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Contribution to the knowledge of the Gonatopodinae (Hymenoptera Dryinidae)(*)

Introduction

In spite of some more or less recent revisions (Olmi 1984, 1986, 1987, 1990), the world Gonatopodinae (Hymenoptera Dryinidae) are still little known, mostly because of too few rearings and collections.

The main taxonomic problem of Gonatopodines is the sexual dimorphism, so that the female is very different from the male. Rearings so are very important to identify the opposite sex. Only by rearings or by studying checked material it will be possible to complete the numerous keys based mostly on female specimens and insert also male specimens. The present paper is a contribution to a better knowledge of the Gonatopodines.

Material and methods

Recently I reared some interesting species and I recognized new taxa in the following collections: Zoological Institute of the University, Lund, Sweden; Florida State Collection of Arthropods, Florida Department of Agriculture, Gainesville, Florida; Instituto de Investigaciones Entomologicas Salta, Salta, Argentina; Department of Entomology, Texas A. & M. University, College Station, Texas; Department of Biology, Utah State University, Logan, Utah; StaatlichesMuseum für Naturkunde, Stuttgart, Germany; California Academy of Sciences, San Francisco.

This paper is the result of the study of dryinids reared by the Author or kept in the above collections.

The following abbreviations are used: POL = distance between the posterior ocelli; OL = distance between anterior and posterior ocelli; OOL = distance between posterior ocelli and eyes.

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Results

Palaearctic region

Gonatopus atlanticus Olmi

During a trip to Morocco in 1990 I reared from unidentified Cicadellidae some specimens of both sexes of *Gonatopus atlanticus* Olmi 1984. This species was known of Spain (Pozuelo), Canary Islands (Betancuria, Fuerteventura I.; Cueva Grande, Gran Canaria I.) and Morocco (Melilla). I reared it from parasitized Cicadellids collected at 84 Km N Essaouira on April 17, 1990 and near the Oued El Kasab bridge (Essaouira) on April 18, 1990. The material from Cueva Grande (Gran Canaria) was reared previously by me from *Brachypterona grisea* Lindberg (Cicadellidae) (W. della Giustina det.).

G. atlanticus was known only on the basis of female specimens; in my rearings from the above Morocco localities two interesting male specimens emerged. They are described as follows: fully winged; length 2,12-2,31 mm; black; legs brown; antennae not distally thickened; antennal segments in following proportions: 5:4,5:7:6,5:7:7:6:6,5:5,5:8; antennal segment 3 approximately 3,5 times as long as broad (7:2); head dull, granulated, with two ovoidal smooth areas between the posterior ocelli and the eyes; frontal line absent; occipital carina absent; POL = 7; OL = 3; OOL = 4; scutum dull, granulated; notaulices complete, posteriorly separated; minimum distance between the notaulices shorter than antennal segment 2 (1:4,5); scutellum dull, granulated; metanotum shiny, smooth, without sculpture; propodeum dull, reticulate rugose, with areolae small; fore wing hyaline, without dark transversal bands; radial vein regularly curved (Fig. 1); median and submedian cells almost invisible, because the veins surrounding these cells are little sclerotized; dorsal process of gonoforceps (Fig. 2) long and slender; maxillary palpi with 5 segments; labial palpi with 2 segments; tibial spurs 1, 1, 2.

In the key to the males of Palaearctic Gonatopodinae proposed by Olmi (1990) the male of *G. atlanticus* should inserted near *Gonatopus formicarius* Ljungh and *Gonatopus striatus* Kieffer, as follows:

31 Dorsal process of gonoforceps short (Fig. 59D in Olmi 1990); areolae of the propodeum small .....*Gonatopus formicarius* Ljungh

— Dorsal process of gonoforceps long (Fig. 2).....32

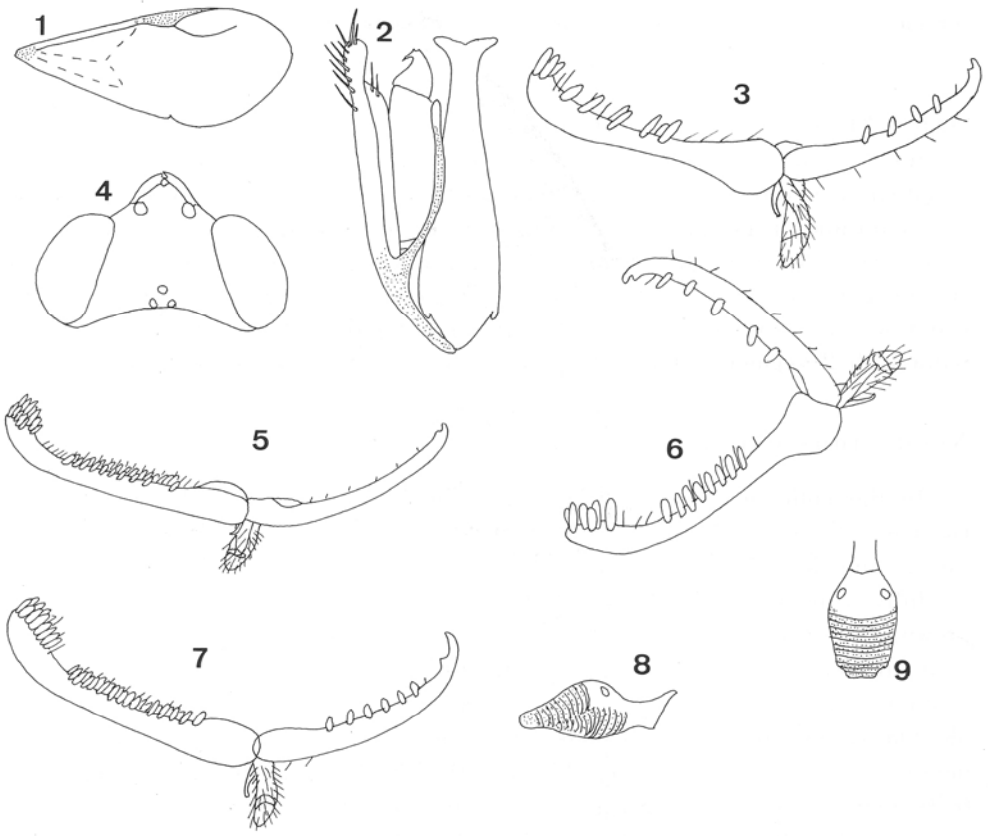
32 Areolae of the propodeum wider; fore wing with radial vein showing an angle between proximal and distal part (Fig. 1048A in Olmi 1984); fore wing with median and submedian cells distinctly visible .....*Gonatopus striatus* Kieffer

— Areolae of the propodeum smaller; fore wing with radial vein regularly curved (Fig. 1); fore wing with median and submedian cells almost invisible.....*Gonatopus atlanticus* Olmi

Ethiopian region

Haplogonatopus katangae (Benoit)

Haplogonatopus katangae (Benoit 1950) is an interesting species known only from Zaire (Lubumbashi (= Elisabethville)) and Niger (Tarna goulbin, Maradi).



Figs 1 - 9. Fore wing (1) and genitalia (2) of male of *Gonatopus atlanticus* Olmi from Oued El Kasab bridge (Morocco); chela of *Haplogonatopus katangae* (Benoit) from Bereboka (Madagascar)(3); head (4) and chela (5) of the holotype of *Neodryinus osteni* n. sp.; chela of the holotype of *Echthrodelphax neotropicus* n. sp. (6); chela of the holotype of *Apterodryinus fritzi* n. sp. (7); mesothorax, metathorax and propodeum in lateral (8) and dorsal (9) view of the holotype of *Gonatopus woolleyi* n. sp.

It was known only on the basis of male specimens. Recently however I examined a female specimen from Madagascar (Bereboka, 60 Km NE Morondava, Tulear Prov.). This material was not reared together with male specimens. I am sure however that this female specimen is the opposite sex of *H. katangae*, because it's the only species of *Haplogonatopus* of the Ethiopian region and because the specimens of this genus are easily recognizable for the characteristic palp formula 2/1.

I may propose so the following description of the female of *H. katangae*:

apterous; length 2,18 mm; head brown, with mandibles, clypeus and anterior half of frons testaceous; antennae testaceous, with segments 4-10 darkened; thorax and propodeum testaceous-brown; abdomen brown; legs testaceous-dark; an-

tennae distally thickened; antennal segments in following proportions: 5:4:6:3:3:3:3:3:3:5,5; head excavated, granulated; frontal line complete; occipital carina incomplete, only visible behind and on the sides of the posterior ocelli; POL ≤ 1; OL = 1; OOL = 4,5; pronotum not crossed by a transversal impression, shiny, smooth, without sculpture; scutum shiny, without sculpture; metathorax + propodeum shiny, without sculpture, except for transversal striae on pleura and on posterior surface; meso-metapleural suture obsolete; fore tarsal segments in following proportions: 10:1,5:3:6:11; enlarged claw (Fig. 3) with a subapical tooth and a row of 4 lamellae; segment 5 of front tarsus (Fig. 3) with two rows of 2+5 lamellae; distal apex with a group of 3 lamellae; maxillary palpi with 2 segments; labial palpi with 1 segment; tibial spurs 1, 0, 1.

Neodryinus osteni n. sp.

In the collections of the Staatliches Museum für Naturkunde of Stuttgart, Germany, there is a female specimen of *Neodryinus* belonging to a new species, *osteni*, and described as follows:

fully winged; length 4,5 mm; head reddish-testaceous, with ocellar triangle brown; antennae reddish-testaceous; mesosoma reddish-testaceous, with propodeum (except for the testaceous distal apex), metapleura and sutures around scutum, scutellum and metanotum black; abdomen reddish-testaceous, with petiole black; legs reddish-testaceous; antennae distally thickened; antennal segments in following proportions: 14:7:32:20:17:10:8:7:6:9; rhinaria on segments 6-10 (one per segment; 10th segment with 2 rhinaria); head shiny, reticulate rugose; frontal line incomplete, visible in front of the anterior ocellus and reaching approximately 0,5 length of the face; occipital carina incomplete, only visible on the sides of the posterior ocelli; POL = 3; OL = 2,5; OOL = 12; posterior ocelli touching the occipital carina; temples slightly prominent (Fig. 4); pronotum crossed by a strong transversal impression, with disc humped; anterior collar and disc slightly granulated and rugose, sculptured by numerous striae around the disc; pronotal tubercles absent; scutum shiny, with a median region reticulate rugose and with the lateral regions smooth and without sculpture; notaulices absent; scutellum rugose; metanotum short, rugose; propodeum reticulate rugose, with two complete longitudinal keels on the posterior surface; fore wing with two dark transversal bands on the basal cells and beneath the pterostigma; distal part of radial vein longer than proximal part (18:8); fore tarsal segments in following proportions: 22:3:10:20:33; segment 3 of front tarsus produced into a hook; enlarged claw (Fig. 5) with a subapical tooth and a row of 7 bristles; segment 5 of front tarsus (Fig. 5) with two rows of 27 lamellae; distal apex with a group of at least 20 lamellae; tibial spurs 1, 0, 2.

Male: unknown.

Typical material: holotype from Tanzania, near Moshi, Kware, December 27 - January 13, 1952, D. O. Afrika Expedition coll.

Notes: the species is named in honor of Dr. Till Osten, Staatliches Museum

für Naturkunde, Stuttgart, Germany; it's the third Ethiopian species of the genus *Neodryinus* Perkins. In the key to the females of the Ethiopian *Neodryinus* proposed by Olmi (1984) *N. osteni* may be inserted near *N. gigas* Ceballos, as follows:

1 Occipital carina invisible; scutum not reticulate rugose, with numerous longitudinal keels .....1. *antiquus* Benoit

— Occipital carina visible behind and on the sides of posterior ocelli; scutum fully reticulate rugose 2

2 Temples very prominent (Fig. 720 in Olmi 1984).....2. *gigas* Ceballos

— Temples less prominent (Fig. 4) .....3. *osteni* n. sp.

Neotropic region

Echthrodelphax neotropicus n. sp.

In the Florida State Collection of Arthropods (Gainesville) and in the Department of Biology of the Utah State University, Logan, there are two female specimens of the genus *Echthrodelphax* Perkins belonging to a new species, *neotropicus*. It's the first species of *Echthrodelphax* of the Neotropic region; it's may be described as follows:

fully winged; length 1,87-2,25 mm; head, antennae, prothorax and scutum testaceous; scutellum, metanotum, propodeum, mesopleura and metapleura black; abdomen testaceous, with first tergite black; legs testaceous, with stalks of hind femora darkened; antennae distally thickened; antennal segments in following proportions: 6,5:3:5:4:3,5:3:3:3,5:3,5:6; head shiny, excavated, without sculpture, smooth; frontal line complete; occipital carina absent; ocellar triangle isosceles, with a median longitudinal keel; POL = 0,5; OL = 3; OOL = 6; pronotum crossed by a strong transversal impression, with disc granulated and with collar without sculpture; scutum shiny, smooth, without sculpture; notaulices complete, posteriorly separated, but very near; minimum distance between the notaulices shorter than breadth of the ocelli (0,5:1); scutellum shiny, smooth, without sculpture; metanotum very reduced; propodeum dull, reticulate rugose, with numerous transversal keels on the posterior surface; fore wing almost fully hyaline, with a strong or weak dark spot beneath the pterostigma; distal part of radial vein longer than proximal part (11:4); fore tarsal segments in following proportions: 9:2,5:3:8:12; enlarged claw (Fig. 6) with a subapical tooth and a row of 3-5 lamellae; segment 5 of front tarsus (Fig. 6) with a row of 7-8 lamellae; distal apex with a group of 6 lamellae; tibial spurs 1, 0, 1.

Male: unknown.

Typical material: holotype from Cayman Islands, Grand Cayman, West Bay, Town Hall Cresent, July 21 - August 1, 1986, by Malaise trap, Diderot Gicca coll. (in Florida State Collection of Arthropods, Gainesville); 1 paratype from Costa Rica, Guanacaste Prov., La Taboga Forest Reserve, 9 Km SW Cañas, February 17-27, 1987, by Malaise trap, W.L. Rubink coll. (in the collections of the Department of Biology, Utah State University, Logan).

Apterodryinus fritzi n. sp.

In the collections of the Instituto de Investigaciones Entomologicas Salta, Salta, Argentina, there is a female specimen of the genus *Apterodryinus* Perkins belonging to a new species, *fritzi*, and described as follows:

apterous; length 4,68 mm; head reddish-testaceous, with vertex and frons partly darkened; antennae brown, with segments 1-2 testaceous and 10 whitish; prothorax reddish-testaceous; mesothorax, metathorax and propodeum black; abdomen testaceous- brown; legs testaceous, with clubs of femora darkened; antennae distally thickened; antennal segments in following proportions: 10:5:20:12:10:8:7:6:5,5:8,5; head excavated, dull, granulated; frontal line complete; occipital carina absent; POL = 1,5; OL = 2,5; OOL = 10; pronotum crossed by a strong transversal impression, dull, granulated; scutum dull, granulated, with a median longitudinal keel, without lateral points; scutellum dull, granulated, inclined; meso-metapleural suture distinct and complete; mesopleura and metapleura granulated and transversely striate, on different planes, because the meso-metapleural suture is very broad; metanotum dull, granulated, hollow behind the scutellum; metathorax + propodeum dull, granulated, with posterior surface transversely striate; fore tarsal segments in following proportions: 16:4:7:18:26; enlarged claw (Fig. 7) with a subapical tooth and a row of 6 lamellae; segment 5 of front tarsus (Fig. 7) with two rows of approximately 30 lamellae; distal apex with a group of at least 22 lamellae; maxillary palpi with 6 segments; labial palpi with 3 segments; tibial spurs 1, 0, 1.

Male: unknown.

Typical material: holotype from Argentina, Buenos Aires, Moreno, M.A. Fritz coll.

Notes: the species is named in honor of the collector of the holotype, Dr. Manfredo A. Fritz, Instituto de Investigacione Entomologicas Salta; in the key to the females of the Neotropic *Apterodryinus* proposed by Olmi (1990) *A. fritzi* may be inserted near *A. brasilensis* Olmi 1990, as follows:

6 Metanotum hollow behind the scutellum .....6'
— Metanotum not hollow behind the scutellum 7
6' Posterior surface of propodeum transversely striate .....12. *fritzi* n. sp.
— Posterior surface of propodeum not transversely striate.....11. *brasilensis* Olmi

Gonatopus woolleyi n. sp.

In the collections of the Department of Entomology, Texas A. & M. University, College Station, Texas, there is a female specimen of the genus *Gonatopus* Ljungh belonging to a new species, *woolleyi*, and described as follows:

apterous; length 3 mm; head brown, with mandibles, clypeus and front part of the face testaceous; antennae testaceous, with segment 1 partly brown and with segments 6-7 black (segments 8-10 missing in the only known specimen); thorax and propodeum brown, with scutum and distal apex of the propodeum

reddish-yellow; abdomen black; legs brown, with chelae and midand hind tarsi testaceous; antennae distally thickened; antennal segments in following proportions: 6:4:10:5:4,5:4:4 (segments 8-10 missing in the only known specimen); head excavated, dull, granulated; frontal line complete; occipital carina absent; POL = 1; OL = 1; OOL = 7; pronotum shiny, smooth, without sculpture, crossed by a strong transversal impression; metanotum very inclined (Fig. 8), with sides protruding (Fig. 9); protrusions rounded (Fig. 9); metathorax + propodeum shiny, without sculpture, except for numerous transversal striae on posterior surface and on pleura; meso-metapleural suture obsolete; fore tarsal segments in following proportions: 11:3:4:12:19; enlarged claw (Fig. 10) with a small tooth at the end of a longitudinal furrow and with a row of 6 peg-like bristles + 1 bristle; segment 5 of front tarsus (Fig. 10) with a row of 20 lamellae; distal apex with a group of approximately 12 lamellae; maxillary palpi with 6 segments; labial palpi with 3 segments; tibial spurs 1, 0, 1.

Male: unknown.

Typical material: holotype from Mexico, Oaxaca, 5,7 mi. SE Quiotepec, 2100', July 21, 1987, Zolnerowich & Woolley coll.

Notes: the species is named in honor of one of the collectors of the holotype, J.B. Woolley; in the key to the females of the Neotropic *Gonatopus*, proposed by Olmi (1990), *G. woolleyi* may be inserted near *G. onorei* Olmi and *G. guayasensis* Olmi, as follows:

39 Metanotum with sides rounded (Fig. 60E in Olmi 1990); anterior surface of metathorax + propodeum less inclined (Fig. 60H in Olmi 1990).....30. *onorei* Olmi

— Metanotum with sides protruding (Figs 60D, F in Olmi 1990); protrusions pointed (Figs 60D, F in Olmi 1990) or rounded (Fig. 9); anterior surface of metathorax + propodeum more inclined (Fig. 10) .....39'

39' Lateral protrusions of the metanotum rounded (Fig. 9).....45. *woolleyi* n. sp.

— Lateral protrusions of the metanotum pointed (Figs 60D, F in Olmi 1990).....40

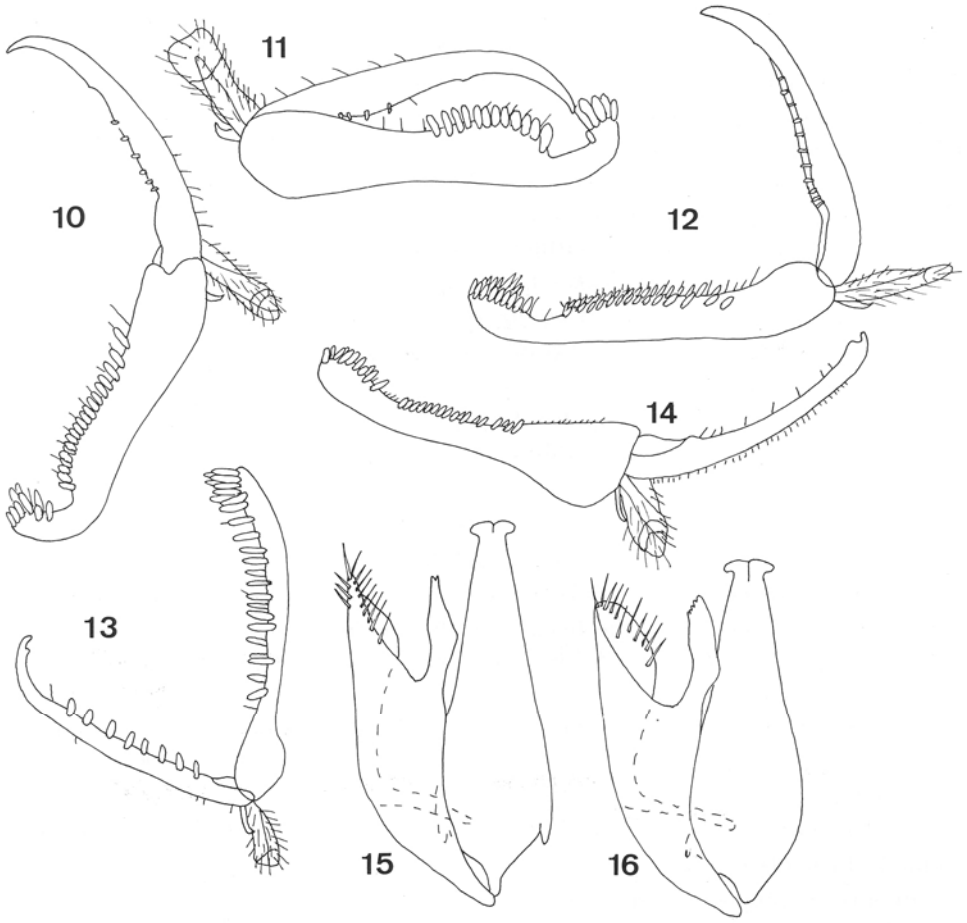
40 Head fully granulated, dull; anterior surface of metathorax + propodeum with some longitudinal striae.....36. *guayasensis* Olmi

— Head shiny, without sculpture, only with occiput granulated; anterior surface of metathorax + propodeum smooth, without sculpture .....35. *acer* Olmi

Gonatopus huggerti n. sp.

In the collections of the Institute of Zoology, University of Lund, Sweden, there is a female specimen of the genus *Gonatopus* Ljungh, belonging to a new species, *huggerti*, and described as follows:

apterous; length 3,25 mm; fully testaceous, with petiole black and abdomen darkened; antennae distally thickened; antennal segments in following proportions: 7:4,5:16:8:7:6:6:5:5:7; head excavated, weakly granulated, shiny; frontal line complete; occipital carina absent; POL = 1; OL = 2; OOL = 7; temples



Figs 10 - 16. Chelae of the holotypes of *Gonatopus woolleyi* n. sp. (10), *Gonatopus huggerti* n. sp. (11), *Echthrodelphax arnaudi* n. sp. (13), *Neodryinus floridensis* n. sp. (14); chela of of the lectotype of *Gonatopus rapax* (Perkins)(12); genitalia of a male paratype of *Neodryinus floridensis* n. sp. (15); male genitalia of *Neodryinus typhlocybae* (Ashmead) from the U.S.A.

distinct; pronotum crossed by a strong transversal impression, shiny, smooth, without sculpture; scutum granulated, dull, without lateral points; meso-metapleural suture obsolete; metanotum shiny, flat, not hollow behind the scutellum; sides of metanotum rounded, not protruding; metathorax + propodeum shiny, smooth, without sculpture, except for the transversal striae on pleura and on posterior surface of propodeum; fore tarsal segments in following proportions: 14:2,5:3,5:13:19; enlarged claw (Fig. 11) without subapical tooth, with a small tooth at the end of a longitudinal furrow and with a row of 4 peg-like hairs + 1 bristle; segment 5 of front tarsus (Fig. 11) with a row of 12 lamellae located in the distal half; distal apex with a group of approximately 7 lamellae; maxillary palpi with 5 segments; labial palpi with 2 segments; tibial spurs 1, 0, 1.

Male: unknown.

Typical material: holotype ♀ from Peru, Madre de Dios, Puerto Maldonado, January 1, 1984, L. Huggert coll.

Notes: the species is named in honor of the collector of the holotype, Mr. Lars Huggert; the new species may be inserted in the key to the females of the Neotropic *Gonatopus* proposed by Olmi (1990) near *Gonatopus providus* Olmi, as follows:

26 Enlarged claw with tooth farther from the distal apex (Fig. 11).....26'

— Enlarged claw with tooth nearer the distal apex (Fig. 63A in Olmi 1990).....27

26' Scutum with two lateral points; segment 5 of front tarsus with lamellae beginning in the proximal third (Fig. 62D in Olmi 1990); labial palpi with 3 segments.....42. *providus* Olmi

— Scutum without lateral points; segment 5 of front tarsus with lamellae in the distal half (Fig. 11); labial palpi with 2 segments.....46. *huggerti* n. sp.

Nearctic region

Tetrodontochelys peculiaris (Brues 1903)

= *Chalcogonatopus unicus* Perkins 1907: 25; n. syn.

= *Tetrodontochelys unicus* (Perkins): Olmi 1984: 1468.

Tetrodontochelys unicus (Perkins) and *peculiaris* (Brues) were considered by Olmi (1984) two separated species. The differences were based on female specimens, because only the male of *T. unicus* was known. Some doubts were born in me because, in spite of the great number of examined specimens of Nearctic *Tetrodontochelys*, I saw always one only type of male specimens. Recently I saw finally female specimens showing intermediate colours between those of *unicus* and *peculiaris*, in a population from Idaho, U.S.A., where the male specimens were all like. As the only difference between *T. unicus* and *peculiaris* was the colour (mesosoma mostly or fully black in *T. peculiaris*; fully or mostly testaceous or reddish in *T. unicus*), I think that these intermediate forms (mesosoma fully brown or partly black and testaceous) show that the two species are synonyms, as well because the male specimens seem always like.

Tetrodontochelys peculiaris (Brues 1903) is so senior synonym of *T. unicus* (Perkins 1907). It's known from Canada (British Columbia, Saskatchewan, Manitoba, Ontario) and from the U.S.A. (Washington, Idaho, California, Utah, Arizona, Montana, Texas, North Dakota, South Dakota, Oklahoma, Minnesota, Iowa, Florida, South Carolina, Massachusetts).

Gonatopus rapax (Perkins 1907)

= *Gonatopus elongatus* Olmi 1984; n. syn.

The synonymy of *G. elongatus* with *G. rapax* was established after a new study of the lectotype of *Gonatopus rapax* (Perkins) and after comparison with a

paratype of Gonatopus elongatus Olmi. In a previous study (Olmi 1984) I didn't see that in the fifth fore tarsal segment of the lectotype of *G. rapax* there were two very long rows of lamellae. The drawing N. 1193 in Olmi (1984) is so not correct: the shortest row of lamellae in the fifth tarsal segment is really a long row (Fig. 12). This mistake was the origin of a not correct inclusion of *G. rapax* in the keys and consequently it was the origin of the description of *G. elongatus*. The length of the second row of the fifth tarsal segment is however variable: in a specimen from L. Oakwood (South Dakota) in fact the shortest row of lamellae is extended little beyond half length.

Gonatopus rapax (Perkins) is known only from the U.S.A. (California, Nevada, Arizona, South Dakota, Kansas, Florida).

Echthrodelphax arnaudi n. sp.

In the collections of the California Academy of Sciences, San Francisco, there is a female specimen of the genus *Echthrodelphax* Perkins, belonging to a new species, *arnaudi*, and described as follows: fully winged; length 2,68 mm; fully testaceous, with petiole black; antennae distally thickened; antennal segments in following proportions: 8:4:9:5:5:5:4,5:4:4:6,5; head excavated, dull, granulated; frontal line complete; occipital carina absent; POL = 1; OL = 4; OOL = 7; pronotum dull, granulated, crossed by a strong transversal impression; pronotal tubercles absent; scutum shiny, without sculpture; notaulices very faint, almost invisible, complete and posteriorly separated; minimum distance between the notaulices as long as breadth of the ocelli (1,5:1,5); scutellum shiny, weakly granulated; metanotum short, reticulate rugose; propodeum reticulate rugose, with two complete longitudinal keels on the posterior surface; fore wing with two dark transversal bands beneath the pterostigma and on the basal cells; distal part of radial vein much longer than proximal part (16:4); fore tarsal segments in following proportions: 13:2:5:14:20; enlarged claw (Fig. 13) with a subapical tooth and a row of 8 lamellae and 1 bristle; segment 5 of front tarsus (Fig. 13) with two rows of 15 lamellae; distal apex with a group of approximately 12 lamellae; tibial spurs 1, 0, 1.

Male: unknown.

Typical material: holotype ♀ from the U.S.A., Arizona, Cochise Co., 5 mi. W Portal, Southwestern Research Station, 5400', September 22, 1966, P.H. Arnaud Jr. coll.

Notes: the species is named in honor of the collector of the holotype, Dr. Paul H. Arnaud Jr.; *E. arnaudi* is the second species of *Echthrodelphax* from the Nearctic region; the following key to the females of the Nearctic *Echthrodelphax* may be proposed:

1 Body fully testaceous, except for petiole black; segment 5 of front tarsus with two rows of lamellae.....2. *arnaudi* n. sp.

— Thorax and propodeum partly black and partly testaceous; segment 5 of front tarsus with a row of lamellae .....1. *krombeini* Olmi

Neodryinus floridensis n. sp.

In the Florida State Collection of Arthropods, Gainesville, there was a series of female and male specimens of the genus *Neodryinus* Perkins, belonging to a new species, *floridensis*, and described as follows:

Female: fully winged; length 3,62-4,93 mm; reddish-testaceous, with abdomen black or brown; antennae distally thickened; antennal segments in following proportions: 13:7:33:18:15:10:8:7:7:10; temples distinct; pronotum crossed by a strong transversal impression; disc humped; anterior collar and disc shiny, sculptured by numerous transversal striae; pronotal tubercles absent; scutum shiny, weakly rugose, hairy; notaulices invisible; scutellum dull, granulated; metanotum short, reticulate rugose; propodeum reticulate rugose, with two complete longitudinal keels on the posterior surface; fore wing with two dark transversal bands; distal part of radial vein much longer than proximal part (18:10); fore tarsal segments in following proportions: 30:4:8:16:28; enlarged claw (Fig. 14) with a subapical tooth and a row of 8 hairs; segment 5 of front tarsus (Fig. 14) with two rows of approximately 20 lamellae; distal apex with a group of approximately 16 lamellae; tibial spurs 1, 0, 2.

Male: fully winged; length 1,93-2,75 mm; black; mandibles testaceous; antennae testaceous-dark, with segments 1-2 darker; legs brown, with tarsi light; abdomen brown or black; antennae not distally thickened; antennal segments in following proportions: 6:5:9:7:7:8:6:6,5:6:8; head dull, granulated and rugose; frontal line absent; occipital carina absent; temples absent; POL = 8; OL = 3; OOL = 4; scutum dull, granulated; notaulices incomplete, reaching approximately 0,5 length of scutum; scutellum dull, granulated, with lateral regions shiny and without sculpture; metanotum dull, granulated, with posterior half shiny and without sculpture; propodeum dull, rugose, without transversal or longitudinal keels; fore wing hyaline, without dark transversal bands; pterostigma and basal and radial veins not pigmented, very light, yellowish; distal part of radial vein slightly longer than proximal part (13:11); dorsal process of gonoforceps slender, short, with a few papillae on the distal apex (Fig. 15); tibial spurs 1, 1, 2.

Typical material: holotype ♀ from the U.S.A., Florida, Highlands Co., Archbold Biological Station, July 11, 1979, by insect flight trap, H.V. Weems Jr. & T.A. Webber (in Florida State Colection of Arthropods); 1 paratype ♀ from the same typical locality, January 17, 1979, by insect flight trap, Sylvia Halkin coll. (in the collection of the Author); other 13 male paratypes are in the Florida State Collection of Arthropods, from the same typical locality, by insect flight traps and on the following dates: 1 ♂, December 7, 1978, H.V. Weems Jr. & S.J. Chance coll; 1 ♂, March 19, 1980, H.V. Weems Jr. & F.E. Lohrer coll.; 1 ♂, April 26, 1979, H.V. Weems Jr. & S. Halkin coll.; 1 ♂, May 8, 1979, H.V. Weems Jr. & S. Halkin coll.; 1 ♂, June 1, 1979, H.V. Weems Jr. & S. Halkin coll.; 1 ♂, June 30 - July 1, 1979, H.V. Weems Jr. & Webber T.A. coll.; 1 ♂, June 5, 1979, H.V. Weems Jr. & S. Halkin coll.; 1 ♂, June 11, 1978, H.V. Weems Jr. & L.K. Klein coll.; 1 ♂, July 23, 1979, H.V.

Weems Jr. & T.A. Webber coll.; 1 ♂, August 23, 1979, H.V. Weems & T.A. Webber coll.); 3 ♂, July 12, 1979, H.V. Weems Jr. & T.A. Webber coll. Other 4 male paratypes are in the collection of the Author, from the same typical locality, by insect flight traps and on the following dates: 1 ♂, October 4, 1978, H.V. Weems Jr. & S.J. Chance coll.; 1 ♂, July 9, 1979, H.V. Weems Jr. & C.W. Harris coll.; 1 ♂, July 12, 1979, H.V. Weems Jr. & T.A. Webber coll.; 1 ♂, August 11, 1978, H.V. Weems Jr. & W.E. Conner coll.).

Notes: *N. floridensis* may be inserted in the key to the Nearctic *Neodryinus* proposed by Olmi (1984) near *N. typhlocybae* (Ashmead), as follows:

FEMALES

1 Scutum granulated and partly reticulate rugose or finely punctate and without sculpture among the punctures, not sculptured by longitudinal keels 2

— Scutum fully sculptured by parallel and longitudinal keels 3

2 Head and mesosoma fully reddish-testaceous; fore wing with distal part of radial vein more than 1,5 times as long as proximal part .....4. *floridensis* n. sp.

— Head and mesosoma fully or almost fully black; fore wing with distal part of radial vein as long as or less than 1,5 times as long as proximal part.....1. *typhlocybae* (Ashmead)

3 Prothorax fully reddish.....2. *balli* Olmi

— Prothorax almost fully black 4

4 Prothorax with collar and disc shiny, not granulated and with keels around the disc.....1. *typhlocybae* (Ashmead)

— Prothorax with collar and disc dull, granulated and with keels around the disc .....3. *incaicus* Olmi

MALES

1 Fore wing with pterostigma and radial vein strongly pigmented, brown; distal part of radial vein as long as or shorter than proximal part; dorsal process of gonoforceps with papillae on distal apex and on the outer margin of distal apex (Fig. 16).....1. *typhlocybae* (Ashmead)

— Fore wing with pterostigma and radial vein hyaline, not pigmented, yellow; distal part of radial vein longer than proximal part; dorsal process of gonoforceps with papillae only on distal apex (Fig. 15); no papillae on the outer margin of the distal apex.....4. *floridensis* n. sp.

The males of *N. balli* Olmi *and incaicus* Olmi are unknown.

ORIENTAL REGION

Pseudogonatopus nudus Perkins 1912

= *Pseudogonatopus sarawaki* Moczar 1979; n. syn.

Recently I examined the lectotype of *Pseudogonatopus nudus* Perkins (in the

collections of the Bishop Museum, Honolulu), together with the holotype of *Pseudogonatopus sarawaki* Moczar (in the collections of the Hungarian Natural History Museum, Budapest). I think that the two species are synonyms. In my revision of world Dryinids (Olmi 1984) I considered the two species different, because I had not at hand at the same time the two types and I was deceived by my conclusions after separate study of both types. Really now I am not able to distinguish the two species, and so I'm considering them synonyms.

Ps. nudus is known from the Philippines, India, Sri Lanka, Thailand, China, Taiwan, Indonesia, Malaysia.

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SUMMARY

This contribution to the knowledge of the Gonatopodinae (Hymenoptera Dryinidae) is based on descriptions of new species: *Neodryinus osteni*, from Tanzania, and *floridensis*, from Florida, U.S.A.; *Echthrodelphax neotropicus*, from the Cayman Islands and Costa Rica, and *arnaudi*, from Arizona, U.S.A.; *Apterodryinus fritzi*, from Argentina; *Gonatopus woolleyi*, from Oaxaca (Mexico), and *huggerti*, from Peru. The opposite sexes of the following species are besides described: male of *Gonatopus atlanticus* Olmi (from Morocco) and female of *Haplogonatopus katangae* (Benoit) (from Madagascar). The following new synonymies are besides established: *Chalcogonatopus unicus* Perkins 1907 = *Tetrodontochelys peculiaris* (Brues 1903); *Gonatopus elongatus* Olmi 1984 = *Gonatopus rapax* (Perkins 1907); *Pseudogonatopus sarawaki* Moczar 1979 = *Pseudogonatopus nudus* Perkins 1912.

Contributo alla conoscenza dei Gonatopodinae (Hymenoptera Dryinidae)

RIASSUNTO

In questo lavoro sono descritte le seguenti nuove specie di Gonatopodinae (Dryinidae): *Neodryinus osteni* (di Tanzania) e *floridensis* (di Florida, U.S.A.); *Echthrodelphax neotropicus* (delle Isole Cayman e di Costa Rica) e *arnaudi* (di Arizona, U.S.A.); *Apterodryinus fritzi* (di Argentina); *Gonatopus woolleyi* (di Messico) e *huggerti* (di Peru). Sono inoltre descritti il maschio di *Gonatopus atlanticus* Olmi e la femmina di *Haplogonatopus katangae* (Benoit). Infine sono proposte le seguenti nuove sinonimie: *Chalcogonatopus unicus* Perkins 1907 = *Tetrodontochelys peculiaris* (Brues 1903); *Gonatopus elongatus* Olmi 1984 = *Gonatopus rapax* Perkins 1907; *Pseudogonatopus sarawaki* Moczar 1979 = *Pseudogonatopus nudus* Perkins 1912.

REFERENCES

OLMI M., 1984. - A revision of the Dryinidae (Hymenoptera). - *Mem. Amer. Entom. Inst.*, 37: XXXI + 1913 pp.

OLMI M., 1986. - New species and genera of Dryinidae (Hymenoptera Chrysidoidea). - *Frustula Entomologica (Nuova Serie)*, 7-8: 63- 105.

OLMI M., 1987. - New species of Dryinidae (Hymenoptera Chrysidoidea). - *Fragmenta Entomologica*, 19: 371-456.

OLMI M., 1990. - Supplement to the revision of the world Dryinidae (Hymenoptera Chrysidoidea). *Frustula Entomologica (Nuova Serie)*, 12: 109-395.