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New species of Mymaridae from Cape Verde Islands (Hymenoptera: Chalcidoidea)

Several years ago, Dr. A. van Harten has collected interesting Aphelinidae, Mymaridae, Signiphoridae and Trichogrammatidae from the Cape Verde Islands. Some parasitoids were reared from the hosts while others were collected by using a Johnson Taylor suction trap.

The studied material includes 9 new species of Mymaridae with descriptions and illustrations⁽¹⁾. The type specimens will be deposited at Dipartimento di Entomologia e Zoologia Agraria, Università di Napoli «Federico II», Portici, Italia.

Genus *Anagrus* Haliday

The following seven species of *Anagrus* have been recorded from Africa: *A. cicadulinae* FERRIÈRE (1930), *A. scassellatii* PAOLI (1930), *A. aegyptiacus* SOYKA (1950), *A. unilinearis* SOYKA (1950), *A. capensis* HEDQVIST (1960), *A. funebris* MATHOT (1968), *A. humicola* MATHOT (1968).

In the present paper we described 4 new species.

Anagrus brevifuniculatus sp. nov.

Female. Body mainly yellow brownish; mesonotum and gaster with infuscations. Head and antennae brownish, with pedicel and F1 lighter. Fore wing hyaline, slightly infuscated below venation. Legs yellow with last segments

⁽¹⁾ Lavoro effettuato con il contributo finanziario del CNR al Centro di Studio sulle Tecniche di Lotta biologica.

of tarsi, fore coxae, middle and hind tibiae, and part of hind femura infuscated. Length: 0.35-0.45 mm.

Head twice as long as wide. Antenna (Fig. I, 1) with scape 2.5 as long as wide, transversally ridged; pedicel as wide as scape, as long as F1 and F2 combined; F1 very short, half as long as F2; F3 slightly shorter than F2; F4 to F6 gradually shorter and wider; F4 slightly shorter than pedicel; club about as long as the preceding three segments combined. Funicular segments, from F4, each with 1 linear sensillum. Other characters as in Fig. I, 1.

Thorax normal for the genus, shorter than gaster (25:30). Fore wing (Fig. I, 2) with five rows of setae on disc, but only two reaching the distal margin, and a

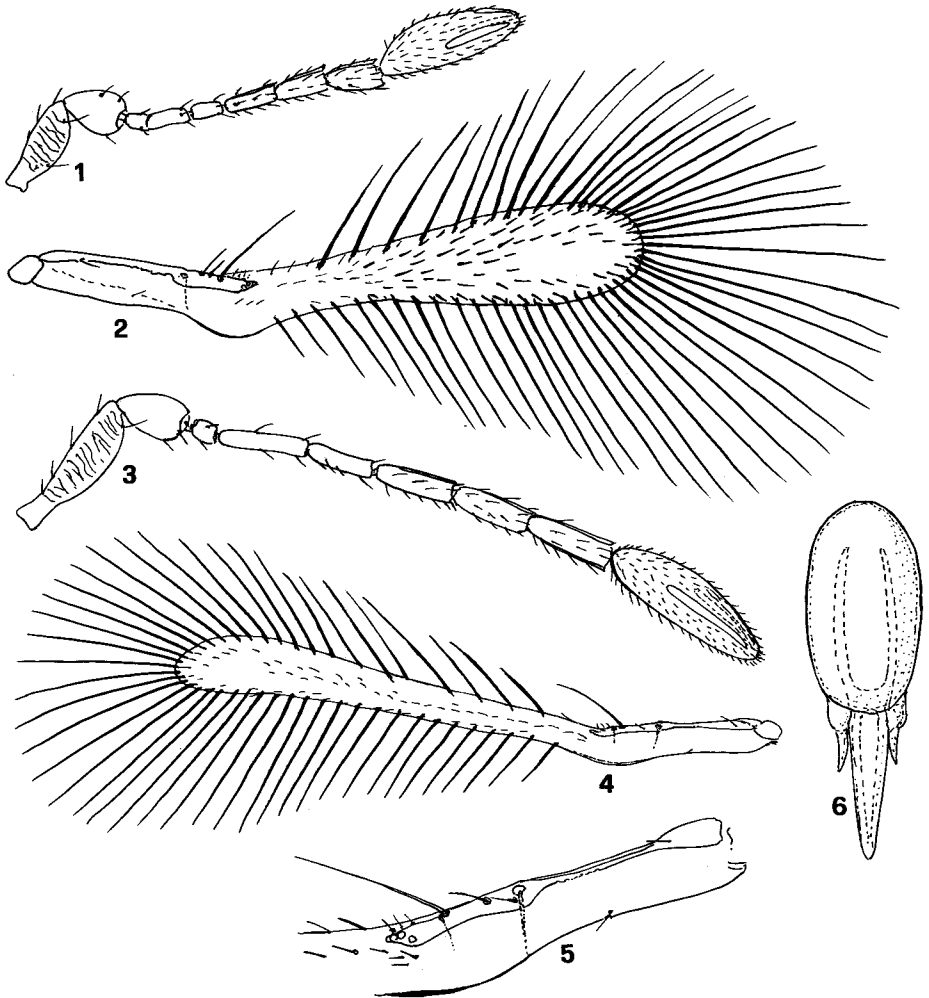


Fig. I - *Anagrus brevipunculatus* sp. nov. - Female -. 1. Antenna. 2. Fore wing. - *Anagrus proscassellatii* sp. nov. - Female -. 3. Antenna. 4. Fore wing. 5. Particular of veins. - Male -. 6. Genitalia.

hairless area; wing ratio 6.5-7; longest setae of marginal fringe 2.5-2.7 as long as discal width. Legs normal with middle tibiae as long as hind ones or slightly longer.

Gaster shortly ovate; ovipositor longer than hind tibia (70:45), with third valvulae about one-third of its entire length.

Male. Unknown.

Material examined. Holotype: female. S. Jorge, 3. 1990; in suction trap; coll. A. van Harten. Paratypes: 12 females. S. Jorge: 11. 1984; 11. 1987; 11. 1989; all in suction trap; coll. A. van Harten.

Comments. This unique new species is recognized from others by the very short antenna.

Anagrus proscassellatii sp. nov.

Female. Body, antennae and legs yellow, with some brownish on distal funicular segments and club. Fore wing hyaline. Length: 0.50 mm.

Head, as wide as high. Antenna (Fig. I, 3) with scape twice as long as pedicel and ridged, F1 short, slightly longer than wide, F2 narrow, three times as long as F1, about as long as F6, F3 as wide as F2 but shorter, as long as pedicel, segments F4 to F6 similar in shape, slightly increasing in width and each with at least 1 linear sensillum (2 on F6); club 3-3.5 as long as wide, shorter than last two funicular segments combined (50:60), with 3-4 linear sensilla.

Thorax shorter than gaster (23:28). Fore wing as in Fig. I, 4, with 1-2 complete rows of setae and a glabrous area on the distal part of the disc; wing ratio 9-10; longest setae of the fringe 2.5-3 times as long as discal width; veins as in Fig. I, 5.

Legs with hind tarsus slightly shorter than tibia and the corresponding basitarsus shorter than the distal segment (10:8).

Gaster conical; ratio ovipositor/hind tibia: 1.75.

Male. Similar to female. Antenna with pedicel as long as F1; subsequent flagellar segments 2.5-3 times as long as wide; each flagellar segment at least with two linear sensilla. Genitalia (Fig. I, 6) 0.08 mm in length, same type as in *atomus*-group (VIGLIANI, 1970).

Material examined. Holotype: female. S. Jorge, 11. 1987; in suction trap; coll. A. van Harten. Paratypes: 7 females and 3 males. S. Jorge: 10. 1984; 11. 1984; 10.12.1985; all in suction trap; coll. A. van Harten.

Comments. The new species is very close to *A. scassellatii* Paoli but can be distinguished from the latter by the characters reported in the key to the African species of *Anagrus* of present paper.

Anagrus prounilinearis sp. nov.

Female. Body, antennae and legs yellowish, with light infuscation on distal funicular segments, club and tips of ovipositor. Fore wing hyaline. Length: 0.65 mm.

Head slightly wider than high (18:15). Antenna (Fig. II, 1) with scape subequal in length to club, pedicel slightly longer than F1, F2 about one-third longer than F1, segments from F3 to F6 subequal and gradually increasing in width, each three times as long as wide and with 1-2 linear sensilla; club shorter than last two funicular segments combined, with 3 linear sensilla.

Thorax shorter than gaster (25:33). Fore wing as in Fig. II, 2; wing ratio 12.7-13.7; longest marginal setae 3-3.5 times as long as discal width; vein as in Fig. II, 3.

Legs with hind tibia as long as tarsus; hind basitarsomere slightly longer than each subsequent segment.

Gaster 1.5 times as long as wide; ratio ovipositor/hind tibia: 1.67.

Male. Similar in colour to female. Antenna (Fig. II, 4) with scape twice longer than pedicel; first flagellar segment 2-2.5 as long as wide and subsequent segments 3-4 times as long as wide; all flagellar segments with at least 2 linear sensilla. Genitalia 0.065 mm in length.

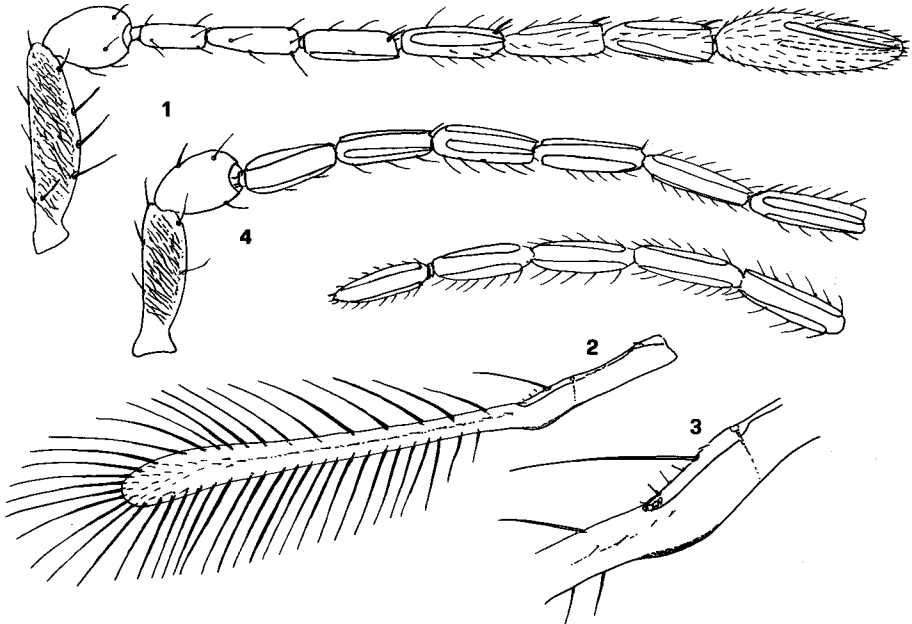


Fig. II - *Anagrus prounilinearis* sp. nov. - Female -. 1. Antenna. 2. Fore wing. 3. Particular of veins. - Male -. 4. Antenna.

Material examined. Holotype: female. S. Jorge, 11. 1987; in suction trap; coll. A. van Harten. Paratypes: 13 females, S. Jorge: 11. 1987; 10. 1989; 1. 1990; 2. 1990; all in suction trap; coll. A. van Harten; 4 males, same locality, 10.12.1985, ex eggs of *Peregrinus maidis* Ashm., coll. A. van Harten.

Comments. *A. unilinearis* Soyka is very close to the new species, but can be distinguished by having linear sensilla only on the last two funicular segments.

Anagrus sensillatus sp. nov.

Female. Body yellow brown, with mid lobe of mesoscutum, a band on each tergite of gaster and third valvulae of the ovipositor, darkish. Antennae with distal funicular segments and club darker. Legs yellow with last tarsomere brownish. Fore wing infuscated mostly below the veins. Length: 0.65 mm.

Head wider than high (20:17), 2 times wider than long. Antenna (Fig. III, 1)

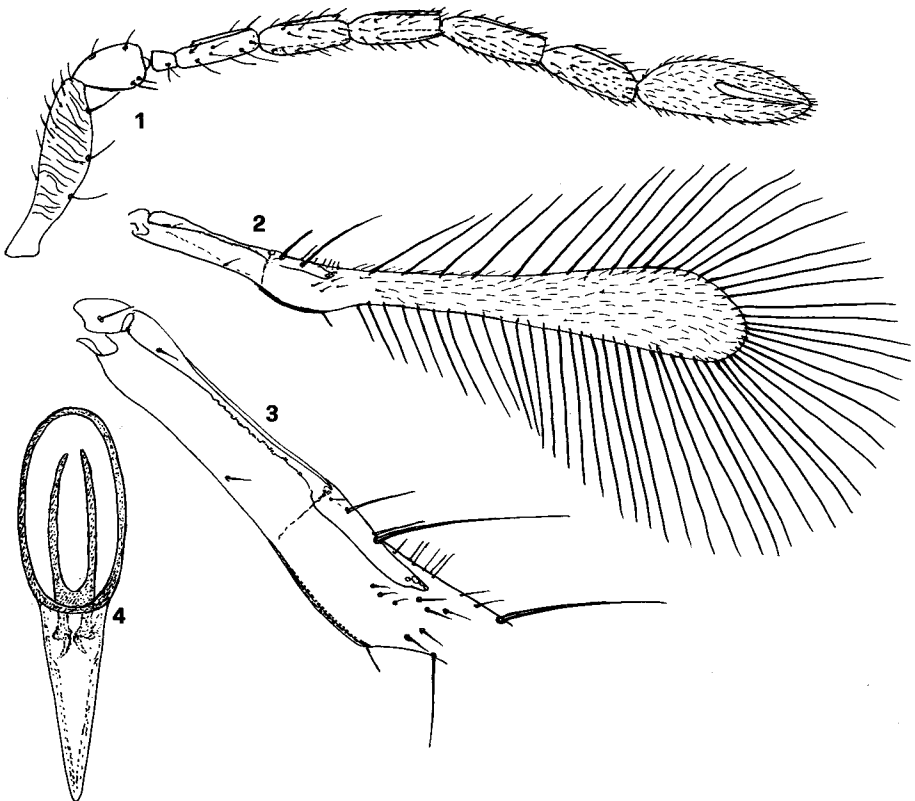


Fig. III - *Anagrus sensillatus* sp. nov. - Female -. 1. Antenna. 2. Fore wing. 3. Particular of veins. - Male -. 4. Genitalia.

with scape 2.5 times as long as pedicel, F1 slightly longer than wide, subsequent funicular segments rather similar in shape, 3 times as long as wide, but a little increasing in width, each with 1-2 linear sensilla; club about 3 times longer than wide, a trifle shorter than scape, with 3 linear sensilla.

Thorax about as long as gaster. Fore wing (Fig. III, 2) with setae on entire discal blade, which is widely expanded; wing ratio 7.5-8; longest marginal setae of the fringe 2.4-2.7 longer than discal width; veins as in Fig. III, 3. Legs with mid and hind tibiae as long as the corresponding tarsi; hind basitarsomere longer than last tarsal segment (10:8).

Gaster 2.5 times as long as wide; ratio ovipositor/hind tibia: 1.6.

Male. Similar to female, but thorax and gaster much darker. Antenna with flagellar segments subequal, F1 twice as long as wide; the other segments at least 3 times as long as wide.

Genitalia as *incarnatus*-group (VIGGIANI, 1970) (Fig. III, 4), 0.110 mm in length, and with digiti each provided with one spine.

Material examined. Holotype: female. S. Jorge, 3. 1990; in suction trap; coll. A. van Harten. Paratypes: 3 females and 4 males. S. Jorge: 11. 1984; 6. 1986; 10. 1989; 1. 1990; 2. 1990; all in suction trap; coll. A. van Harten.

Comments. *A. sensillatus* sp. nov. is close to *A. scassellatii* Paoli, but differs by having linear sensilla on all funicular segments, except the first, and the disc of fore wing without a glabrous area.

KEY TO IDENTIFICATION OF AFRICAN SPECIES OF *ANAGRUS*

(females)

- | | | |
|-------|---|----------------------------------|
| 1 | - Disc of fore wings, just behind the stigmal vein, with more than one row of setae..... | 2 |
| | - Disc of fore wings, just behind the stigmal vein, with one row of setae..... | 6 |
| 2 (1) | - F4 at least 2.5-3 times as long as wide..... | 3 |
| | - F4 less than 2.5 times as long as wide..... | <i>brevifuniculatus</i> sp. nov. |
| 3 (2) | - F4 to F6 with linear sensilla..... | 4 |
| | - F5 and F6 with linear sensilla..... | 5 |
| 4 (3) | - F2 to F6 with linear sensilla; disc of fore wings without a glabrous area..... | <i>sensillatus</i> sp. nov. |
| | - Linear sensilla not before F3; disc of fore wings with a glabrous area..... | <i>scassellatii</i> Paoli |
| 5 (3) | - Disc of fore wings interely covered with setae..... | <i>capensis</i> Hedqvist |
| | - Disc of fore wings interely covered with setae, but with 4 distinct lines..... | <i>aegyptiacus</i> Soyka |
| 6 (1) | - Ovipositor extruded as the gaster length..... | <i>funebri</i> Mathot |
| | - Ovipositor not so extruded..... | 7 |
| 7 (6) | - F2 at least twice as long as F1..... | 8 |
| | - F2 less than twice as long as F1..... | 9 |
| 8 (7) | - F2 3 times as long as F1..... | <i>proscassellatii</i> sp. nov. |
| | - F2 less than 3 times as long as F1..... | <i>cicadulinae</i> Ferrière |
| 9 (7) | - Disc of fore wings with more than one row of setae distally; at least F5 and F6 with linear sensilla..... | 10 |

- Disc of fore wings with only one row of setae distally; only F6 with linear sensilla.....
.....*humicola* Mathot
- 10 (9) - F3 to F6 with linear sensilla..... *prounilinearis* sp. nov.
- F5 and F6 with linear sensilla..... *unilinearis* Soyka

Genus *Camptoptera* Förster

A key to the five African species of this genus has been provided by OGLOBLIN & ANNECKE (1961). Only *C. psocivora* MATHOT (1972) has been described since then.

Camptoptera vanharteni sp. nov.

Female. Head and thorax yellow brownish; gaster dorsally with a wide light band, the rest yellowish and slight infuscate; antennae and legs yellowish; fore wings hyaline. Length: 0.25-0.30 mm.

Head with transverso-frontal trabecula undivided and vertex with setae on the ocellar area (Fig. IV, 1).

Antenna (Fig. IV, 2) with a transverse radicle; scape about 1.5 times as long as wide and slightly narrower than pedicel; F1 3 times as long as wide, 0.5 times as wide as scape; F2 ring-shaped, very short; F3 similar to F1; F4 almost as or slightly shorter and narrower than F3; F5-F6-F7 subequal in length and slightly increasing in width; club slightly longer than last three funicular segments combined and about 1.5 times as wide as F7. Detailed data on the dimensions of the antennal segments are reported in Tab. 1.

Thorax slightly shorter than gaster. Pronotum dorsally very short and not visible; mesoscutum (Fig. IV, 3), transversally and uniformly striated, this sculpture slightly narrower than that on the middle part of scutellum; the latter with longitudinal furrows on each side; parapsidal furrows very well marked; axillae, triangular, short and each with one long seta. Propodeum (Fig. IV, 4) almost in vertical position with respect to the scutellum, with two median carenae. Fore wing (Fig. IV, 5) 13 times as long as wide; disc with one row of setae in the middle; marginal fringe, on average, about 6 times as long as discal width; other characters as in Fig. IV, 5. Hind wings straight and very narrow, with one row of setae on the discal blade; the latter half the width of fore wings. Mid and hind legs with tibiae slightly shorter than the corresponding tarsi and basitarsomere as long as the subsequent segment.

Gaster (Fig. IV, 6) roundish; petiole very short, transverse, without lamella. Ovipositor inserted at the about the middle of gaster; third valvulae as long as one-third of the entire gaster. Hypopygium with two long setae.

Male. Same color of the female. Antenna (Fig. IV, 7) with F1 shorter than

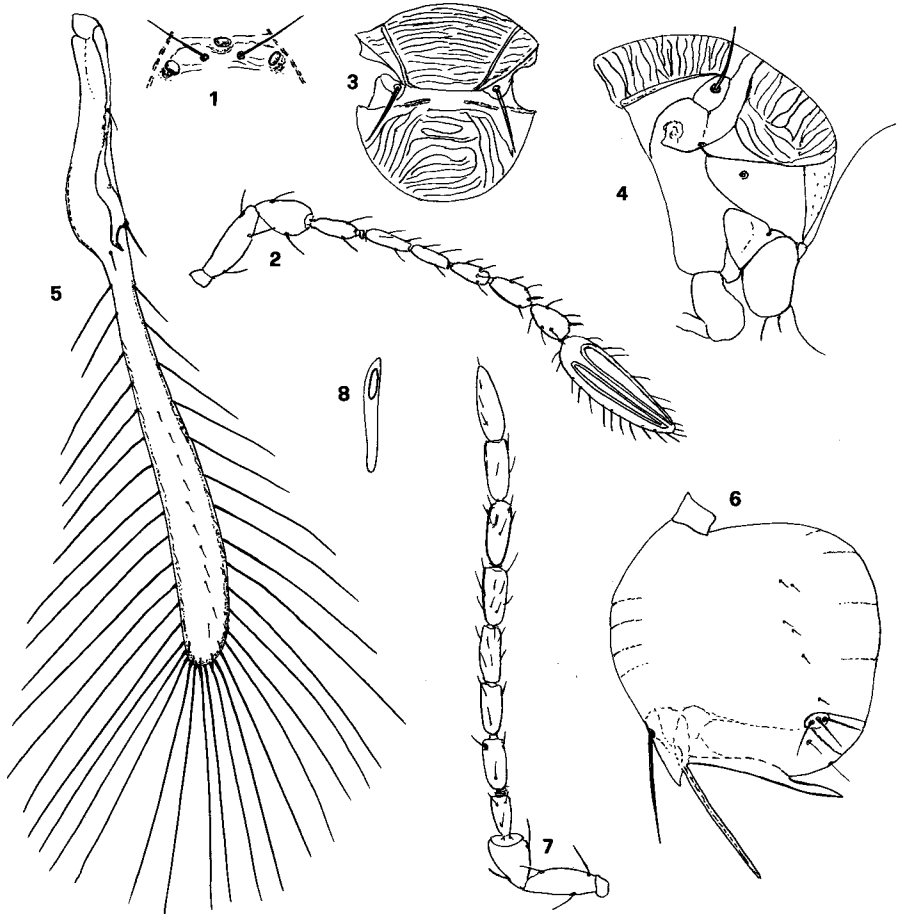


Fig. IV - *Camptoptera vanharteni* sp. nov. - Female -. 1. Ocellar area. 2. Antenna. 3. Mesoscutum. 4. Thorax, lateral view. 5. Fore wing. 6. Gaster. - Male -. 7. Antenna. 8. Genitalia.

pedicel; F2 and F4 annular, very small; F3 and F5 subequal in length; segments from F5 to F10 of similar length and slightly increasing in width; flagellar segments with linear sensilla.

Genitalia (Fig. IV, 8) tubular, simple, very small, 0.04 mm in length.

Material examined. Holotype: female. S. Jorge, 10. 1989; in suction trap; coll. A. van Harten. Paratypes: 37 females and 8 males. S. Jorge: 7. 1984; 9. 1987; 11. 1987; 8. 1988; 9. 1989; 10. 1989; 2. 1990; all in suction trap; coll. A. van Harten.

Comments. The new species *C. vanharteni* is very similar to *C. psocivora* Mathot but can be distinguished as follows: F3 slightly longer than F5 and F6; club as long as or longer than the last three segments combined; fore wings with one

TAB. 1. Measurements of the antennae (20) of 10 females of *C. vanharteni* by Kontron Videoplan.

	AML	S.D.	AMW	S.D.	RL / W	S.D.
Sc	0.043	0.002	0.015	0.001	2.859	0.290
Pe	0.031	0.002	0.020	0.001	1.522	0.067
F1	0.025	0.001	0.008	0.001	3.289	0.383
F2	0.006	0.001	0.003	0.001	1.975	0.280
F3	0.026	0.001	0.007	0.001	3.517	0.335
F4	0.022	0.001	0.006	0.001	3.190	0.365
F5	0.023	0.001	0.007	0.001	2.980	0.234
F6	0.023	0.001	0.010	0.001	2.311	0.233
F7	0.023	0.002	0.012	0.001	1.838	0.216
C	0.072	0.002	0.019	0.003	3.842	0.606

Legend

- AML = average of the maximum length;
 AMW = average of the maximum width;
 C = club;
 F1-F7 = funicular segments;
 Pe = pedicel;
 RL / W = ratio of the average of the maximum length/average of the maximum width;
 Sc = scape;
 S.D. = standard deviation.

row of setae near the median line of the disc; fringe maximum length on average 6 times as long as the discal width; reticulation on scutellum not uniform and as in *C. missionica* Ogloblin (1947); ovipositor inserted about at the middle level of gaster; the latter mostly yellowish.

Genus *Lymaenon* Walker

Most of the 22 known species of African *Lymaenon* have been described by DEBAUCHE (1949) and SOYKA (1950).

Lymaenon capensis sp. nov.

Female. Body mainly brown. Antennae with part of scape and pedicel lighter. Legs brown, with most of fore and mid tibiae, basal half of hind tibiae, tarsi, yellowish. Fore wing hyaline. Length: 0.90 mm.

Head as wide as high. Antenna (Fig. V, 1) with radicle 3-3.5 times as long as wide, scape 2-2.3 times as long as pedicel, F1 and F4 subequal, about one-third longer than wide, F2 and F3 subglobular; F5 and F6 cylindrical, about twice as long as wide, F7 and F8 slightly shorter and wider than F6; club as long as pre-

ceding three funicular segments combined. Funicular segments from F5 to F7, F8 and club, respectively with 2, 3 and 8-10 linear sensilla.

Thorax shorter than gaster (38:44), mid lobe of mesoscutum as long as scutellum, both with a fine, longitudinal reticulation, metanotum with strap-like dorsellum, propodeum slightly shorter than scutellum, with two median weak carenae and some denticles on the delimited area. Fore wing rather wide, wing ratio 2.77-2.81; setae on the blade not particularly dense, with a wide glabrous area below and behind stigmal vein; venation as in Fig. V, 2; setae below the marginal vein in one row of 3 setae; longest setae of the fringe about one-fourth of discal width. Legs with hind basitarsomere about twice as long as wide.

Gaster ovate, with transverse petiole; ratio ovipositor/hind tibia: 1.56-1.73.

Male. Similar to female. Antenna with radicle subquadrate, one-half shorter than scape, the latter longer than wide (10:7); pedicel globular; flagellar segments subequal, about twice as long as wide, each with 4-5 linear sensilla on each side. Genitalia 0.215 mm in length.

Material examined. Holotype: female. S. Jorge, 4. 1990, in suction trap; coll. A. van Harten. Paratypes: 1 female, same locality, 3. 1990; 2 females and 1 male, same locality, 4. 1990; all in suction trap; coll. A. van Harten.

Comments. The new species is close to *L. ngandoi* Debauche and *L. prongandoi* sp. nov., but can be distinguished from the latter two species by the characters of the antenna and fore wing.

Lymaenon prongandoi sp. nov.

Female. Body dark brown. Antennae brownish. Legs mostly dark brown, with fore tibiae and tarsi yellowish or light brown. Fore wing hyaline, with brown infuscation below the venation. Length: about 1 mm.

Head normal, as wide as high. Antenna (Fig. V, 3-4) with radicle twice as long as wide; scape about 3 times as long as wide, twice as long as pedicel, F1 slightly longer than wide, subsequent segments from F2 to F4 subquadrate, sometimes partially fused, F5 barely longer than F6, which is subquadrate, F7 longest funicular segment, about as long as pedicel, F8 slightly shorter than F7 and wider, club as long as the preceding three segments combined. F7 and F8 each with 2 linear sensilla, and club with 10. Some specimens show a linear sensillum on F5, on one or both antennae and other minor differences (Fig. V, 4).

Thorax shorter than gaster (40:45). Other characters as in *L. capensis* sp. nov. Fore wing with rather sparse discal setae; wing ratio 2.5-2.6; below the marginal vein one row of 4-5 setae; longest setae of the fringe one-fifth-one-

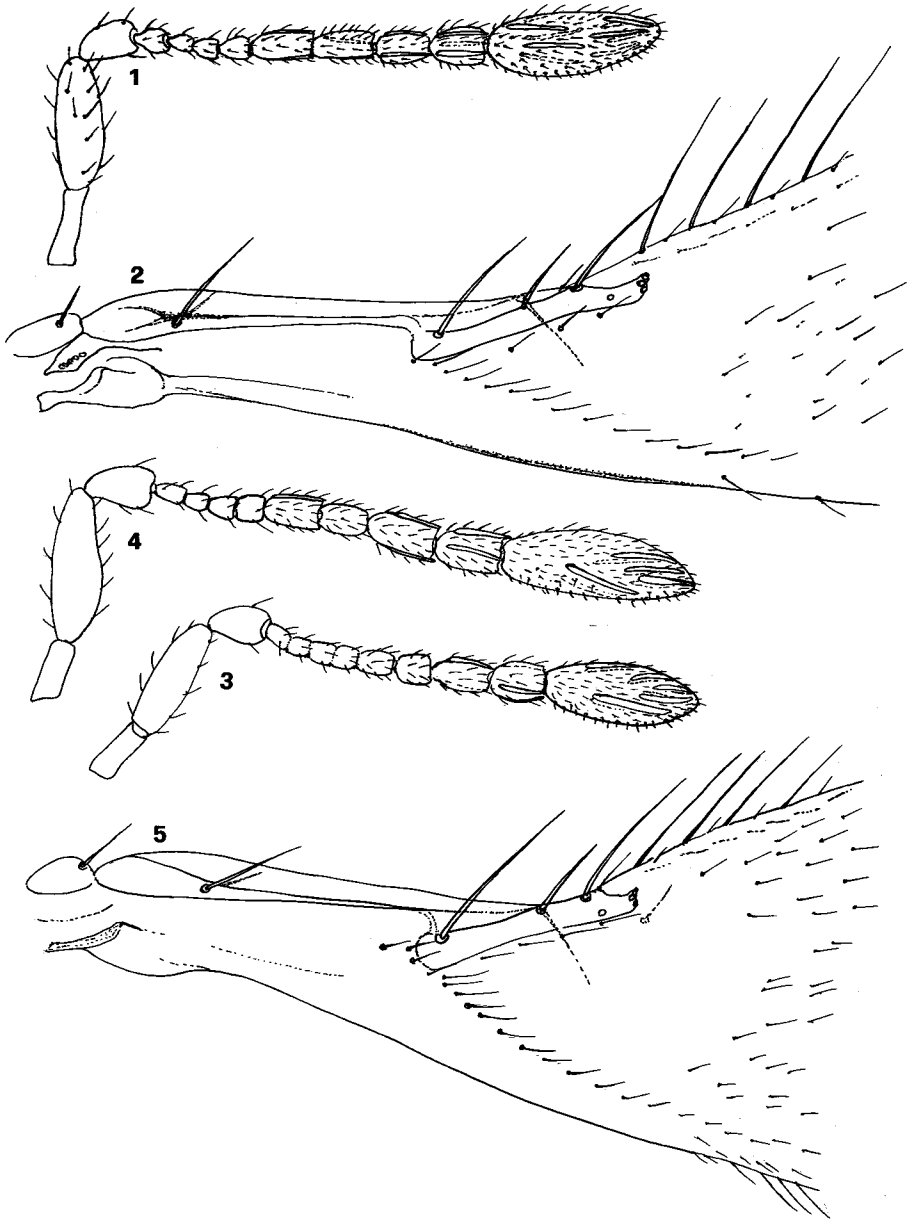


Fig. V - *Lymaenon capensis* sp. nov. - Female -. 1. Antenna. 2. Fore wing, basal part. - *Lymaenon prongandoi* sp. nov. - Female -. 3. Antenna. 4. Antennal variation. 5. Fore wing, basal part.

sixth of discal width; broad glabrous area below the veins as in Fig. V, 5. Legs with hind tibia as long as tarsus, hind basitarsomere about one-third longer than subsequent segment.

Gaster ovate, with transverse petiole; ratio ovipositor/hind tibia: 1.25-1.43.

Male. Unknown.

Material examined. Holotype: female. S. Jorge, 9. 1989, in suction trap, coll. A. van Harten. Paratypes: 1 female, same locality, 7. 1984; 1 female, same locality, 10. 1984; 4 females, same locality, 11. 1984; 4 females, same locality, 7-8. 1987; 1 female, same locality, 9. 1987; 2 females, same locality, 11. 1987; 2 females, same locality, 11. 1989; 1 female, same locality, 1. 1990; 3 females, same locality, 3. 1990; 6 females, same locality, 4. 1990; all in suction trap; coll. A van Harten.

Comments. *L. prongandoi* sp. nov. is very close *L. ngandoi* Debauche, but the latter provided with a wider fore wing (wing ratio: 3.1), 12-7 setae distributed in 2 rows below the marginal vein and shorter fringe (one-third of discal width).

Lymaenon longiclava sp. nov.

Female. Body brown, with yellowish areas near the lateral and hind margins of mid lobe of mesoscutum, some stripes on gaster. Antenna brownish with radicula, ventral side of scape, pedicel and first three funicular segments lighter. Fore wing hyaline, faint, basal infuscation. Legs mostly yellowish, with some brown on coxae, hind femura and tarsi. Length: 0.70 mm.

Antenna (Fig. VI, 1) with radicle 3 times as long as wide, scape rather enlarged, slightly more than twice as long as wide, striate on external side, pedicel as long as F1 and F2 combined; funicular segments from F1 to F4 subequal, slightly longer than wide, F5 1.5 times as long as wide, rather similar to F7 but a little shorter, F6 shorter than F5, F8 about one-fourth shorter than F7, the latter rather cup-shaped, as long as F5 but wider; club as long as funicular segments F5 to F8 combined. One linear sensillum on F5 and F7, 2 sensilla on F8 and 8 on club.

Thorax shorter than gaster (28:35); mid lobe of mesoscutum shorter than scutellum (18:22), both with a fine reticulation, wider on the discal part of mesoscutum and on scutellum; metanotum with strap-like dorsellum; propodeum as long as mid lobe of mesoscutum, with two median, weak carinae and some denticles between them. Fore wing (Fig. VI, 2-3) with normal setae on the blade, rather scattered below the veins; longest setae of fringe about one-third of discal width; wing ratio 2.8-2.9. Legs rather long, mid and basitarsomeres slightly longer than last tarsomere, hind tibia as long as the corresponding tarsus.

Gaster conical with transverse petiole; ratio ovipositor/hind tibia: 1.2-1.3.

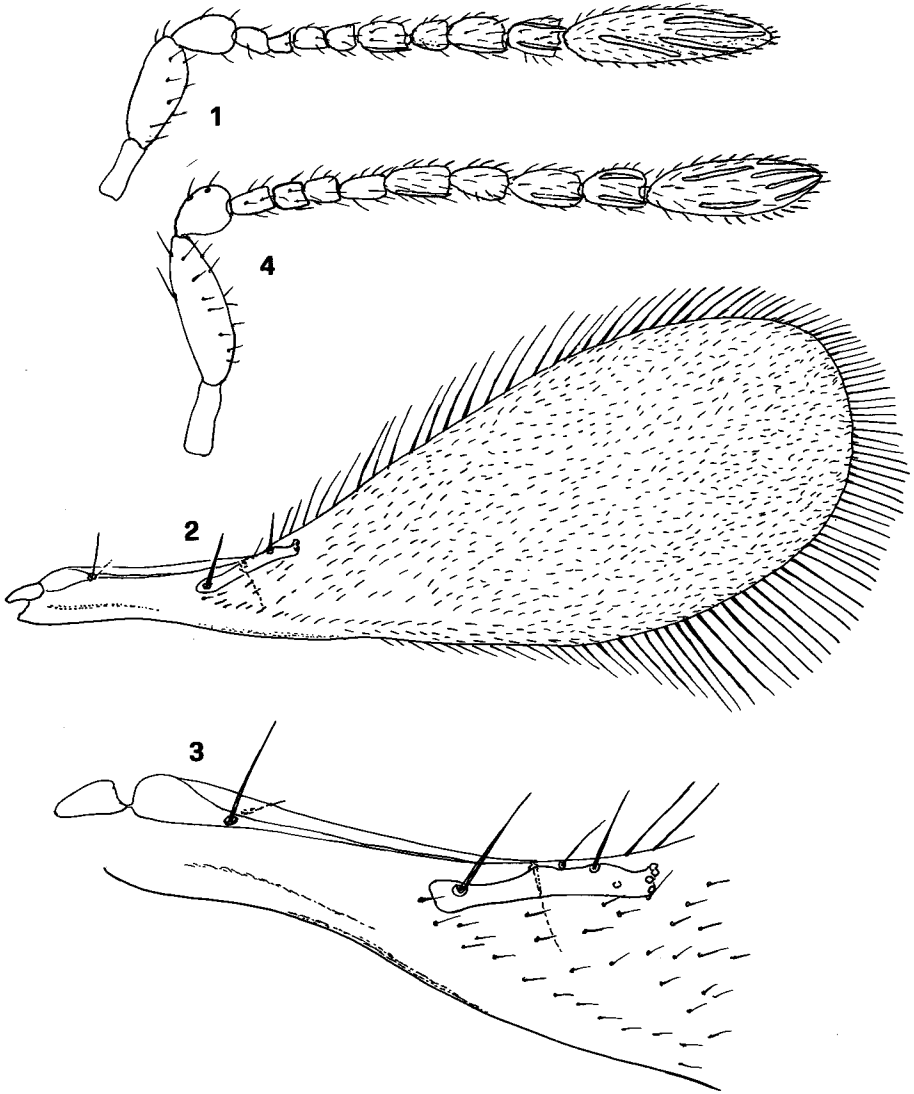


Fig. VI - *Lymaenon longiclava* sp. nov. - Female -. 1. Antenna. 2. Fore wing. 3. Particular of veins. - *Lymaenon protamiranus* sp. nov. - Female -. 4. Antenna.

Male. Unknown.

Material examined. Holotype: female. S. Jorge, 3. 1990; in suction trap; coll. A. van Harten. Paratypes: 4 females, same data of holotype; 2 females, same locality, 1. 1990; all in suction trap; coll. A. van Harten.

Comments. *L. longiclava* sp. nov. is close to *L. tamiranus* Debauche⁽²⁾, but

⁽²⁾ Type material examined.

can be separated by the shorter funicular segments, the longer club and the ratio of the fore wing.

Lymaenon protamiranus sp. nov.

Female. Body colour and characters similar to *L. longiclava* sp. nov., except as follows: antenna with scape 3.5 times as long as wide, pedicel slightly longer than F1 (10:8), F2 and F3 very similar, each a little shorter than F1, F8 rather cylindrical and club shorter than the preceding three funicular segments combined (28:32); other characters as in Fig. VI, 4. Fore wing ratio 2.8-3.0; longest setae of fringe one-fourth of discal width. Length: 0.75 mm.

Male. Unknown.

Material examined. Holotype: female. S. Jorge, 3. 1990; in suction trap; coll. A. van Harten. Paratypes: 18 females. S. Jorge: 11. 1984; 9. 1989; 2. 1990; 3. 1990; 4. 1990; all in suction trap; coll. A. van Harten.

Comments. The new species is very close to *L. tamiranus* Debauche but can be distinguished by a shorter club and wider fore wing.

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SUMMARY

The following species of Mymaridae (Hymenoptera: Chalcidoidea) are described from Cape Verde Islands: *Anagrus brevifuniculatus* sp. nov., *A. proscassellatii* sp. nov., *A. prounilinearis* sp. nov., *A. sensillatus* sp. nov., *Camptoptera vanharteni* sp. nov., *Lymaenon capensis* sp. nov., *L. longiclava* sp. nov., *L. prongandoi* sp. nov. and *L. protamiranus* sp. nov.

A provisional key to the identification of the African species of *Anagrus* is given.

RIASSUNTO

Nuove specie di Mymaridae dalle Isole di Capo Verde (Hymenoptera: Chalcidoidea).

Sono descritte le seguenti specie di Mymaridae (Hymenoptera: Chalcidoidea) per le Isole di Capo Verde: *Anagrus brevifuniculatus* sp. nov., *A. proscassellatii* sp. nov., *A. prounilinearis* sp. nov., *A. sensillatus* sp. nov., *Camptoptera vanharteni* sp. nov., *Lymaenon capensis* sp. nov., *L. longiclava* sp. nov., *L. prongandoi* sp. nov. and *L. protamiranus* sp. nov.

È data una chiave per l'identificazione delle specie africane del genere *Anagrus*.

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