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**A new species of the genus *Omphale* HALIDAY, 1833 from  
South Africa, parasitic in the gall of Cecidomyiidae (Diptera)  
(Hymenoptera, Eulophidae, Entedoninae)**

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**Abstract**

*Omphale turgidus* nov.sp., an endoparasitoid of the larvae of Cecidomyiidae, is described and its systematic relationship with other species of *Omphale* is discussed.

**Zusammenfassung**

*Omphale turgidus* nov.sp., ein Endoparasitoid von Larven der Cecidomyiidae, wird beschrieben und die systematische Beziehung zu anderen Arten der Gattung *Omphale* wird diskutiert.

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## Introduction

The large genus *Omphale* HALIDAY (Hymenoptera: Eulophidae: Entedoninae) is known from all zoogeographical regions (GIJSWIJT 1976; HANSSON 1996, 1997, 2004; NARENDHAN 2006) and currently includes 259 valid species (NOYES 2011). Until recently, the species of this genus have been known only from nodular leaf galls of *Solanum panduriforme* E. MEY in Natal and Transvaal (South Africa) OLCKERS; HULLEY 1991. The paper of these authors was related to the biological control of *Solanum* weed species. The authors did not determine specimens to species level and determined only till generic level 3 specimens as *Omphale* sp. 1 and 7 specimens as *Omphale* sp. 2. They did not give diagnostic characters of *Omphale* and information about these species of this genus and also did not name the species. Other species of genus *Omphale* were never described in South Africa (NOYES 2011). The present study deals with the specimens from South Africa, which represent a new species and is described and illustrated below.

## Material and method

Loaning about 90 specimens of this genus in South African National Collection of Insects (SANC) (Pretoria, South Africa) in 2006 I have had possibility to examine these specimens. In doing so I here document all identification of loan specimens, described this new species and present it in this paper.

The text is arranged as follows: a brief generic and specific diagnosis (full morphological description), and information of the known distribution and hosts.

The paper is based on eulophids specimens reared by R.J. Adair. Morphological terminology follows that of ASKEW & BOUČEK (1968) and (GIBSON et al. 1997). The abbreviations used in the text are listed below: SL – length of scape, SW – width of scape, PL – pedicel length, PW – pedicel width, F1-F2 – first, second segments of antennal funicle; SMV, MV, PMV, SV – submarginal, marginal, postmarginal and SV stigmal veins; FWL – fore wing length, FWW – fore wing width, T1-T7 – first–seven tergites of gaster. POL – the minimum distance between the posterior ocelli, OOL – the minimum distance between the eye margin and the adjacent posterior ocellus. All measurements are given in millimeters (mm). Terminology is that of GIBSON (1997).

The holotypes and paratypes of the new species are deposited in Pretoria, South Africa SANC. Voucher specimens are deposited in the collections in the Natural History Museum (BMNH) (London, UK) and in Zoological Institution of Russian Academy of Science (ZISP) (Saint Petersburg, Russia).

## Taxonomy

### Genus *Omphale* HALIDAY, 1833

*Omphale* HALIDAY, 1833: 339. Type species: *Omphale salicis* HALIDAY, by monotypy.  
*Smaragdites* WESTWOOD, 1833: 419. Type species *S. admirabilis* WESTWOOD, by monotypy.  
Synonymized with *Omphale* by GRAHAM 1963: 240.

*Secodes* FÖRSTER, 1856: 78, 81. Type species *S. fagi* FÖRSTER, by monotypy. Synonymized with *Omphale* by GRAHAM 1963: 240.

*Holcopelte* FÖRSTER, 1856: 78. Type species *Elachistus obscurus* FÖRSTER, 1841:40, by original designation. Synonymized with *Omphale* by HANSSON 2004: 142.

*Euderomyia* GIRAULT, 1913: 176. Type species *E. carlylei* GIRAULT, by original designation. Synonymized with *Omphale* by BOUČEK 1988: 727.

*Chrysocharoideus* ASHMEAD, 1904: 304. Type species *Chrysocharis thoracicus* ASHMEAD, by original designation.

Synonymized with *Omphale* by LASALLE & SCHAUFF, 1992: 12.

*Chrysocharomyia* DODD, in GIRAULT, 1915: 207. Type species *C. elongata* GIRAULT, by original designation.

Synonymized with *Omphale* by BOUČEK 1988: 727.

*Paromphale* GIRAULT & DODD, 1915: 211-212. Type species *P. flavicorpus* GIRAULT, by original designation.

Synonymized with *Omphale* by BOUČEK 1988: 727.

*Raphaelonia* GIRAULT, 1924: 173. Type species *R. sulcatiscutum* GIRAULT, by monotypy.

Synonymized with *Omphale* by BOUČEK 1988: 727.

*Eugerium* GRAHAM, 1959: 202. Type species *Cirrospilus isander* WALKER, by original designation.

Synonymized with *Omphale* by HANSSON 1996b.

*Pholema* GRAHAM 1963: 267. Type species *P. microstoma* GRAHAM, by original designation.

Synonymized with *Omphale* by SCHAUFF 1991: 61.

*Exodontomphale* BOUČEK, 1984: 65. Type species *E. tuborskyi* BOUČEK, by original designation.

Synonymized with *Omphale* by SCHAUFF 1991: 61.

**D i a g n o s i s .** Head with vertex not projecting antero-laterally, scape and funicle segments not flattened, mid lobe of mesoscutum with two pairs of setae (rarely with one pair or with setae missing) (HANSSON 2004), fore wing usually hyaline, but if infusate then not in a longitudinal pattern.

**B i o l o g y :** *Omphale* species are endoparasitoids of galls of Cecidomyiidae (Diptera) (ASKEW & BOUČEK 1968; GUISWIT 1976; SCHAUFF 1991; EMEHUTE 1998) and *Phyllonorycter* (Lepidoptera: Gracillariidae) (HERTING 1975; HANSSON 2004).

### ***Omphale turgidus* YEFREMOVA nov.sp. (Figs 1-6)**

**M a t e r i a l .** Holotype: ♀, South Africa, KZN, Mkuzi Game Res., 27.40 S 32.24 E, 27.xi.1999, reared from cecidomyiid galls on *Acacia nilotica*, coll. R.J. ADAIR (SANC). Paratypes: 34 ♀ ♀, 49 ♂ ♂, South Africa, KZN, Mkuzi Game Res., 27.40 S 32.24 E 27.xi.1999, reared from cecidomyiid galls on *Acacia nilotica*, coll. R.J. ADAIR (20 ♀ ♀, 25 ♂ ♂, SANC; 7 ♀ ♀, 10 ♂ ♂, BMNH), 7 ♀ ♀, 14 ♂ ♂ (ZISP).

**D i a g n o s i s .** Clypeus poorly delimited (upper borderline missing), scrobal grooves sutured, parallel and joining below frontal sulcus; subtorular grooves present. Female antenna with 2 almost equal each to other finical segments. Scutellum with 3 pairs of long setae. Propodeum with median carina. Gaster 4.6 times as long as broad. Male scape swollen, funicle with 2 segments, F1 1.5 times as long as pedicel and 1.2 times as long as F2. Gaster 2.6 times as long as broad.

**D e s c r i p t i o n .** Female. Body length 1.6 mm, fore wing length 1.03 mm. Colouration. Head and thorax dark brown with green tint, mesoscutum green with bronze tint, axillae and scutellum bronze, propodeum green, gaster T1, T2, T5 green, T3, T4,

T6, T7 brownish. Face brown, clypeus and mandibles brownish. Eye grey. Ocelli yellow. Antenna scape and pedicel yellow, funicle and clava brownish. Venation yellow. Fore wing hyaline. Tegulae yellow with brown spot. All legs yellow with brown coxae and brown distal half of femora.

Head (Fig. 1) height 15.8, head breadth 16.3, length 8.0. Head 1.03 times as broad as high. Eyes (6.5 x 11.0) without setae. Distance between eyes 6.8. POL 1.5 OOL. Eyes without setae. Face finely granulate. Clypeus poorly delimited (upper borderline missing). Mandibles with two big teeth. Frontal sulcus present as V-shaped lines. Scrobal grooves sutured, parallel and joining below frontal sulcus; subtorular grooves present (Fig. 1). Malar sulcus 3.9 times shorter than mouth. Antennae inserted slightly above at the lower level of eyes. Antenna (Fig. 2) with scape 3.8 times as long as broad, pedicel 2.06 times as long as broad, with numerous short setae, 1 anellus. Funicle with 2 segments (F1 3.0 x 2.6, F2 2.8 x 2.4), clava 3-segmented and 2.87 times as long as broad with short apical sensilla. F1 1.7 times as long as pedicel and 1.07 times as long as F2. Clava about 3.0 times as long as F2. Relative measurements: POL 5.0, OOL 3.2, SL 13.7, SW 3.6, PL 5.15, PW 2.5, F1 3.0 x 2.6, F2 2.8 x 2.4, clava 8.5.

Mesosoma. Pronotum very short. Mesoscutum (12 x 19) with shallow notauli, superficially granulate; mid lobe of mesoscutum with 2 lateral long setae. Scutellum (10 x 10), superficially granulate, with 3 pairs of long setae (first pair – in upper part, the second pairs – in low part and additional setae in middle). Dorsellum smooth. Propodeum (2 x 16), smooth with short median carina, spiracles small round with rim situated near distal margin. Setae of callus arranged densely into 1 row, with 2 long setae.

Fore wings (Fig. 3) 2.0 times as long as broad. Speculum extending along about 1/3 of MV. SMV with 2 setae and joining parastigma and tapering at apex. Costal cell with 4 dorsal setae. SMV 1.7 times as long as MV. SV 1.13 times as long as PMV. Cilia (1.5) 0.4 length SV. PMV as stub. Cubital line of hair present and slightly curved. Relative measurements: FWL 41.0, FWW 20.0, SMV 8.5, MV 14.5, SV 3.4, PMV 3.0.

Metasoma. Gaster 4.6 times as long as broad. Relative measurements: GL 37.0, GW 8.0.

Variation of female. Body length 1.60–1.40 mm; colour of propodeum varies from dark brown with strong green tint to green.

**Description.** Male. Body length 0.97 mm. Fore wing length 0.75 mm. Colouration. Head dark brown with green tint, mesoscutum green with bronze tint, scutellum bronze, propodeum green, gaster brown ventrally yellow. Face brown, clypeus and mandibles brownish. Eye grey. Ocelli yellow. Antenna yellow. Venation yellow. Fore wing hyaline. Tegulae yellow or slightly brownish. All legs yellow with brown coxae.

Head height 14.4, head breadth 15.0, length 8.0. Head 1.4 times as broad as high. Eyes (7.5 x 10.0) without setae. Distance between eyes 6.8. Face finely granulate, antennal scrobes joining below frontal suture (Fig. 4). Eyes without setae. Clypeus delimited better than in female and upper borderline slightly visible. Frontal sulcus present as deep V-shaped lines, scrobal grooves sutured, parallel and joining below frontal sulcus; subtorular grooves present (Fig. 4). Malar sulcus straight and about 5.0 times shorter than mouth. Antennae inserted above at the lower level of eyes. Antenna (Fig. 5) with swollen scape 2.32 times as long as broad, ventral margin of scape with 12 setae, pedicel short

(5.0 x 2.9), 1 anellus and funicle with 2 segments: F1 1.5 times as long as broad, F2 1.8 times as long as broad, clava 3-segmented 2.2 times as long as broad, apical sensilla slightly longer than that in the female. F1 1.5 times as long as pedicel and 1.1 times as long as F2. Clava 2.85 times as long as F2. Relative measurements: POL 5.0, OOL 3.2, SL 16.0, SW 7.0, PL 5.0, PW 2.9, F1 3.3 x 2.2, F2 3.0 x 1.7, clava 8.5. x 3.8.

Mesosoma. Pronotum very short. Mesoscutum (10.0 x 17.5) with shallow notauli, superficially granulate; mid lobe of mesoscutum with 2 lateral long setae. Scutellum (9.0 x 8.5) 1.1 times as long as broad, superficially granulate, with 3 pairs of long setae (first pair in front of scutellum, 2 pair – in middle, 3 pair – in low part). Dorsellum smooth. Propodeum (3.7 x 13.0) 3.5 times as long as broad, superficially granulate with median carina, spiracles small round situated near upper margin. Setae of callus arranged densely into one row, with 2 long setae. Fore wings (Fig. 6) 2.0 times as long as broad. Speculum extending along 1/2 of MV. Costal cell with 4 dorsal setae. SMV with 2 setae and joining parastigma and tapering at apex. SMV 1.8 times as long as MV. PMV as stub. Cilia (1.5) 0.4 length SV. Relative measurements: FWL 36.0, FWW 18.0, SMV 8.0, MV 14.4, SV 3.6, PMV 3.0.

Metasoma. Gaster 1.5 times as long as broad. Male genitalia occupies less ¼ part of gaster and places in 6–7 sternites. Genitalia strong protruding, phallobase with two large volsellar setae, digitus with two spines; paramerae with one seta, apodemae of aedeagus 1.57 times shorter than length of aedeagus (Fig. 7). Relative measurements: GL 21.0, GW 14.0.

Variation of male. Body length 0.97-1.20 mm.

**D i s t r i b u t i o n .** South Africa.

**B i o l o g y .** Cecidomyiidae (Diptera) from galls on *Acacia nilotica*.

**E t y m o l o g y .** From the Latin turgidus, swollen, in reference to the shape of the male scape.

**Material examined and not included in paratypes** (2 specimens are in poor condition and 2 specimens were reared from different species of *Acacia*): 2 ♀ ♀, South Africa, MPU, Klaseria, 24.28 S 31.06 E, 23.xi.1999, reared from durian type cecidomyiid node galls on *Acacia nilotica*, coll. R.J. ADAIR (SANC). 2 ♀ ♀, South Africa, Blyde River, 24.30 S 30.53 E, 23.xi.1999, reared from durian type cecidomyiid node galls on *Acacia gerrardii*, coll. R.J. ADAIR (SANC) KZN, Mkuzi Game Res., 27.40 S 32.24 E, 27.xi.1999, reared from cecidomyiid galls on *Acacia nilotica*, coll. R.J. ADAIR (SANC).

**C o m m e n t s .** The new species was compared with 2 ♀ ♀, type of *Omphale salicis* (HALIDAY, 1833) (WALKER collection) (BMNH); 1 ♀, Epen (Z.L.). 23.vii.1975. H.J. VLUG, det. M. J.GUSWIJT, 1975 and ♂, Esher Common, Surrey England 28.v.1972. BOUČEK (BMNH). *Omphale turgidus* sp.nov. resembles *O. salicis* by colouration body mostly green, head with yellow antenna, tegulae yellow, all legs yellow but differs by mandibles brownish (mandibles yellow in *O. salicis*); green T1, T2, T5 (only green T1 in *O. salicis*), legs with brown coxae and half of femora (yellow in *O. salicis*).

The new species differs from *O. salicis* as following morphological characters:

<i>Omphale turgidus</i> sp.nov.	<i>Omphale salicis</i> (HALIDAY)
(♀ ♀)	(♀ ♀)
Funicle 2-segmented and clava 3-segmented	Funicle 2-segmented and clava 3-segmented
F1 1.15 times as long as broad	F1 2.0 times as long as broad
F2 1.16 times as long as broad	F2 2.5 times as long as broad
Antenna clavate	not clavate
Clava 2.87 times as long as broad	Clava 1.8 times as long as broad
Clava with apical sensilla less than 0.5 length of third claval segment	Clava with apical sensilla 0.5 length of third claval segment
Fore wing SV 1.3 times longer than PMV	Fore wing SV shorter than PMV
Speculum narrow and extending along 1/3 of MV	Speculum broad extending 1/3 of MV
Metasoma 4.6 times as long as broad	Metasoma about 1.6 times as long as broad
Last tergite 2.0 times as long as broad	Last tergite 3.5 times as long as broad
(♂ ♂)	(♂ ♂)
Funicle 2-segmented and clava 3-segmented	Funicle 3-segmented and clava 3-segmented
Length of funicle female antenna almost equal of those of male	Length of funicle female antenna 3.0 times more than length of those of male
Scape swollen 2.32 times broader than long	Scape narrow and longer than broad

*Omphale turgidus* nov.sp. resembles female of *O. clypealis* (THOMSON) with two-segmented funicle and three segmented clava but male of new species with swollen scape and it is different shape that scape of male of *O. clypealis*.

*Omphale turgidus* nov.sp. similar to Mexican *obscurinotata* group (HANSSON 1997) by presence poorly delimited clypeus. The female funicle resembles *Omphale obscurinotata* (GIRAULT) by having short and stout segments with short setae but male is absolutely different by the presence swollen scape in *O. turgidus* sp.nov, short funicular segments and short setae on them comparatively short as in female (scape widest only at base, funicular segments longer than broad with thick and long setae – in *O. obscurinotata*).

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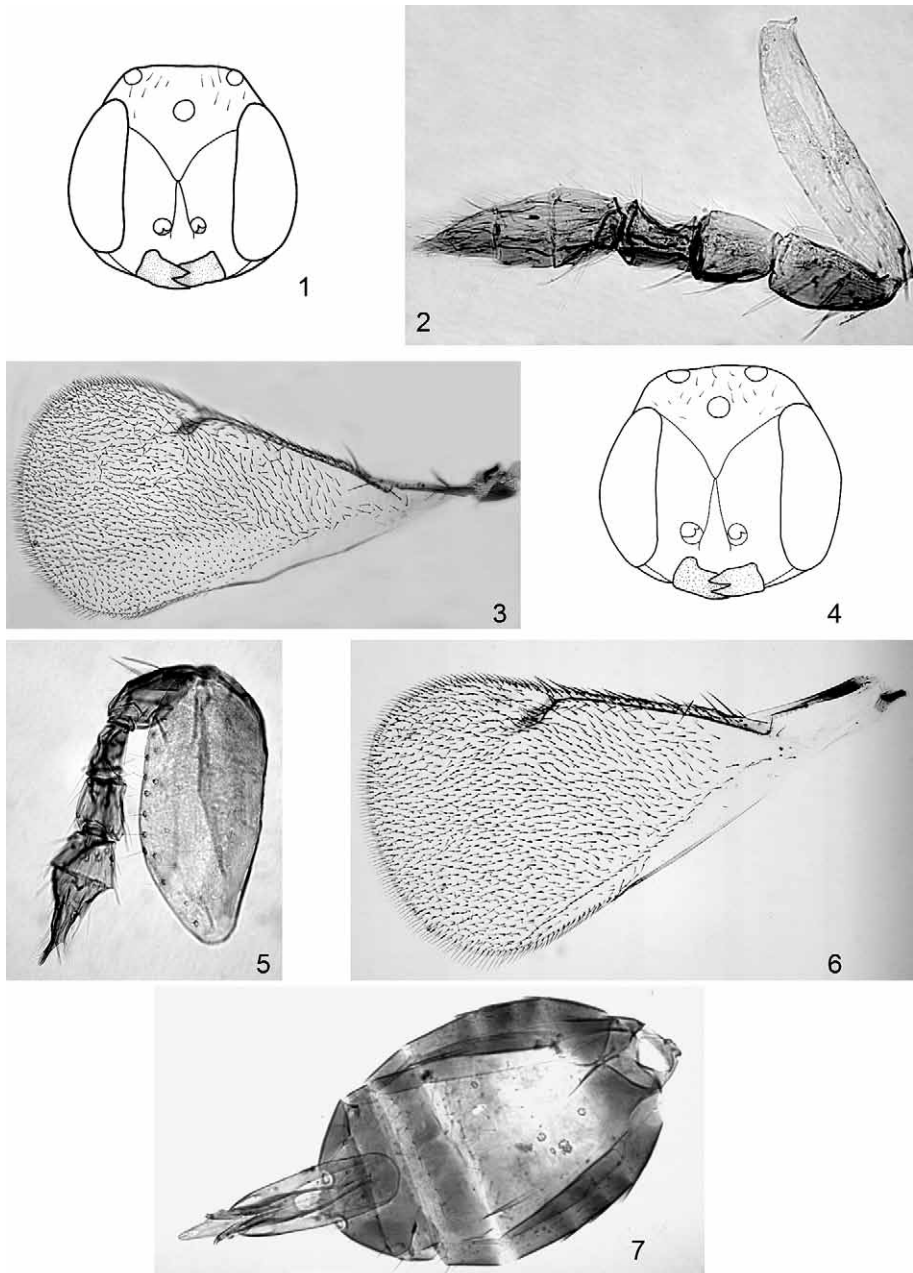
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**Figs 1-7:** *Omphale turgidus* nov.sp. (paratypes): (1) female, head, dorsal view, (2) female, left antenna, (3) female, left forewing, (4) male, head, dorsal view, (5) male, left antenna, (6) male, left forewing, (7) male genitalia, ventral view.



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