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The tetrastichine wasps (Hymenoptera: Chalcidoidea: Eulophidae) associated with galls on *Erythrina* species (Fabaceae) in South Africa, with the description of five new species

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Abstract

Five new tetrastichine eulophid species are described from both sexes from South Africa: *Quadrastichus ingens, Q. gallicola* and *Q. bardus* induce leaf, petiole and shoot galls on indigenous *Erythrina* species (Fabaceae); *Aprostocetus nitens* and *A. tritus* are parasitoids of the *Quadrastichus* species; *Q. bardus* and *A. nitens* are also recorded from Tanzania and comments are provided on *A. exertus* La Salle, known from Tanzania and South Africa as a parasitoid of *Q. erythrinae* Kim and *Q. ingens.* A key is provided for the separation of the six eulophid species now known from South Africa.

Key words: Hymenoptera, Eulophidae, *Quadrastichus, Aprostocetus*, description, galls, *Erythrina*, Fabaceae

Introduction

There has been considerable interest in the chalcidoids that are associated with galls on *Erythrina* species (Fabaceae), commonly known as coral trees, following the recent discovery of *Quadrastichus erythrinae* Kim (Eulophidae: Tetrastichinae), an aggressive invasive gall inducer of these trees (e.g. Kim *et al*. 2004, Yang *et al.* 2004, Uechi *et al.* 2007, La Salle *et al.* 2009). *Quadrastichus erythrinae,* which in all probability is native to East Africa from where specimens are at hand (in Australian National Insect Collection), was first recorded from Mauritius and Singapore in 2002 and has since spread rapidly through certain parts of Asia and the Pacific, including the Hawaiian islands, and, most recently, to Florida on the North American continent (Gates & Delvare 2008). *Quadrastichus erythrinae* induces galls on the leaves, petioles and twigs of several species of coral tree, resulting in devastating tree losses wherever it is found (Gates & Delvare 2008).

A recent search for natural enemies of *Q. erythrinae* by various research groups has resulted in the discovery of at least 12 chalcidoid species, mostly eulophids, that are associated with *Erythrina* galls in West and East Africa (see "The eulophid fauna associated with *Erythrina* galls in Africa" below) in addition to five undescribed Southern African species, the existence of which has been known for many years. Although little is presently known about the relationships and interactions of most of these wasps, some will undoubtedly be shown to be of potential importance as biocontrol agents in their role as primary parasitoids of the gall inducing species.

In this paper we treat the South African fauna, which comprises the following five new tetrastichine species, namely *Quadrastichus ingens, Q. gallicola, Q. bardus, Aprostocetus nitens* and *A. tritus* in addition to *A. exertus* La Salle, which is being described in a companion paper by La Salle *et al.* (2009). These species are described from extensive material which has been reared in association with all six of the indigenous species of *Erythrina* found in South Africa and that has accumulated in the South African National Collection of Insects over many years. Based on this extensive material we are of the opinion that, in all probability, the six

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species treated here are representative of the entire eulophid complex that is associated with *Erythrina* galls in South Africa. Apart from this complex, *Eurytoma erythrinae*, which was recently described from various parts of Africa by Gates & Delvare (2008), is the only other wasp known from South Africa to be associated with *Erythrina* galls. It is thought to be a parasitoid of one or more of the eulophid gall inducers.

Unless stated otherwise the specimens on which this study is based are housed in the South African National Collection of Insects (SANC), Plant Protection Research Institute, Pretoria. The following acronyms are used in the text: ANIC (Australian National Insect Collection, Canberra, Australia), BMNH (The Natural History Museum, London, UK), CIRAD (Centre de Coopération Internationale en Recherche Agronomique pour le Développement, Montpellier, France), MNHN (Muséum National d'Histoire Naturelle, Paris, France).

The eulophid fauna associated with *Erythrina* galls in Africa

Based on the South African material recorded in this study, and unrecorded voucher specimens and information from West and East Africa kindly provided by J. La Salle (ANIC) and G. Delvare (CIRAD), the following eulophids are now known to be associated with *Erythrina* galls in Africa:

Aprostocetus exertus La Salle: South Africa, Tanzania.
Aprostocetus nitens **sp. n.**: South Africa, Tanzania.
Aprostocetus tritus **sp. n.**: South Africa.
Aprostocetus spp.: at least one, possibly two undetermined species from Kenya.
Closterocerus spp: two undetermined species from Benin.
Quadrastichus bardus **sp. n.**: South Africa, Tanzania.
Quadrastichus erythrinae Kim: Tanzania, Kenya and widespread beyond its native range (see introduction).
Quadrastichus ingens **sp. n.**: South Africa.
Quadrastichus gallicola **sp. n.**: South Africa.
Quadrastichus spp: at least five undetermined species, one of which is from Benin, one from Benin and Togo, two from Kenya, one from Tanzania.

Identification of the South African species of *Aprostocetus* Girault and *Quadrastichus* Westwood

As in many other regions of the world, the Afrotropical Eulophidae are dominated by members of the Tetrastichinae. This subfamily is still very poorly known from the region with a great many new taxa awaiting description and discovery. The described component of the fauna, which comprises about 160 species in 18 genera, is equally poorly known. Many of these species, known only from their original descriptions, are in need of re-assessment. This would elucidate their specific identity and correct generic placement in accordance with present generic concepts, as first proposed by Graham (1987) and subsequently followed by workers such as Bouček (1988), Graham (1991) and La Salle (1994). For example, further study will in all probability show that many of the 74 Afrotropical species presently assigned to *Tetrastichus* would need to be transferred to *Aprostocetus*, an extremely large and diverse genus, which already contains 37 described Afrotropical species. Other species are likely to be better placed in *Quadrastichus*, to which not a single African species has been assigned prior to this study.

Although the relationships of the three South African species of *Quadrastichus* and three species of *Aprostocetus* remain largely unstudied because of the poor state of our knowledge of the Afrotropical Tetrastichinae, all these species are, as far as could be ascertained, undescribed. This is based on comparisons with either the literature or authentically identified specimens of most of the described Afrotropical tetrastichines, in addition to an assessment of published host data, which are available for about two-thirds of these species. In this regard, of the 19 described Afrotropical tetrastichine species known to be associated with

plant galls, none have been reared from plants belonging to the Fabaceae, the family to which the genus *Erythrina* belongs.

The South African species of *Aprostocetus* and *Quadrastichus* treated here have been compared with voucher material of all the *Erythrina* gall associated tetrastichines from elsewhere in Africa (listed above) and found to be distinct. These extra-limital species are, in all probability, undescribed as in the case of the South African species and have been shown to be distinct from the many tetrastichine species described by Risbec from Madagascar and tropical Africa (Delvare, pers.comm.). Comments on the characters that separate the South African *Erythrina* gall associated tetrastichines from those known from elsewhere in Africa are provided in the species descriptions below.

We have not been fully confident in our placement of some of the five new species in either *Aprostocetus* or *Quadrastichus* because, based on the detailed assessments by Graham (1987, 1991) and La Salle (1994) of the character states that separate these two genera, some of the new species could probably have been placed equally well to either of them. A reappraisal of these two genera that incorporates the African fauna is beyond the scope of this study but is evidently a prerequisite for future studies aimed at a major revision of the Afrotropical tetrastichine fauna. The five new species of *Quadrastichus* and *Aprostocetus* treated here can be separated from one another and from *A. exertus* by the characters given in the key.

Biology of the South African species

Apart from a study by Van Staden *et al*. (1977) of the life cycle and gall formation by *Q. ingens*, little is known about the biology of the species treated here other than some information gleaned from the rearing of specimens from galls of various indigenous species of *Erythrina*. The available information for each of the six species can be summarized as follows:

Quadrastichus ingens. This species appears to be exclusively associated with *E. latissima* galls since it has never been found in association with any other species of *Erythrina* from which wasps have been reared. *Quadrastichus ingens*, erroneously referred to "*Eurytoma* sp." by Van Staden *et al.* (1977) has been shown by these authors to induce leaf galls (Fig. 1) in *E. latissima*.

FIGURES 1–2. 1, leaf galls on *Erythrina latissima*; 2, leaf galls on *Erythrina lysistemon*.

Quadrastichus gallicola. This is the most abundant and widespread species in the *Erythrina* gall wasp complex in South Africa and is assumed to be the leaf gall inducer in the following species of *Erythrina* on which it is commonly found in great abundance: *E. lysistemon* (Fig. 2), *E. caffra* and *E. zeyheri*.

Quadrastichus bardus. This wasp, which emerges from the swollen twigs, petioles and leaflet veins of *E. humeana* and *E. zeyheri* is in all probability the gall inducer in these plants. It is also known from Tanzania, where it has been reared from galls on *E. abyssinica*.

Aprostocetus tritus and *A. nitens*. These two species are, in all probability parasitoids of the latter two species of *Quadrastichus*, each having been reared in association with both *Q. gallicola* and *Q. bardus*. Evidence of their parasitic role is supported by the fact that laboratory studies have shown that Tanzanian stock of *A. nitens* are primary parasitoids of *Q. erythrinae* Kim (La Salle *et al.* 2009).

Aprostocetus exertus. This species is known from Tanzania as a primary parasitoid of *Q. erythrinae* Kim (La Salle *et al.* 2009). It has also been reared from leaf galls on *E. latissima* in South Africa in association with *Q. ingens*, which appears to be another primary host of this parasitoid.

Key to the species of *Quadrastichus* and *Aprostocetus* associated with galls on *Erythrina* spp. in South Africa (Males and females)

1. Antennal funicle three-segmented (Figs. 7, 14, 21, 27, 32).....Females…….2
- Funicle four-segmented (Figs. 6, 13, 20, 28, 33)..... Males…….7
2. Submarginal vein of forewing with 1 dorsal seta; mesosoma without a metallic lustre, either generally brown to black, or black with mesoscutal side lobes yellow in contrast; antenna with a single anellus (Figs.7, 14, 21); *Quadrastichus* species 3
- Submarginal vein with 2–4 dorsal setae or, if rarely with a single seta, then mesosoma black with a distinct dark green lustre; antenna with 4 anelli (Figs. 27, 32); *Aprostocetus* species.. 5
3. Large, at least 3 mm in length; ovipositor protruding strongly by at least one-third length of gaster; mesosoma black with mesoscutal side lobes yellow in contrast; associated with *Erythrina latissima* ..... *Q. ingens* **sp. n.**
- Smaller species, less than 2 mm in length; ovipositor not or only slightly protruded; colour of mesosoma different; associated with species of *Erythrina* other than *E. latissima*..... 4
4. Meso - and metasoma generally brown to blackish-brown with yellowish-brown suffusions; gaster somewhat circular in outline, hardly longer than wide; mesoscutum with 1 pair of adnotaular setae (Fig. 10) ..... *Q. gallicola* **sp. n.**
- Meso – and metasoma black save basal half or so of gaster yellow; gaster elongate, tapering to an acute apex, about 1.5 X as long as broad; mesoscutum with 2–3 pairs of adnotaular setae (Fig. 18) ..... *Q. bardus* **sp. n.**
5. Last gastral tergite (epipygium) extremely long and slender, tail-like, distinctly longer than head and remainder of body combined (Fig. 38)..... *A. exertus* La Salle
- Last gastral tergite short, triangular to conical in shape, distinctly shorter than remainder of gaster (Figs. 29, 36).... 6
6. Head and body without a metallic lustre, blackish-brown to almost black save base of gaster yellowish; mesoscutum with a row of 6–8 adnotaular setae on each side (Fig. 25); submarginal vein of forewing with 4 dorsal setae..... ..... *A. tritus* **sp. n.**
- Head and body black with a distinct dark metallic green tinge, the base of gaster suffused with yellow; mesoscutum with 2–3 adnotaular setae on each side (Fig. 34); submarginal vein usually with 2 setae, rarely with 1..... .....*A. nitens* **sp. n.**
7. Submarginal vein of fore wing with 1 dorsal seta; body without a metallic lustre; species of *Quadrastichus*.....8
- Submarginal vein with 2–4 setae or, if rarely with 1, then mesosoma black with a distinct metallic greenish tinge; species of *Aprostocetus*..... 10
8. Head and body generally brown to blackish-brown with certain areas unevenly suffused with yellowish-brown; mesoscutum with 1 adnotaular seta on each side..... *Q. gallicola* **sp. n.**
- Head and body distinctly bicolorous, with certain areas black, others white; mesoscutum with more than 1 adnotaular seta on each side.....9
9. Gaster dorsally entirely blackish; mesoscutum with a row of 3–5 adnotaular setae on each side..... *Q. ingens* **sp. n.**
- Gaster blackish with basal half or so white in contrast; mesoscutum with a row of 2–3 adnotaular setae..... ..... *Q. bardus* **sp. n.**
10. Head and body non metallic, entirely blackish-brown save base of gaster suffused with yellowish-brown; legs with all coxae largely dusky; mesoscutum with a row of 6–8 adnotaular setae on each side; flagellar segments with whorls of long setae, as in Fig. 28. ..... *A. tritus* **sp. n.**
- Head and body black with a metallic green tinge, the basal third or so of gaster white in contrast; coxae entirely white; mesoscutum with 2–4 adnotaular setae on each side; flagellar segments without whorls of long setae (Fig. 33) 11
11. Antenna with 3 anelli..... *A. exertus* La Salle
- Antenna with 2 anelli..... *A. nitens* **sp. n.**

Genus *Quadrastichus* Girault

Quadrastichus Girault, 1913: 232; Graham, 1991: 46; Graham & La Salle, 1991: 94; La Salle, 1994: 193.
Cecidotetrastichus Kostjukov, 1977: 189.

The genus *Quadrastichus* comprises fewer than 100 described species, the majority of which are known from the Holarctic region. Although the genus is found on all continents, including Africa, the only species hitherto recorded from the latter continent is *Q. ingens*, described below as new and previously referred to as "*Eurytoma* sp." by Van Staden *et al.* (1977).

***Quadrastichus ingens* sp. n.**
Figs 3–9.

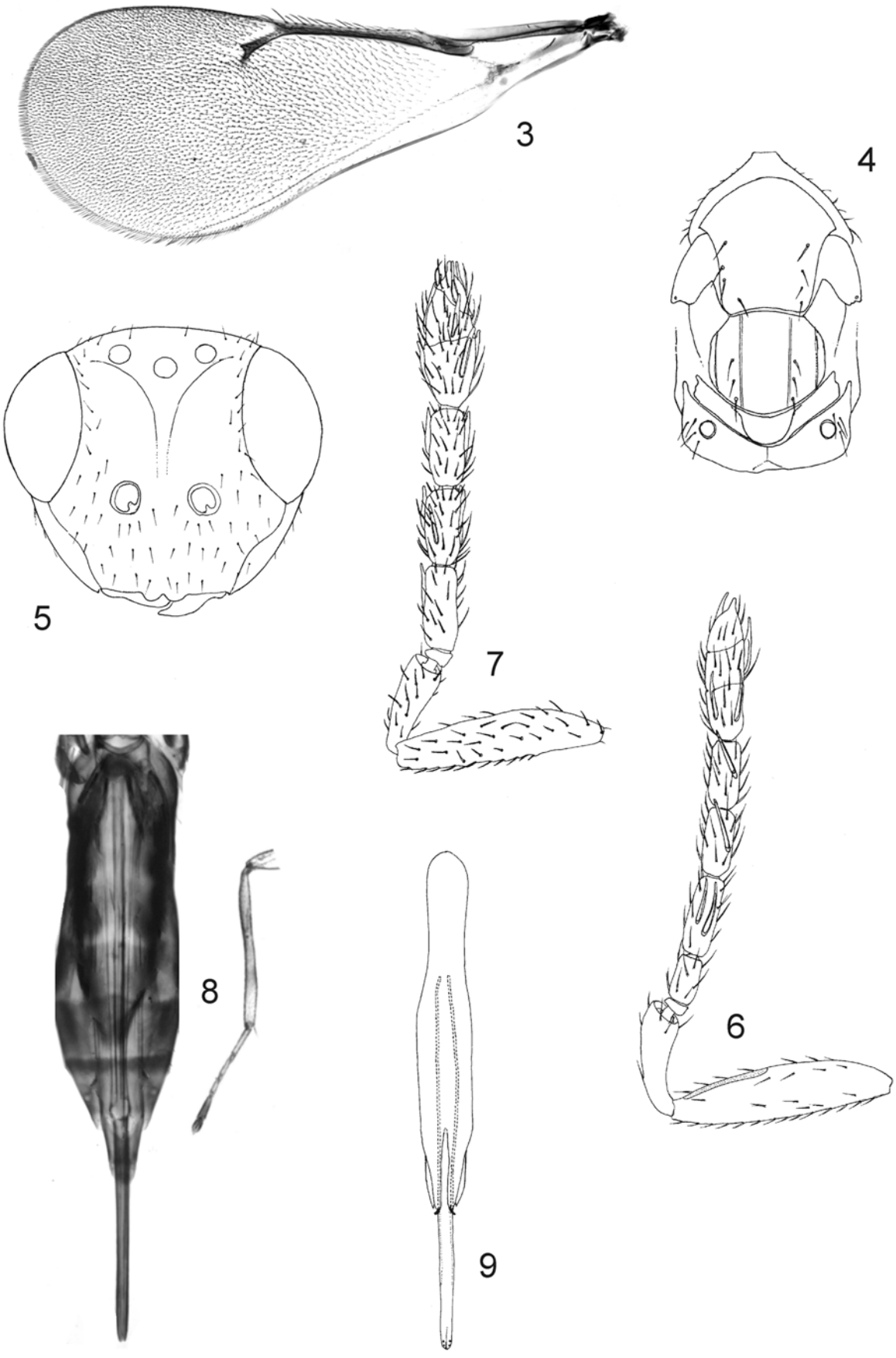
Eurytoma sp.: Van Staden, Davey & Noel, 1977: 283 (misidentification).

Female. Length: 3.7–4.4 mm. (including strongly protruding ovipositor). Colour: front aspect of head yellow, with brownish suffusions as follows: center of face below toruli, side of face below eyes, frontovertex from ocellar triangle to occipital margin, genae in some specimens; posterior aspect of head largely blackish above, the lower one-third or so yellowish; antenna ranging from yellowish-brown to blackish- brown, flagellum a little darker than scape in some specimens. Mesosoma black, with mesoscutal side lobes partly to entirely yellow in addition to the following areas that are also marked with yellow: hind margin of mesoscutal midlobe to a varying degree, hind margin of scutellum narrowly, prepectus and acropleuron. Metasoma black with uneven paler suffusions in some specimens, hind margin of second last tergite usually marked with yellow; protruding gonostyli blackish-brown. Forewing palely infuscated, venation brown. Legs whitish with following areas blackish- brown: all coxae basally, femora save basal and distal ends, the middle femur in some specimens almost entirely pallid, only the ventral margin narrowly darkened; distal tarsomere of all legs.

Head, in frontal view (Fig. 5), about 1.2 X as wide as high, about 1.9 X as wide as frontovertex at its narrowest; malar space 0.7 X as long as an eye, the sulcus distinctly curved, without a triangular fovea beneath the eye; POL 1.6 X OOL, 3 X OD; mandible bidentate with a truncation; head finely setose as in Fig. 5, the eyes naked; lower margins of toruli a little below lower eye margins; clypeus distinctly bilobed.
Antenna (Fig. 7) with scape 4.1–4.3 X as long as wide, a little shorter than the length of an eye, almost reaching vertex; pedicel 3 X as long as wide, a little longer than basal funicle segment; one strongly transverse anellus present; funcile three-segmented, the segments progressively decreasing a little in size, segment I about 2.4 X as long as wide, III about twice as long as wide; club a little shorter that distal two funicle segments combined, 2.7–3.2 X as long as wide; basal club segment 1.1–1.4 X as long as wide, distinctly broader than apical funicle segment; apical club segment longer than wide; apical spine short, distinctly shorter than apical segment; sensilla fairly sparse, the flagellum densely covered with short setae, as in Fig. 7.

Mesosoma (Fig. 4) about 1.6 X as long as wide; mesoscutum in profile gently convex, in dorsal view gently rounded from side to side; mesoscutal midlobe about as long as wide, with traces of a midline visible in some specimens; midlobe with a row of 3–5 adnotaular setae at each side; mesoscutum with fine lineate-reticulate sculpture; scutellum fairly strongly convex in profile, about 1.2 X as wide as long with distinct sublateral and submedian lines; sculpture much as in mesoscutum; scutellum with 2 or 3 setae at each side; dorsellum convex, smooth, medially about as long as propodeum; propodeum with a poorly defined median carina and no paraspiracular carinae, with fine reticulate sculpture; spiracles less than their own diameter from anterior propodeal margin; cali each with 4–5 setae. Middle leg with tibial spur about 0.5 X as long as basitarsus.

Forewing (Fig. 3) 2.6 X as long as wide, the disc densely setose; costal cell about 20 X as long as broad, subequal in length to marginal vein, naked; submarginal vein with 1 dorsal seta; marginal vein 3 X as long as



FIGURES 3– 9. *Quadrastichus ingens* **sp. n.** : 3, forewing, female; 4, mesosoma, female; 5, head, frontal view, female; 6, antenna, male; 7, antenna, female; 8, ovipositor and middle tibia, same scale, female; 9, male genitalia.

stigmal vein, the postmarginal vein subobsolete; subcubital line of setae extending basally as far as basal vein, closing speculum posteriorly; longest marginal cilia about 0.6–0.7 X as long as longest setae on marginal vein.

Metasoma with gaster (including strongly protruding ovipositor) long and slender, tapering strongly to an acute apex, about 2.5–2.9 X as long as mesosoma in dried specimens; epipygium distinctly longer than wide; hypopygium reaching to about two-thirds length of gaster; ovipositor, as seen in cleared slide-mounted specimens (Fig. 8), 3.0–3.5 X as long as middle tibia, 2.3–2.6 X as long as gonostyli, the latter protruding strongly caudally by at least one-third gastral length, 14–16 X as long as middle tibial spur; 2 cercal setae.

Male. Length: 2.4–3. 0 mm. Colour: distinctly bicolorous: head and antenna whitish, with ocellar triangle and upper part of occiput dusky; mesosoma black with the following areas white: sides and venter of pronotum, posterolateral sides of mesoscutal midlobe in a pattern that leaves the black area V-shaped, mesoscutal side lobes, prepectus and acropleuron; metasoma blackish save basal two to three segments of gaster ventrally palely suffused; wings palely infuscated; legs whitish with distal tarsomere of all legs dark. Differing structurally from the female mainly in the antenna (Fig. 6): scape with a ventral plaque, placed in apical half and extending from near apex to about mid length of scape, as in Fig. 6; one anellus present; funicle four-segmented, basal segment 1.5–1.7 X as long as wide, distinctly shorter than segments II–IV which become progressively a little shorter, segment II about 3 X as long as wide, IV 2.2 X as long as wide; flagellum sparsely setose, the setae on funicle segments short, curved, distinctly shorter than the segments that bear them, not arranged in whorls; genitalia as in Fig. 9.

Remarks. *Quadrastichus ingens* is a striking species that is readily separated from *Q. gallicola*, *Q. bardus*, *Q. erythrinae* and all the undescribed species of the genus known to be associated with *Erythrina* galls by its distinctive colour, large size, row of 3 – 5 adnotaular setae, long, slender, acutely pointed gaster and straight, strongly protruding ovipositor. *Quadrastichus ingens* does not fit any one of the two existing species-groups, namely *anysis* and *brevinervis*, which were established by Graham (1991) for the European fauna of the genus.

Type material examined. Female holotype, 21 female, 19 male paratypes as follows: SOUTH AFRICA. KwaZulu-Natal Province: Pietermartizburg, 29°36’S 30°22’E, B. Muller, vi.2008, ex leaf galls on *Erythrina latissima* (Female holotpye, 15 females, 14 males; HYMC05731); same data except D. J. Brothers, ix.2008 (5 females, 5 males; HYMC05732); 1 female, 1 male paratypes in each: ANIC, BMNH, MNHN.

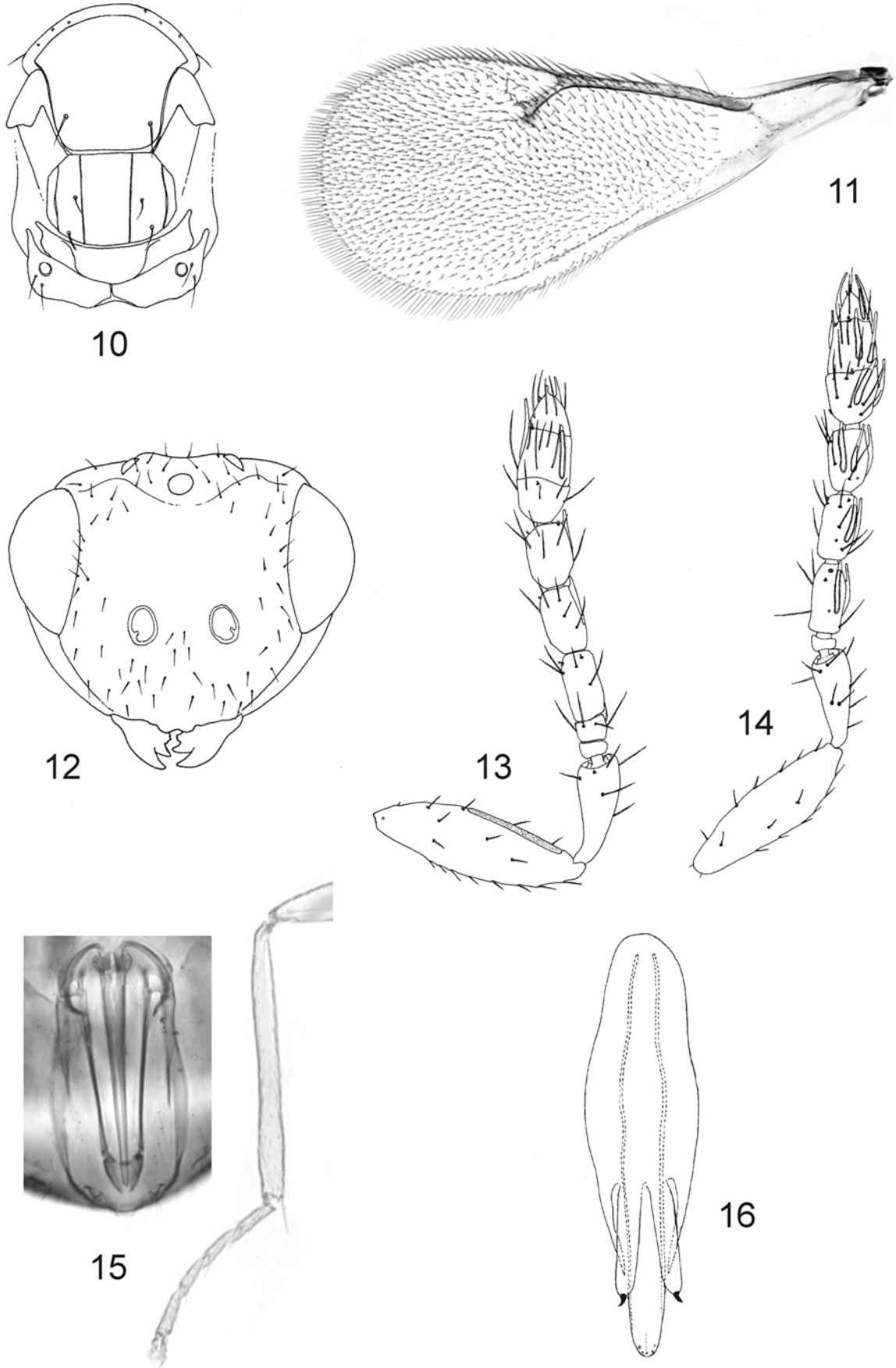
Non type material examined. SOUTH AFRICA. KwaZulu-Natal Province: Pietermaritzburg, R. A. Noel, 1975, ex leaf galls on *Erythrina latissima* (7 females; HYMC00034).

***Quadrastichus gallicola* sp. n.**

Figs. 10–16.

Female. Length: 0.7–1.3 mm. Colour: front aspect of head yellowish, genae and temples with dusky suffusions; posterior aspect of head dusky above, the lower one-third or so yellowish; antenna dominantly white to yellow, flagellum a little darker than pedicel and scape in some specimens. Mesosoma almost entirely dark brown to blackish-brown or with side lobes and posterior half of mesoscutum, scutellum, prepectus and acropleuron variably suffused with yellowish-brown to pale brown in some specimens. Metasoma blackish-brown, the base of gaster dorsally broadly suffused with yellowish-brown. Forewing disc entirely hyaline, venation brownish. Legs white to yellowish-white save basal half or more of hind coxa, and apical tarsomere of all legs, dusky, the base of fore coxa also somewhat darkened in some specimens.

Head, in frontal view (Fig. 12), 1.1–1.3 X as wide as high, 1.7–1.8 X as wide as frontovertex at its narrowest; malar space 0.6–0.8 X as long as an eye, the sulcus slightly curved, without a triangular fovea beneath the eye; POL 1.4 – 1.6 X OOL, 3.1–3.6 X OD ; mandible bidentate with a truncation; head finely setose as in Fig. 12, eyes naked; lower margins of toruli a little below lower eye margins; clypeus distinctly bilobed.



FIGURES 10–16. *Quadrastichus gallicola* **sp. n.** : 10, mesosoma, female; 11, forewing, female; 12, head, frontal view, female; 13, antenna, male; 14, antenna, female; 15, ovipositor and middle tibia, same scale, female; 16, male genitalia.

Antenna (Fig. 14) with scape 2.8–3.3 X as long as wide, a little shorter than the length of an eye, almost reaching vertex; pedicel approximately 2.5 X as long as wide, 1.5 X as long as basal funicle segment; one strongly transverse anellus present; funicle three-segmented, segments about equal in size or progressively decreasing a little in size, each 1.5–2.1 X as long as wide; club about equal in length to distal two funicle segments combined, 2.6–3.2 X as long as wide; basal club segment about as long as wide, a little broader than apical funicle segment; apical club segment as long as wide to a little wider than long; apical spine short, distinctly shorter than apical segment; sensilla sparse, flagellum rather sparsely setose, as in Fig. 14.

Mesosoma (Fig. 10) 1.2–1.5 X as long as wide; mesoscutum in profile gently convex dorsally, in dorsal view gently rounded from side to side; mesoscutal midlobe slightly wider than long, without a median line, with 1 adnotaular seta at each side, in posterior half; mesoscutum with fine lineate-reticulate sculpture; scutellum fairly strongly convex in profile, 1.2–1.5 X wider than long with distinct sublateral and submedian lines; sculpture much as in mesoscutum; scutellum with 2 pairs of setae; dorsellum convex, smooth, medially about as long as propodeum; propodeum with median carina, without paraspiracular carinae, with very fine reticulate sculpture; spiracles less than their own diameter from anterior propodeal margin; cali each with 2–3 setae. Middle leg with tibial spur slightly shorter than basitarsus.

Forewing (Fig. 11) 2.3–2.4 X as long as wide; costal cell 16–21 X as long as broad, subequal in length to marginal vein, naked or with a variable number of ventral setae; submarginal vein with 1 dorsal seta; marginal vein 3.3 – 3.7 X as long as stigmal vein, the postmarginal vein less than 0.25 X length of stigmal vein; subcubital line of setae extending basally as far as basal vein, closing speculum posteriorly; longest marginal cilia about 1.4–1.7 X as long as longest setae on marginal vein.

Metasoma short, about as long as mesosoma in dried specimens, somewhat circular in outline, hardly longer than broad, broadly rounded apically; epipygium wider than long; hypopygium reaching to about half the length of gaster; ovipositor, as seen in cleared slide-mounted specimens (Fig. 15), about half as long as gaster, slightly shorter than middle tibia, 6.0–7.3 X as long as gonostyli, the latter short and broad, not or hardly protruding caudally, 1.1–1.5 X as long as middle tibial spur; 2–3 cercal setae.

Male. Length: 0.7–1.2 mm. Colour: much as in female except head more extensively yellow in some specimens, leaving only the posterior aspect partly dusky; hind coxa almost entirely pale, only the base slightly darkened.

Differing structurally from the female mainly in the antenna (Fig. 13): scape with a ventral plaque, placed in apical half and extending from near apex to beyond mid length of scape, as in Fig. 13; a single anellus present; funicle four-segmented, the basal segment quadrate to 1.3 X as wide as long, distinctly shorter than segments II-III which are subequal in size or progressively decreasing a little in size, each about 1.5–2.1X as long as wide; flagellum sparsely setose, the setae on funicle segments fairly long, slightly curved, not arranged in whorls; genitalia as in Fig. 16.

Remarks. *Quadrastichus gallicola* can be easily distinguished from *Q. ingens, Q.bardus* and *Q. erythrinae* by a combination of characters that include colour, the presence of 1 pair of adnotaular setae and the short, broadly rounded gaster with ovipositor hardly protruding. *Quadrastichus gallicola* most closely resembles the undescribed *Quadrastichus* species known from Togo and Benin, which can be separated from the former species in the female by its distinctive colour in which the head and basal half or so of the gaster are yellow in contrast to the remainder of the body which is blackish. Both these species fit the *anysis*- species group, as defined by Graham (1991), to a large extent.

Type material examined. Female holotype, 33 female, 20 male paratypes as follows: SOUTH AFRICA. Western Cape Province: Stellenbosch, 33°56’S 18°51’E, xii.1975, ex leaf galls on *Erythrina caffra* (Female holotype, 12 females, 8 males; HYMC00065); same data except xi.1975 (1 female, 5 males; HYMC00036); Stellenbosch, vii.1980, ex leaf galls on *E. lysistemon* (7 females, 3 males; HYMC02282); Cape Town, 33°55’S 18°22’E, iii.1978, ex galls on *Erythrina* sp. (5 females, 2 males; HYMC02947); Gauteng Province: Pretoria, Rietondale experiment farm, 25°44’S 28°13’E, xi.2004, ex leaf galls on *Erythrina lysistemon* (8 females, 2 males; HYMC03772). All series collected by S. Neser. 2 female, 2 male paratypes each : ANIC, BMNH, MNHN.

Non type material examined. SOUTH AFRICA. Western Cape Province: Stellenbosch, 33°56'S 18°51'E, xi.1975, ex leaf galls on *Erythrina* ? *caffra* (2 females, 2 males; HYMC00064); same data except xii.1975 (4 females, 1 male; HYMC00067); Wynberg, xii.1975, ex *E.* ? *caffra* (4 females, 2 males; HYMC00066); Gauteng Province: Pretoria, Rietondale experiment farm, 25°44'S 28°13'E, iii.1993, ex leaf galls on *Erythrina lysistemon* (9 females, 4 males; HYMC02935); ii.2006 (4 females, 3 males; HYMC03792); ii. 2006 (5 females, 5 males; HYMC0580); Pretoria, Brummeria, ii.1993, ex leaf galls on *E. zeyheri* (2 females, 2 males; HYMC02976); Limpopo Province: Blouberg, NW of Polokwane, 23°04'S 28°59'E, v.2006, ex leaf galls on *E. lysistemon* (1 female; HYMC 03795); Mpumalanga Province: Pongola, v.1996, from *Erythrina* sp. (5 females, 3 males; HYMC02270); KwaZulu-Natal Province: Richards Bay, 28°44'S 32°05'E, xi.2003. M. Clark, ex leaf galls on *Erythrina* sp. (3 females, 3 males; HYMC05077). All series collected by S. Neser except HYMC05077.

***Quadrastichus bardus* sp. n.**
Figs. 17–23.

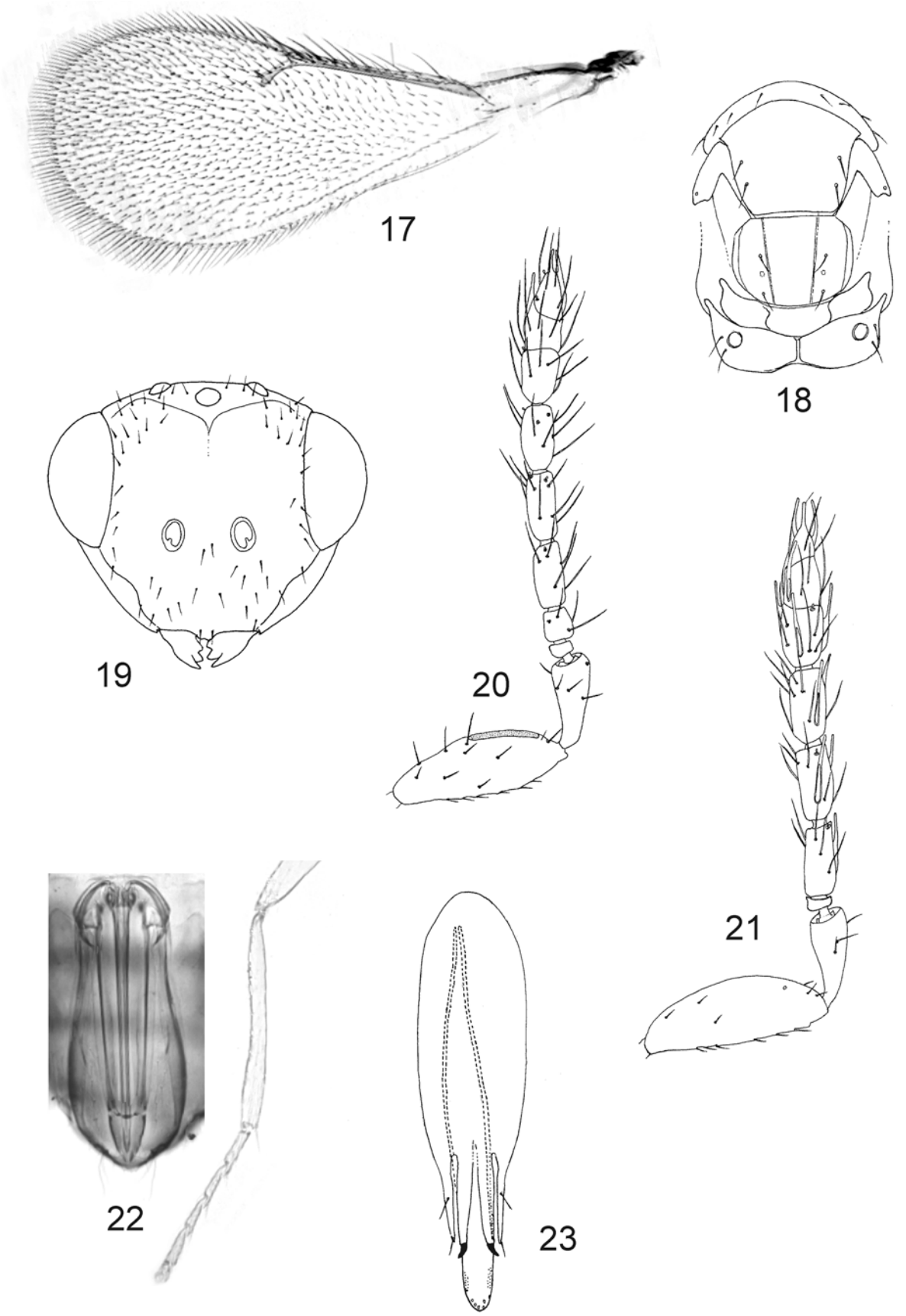
Female. Length: 0.8–1.3 mm. Colour: front aspect of head yellowish with sides, middle of face below toruli, and ocellar area, with variable dark suffusions; back of head black with dorsal margin broadly outlined in yellow, the ventral third or so white; antenna dominantly sordid white. Mesosoma uniformly black (blackish-brown in faded specimens), shiny, except acropleuron yellowish. Metasoma black save basal two and a half segments of gaster yellowish with a dark spot at each dorsolateral margin near base. Forewing disc entirely hyaline, venation pale brown. Legs white to yellowish except basal half or so of fore and hind coxae, and tarsal tips, dark.

Head, in frontal view (Fig. 19) 1.1–1.3 X as wide as high, 1.6–1.7 X as wide as frontovertex at its narrowest; malar space 0.6–0.8 X as long as an eye, the sulcus distinctly curved, without a triangular fovea beneath the eye; POL 1.6 – 1.8 X OOL, 3.0–3.3 X OD; mandible bidentate with a truncation; head finely setose as in Fig. 19, the eyes naked; lower margins of toruli about level with lower eye margins; clypeus bilobed.

Antenna (Fig. 21) with scape 2.8–3.3 X as long as wide, a little shorter than the length of an eye, almost reaching vertex; pedicel 2.1–2.4 X as long as wide, 1.2–1.4 X as long as basal funicle segment; one transverse anellus; funicle three-segmented, segments subequal in size, each 2.0–2.4 X as long as wide; club about as long as distal two funicle segments combined; basal club segment 1.2–1.5 X as long as wide, a little broader than distal funicle segment; apical segment 1.3–1.4 X as long as wide; apical spine long, a little shorter than apical segment; sensilla sparse, flagellum rather sparsely setose, as in Fig. 21.

Mesosoma (Fig. 18) about 1.5 X as long as wide; mesoscutum in profile gently convex dorsally, in dorsal view gently rounded from side to side; mesoscutal midlobe a little wider than long, without or with slight traces of a median line, with 2–3 adnotaular setae at each side, in posterior half; mesoscutum with fine lineate-reticulate sculpture; scutellum fairly strongly convex in profile, about 1.3 X as wide as long with distinct sublateral and submedian lines; sculpture much as in mesoscutum; scutellum with 2 pairs of setae, anterior pair level with the middle of scutellum; dorsellum convex, smooth, medially about as long as propodeum; propodeum with median carina and paraspiracular carinae absent; propodeum appearing a rather smooth with fine reticulate sculpture; spiracles less than their own diameter from anterior margin of propodeum; cali each with 2 setae. Middle leg with tibial spur slightly shorter than basitarsus.

Forewing (Fig. 17) 2.4–2.6 X as long as wide; costal cell 17–20 X as long as broad, about equal in length to marginal vein, with a row of ventral setae; submarginal vein with 1 dorsal setae; marginal vein 3.3 – 4.0 X as long as stigmal, the postmarginal vein less than 0.25 X as long as stigmal; subcubital line of setae extending basally as far as basal vein, closing speculum posteriorly; longest marginal cilia about 1.1–1.5 X as long as longest setae on marginal vein.



FIGURES 17–23. *Quadrastichus bardus* **sp. n.** : 17, forewing, female; 18, mesosoma, female; 19, head, frontal view, female; 20, antenna, male; 21, antenna, female; 22, ovipositor and middle tibia, same scale, female; 23, male genitalia.

Metasoma slightly longer than mesosoma in dried specimens, somewhat parallel-sided, tapering to an acute apex, approximately 1.5 X as long as broad; epipygium wider than long; hypopygium reaching to about half the length of gaster; ovipositor, as seen in cleared slide-mounted specimens (Fig. 22), a little shorter than gaster, 1.2–1.4 X as long as middle tibia, 5.6–6.5 X as long as gonostyli, the latter short and broad, not protruding caudally, 1.5–1.9 X as long as middle tibial spur; 2 to 3 cercal setae.

Male. Length: 0.7–1.0 mm. Colour: distinctly bicolorous: head and antenna white, the triangle demarcated by the ocelli dusky; mesosoma blackish with sides of pronotum, mesoscutal side lobes, prepectus and acropleuron white in contrast; metasoma blackish save basal half of gaster white; wings hyaline; legs entirely white.

Differing structurally from the female mainly in the antenna (Fig. 20): scape with a ventral plaque, placed in apical half and extending about halfway the length of scape, as in Fig. 20; one anellus present; funicle four-segmented, the basal segment quadrate to slightly wider than long, distinctly shorter than segments II–III which are subequal in size, each approximately twice as long as wide; flagellum sparsely setose, the setae on funicle segments long, slightly curved, not arranged in whorls; genitalia as in Fig. 23.

Remarks. *Quadrastichus bardus* can be separated most readily from *Q. ingens, Q. gallicola* and *Q. erythrinae* in the female by: its colour, which is generally black, the basal half or so of gaster yellowish in contrast; long apical spine of the antennal club; 2–3 adnotaular setae at each side of mesoscutal midlobe; relatively short, tapering gaster with non protruding ovipositor. *Quadrastichus bardus* structurally closely resembles the undescribed *Quadrastichus* species from Tanzania, which has been reared from galls on *E. abyssinica*, although the two species are distinctly different in colour. *Quadrastichus bardus* fits the *anysis*-group of species as defined by Graham (1991).

Type material Examined. SOUTH AFRICA. Female holotype, 39 female, 14 male paratypes as follows: Gauteng Province: Pretoria, Rietondale experiment farm, 25°44'S 28°13'E , viii.2006, ex leafless twigs of *Erythrina humeana* (Female holotype, 10 females, 1 male; HYMC05730); same data except xi.2003, ex petioles and leaf veins (12 females; HYMC01918); Pretoria, Brummeria, Botanic Gardens, ii.2007, ex swollen petioles of *Erythrina zeyheri* (17 females, 13 males; HYMC05729). All specimens collected by S. Neser. 2 females, 2 males each: ANIC, BMNH, MNHN.

Non type material examined. SOUTH AFRICA. Gauteng Province: Pretoria, ii.1986, ex thickened leaf vein of *Erythrina humeana* (2 females, 2 males; HYMC02271); same data except ii.1984 (2 females; HYMC02278); same data except iii.1986, ex galls on *E. humeana* in laboratory originating from stock reared from *E. zeyheri* (14 females; HYMC02273); KwaZulu-Natal Province: Midmar dam, nr. Howick, ii.1985, ex galls in petioles of *E. humeana* (2 females, 1 male; HYMC02276). All specimens collected by S. Neser. TANZANIA: Kisase-Mwanza, 12.ii.2006, M. Ramadan, ex *Erythrina* af. *abyssinica* (2 females; in CIRAD)

Genus *Aprostocetus* Westwood

Aprostocetus Westwood, 1833: 144; Graham, 1987: 86; La Salle, 1994: 136.

Noyes (2002) provides a complete list of the more than 40 synonymies that apply to this genus. *Aprostocetus* is by far the largest and most diverse of all the tetrastichine genera. The Afrotropical fauna has never been studied in any detail and is based mainly on scattered descriptions of fewer than 40 species, mostly from West and Central Africa, and listed by Noyes (2002).

Aprostocetus tritus sp. n.

Figs. 24–30.

Female. Length: 1.1–1.7 mm. Colour: head and body entirely blackish-brown to almost black save basal one and a half segments of gaster yellowish; antenna with the scape and pedicel yellowish, flagellum brown to

blackish-brown; legs white to yellowish, coxae partly to almost completely dusky, tarsal tips dark, hind femur with dusky suffusions in the middle in some specimens. Forewing disc entirely hyaline, venation pale brown. Head in frontal view (Fig. 26) about 1.2 X as wide as high, 1.6 X as wide as frontovertex at its narrowest; malar space about 0.6 X as long as an eye, the sulcus slightly curved, without a triangular fovea beneath the eye; POL 1.6 X OOL, 2.6 X OD; mandible bidentate with a truncation; head finely and rather densely setose as in Fig 26, eyes naked; lower margin of the toruli about level with lower eye margins; clypeus distinctly bilobed.

Antenna (Fig. 27) with scape about 4 X as long as wide, 0.8 X the length of an eye, not reaching vertex; pedicel twice as long as wide, about equal in length to basal funicle segment; four strongly transverse anelli; funicle three-segmented; basal two segments subequal in size, each not quite twice as long as wide, a little longer than the distal segment, the latter 1.5 X as long as wide; or segment II intermediate in size between I and III ; club about equal in length to the distal two funicle segments combined, 2.5 X as long as wide; basal club segment a little longer than wide, distinctly wider than apical funicle segment; apical segment wider than long; apical spine shorter than length of apical club segment; sensilla sparse, the flagellum sparsely setose, as in Fig. 27.

Mesosoma (Fig. 25) about 1.5 X as long as broad; mesoscutum in profile slightly convex dorsally, in dorsal view gently rounded from side to side; mesoscutal midlobe more or less as long as wide, with a median line which is barely discernible in some specimens, with 6–8 adnotaular setae at each side, roughly arranged in one or two rows; mesoscutum with clearly discernible lineate-reticulate sculpture; scutellum moderately convex, 1.2 – 1.4 X as wide as long with distinct submedian and sublateral lines; sculpture much as in mesoscutum; scutellum with 2 pairs of setae, anterior pair placed slightly behind mid-length of scutellum; dorsellum convex, smooth, medially subequal in length to propodeum; propodeum with a median carina, without paraspiracular carinae, with distinct reticulate sculpture; propodeal spiracles less than their own diameter from anterior margin of propodeum; cali each with 2 setae. Middle leg with tibal spur slightly shorter than basitarsus.

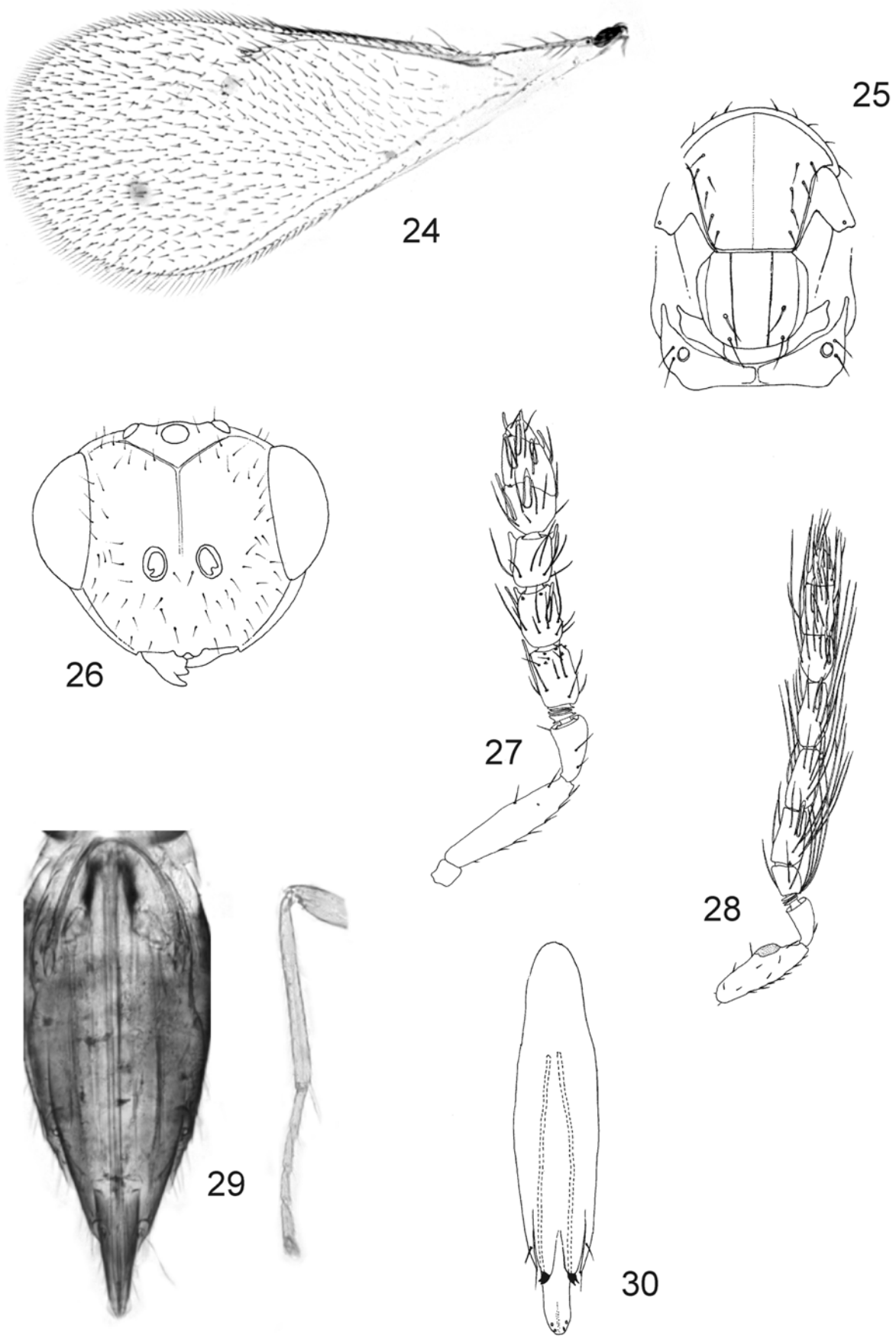
Forewing (Fig. 24) 2.2–2.3 X as long as wide; costal cell 12–15 X as long as broad, almost as long as marginal vein, with a short row of 3–5 ventral setae at distal end; submarginal vein with 4 dorsal setae; marginal vein 3.2–3.7 X as long as stigmal; postmarginal vein subobsolute; subcubital line of setae extending basally as far as basal vein, closing speculum posteriorly; longest marginal cilia about 0.7–0.9 X as long as longest setae on marginal vein.

Metasoma with gaster long and slender, tapering to an acute apex, 2.4–2.6 X as long as wide, 1.6–2.0 X as long as mesosoma; epipygium about as long as wide; hypopygium reaching to about half way the length of gaster; ovipositor, as seen in cleared slide mounted specimens (Fig. 29), as long as gaster, 2.2–2.5 X as long as middle tibia, 3.6–3.8 X as long as gonostyli, the later long, slender, protruding prominently caudally, 2.4–3.0 X as long as middle tibial spur.

Male. Length: 0.9–1.3 mm. Colour: entirely blackish-brown save gaster near base with a large yellowish-brown patch. Antenna sordid white, setation dark brown, lending the flagellum a dark appearance. Legs whitish with all coxae largely blackish-brown, the hind femur with a dusky suffusion in the middle in some specimens; tarsal tips dark. Forewing disc entirely hyaline.

Differing structurally from female mainly in the antenna (Fig. 28): scape about 4.4 X as long as wide, with a bold ventral plaque in apical half as in Fig. 28; three strongly transverse anelli present; funicle four-segmented, the basal segment subquadrate, distinctly shorter than each of segments II–IV, which are subequal in length, each approximately twice as long as broad; flagellum with whorls of very long setae as in Fig. 28. Genitalia as in Fig. 30.

Remarks. *Aprostocetus tritus*, which is best placed in the subgenus *Aprostocetus*, can be distinguished from *A. nitens*, *A. exertus* and the known undescribed species of *Aprostocetus* associated with *Erythrina* galls by a number of characters, which include: non-metallic body; long row of 6–8 adnotaular setae; 4 dorsal setae on the submarginal vein; long, slender, strongly tapering gaster with shortly protruding ovipositor; male flagellar segments with whorls of long setae.



FIGURES 24–30. *Aprostocetus tritus* **sp. n.** : 24, forewing, female; 25, mesosoma, female; 26, head, frontal view, female; 27 antenna, female; 28, antenna, male; 29, ovipositor and middle tibia, same scale, female; 30, male genitalia.

Type material examined. Material examined. SOUTH AFRICA. Female holotype, 23 female, 18 male paratypes as follows: Western Cape Province: Stellenbosch, vii.1980, ex leaf galls on *Erythrina lysistemon* (female holotype, 10 females, 11 males; HYMC02280); Cape Town, iii.1978, ex galls on *Erythrina* sp. (2 females, 1 male; HYMC00551); Gauteng Province: Pretoria, Rietondale experiment farm, 25°44'S 28°13'E, ii. 2004, ex leaf galls of *E. lysistemon* (1 female, 2 males; HYMC03773); same data except ii.2006 (2 females; HYMC0583); Pretoria, Botanic Gardens, 25°44'S 28°16'E, ii.2006, ex leaf galls on *Erythrina acanthocarpa* (4 females, 2 males; HYMC03799); Pretoria, Botanic Gardens, iv.2003, with leaf galls on *E. zeyheri* (2 females; HYMC03779); North-West Province: Hartbeespoort Dam, 25°44'S 27°51'E, ii.1976, G. L. Prinsloo & R. P. Brown, ex galls on *Erythrina* sp. (3 females, 2 males; HYMC00054). All series collected by S. Neser except HYMC00054. 2 females, 1 male each: ANIC, BMNH, MNHN.

Non type material examined. KwaZulu-Natal Province: Midmar Dam, nr. Howick, ii.1985, ex galls in petioles of *E. humeana* (1 female, 1male; HYMC02277); Limpopo Province: Blouberg NW of Polokwane, 23°04'S 28°59'E, v.2006, ex leaf galls on *E. lysistemon*, (1 female; HYMC03794); Gauteng Province: Pretoria, Rietondale experiment farm, 25°44'S 28°23'E, ii.1997, ex inflorescens of *Erythrina humeana* (2 females, 4 males; HYMC02274). All series collected by S. Neser.

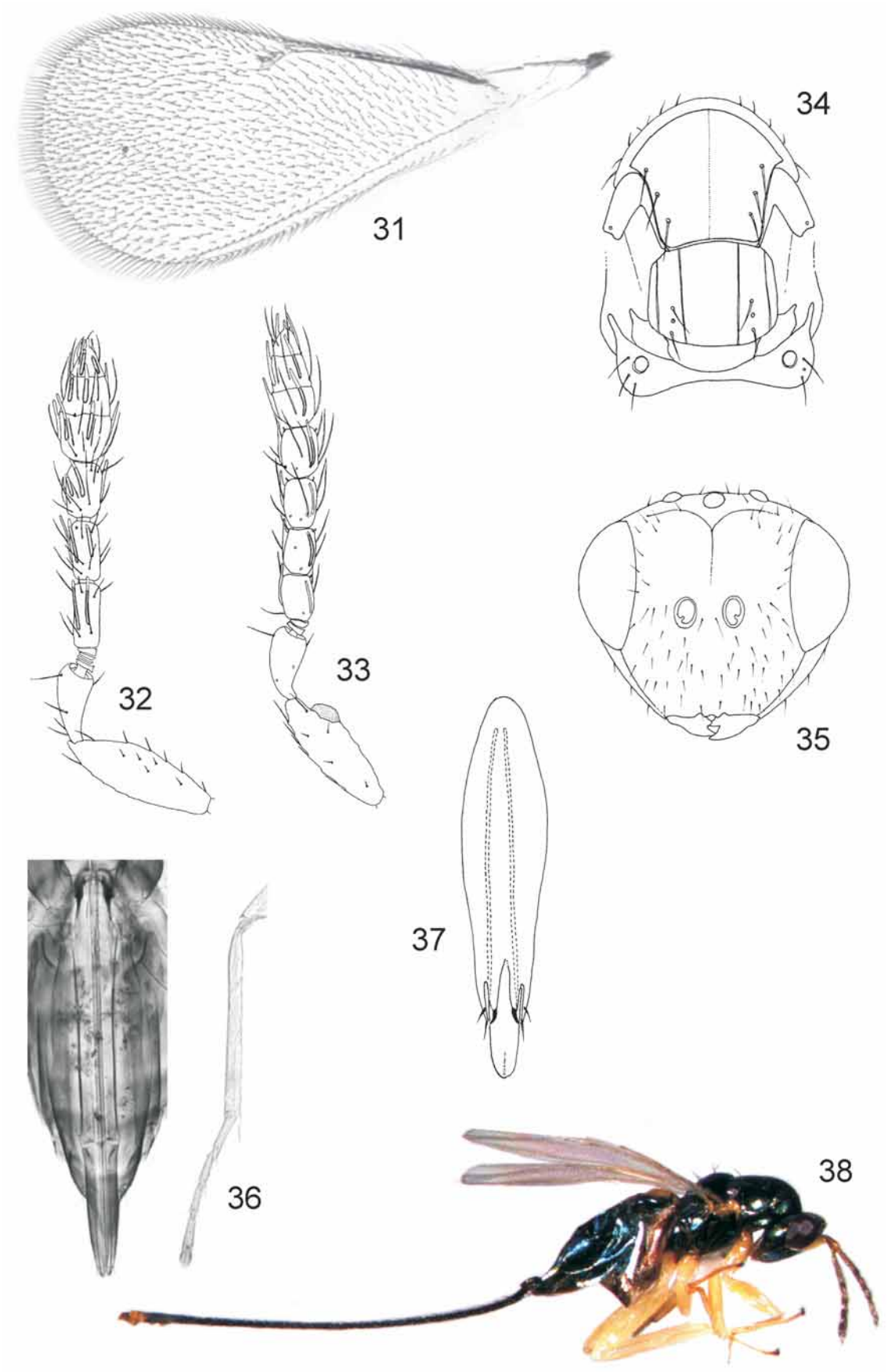
***Aprostocetus nitens* sp. n.**
Figs. 31–37.

Female. Length: 1.1–1.7 mm. Colour: head and body black, shiny with a distinct dark metallic green tinge, the base of gaster broadly suffused with yellow; antenna mostly yellowish, or with flagellum a little darker in some specimens; legs yellowish save hind coxa largely black with a metallic tinge, the middle and hind coxae slightly darkened in some specimens; tarsal tips dark; wings hyaline, venation pale brown.

Head (Fig. 35) in frontal view 1.2–1.3 X as wide as high, about 1.7 X as wide as frontovertex at its narrowest; malar space 0.5–0.6 X as long as an eye, the sulcus almost straight, without a triangular fovea beneath the eye; POL 1.6–1.9 X OOL, more than 4 X OD; mandible with two teeth and a truncation; head rather densely setose as in Fig. 35, eyes naked; lower margin of the toruli a little above lower eye margins; clypeus distinctly bilobed.

Antenna (Fig 32) somewhat variable: scape approximately 3 X as long as wide, about 0.7 X the length of an eye, not reaching vertex; pedicel 1.8–2.5 X as long as wide, subequal in length to basal funicle segment; antenna with four strongly transverse anelli, the middle two distinctly shorter than the remaining two, which are about equal in size; funicle three-segmented, either with basal two segments about equal in length, each 2.0–2.6 X as long as wide and segment III a little shorter, or segment II intermediate in length between segments I and III ; club as long as the distal two to two and a half funicle segments combined, 2.7–3.3 X as long as wide; basal club segment as long as wide to distinctly longer than wide, wider than apical funicle segment; apical club segment as wide as long to wider than long; apical spine distinctly shorter than length of apical club segment; sensilla sparse, the flagellum rather sparsely setose, as in Fig. 32.

Mesosoma (Fig. 34) about 1.3 X as long as broad; mesoscutum in profile slightly convex dorsally, in dorsal view gently rounded from side to side; mesoscutal midlobe about 1.2 X as wide as long with a distinct median line, with 2–3 strongly developed adnotaular setae at each side; mesoscutum with clearly discernible lineate-reticulate sculpture; scutellum strongly convex, 1.1–1.3 X wider than long with distinct submedian and sublateral lines; sculpture much as in mesoscutum; scutellum with 2 pairs of setae, anterior pair placed slightly behind mid-length of scutellum; dorsellum a narrow band, hardly convex, smooth, medially much longer than propodeum; propodeum medially very short, barely visible in some specimens, without a median and paraspiracular carinae, mostly smooth with fine, poorly defined sculptural cells; spiracles less than their own diameter from anterior propodeal margin; cali each with 3 – 4 setae. Middle leg with tibal spur slightly shorter than basitarsus.



FIGURES 31–38. *Aprostocetus* spp.: 31–37, *A. nitens* **sp. n.** : 31, forewing, female; 32, antenna, female; 33, antenna, male; 34, mesosoma, female; 35, head, frontal view, female; 36, ovipositor and middle tibia, same scale, female; 37, male genitalia. 38, *A. exertus* La Salle, female, lateral view.

Forewing (Fig. 31) 2.2–2.5 X as long as wide; costal cell 14–18 X as long as broad, about 0.75 X as long as marginal vein, with a short row of 3–4 ventral setae at distal end; submarginal vein with 2 dorsal setae; marginal vein 4.3–5.3 X as long as stigmal; postmarginal vein very short, less than 0.25 X as long as stigmal; subcubital line of setae extending basally as far as basal vein, closing speculum posteriorly; longest marginal cilia varying from 0.5 X to almost as long as longest setae on marginal vein.

Metasoma with gaster (including protruding gonostyli) long, slender, about 3.5 X as long as wide, 2.5 X as long as mesosoma, tapering strongly to an acute apex; epipygium conical, at least about 1.3 X as long as wide; hypopygium extending about half way length of gaster; ovipositor, as seen in cleared slide mounted specimens (Fig. 36), longer than gaster, 2.2–2.9 X as long as middle tibia, 2.9–3.5 X as long as gonostyli, the later very long, slender, protruding prominently caudally, more than 5 X as long as middle tibial spur.

Male. Length: 0.8–1.1 mm. Colour: head and body black, shiny with a dark metallic green tinge as in female, the basal third or so of gaster white in contrast; antenna whitish or with flagellum a little darker in some specimens; plaque shiny brown in contrast, visible as a distinct dark subapical patch on ventral margin of scape; legs entirely white save dark tarsal tips; wings entirely hyaline.

Differing structurally from female mainly in antenna (Fig. 33): scape 3.0–3.4 X as long as wide with a short, strongly raised subapical plaque on ventral margin as in Fig. 33; two transverse anelli; funicle with four subequal funicle segments, each 1.4–1.7 X as long as wide; flagellar setae fairly sparse, gently curved; Genitalia as in Fig. 37.

Remarks. Some of the specimens from Tanzania that are listed below differ from the majority of the study material by the base of the gaster which is not palely marked and by the legs which are, besides the coxae, not entirely yellow but with the femora distinctly infuscated to a varying degree. In addition, a few Tanzanian specimens have a single dorsal seta on the submarginal vein, instead of the normal two. Since these differences were found among specimens of the same series they are attributed to intraspecific variation.

Aprostocetus nitens is readily separated from *A. tritus*, *A. exertus* and the known undescribed *Erythrina* gall-associated *Aprostocetus* species by the following combination of characters: body with a metallic green tinge and prominently protruding ovipositor (but not unusually long and tail-like as in *A. exertus*); strongly developed row of 2–3 adnotaular setae; 2 (rarely 1) dorsal setae on the submarginal vein; male antenna with 2 anelli, scape with a short, strongly raised plaque. Although Kostjukov (2004) restored the generic status of *Ootetrastichus* Perkins we here follow Graham (1987), La Salle (1994) and many other subsequent authors in treating this taxon as a subgenus of *Aprostocetus*. In so doing the subgeneric placement of *A. nitens* remains uncertain since it has several character states that have been attributed to either *Ootetrastichus* or *Aprostocetus*, as defined by Graham (1987) and La Salle (1994).

Type material examined. Female holotype, 39 female, 26 male paratypes as follows: SOUTH AFRICA. Limpopo Province: Blouberg NW of Polokwane, 23°04’S 28°59’E, v.2006, ex leaf galls on *Erythrina lysistemon* (Female holotype, 1 female; HYMC03797); Gauteng Province: Pretoria, Rietondale experiment farm, 25°43’S 28°14’E, ii.2006, ex leaf galls on *E. lysistemon* (14 females, 14 males; HYMC05082); Pretoria, Botanical Gardens, 25°44’S 28°16’S, ii.2006, ex leaf and vein galls on *E. acanthocarpa* (8 females, 7 males; HYMC03798); Mpumalanga Province: Pongola, 27°23’S 30°38’E, v.1996, from *Erythrina* sp. (3 females, 5 males; HYMC02269); Western Cape province: Stellenbosch, vii.1980, ex leaf galls on *E. lysistemon* (13 females; HYMC02281). All series collected by S. Neser. 2 female, 2 male paratypes each: BMNH, ANIC, MNHN.

Non type material examined. SOUTH AFRICA: Gauteng Province: Pretoria, Rietondale experiment farm, 25°43’S 28°14’E, xi. 2004, ex leaf galls on *E. lysistemon* (14 females, 3 males; HYMC03774); same data except ii.2006 (3 females, 6 males; HYMC03790); Pretoria, Rietondale experiment farm, ii.1997, in inflorescens of *E. humeana* (1 female, 1 male; HYMC02275); Pretoria, iii.1986, ex leaf galls on *E. lysistemon* (3 females, 2 males; HYMC02284); same data except iii.1990 (2 females, 1 male; HYMC02279); Pretoria, ii.1986, ex leaf veins of *E. zeyheri* (1 male; HYMC02272); Western Cape Province: Stellenbosch, xii.1975, ex leaf galls on *E. ? caffra* (1 female; HYMC03780); all series collected by S. Neser; KwaZulu-Natal Province: Durban, i.2006, M. Ramadan, ex leaf galls on *E. lysistemon* (8 females). TANZANIA. Morogoro

region, ii.2007, ex galls on *Erythrina abyssinica* from the following villages: Bwawani and Gweta (28 females); Arusha region, Masai camp village, ii. 2007 ex galls on *E. abyssinica* (8 females); Mwanza region, Emeleia village, ii.2007, ex leaf galls on *E. variegata* var. *? indica* (15 females); Iringa, i.2006, ex leaf galls on *E. latissima* (2 females); all series collected by M. Ramadan; in ANIC.

***Aprostocetus exertus* La Salle**
Fig. 38

Aprostocetus exertus La Salle: in La Salle, Ramadan and Kumashiro, 2009:

Aprostocetus exertus is being described and illustrated in detail from Tanzania and South Africa in a companion article by La Salle (La Salle *et al.* 2009). This species is readily distinguished from all the other species of the genus associated with *Erythrina* galls by its extremely long epipygium and ovipositor (Fig. 38).

Material examined. SOUTH AFRICA. KwaZulu – Natal Province: Pietermaritzburg, University Botanic Gardens, 29°36'S 30°22'E, B. Muller, ex leaf galls on *Erythrina latissima* (20 females, 20 males; HYMC05766); same data except D.J. Brothers (20 females, 20 males; HYMC05767).

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