig. 243) \textit{S. arabica}

TAXONOMIC ACCOUNT

Subfamily Aleuropteryginae
Genus \textit{Aleuropteryx} Löw, 1885

\textit{Aleuropteryx arabica} Meinander, 1977

\textit{Aleuropteryx arabica} Meinander, 1977. — Entomologica Scandinavica \textbf{8}: 83.
\textit{Aleuropteryx cruciata} Sziráki 1990. — Folia Entomologica Hungarica \textbf{51}: 117, \textit{n. syn.}

Figs 1-14: Species of *Aleuropteryx*. 1-3: *Aleuropteryx arabica*. 1: wings, 2: 9th sternite, ventral view (according to the original description), 3: 9th sternite of the specimen from Tanzania (holotype of *A. cruciata*), ventral view. Redrawn from Meinander 1977 (2), and Sziráki 1990 (1, 3). 4-5: *Aleuropteryx felix*. 4: 9th sternite, ventral view, 5: dorsal plate, dorsal view – specimen from Yemen: Ta’izz. Fig. 4 redrawn from Meinander 1977, 6-8: *Aleuropteryx mestrei*. 6: 9th sternite, ventral view, 7: dorsal plate, dorsal view, 8: basal part of male antenna. Redrawn from Monserrat 1996. 9-10: *Aleuropteryx wurtianorum*. 9: 9th sternite, ventral view, 10: dorsal plate, dorsal view. Redrawn from Meinander 1972. 11-14: *Aleuropteryx wawrikae*. 11: 9th sternite, ventral view (according to the original description), 12: 9th sternite of the Yemeni specimen (from Al-Kowd), ventral view, 13: dorsal plate, dorsal view (according to the original description), 14: dorsal plate of the Yemeni specimen, dorsal view. Figs 11 and 13 redrawn from Rausch & Aspöck 1978 a.
Diagnosis: Small, dark-pigmented species. Fore wing 1.5-1.7 mm, with dark brownish-grey colour, and forked vein Cu₂. In the male genitalia the ninth sternite has a long, narrow caudal process. Among the specimens examined, there is a series with genital features transitional between *A. arabica* Meinander, 1977 and *A. cruciata* Sziráki, 1990 from Tanzania. The sclerotization of the lateral part of the 9th sternite may be rather weak or strong, and the structures between the lateral and caudal parts may be membranous, slightly or distinctly sclerotised; moreover, this sternite may be rounded or rather acute proximally (Figs 2-3). Consequently, *A. cruciata* must be regarded as a junior synonym of *A. arabica*.


**Aleuropteryx felix** Meinander, 1977


Diagnosis: A larger, light-pigmented species. Fore wing 2.2-2.7 mm, with yellowish-brown colour, and unforked vein Cu₂. In the male genitalia the ninth sternite has a broadly rounded caudal lobe, and a small dorsal plate terminating in two apophyses.


**Aleuropteryx mestrei** Monserrat, 1996


Diagnosis: A small, light-pigmented species. Fore wing 1.8-1.9 mm, with yellowish-brown colour, and unforked vein Cu₂. In the male genitalia the ninth sternite has a T-shaped caudal lobe and an elongated dorsal plate terminating in two blunt rods.


**Aleuropteryx vartianorum** Aspöck & Aspöck, 1967


Diagnosis: A rather small, light-pigmented species. Fore wing 1.5-2.2 mm, with yellowish-brown colour, and unforked vein Cu₂. In the male genitalia the ninth sternite does not have a widened caudal lobe, while its elongated dorsal plate terminates in two thin, slightly bent projections.

Distribution: Saudi Arabia (MEINANDER 1979), Oman (MONSERRAT 1995) and Pakistan.

**Aleuropteryx wawrikae** Rausch & Aspöck, 1978


Diagnosis: A rather dark-pigmented species. Fore wing of type specimens 2.2-2.4 mm, that of Yemeni specimens 1.5 mm, with greyish-brown colour, and unforked vein Cu₂. In the male genitalia the ninth sternite has a broadly rounded caudal lobe, and a broad dorsal plate.

Remarks: The validity of this species was considered to be uncertain by MEINANDER (1990), but examination of the present specimens supports its validity.

Distribution: Yemen and Morocco. New to the fauna of the Arabian Peninsula, and the first record apart from its type locality.
Genus *Coniocompsa* Enderlein, 1905

*Coniocompsa arabica* Sziráki, 1992


Diagnosis: Head pale yellowish-brown. Length of fore wing 2.6 mm. Cross vein Rs-M at the knee of Rs present, but weak. Deeply forked apex of the very thick, dorsally concave penis slightly tapering in lateral view, in dorsal view bulb-like.

Distribution: Known only from Yemen.

*Coniocompsa smithersi* Meinander, 1972


Diagnosis: Head dark brown. Length of fore wing 2.5-3.0 mm. No cross vein Rs-M at the knee of Rs. Slightly forked apex of penis distinctly tapering in lateral view and also in dorsal view.

Remarks: Recently, MONSERRAT (2002) has synonymised *C. smithersi* with *C. silvestriana* Enderlein, 1914. However, because of the different shape of the penis, we are not convinced that the specimen of *C. silvestriana* figured by MEINANDER (1975), and the specimen which was drawn in the original description of *C. smithersi* (MEINANDER 1972), belong to the same species.

Distribution: Yemen, East and South Africa and Equatorial Guinea. New to the fauna of the Arabian Peninsula, and first record outside Africa.

Genus *Cryptoscenea* Enderlein, 1914

*Cryptoscenea hoelzeli* Sziráki, 1997


Diagnosis: Length of fore wing 2.4 mm. Both wing pairs 2.5 times as long as wide. Caudal part of paramere tongue-like and blunt in lateral view. Stylus simple, sinuous. Penis about as long as parameres.

Distribution: Known only from Yemen.

_Cryptoscenea ohmi_ Sziráki, 1997


Diagnosis: Length of fore wing 2.3 mm. Both wing pairs about three times as long as wide. Coxopodite large. Caudal part of paramere in lateral view widened and with crenulated caudal edge. Stylus simple, prominent, curved inwards. Penis distinctly longer than paramere.

Additional descriptive features of this species: There was no previous information on the colour of this species as the holotype, the single known specimen until now, had lost its colour before examination. The present specimen has the head capsule, antennae, palpi and legs light brown, and wing membrane light yellowish-brown.

Distribution: Known only from Yemen.
Cryptoscenea serrata (Meinander, 1979), new comb.


**Diagnosis:** Length of fore wing 2.3 mm. Both wing pairs 2.7 times as long as wide. Coxopodite short. Caudal part of paramere in lateral view widened and with a serrated and ventrally hooked caudal edge. Stylus plate-like with a small curved tooth. Penis about as long as parameres.

This species belongs to the genus *Cryptoscenea* because of the following features:

- setae on vein M of the fore wing absent;
- in the hind wing, vein Cu₁, running for more than half its length so close to M that no membrane is visible between these veins;
Coniopterygidae of the Arabian Peninsula


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long fringes present on the hind margin of the hind wing;
- no ventral process on male ectoproct.

**Distribution:** Saudi Arabia (Me인이 1979); new to Yemen.

**Cryptoscenea stylaris** n. sp.

**Holotype:** ♂, Yemen, Sana’a, light trap, 1.VI-10.VII.1999, A. van Harten, HNHM.

**Diagnosis:** Length of fore wing 2.0 mm, of hind wing 1.8 mm. Both wings are narrow: about three times as long as wide. Coxopodites short, subtriangular. Paramere rather strong, in lateral view its caudal end forked, and bent downwards. Stylus with a dorsal, a caudal, a lateral and a basal projection.

**Description:** With a large unsclerotised area on the frons. Maxillary palpi slender. Colour of the head capsule dark brown, antennae, palpi, thorax and legs medium brown. Eyes rather small, black. Antennae 1.0 mm, 23-segmented. Scape and pedicel about 1.8 times as long as broad, median flagellar segments 1.5 times as long as broad. Hairs situated irregularly on the flagellar segments. Both wings narrow: about three times as long as wide. In the hind wing, vein Cu1 running for more than half of its length so close to M that no membrane is visible between them, and at one point they diverge abruptly. Fringes short on the fore wing and near to the apex of the hind wing, but long on the hind margin of the hind wings. Wing membrane hyaline. Length of fore wing 2.0 mm, of hind wing 1.8 mm.

Male genitalia as in Figs 28-30. Ninth tergite and sternite well sclerotised. Border between ninth and tenth tergites indistinct. Ectoproct without ventral process. Coxopodites short, subtriangular, broad basally, rounded caudally. Ninth tergite and sternite strengthened by a strong apodeme anteriorly, which in the case of the sternite continues as a chitinised median projection caudally. Tip of this projection connected to a triangular transverse plate situated below the parameres. The structure of the stylus is entirely unusual: it has a dorsal, a caudal, a lateral and a basal projection. The latter is connected to the above-mentioned transverse plate, the dorsal projection is rather small, apically heavily sclerotised and slightly serrated, while the caudal projection is large
and curves upwards caudally. Paramere rather strong, in lateral view its caudal end forked, and bent downwards. Penis long, wide and forked near to its middle; in addition, this sclerite has a tubular structure before the middle.

Remarks: Because of the shape and venation of the wings, the presence of long fringes on the hind wings, and the absence of a ventral process on the ectoproct, the new species belongs to the genus Cryptoscenea. On the other hand, it does not appear to be close to any of the known species of this genus because of the peculiar structure of the stylus and the unusual shape of the paramere.

Etymology: The specific name relates to the peculiar structure of the stylus.

Genus Helicoconis Enderlein, 1905
Subgenus Fontenellea Carpentier & Lestage, 1928

Helicoconis (Fontenellea) beata Sziráki, 1997


*Diagnosis:* Head distinctly sclerotised between antennae. Length of fore wing 2.7 mm. Both wings about 2.5 times as long as wide. Paramere with a strong dorsal projection.

*Distribution:* Known only from Yemen.

Helicoconis (Fontenellea) iberica Ohm, 1965

*Diagnosis:* Head with a weakly sclerotised spot within the unsclerotised area between antennae. Length of fore wing 2.7-2.8 mm. Paramere without a dorsal projection.

*Distribution:* Spain and Yemen (Meinander 1977).

Subfamily Coniopteryginae
Genus Nimboa Navas, 1915

Nimboa espanoli Ohm, 1973
*Nimboa* sp.1. — Meinander 1972: 189.


*Diagnosis:* Wing membrane unspotted. Length of fore wing 2.2-2.5 mm. Caudal edge of hypandrium with a small median incision. Fused caudal part of paramere long, narrow, its tip rounded. Dorsal arch of paramere absent.

*Distribution:* Yemen, Canary Islands, Mali, Morocco, Nigeria, South Africa, Spain. New to the fauna of the Arabian Peninsula.

Nimboa kasyi Rausch & Aspock, 1978


*Diagnosis:* Wing membrane unspotted. Length of fore wing 3.1 mm. Caudal part of hypandrium with a wide, shallow incision. Fused caudal part of paramere rather short, in lateral view pointed, in dorsal view broadly truncated. Dorsal arch of paramere low.

**Distribution:** Yemen and Turkey (Anatolia). New to the fauna of Arabian Peninsula, and the first record apart from the type locality.

*Nimboa macroptera* Aspöck & Aspöck, 1965


**Diagnosis:** Wing membrane unspotted. Length of fore wing 1.6-3.5 mm. Caudal edge of hypandrium with a shallow, often indistinct incision. Fused caudal part of paramere moderately long, narrow, its caudal end narrowly truncate or moderately pointed in dorsal view, distinctly pointed in lateral view. Dorsal arch of paramere prominent.
Remarks: The length of the fore wing in the present material was 1.6-1.9 mm. At the same time, the features of the male genitalia varied from almost typical *N. macroptera* to different kinds of “transitional” forms and to entirely typical *N. vartianorum* sensu Aspöck & Aspöck 1965 b. Consequently, *Nimboa vartianorum* Aspöck & Aspöck, 1965 is correctly regarded as a junior synonym of *N. macroptera*, as was proposed by Monserrat (1995).

Distribution: Saudi Arabia (Meinander 1979), Oman (Monserrat 2002), Yemen, Afghanistan, Iran, Egypt, Sudan, Lebanon, Canary Islands, Greece (Crete). New to Yemen.

*Nimboa marroquina* Monserrat, 1985


Diagnosis: Wing membrane spotted. Length of fore wing 2.2 mm. Caudal edge of hypandrium with a shallow incision. Fused caudal part of paramere very wide, in ventral view bilobed, its dorsal arch prominent.

Distribution: Yemen (also Sziráki 1997), Morocco, South Africa, Mozambique.

Nimboa ressi Aspöck & Aspöck, 1965


Diagnosis: Wing membrane unspotted. Length of fore wing 2.3-2.4 mm. Caudal edge of hypandrium with a large, deep incision. Fused caudal part of paramere short, its caudal tip pointed. Dorsal arch of paramere low.

Distribution: Yemen, Turkey (Anatolia), Palestine, Lebanon. New to the fauna of Arabian Peninsula.

Nimboa sumarana Sziráki, 1997


Diagnosis: Wing membrane unspotted. Length of fore wing 2.3 mm. Caudal part of hypandrium broad, rounded, without any incision. Fused caudal part of paramere narrow in dorsal view, broad with a rounded tip in lateral view. Dorsal arch of paramere small.

Distribution: Only known from Yemen.

Nimboa yemenica Monserrat, 1996


Diagnosis: Wing membrane unspotted. Length of fore wing 1.8 mm. Caudal part of hypandrium short, rather weakly sclerotised, without a distinct incision. Fused caudal part of paramere short, pointed. Dorsal arch of paramere large, in lateral view prominent.

Distribution: Known only from Yemen.

Genus Coniopteryx Curtis, 1834
Subgenus Xeroconiopteryx Meinander, 1972

Coniopteryx (Xeroconiopteryx) aegyptiaca Withycombe, 1924


Diagnosis: Scale-like hairs in two whorls on flagellar segments of male antennae. Wing membrane light brown. Length of fore wing 2.0-2.7 mm. Gonarcus short. Processus lateralis, processus terminalis and its median incision small. Styli unforked, band-like below the parameres. Inner branch of the forked processus apicalis with two teeth.

Remarks: The single specimen in the present material is a male with obviously aberrant, asymmetrical hypandrium and stylus, but with typical paramere, penis and antennae.


*Coniopteryx (Xeroconiopteryx) appendiculata* Sziráki, 1997


**Diagnosis**: Scale-like hairs present on whole surface of pedicel and first flagellar segments, and in a thick apical whorl on other flagellar segments of male antennae. Wing membrane hyaline. Length of fore wing 1.8 mm. Gonarcus extremely long, bent downwards, and with a strong, straight internal projection. Ventral part of processus lateralis forming a long, narrow lobe. Pro-
Coniopteryx (Xeroconiopteryx) armata n. sp.

**Holotype:** ♂, Yemen, Ta‘izz, light trap, VIII.1999, A. van Harten & A. Awad, HNHM.

**Diagnosis:** No scale-like hairs on flagellar segments of male antennae. Length of fore wing 1.7 mm, of hind wing 1.5 mm. Processus terminalis distinct but short. Anterior apodeme of hypandrium ventrally complete. Processus apicalis of paramere very wide, forked, with pointed dorsal and ventral branches.

**Description:** Head capsule and palpi light brown, their structure normal. Eyes large, black. Antennae light brown, apical part broken, remaining parts 19- and 27-segmented. Scape and pedicel about 1.5 times as long as broad, median flagellar segments 1.5 times as broad as long. Ordinary hairs in two whorls on flagellar segments. Moderately long setae present. Scale-like hairs absent. Thorax light brown with darker shoulder spots. Legs and wing membrane also light brown. Length of fore wing 1.7 mm, of hind wing 1.5 mm.

Male genitalia as in Figs 71-75. Hypandrium in lateral view slightly broader than long. Apodeme along anterior margin of hypandrium ventrally complete, but rather indistinct along its dorsal edge. Processus lateralis consisting of a small, caudally-situated lobe, and a large, pointed thorn which is slightly curved in lateral view and is connected to the above-mentioned lobe by a caudal apophysis. Processus terminalis rather short, but distinct, with a U-shaped median incision. Gonarcus with a haired dorsal part, and with a wide ventral apodeme to which a heavily sclerotised caudal projection is connected. Between the two arms of the gonarcus there is a haired plate (probable tenth sternite), while caudally of the gonarcus there appears to be a membranous structure in lateral view. Styli forming a band below the parameres, and with a pair of anterior lobes laterally. The large, bent paramere has a distinct processus ventralis and a very wide, forked processus apicalis with pointed dorsal and ventral branches. Penis consisting of two thin sclerotised rods, bent in lateral view.

**Remarks:** Because of the thorn-like part of the processus lateralis of the hypandrium with a caudal apophysis, the forked processus apicalis of the paramere with pointed dorsal and ventral branches and the absence of scale-like hairs on the flagellar segments of the antennae, the new species is close to *C. (X.) hastata* Meinander, 1997 and *C. (X.) unicif*. Monserrat, 1996. The main distinctive features of *Coniopteryx (X.) armata* are:

- the very wide processus apicalis of the paramere, which resembles that of *C. unicif* but differs sharply from that of *C. hastata*;
- the shape of the thorn-like part on the processus lateralis of the hypandrium;
- the short but distinct processus terminalis of the hypandrium;
- the ventrally complete anterior apodeme of the hypandrium, which is similar to that of *C. hastata* but differs from that of *C. unicif*.

**Etymology:** The specific name refers to the thorn-like part of the processus lateralis of the hypandrium in the male genitalia.
Coniopteryx (Xeroconiopteryx) caudata n. sp.

Holotype: ♂, Yemen, Ta'izz, light trap, 5.I.-II.1998, A. van Harten & M. Mahyoub, HNHM.

Diagnosis: Length of fore wing 1.5 mm, of hind wing 1.3 mm. Scale-like hairs covering a large part of the pedicel, and in two whorls on the flagellar segments. Anterior apodeme of hypandrium ventrally complete. Outer part of the forked processus apicalis of the paramere thorn-like, inner one forming a lobe. Penis sclerite single and extraordinarily large.

Description: Head capsule and palpi dark brown, their structure normal. Eyes rather small, black. Antennae dark brown; the tips broken, the remaining parts 20- and 24-segmented. Scape somewhat longer than broad, pedicel 1.5 times as long as broad. Basal flagellar segments broader than long, median flagellar segments about as long as broad. Ordinary hairs irregularly present on the scape, pedicel and first flagellar segments, but arranged in two whorls on the other segments. Setae present, but relatively small. Scale-like hairs covering a large part of the pedicel, and arranged in two whorls on the flagellar segments. Thorax and legs dark brown, wing membrane light fuscous. Length of fore wing 1.5 mm, of hind wing 1.3 mm.

Male genitalia as in figures 76-79. Hypandrium very short; in lateral view about four times as high as broad. Apodeme along its anterior margin ventrally complete but narrow. Processus terminalis and processus lateralis indistinct. Gonarcus broad and short with a short and stout caudal projection. Styli forming a rather wide arch below the parameres, bordered by a membrane caudally. Paramere moderately long, without a distinct processus ventralis but with a forked processus apicalis. Outer part of the latter process thorn-like, the inner one forming a lobe. The tail-like penis extraordinarily large, caudally curving down, a slightly forked single sclerite. It is covered by a transparent structure connecting to the stylus, and its heavily sclerotised part is pointed.

Remarks: Because of the two whorls of scale-like hairs on the flagellar segments of the male antennae, the new species belongs to the Coniopteryx (X) aegyptiaca Withycombe, 1924 species-group (sensu MEINANDER 1972), and because of the similar structure of male genitalia it is close to C. (X) wittmeri Meinander, 1979. The main distinctive features of Coniopteryx (X) caudata n. sp. are:

- the forked processus apicalis of paramere, in which the outer branch is long and thorn-like (in C. wittmeri the inner branch is long);
- the single penis sclerite;
- the ventrally complete anterior apodeme of the hypandrium.

Etymology: The specific name refers to the extraordinarily large, tail-like penis of the male genitalia.

Coniopteryx (Xeroconiopteryx) collaris Sziráki, 1997


Diagnosis: Scale-like hairs in an apical whorl on flagellar segments of male antennae. Wing membrane hyaline, or light brown. Length of fore wing 1.5-1.8 mm. Gonarcus short but broad, and with a strong, curved internal projection. Large part of processus lateralis indistinct. Processus terminalis rounded caudally, with a shallow median incision. Styli with stronger ventral and weaker
dorsal branch; the ventral one forming an arch below the parameres. Processus apicalis of paramere with two dorsal projections, and with a curious collar-like structure.

**Distribution:** Known only from Yemen.

**Coniopteryx (Xeroconiopteryx) dentifera** Meinander, 1983

Diagnosis: Scale-like hairs in two whorls on the flagellar segments of male antennae. Wing membrane light greyish. Length of fore wing 2.0 mm. Gonarcus moderately long, subtriangular, with a subapical internal tooth. Ventral part of processus lateralis forming a long, rather wide
lobe. Processus terminalis rounded, with a small tooth inside of the small median incision. Styli unforked, forming an arch below the parameres. Processus apicalis of paramere forked. Penis very long, curved.

**Distribution:** Yemen, Oman, Egypt, South Africa. Data from the Arabian Peninsula: MONSERRAT 1995 (Yemen, Oman), 1996 (Yemen).

### Coniopteryx (Xeroconiopteryx) deserta Meinander, 1979


**Diagnosis:** The presence of scale-like hairs is variable: they may be absent (as in the original description) or present in two whorls on the flagellar segments of male antennae (as in the present specimens). However, in latter case they are rather long, extremely narrow, moderately bent (not close to the surface of flagellomeres, and consequently lying almost parallel to the ordinary hairs), and rather sparsely situated in the whorls. Wing membrane light greyish. Length of fore wing 1.6-1.8 mm. Gonarcus moderately long, subtriangular. Hypandrium very short. Ventral part of processus lateralis prominent but short. Processus terminalis absent. Styli forked; outer branch represented by a small acute projection, inner branch very broad and forming an arch below the parameres, with a short median apophysis. Processus apicalis of the stout paramere forked, with a moderately long, tooth-like inner branch.

**Remarks:** *C. deserta* was synonymised with *C. venustula* Rausch & Aspöck, 1978 by MONSERRAT (1996) but, because of the features of male antennae and genitalia described above, we believe it to be a valid species.

**Distribution:** Saudi Arabia, Yemen. Other data from the Arabian Peninsula: MEINANDER 1979 (Saudi Arabia), SZIRÁKI 1992 (Yemen).

### Coniopteryx (Xeroconiopteryx) dudichi n. sp.

**Holotype:** ♂, Yemen, al-Kowd, light trap, 8-12.VII.2001, A. van Harten & S. Al-Haruri, HNHM. — **Paratype:** 1 ♂, same data as holotype, HNHM.

**Diagnosis:** Length of fore wing 1.5 mm, of hind wing 1.3-1.4 mm. Scale-like hairs on a large part of the pedicel, and in two whorls on flagellar segments. Processus terminalis of hypandrium without a median incision, processus lateralis weakly sclerotised. Gonarcus with a moderately pointed internal projection, and caudal part of this organ with a small apical lobe. Paramere with a forked processus apicalis.

**Description:** Frons and palpi normal. Head capsule dark brown. Eyes moderately large, black. Antennae 0.9 mm, 24-segmented, dark brown. Scape and pedicel about 1.5 times as long as broad. Median flagellar segments 1.3 times as broad as long. Ordinary hairs situated irregularly on the pedicel, and in two more or less irregular whors on the flagellar segments. Rather short setae present on flagellar segments. Scale-like hairs on a large part of the surface of pedicel and in two whors on flagellar segments, of which the apical one is thick while the basal one is weak and irregular. Thorax, legs and wing membrane light brown. Shoulder spot dark brown. Length of fore wing 1.5 mm, of hind wing 1.3-1.4 mm.

Male genitalia as in Figs 94-98. Hypandrium in lateral view about as high as broad. Apodeme ventrally complete along its anterior margin. Processus terminalis rounded, without a distinct median apical incision. Processus lateralis weakly sclerotised and continuing as a membraneous internal projection. Gonarcus long with a broad ventral apodeme, ending in a small, rounded hyaline lobe.
Figs 94-98: Coniopteryx (X.) dudichi n. sp. — holotype. 94: male genitalia, lateral view, 95: hypandrium, ventral view, 96: male internal genitalia, ventral view, 97: caudal part and internal projection of gonarcus, ventral view, 98: dorsal part of male genitalia, caudal view.

and with a plate-like internal projection that is triangular in ventral view. Between these projections there is a moderately chitinised protuberance (probable the tenth sternite). Parameres stout, in lateral view curved. Processus apicalis forked; its caudal projection is a moderately long, pointed and

forwardly curving thorn. Before this projection there is a distinct, blunt dorsal lobe. In addition, the caudal part of the paramere also has a rather weakly sclerotised internal lobe which has a very narrow connection with the median arch of the styli. Lateral parts of the styli moderately broad, their wide ventral part forming an arch below the parameres. Penis consisting of two well sclerotised sclerites that are rather broad in lateral view, and with a thin, outwardly curving caudal part.

Remarks: Because of the structure of the hypandrium and gonarcus, as well as the position of scale-like hairs on the flagellar segments, C. (X.) dudichi is close to C. (X.) platyarcus. The main distinctive features of the new species are:

- the curved parameres with a distinctly forked processus apicalis;
- the caudal process of gonarcus with a small transparent apical lobe;
- in ventral view, the internal projection of gonarcus moderately pointed.

Etymology: We dedicate this species to the late Dr. Endre Dudich, professor in the Department of Systematic Zoology and Zoogeography of the Eötvös Loránd University, Budapest, from 1934 to 1965.
Coniopteryx (Xeroconiopteryx) martinmeinanderi nom. nov. Figs 99-103


Distribution: Palestine, Yemen. New to the fauna of the Arabian Peninsula.

Coniopteryx (Xeroconiopteryx) hastata Meinander, 1998 Figs 104-108


Diagnosis: No scale-like hairs on flagellar segments of male antennae. Wing membrane fuscous. Length of fore wing 1.9 mm. Gonarcus basally broad, with a finger-like ventro-caudal projection, and a wart-like internal projection. Processus lateralis represented by a long, straight thorn, which is supported ventrally by a branched apophysis. Processus terminalis rather indistinct, with a very small median incision. Styli unforked, band-like below the parameres. Processus apicalis of paramere forked, with very narrow branches.

Distribution: Iran, Yemen. New to the fauna of the Arabian Peninsula.

Coniopteryx (Xeroconiopteryx) kerzhneri Meinander, 1971 Figs 109-113


Distribution: Yemen, Mongolia, Kazakhstan, Uzbekistan, Spain, Egypt, Algeria. New to the fauna of the Arabian Peninsula.

Coniopteryx (Xeroconiopteryx) ketiae Monserrat, 1985 Figs 114-118


Diagnosis: Scale-like hairs in an apical whorl on flagellar segments of male antennae. Wing membrane light greyish-brown. Length of fore wing 1.9-2.4 mm. Gonarcus moderately long, subtriangular. Processus lateralis rather indistinct, but connected to the rather distinctly sclerotised internal projection of hypandrium, which is usually clearly visible in ventral or caudal view. Processus
 terminalis small, without median incision. Styli unforked, band-like below parameres. Processus apicalis of paramere unforked, but with a small, rounded lobe before the base of its hooked tip.

**Distribution:** Spain, Yemen (also Sziráki 1997).

### Coniopteryx (Xeroconiopteryx) loksai n. sp.

**Holotype:** ♂. Yemen, al-Kowd, light trap, VII.1999, A. van Harten & S. Al-Haruri, HNHM.

**Diagnosis:** No scale-like hairs on flagellar segments of male antennae. Length of fore wing 1.5 mm, of hind wing 1.4 mm. Processus lateralis of hypandrium tongue-like, with indistinct dorsal edge. Ventral apodeme of gonarcus with a pointed ventral thorn. Processus apicalis of paramere in ventral view turning outwards at a right angle, and with a pyriform lateral part ending in a long, pointed dorsal projection.

**Description:** Occiput pale ochreous, other parts of head capsule dark brown, palpi light brown. Structure of frons and palpi normal. Eyes moderately large, black. Antennae 1.1 mm, 28-segmented, light brown. Scape 1.2 times, pedicel 1.5 times as long as broad. Median flagellar segments about as long as broad. Ordinary hairs in two whorls on flagellar segments. Setae present, scale-like hairs absent. Thorax pale ochreous with dark brown shoulder spots. Legs and wing membrane light brown. Length of fore wing 1.5 mm, of hind wing 1.4 mm.

Male genitalia as in Figs 119-123. Hypandrium in lateral view slightly higher than broad. Apodeme along its anterior margin ventrally complete, with median branch directed caudally. Dorsal apodeme of hypandrium distinct. Processus terminalis short, rounded, with small median
incision. Processus lateralis large, in lateral view tongue-like. Its dorsal edge rather indistinct, as this structure is continued as a membraneous internal projection. Gonarcus rather short. Its ventral apodeme ending in a pointed thorn bent downwards and slightly forwards. Ectoproct synscleritous with the gonarcus bearing moderately long setae and short hairs. The two ectoprocts fused dorsally, forming a well sclerotised dorsal arch. Styli attached to the middle of the ventral apodeme of gonarcus, and fused ventrally below parameres. Paramere, apart from the processus apicalis, narrow,
and bent sharply near the small processus ventralis. Processus apicalis in ventral view turning outwards at a right angle, and with a pyriform lateral part ending in a long, pointed dorsal projection. Penis consisting of two long, but thin sclerites. Between the two arms of gonarcus with a distinct haired plate (probable tenth sternite).

Remarks: Because of the well sclerotised and dorsally fused ectoproct, the peculiar structure of the stylus, and the parameres bent sharply near the processus ventralis, the new species is rather close to C. (X) unguibipandriata Monserrat, 1996. Moreover, Coniopteryx (X) armata n. sp., C. (X) hastata, C. (X) loksai n. sp., C. (X) unguibipandriata and C. (X) unicef may be regarded as members of a probably monophyletic species-group (unguibipandriata-group), as an addition to the other informal species-groups of the subgenus Xeroconiopteryx established by MeINANDER (1972, 1981). The common features of the species belonging to the unguibipandriata-group are: absence of scale-like hairs on male antennae, presence of an apodeme on the dorsal (dorso-caudal) edge of hypandrium, thorn- or tongue-like processus lateralis of hypandrium, and large, pointed processus apicalis of paramere. All of the species belonging to this group live in Yemen, but two of them (C. (X) hastata and C. (X) unicef) are also known from Iran. The main distinctive features of Coniopteryx (X) loksai n. sp. are:

- the peculiar processus apicalis of the paramere;
- the pointed ventral thorn at the tip of the ventral apodeme of the gonarcus;
- the tongue-like processus lateralis of the hypandrium with an indistinct dorsal edge.

Etymology: We dedicate this species to Dr. Imre Lókša, who was assistant professor in the Department of Systematic Zoology and Zoogeography of the Eötvös Loránd University, Budapest, until his untimely death in 1992.

Coniopteryx (Xeroconiopteryx) makarkini Sziráki, 1997

Figs 124-128


Specimens examined: Yemen: 1 ♂, Sana’a, light trap, V.1999, A. van Harten.

Diagnosis: Scale-like hairs in two whorls on flagellar segments of male antennae. Wing membrane fuscous brown. Length of fore wing 1.8 mm. Gonarcus narrow, bent downwards and inwards, and with a long slender apical thorn. Processus lateralis short, with a distinct upper angle. Processus terminalis small without a median incision. Styli narrow, unforked, band-like below the parameres. Processus apicalis of paramere forked, but its branches extremely short.

Distribution: Known only from Yemen.

Coniopteryx (Xeroconiopteryx) mongolica Meinander, 1969

Figs 129-133


Specimens examined: Yemen: 1 ♂, Sana’a, Malaise trap, II-III.1998, A. van Harten.

Diagnosis: Scale-like hairs in an apical whorl on flagellar segments of male antennae. Wing light greyish-brown. Length of fore wing 2.3 mm. Gonarcus small, ending in a hook. Processus lateralis very large, its upper edge rounded. Processus terminalis rounded caudally, without a median incision. Styli unforked, forming an arch below the parameres. A special sclerite connected to the styli and paramere with a serrated caudal edge. Processus apicalis of paramere narrow, bent upwards and forked.

Distribution: Mongolia, Kazakhstan, Yemen. New to the fauna of the Arabian Peninsula.

Coniopteryx (Xeroconiopteryx) murogonarcuata Meinander, 1979

Figs 134-138


Diagnosis: Scale-like hairs in an apical whorl on the flagellar segments of male antennae. Wing membrane yellowish-brown. Length of fore wing 2.2 mm. Gonarcus short, with a long, sub-apical, acute internal projection. Processus lateralis minute. Processus terminalis indistinct, without median incision. Styli unforked, forming an arch below the parameres. Processus apicalis of paramere unforked.

Distribution: Saudi Arabia, Yemen, Oman, Morocco. Other data from the Arabian Peninsula: MEINANDER 1979 (Saudi Arabia), 1998 (Oman), MONSERRAT 1996 (Yemen).

*Coniopteryx (Xeroconiopteryx) orba* Rausch & Aspöck, 1978

**Diagnosis:** Length of fore wing 2.0 mm. Gonarcus moderately long, blunt, with a long, subapical, acute internal projection. Processus lateralis short, and connected to the very wide, plate-like internal projection of hypandrium. Processus terminalis indistinct, with a small median incision. Styli unforked, without an arch below parameres. Processus apicalis of paramere forked, with a dorsally directed, extremely large caudal branch.

**Distribution:** Oman (Monserrat 1995), Iran.

**Coniopteryx (Xeroconiopteryx) platyarcus** n. sp.

**Holotype:** ♂ Yemen, al-Kowd, light trap, VIII.1999, A. van Harten & S. Al-Haruri, HNHM. — **Paratypes:** 28 ♀♂, same data as holotype; 4 ♂♂, Yemen, Mayfa‘ah, light trap, 26-28.V.1998, A. van Harten & M. Afif, HNHM.

**Diagnosis:** Scale-like hairs mostly in an apical whorl on the flagellar segments. Length of fore wing 1.5-1.6 mm, of hind wing 1.3-1.4 mm. Hypandrium with a shallow median incision in the rounded processus terminalis. Gonarcus long, with a wide, plate-like internal projection, pointed at tip, and a distinct caudal projection.

**Description:** Head and palpi ochreous, their structure normal. Antennae 0.8-1.0 mm, 24-segmented, light brown. Scape and pedicel about 1.5 times as long as broad, median flagellar segments ca. 1.5 times as broad as long. Ordinary hairs arranged irregularly on scape, on pedicel and
Figs 144-148: Coniopteryx (X) platyarcus n. sp. – holotype. 144: male genitalia, lateral view, 145: hypandrium, ventral view, 146: male internal genitalia, lateral view, 147: caudal and internal projections of gonarcus, ventral view, 148: dorsal parts of male genitalia, caudal view.
on first flagellar segments, and with two whorls of hairs on the other segments. Moderately long setae present. Scale-like hairs forming an apical whorl on the flagellar segments, but some of them irregularly arranged also on the basal part of these segments. Thorax pale ochreous, shoulder spots brown, legs light brown. Wing membrane and veins light brown. Length of fore wing 1.5-1.6 mm, of hind wing 1.3-1.4 mm.

Male genitalia as in Figs 144-148. Hypandrium in lateral view 1.5 times as high as broad. Apodeme along the anterior margin ventrally complete. Processus terminalis rounded, with a shallow median apical incision. Internal projection of hypandrium large, rounded and mostly membranous. Its more distinctly chitinised, acute outer part represents the processus lateralis. Gonarcus long, with a broad ventral apodeme, with a blunt caudal projection, and a wide, plate-like, but apically pointed internal projection. Between the two internal projections of the gonarcus with a moderately chitinised rib (probably the tenth sternite). Paramere strong with large, acute processus dorsalis, and, before this process, with a small dorso-lateral tooth. Styli slightly forked; their outer branches very broad, the inner ones forming an arch below the parameres. Penis consisting of two thin but long sclerites.

Remarks: Because of the structure of the hypandrium, the long gonarcus, the broad, forked styli and the shape of the paramere, *C. (X.) platyarcus* is close to *C. (X.) appendiculata* Sziráki, 1997. The main distinctive characteristics of the new species are:
the peculiar, plate-like, but pointed internal projection of the gonarcus;

the moderately long but very distinct caudal projection, which is connected to the ventral apodem of the same organ.

**Etymology:** The specific name refers to the plate-like projection of the gonarcus in the male genitalia.

**Coniopteryx (Xeroconiopteryx) ressli** Rausch & Aspöck, 1978

- **Diagnosis:** Scale-like hairs in two whorls on pedicel and on flagellar segments of male antennae. Wing membrane light greyish-brown. Length of fore wing 2.2-2.6 mm. Gonarcus short, with a prominent caudal tooth, and with a small internal projection. Processus lateralis weakly sclerotised. Processus terminalis rather large, but its median incision small. Styli unforked, band-like below the parameres. Processus apicalis of paramere consisting of a dorsal and a pointed ventral branch.

**Distribution:** Saudi Arabia (Meinander 1979), Iran.

**Coniopteryx (Xeroconiopteryx) sanana** Sziraki, 1997

- **Diagnosis:** Scale-like hairs in two whorls on flagellar segments of male antennae. Wing membrane fuscous brown. Length of fore wing 1.5-2.1 mm. Gonarcus rather long, with a stout, ventrally directed caudal thorn, and a slightly curved internal projection. Processus terminalis rather large, rounded, with a distinct U-shaped median incision. Styli unforked, without an arch below parameres. Processus apicalis forked; its posterior branch rounded lance-shaped, the anterior one large, twisted. Distal part of paramere ventrally supported by a U-shaped sclerite.

**Distribution:** Known only from Yemen.

**Coniopteryx (Xeroconiopteryx) stylobasalis** n. sp.

- **Diagnosis:** Scape swollen; with scale-like hairs on apical part of the flagellar segments and of pedicel. Length of fore wing 1.6-2.0 mm, of hind wing 1.4-1.7 mm. Gonarcus short and broad, with a strong ventral apodeme, forming an unusually wide base to the styli. Processus terminalis of hypandrium indistinct. Paramere with outstanding processus ventralis. Anterior branch of the processus apicalis of paramere very long.

**Description:** Head capsule and palpi dark brown, their structure normal. Antennae dark brown, 0.9-1.0 mm, 26- to 27-segmented. Scape swollen, in dorsal view more than 1.5 times as broad as long, in lateral view about as broad as long. Pedicel and flagellar segments slightly broader than long. Ordinary hairs in two sparse whorls on flagellar segments. Setae present, but short.
Figs 158-162: Coniopteryx (X.) stylobalis n. sp. — holotype. 158: male genitalia, lateral view, 159: paramere and penis, lateral view, 160: hypandrium, ventral view, 161: male internal genitalia, ventral view, 162: male genitalia (without the membraneous internal projection of the hypandrium), caudal view.

Scale-like hairs on the apical part of the flagellar segments and of pedicel. Thorax light brown, with large, dark brown shoulder spots. Legs dark brown, wing membrane light brown. Length of fore wing 1.6-2.0 mm, of hind wing 1.4-1.7 mm.
Male genitalia as in Figs 158-162. Hypandrium, apart from its membraneous internal projection, short; in lateral view more than twice as high as broad. Apodeme along the anterior margin of hypandrium ventrally complete, but median part moderately sclerotised. Processus terminalis indistinct, without any trace of median incision. The sclerotised processus lateralis short, subtriangular, and connecting with a membraneous internal projection. Gonarcus short and broad, with a very strong ventral apodeme which forms an unusually wide base to the styli. The two ventral apodemes connected by a moderately sclerotised but distinct transverse structure caudally. Styli slightly forked; their anterior branch forming a broad arch below the parameres. Paramere long, with an outstanding processus ventralis. Processus apicalis of paramere forked. Its posterior branch rather narrow, but rounded in caudal view. Anterior branch very large, pointed and curving forwards. Penis consisting of two sclerites that are very broad in lateral view.

Remarks: Because of the short and broad gonarcus, the indistinct processus terminalis of the hypandrium, and the forked processus apicalis of the paramere, the new species resembles _C. (X) caudata_ n. sp. in the _C. aegyptiaca_ species-group. The main distinctive features of _Coniopteryx (X)_ stylobasilis are:

- the flagellar segments of the antennae with scale-like hairs only on their apical part;
- the extremely wide ventral apodeme of the gonarcus;
- the outstanding processus ventralis of the paramere;
- the very long anterior branch of the processus apicalis of the paramere.

Etymology: The specific name refers to the unusually wide base of the styli in the male genitalia.

_Coniopteryx (Xeroconiopteryx) ujhelyii_ Sziráki, 1992


Diagnosis: Scale-like hairs in two whorls on the flagellar segments of male antennae. Wing membrane light brown. Length of fore wing 1.5-2.0 mm. Gonarcus moderately short, subtriangular. Hypandrium moderately long. Processus lateralis large, rounded. Processus terminalis present, but variable; it may be broadly rounded, with a very shallow median incision, or prominent and without a median incision (Fig. 165). Styli forked; the outer branch short, subtriangular, the inner branch laterally narrow but forming a broad arch below the parameres, with a rather long median apophysis. Processus apicalis of the thin paramere forked, with a moderately long, tooth-like inner branch.

Remarks: The scale-like hairs on the antennae were not visible in the type specimens, probably because of the rather bad condition of the material available for the original description (Sziráki 1992).

Distribution: Known only from Yemen (also Sziráki 1992, 1997)

_Coniopteryx (Xeroconiopteryx) unguigonarcuata_ Aspöck & Aspöck, 1968

_Coniopteryx unguigonarcuata_ Aspöck & Aspöck, 1968. — Ent. NachrBl. 15: 34.

Diagnosis: Scale-like hairs in an apical whorl on pedicel and on the flagellar segments of male antennae. Wing membrane yellowish-grey. Length of fore wing 1.7-1.9 mm. Gonarcus very

large, in lateral view curved. Processus lateralis minute. Processus terminalis indistinct, without a median incision. Styli unforked, forming an arch below the parameres, with a small, knob-like median projection. Processus apicalis of paramere forked.

**Distribution:** Oman (Meinander 1998), Mongolia, Kazakhstan.

*Coniopteryx (Xeroconiopteryx) unguhipandriata* Monserrat, 1996  

**Specimens examined:** Yemen: 1 ♂, al-Kowd, light trap, VII.1999, A. van Harten & S. Al-Haruri; 1 ♀, same data but 8-12.VII.2001.

**Diagnosis:** No scale-like hairs on flagellar segments of male antennae. Wing membrane light brown. Length of fore wing 1.6-1.8 mm. Gonarcus short, with a forked caudal projection. Ectoprocts fused with gonarcus, and well chitinised. Processus lateralis represented by a long, hooked thorn, which is supported ventrally by an apophysis, situated on the dorsal edge of hypandrium. Processus terminalis protruding in lateral view. Median incision deep, U-shaped. Styli unforked, but forming a ring below and above the parameres. Processus apicalis of paramere present as an unforked, acute projection, which in lateral view appears to be serrated. Penis long, thin.
Remarks: Some of the features in the male genitalia mentioned above are newly reported for this species.

Distribution: Known only from Yemen.

Coniopteryx (Xeroconiopteryx) unicef Monserrat, 1996


Diagnosis: No scale-like hairs on flagellar segments of male antennae. Wing membrane fuscous. Length of fore wing 1.7-2.1 mm. Gonarcus short, with a strong ventral apophysis ending in a long, downwardly directed projection. Processus lateralis represented by a forked apophysis which is supported ventrally by an apophysis, situated on the dorso-caudal edge of hypandrium. Processus terminalis large, prominent. Median incision deep, U-shaped. Styli unforked, forming a band below the parameres. Processus apicalis of paramere with a larger dorsal and a smaller ventral projection. Penis long, thin.

Distribution: Iran, Yemen (also Monserrat 1996 and Sziráki 1997).

**Coniopteryx (Xeroconiopteryx) venustula** Rausch & Aspöck, 1978


Diagnosis: Scale-like hairs in two whorls on the flagellar segments of male antennae. Wing membrane light brown. Length of fore wing 1.5-2.0 mm. Gonarcus moderately long, subtriangular. Hypandrium short. Processus lateralis indistinct. Processus terminalis absent, or indistinct. Styli forked; the outer branch short, subtriangular, the inner branch laterally narrow, but forming a broad arch below the slender parameres, with a median apophysis. Processus apicalis of the thin paramere forked, with a long, tooth-like inner branch.

Distribution: Yemen (also Monserrat 1996 and Sziráki 1997), Iran, Sri Lanka.

**Coniopteryx (Xeroconiopteryx) wittmeri** Meinander, 1979


Diagnosis: Scale-like hairs on large surface of pedicel, and in two whorls on flagellar segments of male antennae. Wing membrane light brown. Length of fore wing 2.0-2.2 mm. Gonarcus short, stout. Processus lateralis very small, processus terminalis without a median incision. Styli unforked, band-like below the parameres. Inner branch of the forked processus apicalis a simple tooth.

Remarks: Most of the specimens examined fully agree with the original description, but in some cases the very short hypandrium may be truncate instead of the usual rounded, lobe-like form.

Distribution: Saudi Arabia, Yemen. Other data from the Arabian Peninsula: Meinander 1979 (Saudi Arabia), Monserrat 1996 (Yemen), Sziráki 1997 (Yemen).

Subgenus *Coniopteryx* Curtis, 1834

**Coniopteryx (Coniopteryx) curvicaudata** Sziráki, 1997


Diagnosis: Scale-like hairs on whole surface of pedicel, and in an apical whorl on the flagellar segments of male antennae. Length of fore wing 2.1 mm. Gonarcus moderately long. Processus lateralis of hypandrium very large. Processus terminalis prominent, its caudal part curved upwards,

and hooked in lateral view. Median incision U-shaped, shallow in ventral view, distinct in caudal view. Anterior apodeme of hypandrium curving backwards medially. Styli forked, the outer branch rather wide, the inner branch forming an arch below the parameres. Processus apicalis of paramere (= “caudal part of paramere” in the original description) weakly S-shaped in both lateral and ventral views, and pointed in lateral view.

**D i a g n o s i s:** Known only from Yemen.

*Coniopteryx (Coniopteryx) exigua* Withycombe, 1925  


**D i a g n o s i s:** Scale-like hairs in a broad apical whorl on pedicel and flagellar segments of male antennae. Wing membrane greyish-brown. Length of fore wing 2.1-3.2 mm. Gonarcus moderately long. Processus lateralis of hypandrium long, acute. Processus terminalis directed caudally and slightly dorsally. Median incision deeply U-shaped in ventral view. Anterior apodeme of hypandrium straight in ventral view. Styli narrow, forked, inner branch forming an arch below the parameres. Tip of the processus apicalis of paramere curved sharply outwards in dorsal view.

**D i s t r i b u t i o n:** Yemen (Monserrat 1996), Pakistan, Nepal, India, Malaysia.

*Coniopteryx (Coniopteryx) gozmanyi* n. sp.  

**H o l o t y p e :** ♂, Yemen, San’ā, light trap, 1.VI-10.VII.1999, A. van Harren, HNHM. — **P a r a t y p e s:** 1 ♂, Yemen, Hammam’Ali, 4.XI.1997, on Citrus, A. van Harren; 1 ♂, Yemen, San’ā, light trap, III-IV.1999, A. van Harren, HNHM.
Diagnosis: Scale-like hairs on apical part of flagellar segments and pedicel. Long setae present on the antennae. Length of fore wing 1.5-1.7 mm, of hind wing 1.4-1.5 mm. Processus lateralis of hypandrium large, subtriangular. In lateral view moderately curved processus terminalis of hypandrium rounded, with a V-shaped median incision. Outer branch of styli with chitinous spines. Posterior part of paramere about as long as anterior part. Penis sclerite consisting of two rods.

Description: Head capsule pale ochreous, palpi light brown. Structure of frons and palpi normal. Eyes large, black. Antennae 0.9 mm, 25- to 26-segmented, dark brown. Scape and pedicel about as long as broad, pyriform. Median flagellar segments ca. 1.5 times as broad as long. Ordinary hairs in two sparse regular whorls on flagellar segments. Long setae present. Scale-like
hairs on apical part of flagellar segments and pedicel. Thorax pale ochreous with a brown shoulder spot. Legs and wing membrane light brown. Length of fore wing 1.5-1.7 mm, of hind wing 1.4-1.5 mm.

Male genitalia as in Figs 201-205. Hypandrium in lateral view about as high as broad. Apodeme near to its anterior margin ventrally complete and curving backwards. Processus terminalis of hypandrium well-developed but rounded, with wide V-shaped median incision. Processus lateralis large, prominent, in lateral view rounded subtriangular. Anterior part of its ventral apodeme indistinct. Styli forked; outer branch pointed and with minute chitinous spines, the inner branches fused ventrally below the parameres and with a small, membranous caudal projection. Paramere long and rather slender, with distinct processus ventralis. Posterior part of paramere (which is caudally of processus ventralis) sinuous, and about as long as anterior part. Processus apicalis of paramere flattened, and turned upwards. Penis sclerite consisting of two rather long rods, connected with a membranous structure caudally.

Remarks: Because of the large, prominent, subtriangular processus lateralis of the hypandrium and the long, slender, dorsally apically curved paramere, the new species is close to Coniopteryx (C.) exigua, distributed from Pakistan to Malaysia, and to C. (C.) curvicaudata from Yemen. Features differentiating Coniopteryx (C.) gozmanyi from C. exigua are:

- the long setae on the flagellar segments of the antennae;
- the rounded processus terminalis of the hypandrium, with a V-shaped median incision (in C. exigua, truncated with a U-shaped median incision);
- the long posterior part of the paramere which is about as long as the anterior part (in C. exigua, anterior part twice as long as posterior part);
- the penis sclerite consisting of two rods (in C. exigua it is a single sclerite).

Features differentiating the new species from C. curvicaudata are:

- the processus terminalis of the hypandrium not hooked, and its caudal tip rather far from the processus lateralis;
- the ventral apodeme of the hypandrium moderately curved;
- the outer branch of the styli with chitinous spines.

Etymology: We dedicate this new species to Dr. László Gozmány, the eminent Hungarian microlepidopterologist.
Coniopteryx (Coniopteryx) vanharteni Sziráki, 1997


Diagnosis: With a setose projection and two setose plates on the vertex. Scale-like hairs on whole surface of pedicel, and in an apical whorl on the flagellar segments of male antennae. Wing membrane light fuscous. Length of fore wing 2.2–2.5 mm. Gonarcus rather short. Lower angle of processus lateralis of hypandrium acute. Processus terminalis short, broad, with a small median incision. Anterior apodeme of hypandrium straight in ventral view. Styli narrow, forked, inner branch forming an arch below the parameres. Processus apicalis of paramere (= “caudal part of paramere” in original description) pointed and slightly curved downwards.

Distribution: Known only from Yemen.

Subgenus Holoconiopteryx Meinander, 1972

Coniopteryx (Holoconiopteryx) tenuicornis Tjeder, 1969


Diagnosis: No scale-like hairs on the flagellar segments of male antennae. Wing membrane almost hyaline. Length of fore wing 2.2 mm. Gonarcus rather short, caudally connected with a narrow arch. Processus lateralis of hypandrium broad, truncated. Processus terminalis rather narrow and acute, with a deep, V-shaped median incision. Anterior apodeme of hypandrium with a long median projection. Styli narrow, forked, inner branch forming an arch below the parameres. Processus apicalis of paramere forked. Penis broad, with an arcuate dorsal part.

Distribution: Yemen (MEINANDER 1977), Tanzania, Zimbabwe, South Africa.

Coniopteryx (Holoconiopteryx) turneri Kimmins, 1935


Diagnosis: Scale-like hairs arranged irregularly on the whole surface of pedicel and flagellar segments of male antennae. Wing membrane greyish-brown. Length of fore wing 2.0–2.5 mm. Gonarcus moderately long, caudally connected with a narrow arch. Processus lateralis of hypandrium large, rounded. Processus terminalis rather narrow and acute, with a deep, V-shaped median incision. Anterior apodeme of hypandrium with a long median projection (Monserrat 1996). Styli
narrow, forked, inner branch forming an arch below the parameres. Processus apicalis of paramere forked. Penis narrow, without an arcuate dorsal part.

Distribution: South Africa, Yemen (Monserrat 1996).

Genus **Conwentzia** Enderlein, 1905

**Conwentzia obscura** n. sp.

*Holotype:* ♂ Yemen, Sana’a, light trap, III-IV.1999, A. van Harten, HNHM. — *Paratypes:* 5 ♂♂, same data as holotype; 2 ♂♂, Yemen, Sana’a, light trap, V.1999, A. van Harten; 3 ♂♂, Yemen, Sana’a, light trap, 1.VI-10.VII.1999, A. van Harten, HNHM.

*Diagnosis:* Moderately large insect, with rather dark pigmentation. Length of fore wing 2.5-3.1 mm, of the shortened hind wing 1.0-1.2 mm. Femur and tibia of male fore leg with strong spines. Hypandrium supported by a strong anterior apodeme. Inner process of ectoproct broad. Stylus curving caudally.

*Description:* Head capsule dark brown, palpi medium brown. Structure of frons and palpi normal. Eyes moderately large, black. Antennae 2.0-2.2 mm, 34- to 37-segmented, medium brown. Scape broad, slightly broader than long, pedicel pyriform, about 1.5 times as long as broad. Median flagellar segments also 1.5 times as long as broad. Ordinary hairs irregularly covering flagellar segments and pedicel, and situated also on apical part of scape. Moderately long setae present on flagellar segments. Thorax and legs dark brown, wing membrane medium brown. Fore wing 2.5-3 times as long as wide; its length 2.5-3.1 mm. Length of the shortened hind wing 1.0-1.2 mm. Femur and tibia of male fore leg with strong spines (Fig. 225).

Male genitalia as Figs 219-223. Hypandrium (= ninth sternite in Meinander 1972) caudally bordered by a narrow membraneous plate (= hypandrium in Sziráki 1997: 289), its anterior margin strengthened by a relatively broad apodeme. Styli distinctly curving backwards and with a strong anterior apodeme. Outer process of ectoproct in lateral view about as long as high. Inner process in caudal view broad and slightly forked. Paramere rather long, with a strong processus apicalis which curves evenly upwards. Tenth sternite well-developed. Penis a short, but distinctly sclerotised structure.

Remarks: Because of the curved, strong processus apicalis of the paramere, the well-developed tenth sternite and the distinctly sclerotised penis, the new species seems to be close to *Conwentzia sabae* Sziráki, 1977. The main distinctive features of *Conwentzia obscura* n. sp. are:

- the hypandrium supported by a strong anterior apodeme, its membraneous caudal part narrow;
- the inner process of the ectoproct broad;
- the stylus curving caudally;
- the male fore leg with very strong spines on inner surface of femur and basal part of tibia;
- a moderately large insect, with rather dark pigmentation.

Etymology: The specific name refers to the dark pigmentation.
Conwentzia sabae Sziráki, 1997


**Diagnosis:** Wing membrane almost hyaline. Colour of the body mostly pale ochreous. Length of fore wing 3.7 mm. Length of the shortened hind wing 1.5 mm. Femur and tibia of male fore leg with moderately strong spines. Hypandrium (= ninth sternite in Meinander 1972) caudally bordered by a wide membranous plate (= hypandrium in Sziráki 1997: 289). Styli in lateral view narrow. Outer process of ectoproct in lateral view about as long as high. Inner process slender and relatively long. Paramere long, with a strong processus apicalis, which curves sharply upwards. Tenth sternite well-developed. Penis short.

**Remarks:** Details of the male fore legs are newly described features of this species.

**Distribution:** Known only from Yemen.

Genus *Hemisemidalis* Meinander, 1972

*Hemisemidalis fulvipennis* Sziráki, 1999


**Distribution**: Yemen, Saudi Arabia, Jammu and Kashmir (under administration of Pakistan). Data from the Arabian Peninsula: MEINANDER 1979 (as *H. kasyi*) (Saudi Arabia), SZIRÁKI 1997 (as *H. kasyi* – partim) (Yemen), SZIRÁKI 1999 (Yemen).

*Hemisemidalis kasyi* (Aspöck & Aspöck, 1965)  

**Diagnosis**: Colour of the body mostly yellowish in the case of the specimens examined. Wing membrane light yellowish-brown. Length of fore wing 2.2-2.5 mm. Anterior apodeme of hypandrium ventrally incomplete. Processus terminalis rudimentary, broadly rounded, without a median incision. Processus ventralis of paramere absent, processus apicalis short and high.

**Distribution**: Iran, Afganistan, Lebanon, Yemen (MONSERRAT 1996, SZIRÁKI 1997 (partim)).

*Hemisemidalis pallida* (Withycombe, 1924)


Diagnosis: Colour of body mostly pale ochreous. Wing membrane light greyish. Length of fore wing 2.8-3.0 mm. Anterior apodeme of hypandrium ventrally incomplete. Processus terminalis protruding, with a dorsal knob in lateral view, with a heavily sclerotised band caudally, and with a very shallow median incision. Processus ventralis of paramere absent, processus apicalis short and moderately high.

Remarks: In the hind wings of one of the specimens examined, cross vein M-Cu1 has an unusual position; it meets the branch M3+4.

Distribution: Saudi Arabia (Meinander 1979), Yemen, Iraq, Iran, Afghanistan, Pakistan, Jammu and Kashmir (under administration of Pakistan), Mongolia, Uzbekistan, Kazakhstan, Turkey (Anatolia), Greece, Italy, Spain, Algeria, Morocco, Egypt, Sudan. New to Yemen.

Genus *Semidalis* Enderlein, 1905

*Semidalis arabica* Meinander, 1977


**Specimens examined:** Yemen: 1 ♂, Ta’izz, light trap, XI.1999, A. van Harten & A. Awad; 8 ♂♂, al-Kowd, light trap, IX.1999, A. van Harten & S. Al-Haruri.

**Diagnosis:** Wing membrane light greyish. Length of fore wing 2.0-2.2 mm. Ventral (= outer) process of ectoproct long and rather broadly digitiform. No internal projection of ectoproct. Hypandrium truncate without outstanding spines. Processus ventralis of paramere present. Processus apicalis slightly swollen, its tip pointed and curved upwards. Uncini unguiform.

**Distribution:** Known only from Yemen.

*Semidalis pluriramosa* (Karny, 1924) Figs 244-247


**Diagnosis:** Wing membrane almost hyaline. Length of fore wing 2.3-2.7 mm. Ventral process of ectoproct rather long and broad. No internal projection of ectoproct. Hypandrium ventrally with two long spines. Processus ventralis of paramere absent. Processus apicalis rather narrow, membraneous, with rounded tip. Uncini unguiform.
**Distribution:** Yemen (also Monserrat 1996), Nigeria, Mali, Sudan, Egypt, Algeria, Morocco, Spain.

*Semidalis scotti* Esben-Petersen, 1928


**Specimens examined:** Yemen: 1 ♂, Sana’a, beaten from peach, VIII.1993, M. Knapp; 2 ♀♀, same data but X.1993; 1 ♂, 2 ♀♀, Sana’a, Malaise trap, II-III.1998, A. van Harten; 8 ♂♂, same data but 1.VI-10.VII.1999, Malaise trap; 8 ♂♂, Lahj, Malaise trap, V.1999, A. van Harten & A. Sallam.

**Diagnosis:** Wing membrane greyish. Length of fore wing 2.7-4.0 mm. Ventral process of ectoproct rather long and narrow. Internal projection of ectoproct distinct, acute. Hypandrium terminating in two short processes. Processus ventralis of paramere absent. Processus apicalis forked. Uncini unguiform; ventrally of uncini with a heavily sclerotised transverse plate (Figs 250-252.)

**Distribution:** Ethiopia, Kenya, Yemen (also Monserrat 1996 and Sziráki 1997).

*Semidalis tenuipennis* Sziráki, 1997


**Diagnosis:** Wing membrane light brown. Length of fore wing 1.8 mm. Femur and tibia of male fore leg with stout spines. Ventral process of ectoproct short, in lateral view subtriangular, distally with a stout inner thorn. Hypandrium short, with two long setae. Processus ventralis of paramere absent. Processus apicalis (= dorsal process in Sziráki 1997) extremely large. Uncini strong, with a large outer and a short inner arm. Ventrally of parameres with a pair of large, moderately sclerotised transverse plates.

**Distribution:** Known only from Yemen.

**DISCUSSION**

Compared to the fauna of the neighbouring territories, the number of coniopterygid species known from the Arabian Peninsula (62 species) is already very high. On one hand, this species richness may be a consequence of the geographic situation of this area, as Arabia is connected to the other arid and semi-arid territories of southwest and central Asia, to the Mediterranean, and, until the most recent geological times, to the subsaharan territories of Africa. On the other hand, the high number of species is also a result of the intensive collecting activity of A. van Harten (co-author of the present paper) and his co-workers in Yemen.

According to present knowledge, 50% of the Arabian coniopterygid fauna (31 species) appears to be endemic, and 28 of the species are known only from Yemen. Apart from *Hemisemidalis pallida*, which has an extremely wide range, 12 Arabian species are common to other parts of southwest and central Asia, and three of these are also found in the Mediterranean subregion. Nine coniopterygid species of the Arabian Peninsula also occur in the Afrotropical region, and four of these in the Mediterranean too. Seven other species of dusty lacewings are known only from the Mediterranean and from the Arabian Peninsula. The similarity between the Yemeni and East African coniopterygid fauna was recognised earlier (Sziráki 1998). The new results show that the coniopterygid fauna of the Arabian Peninsula has almost equal connections with the fauna of the arid and semi-arid territories in other parts of southwest and central Asia, the Mediterranean area and subsaharan Africa.

As regards the Yemeni collecting localities, it is interesting to note that *Coniopteryx (X.) ujhelyii* was found in large numbers in Ta’izz and not at all in al-Kowd, while the closely related *Coniopt-
eryx (X.) venustula was collected mostly in al-Kowd. Most Coniopteryx (X.) collaris were collected in al-Kowd and in Mayfa’ah, most Coniopteryx (X.) ketiae in al-Kowd and in Sana’a, and most Seme­
dalis scotti in Sana’a and Lahj.

Agricultural importance

In Yemen, dusty lacewings seem to be much more abundant than green lacewings (Chrysopidae). One possible reason for this is that the larvae of Coniopterygidae are less susceptible to desiccation and heat than larvae of Chrysopa because of their small size and cryptic lifestyle. Consequently, the Coniopterygidae seem to have taken over the role of Chrysopidae as biocontrol agents of pests such as aphids, scale insects and spider mites. Moreover, it is worth mentioning that coniopterygids may be found in large numbers in orchards that are regularly treated with insecticides (Szirîkî 1979).

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