Guide to the Family Level Identification of Hymenoptera (sawflies, wasps, ants and bees) in New Zealand

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Draft
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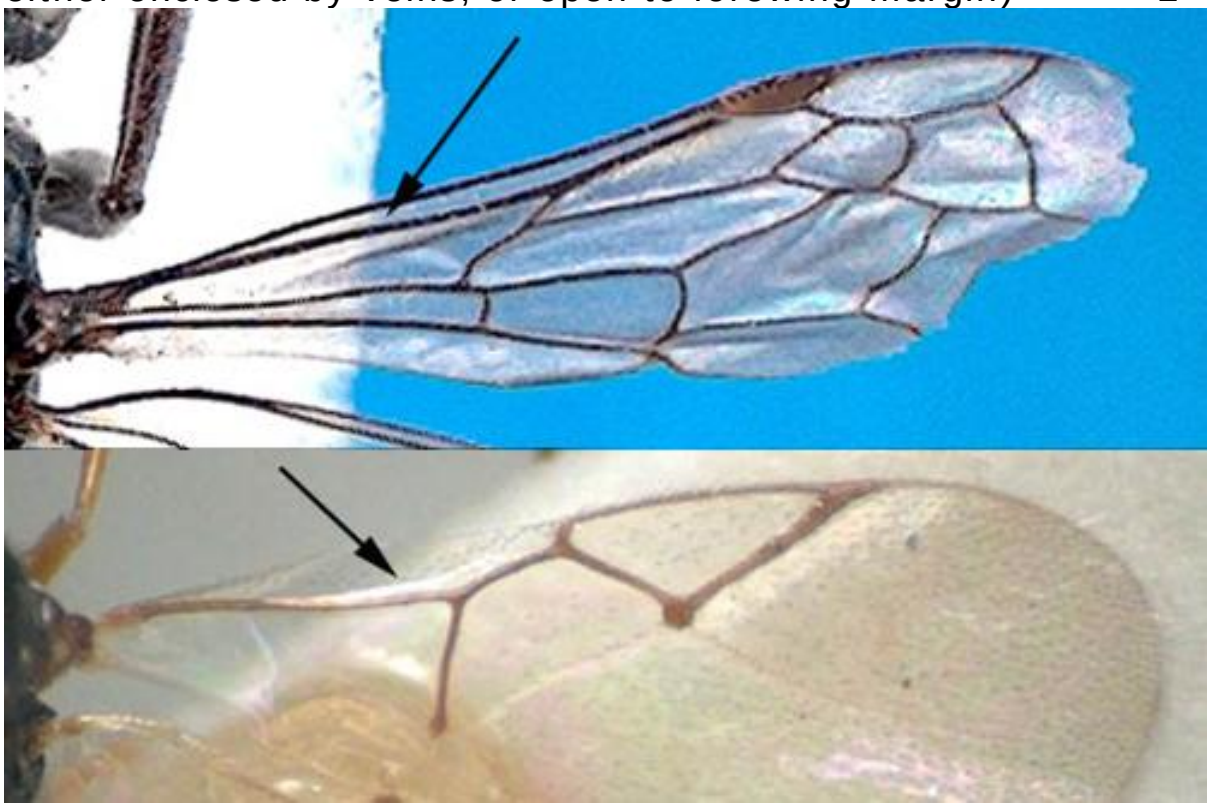
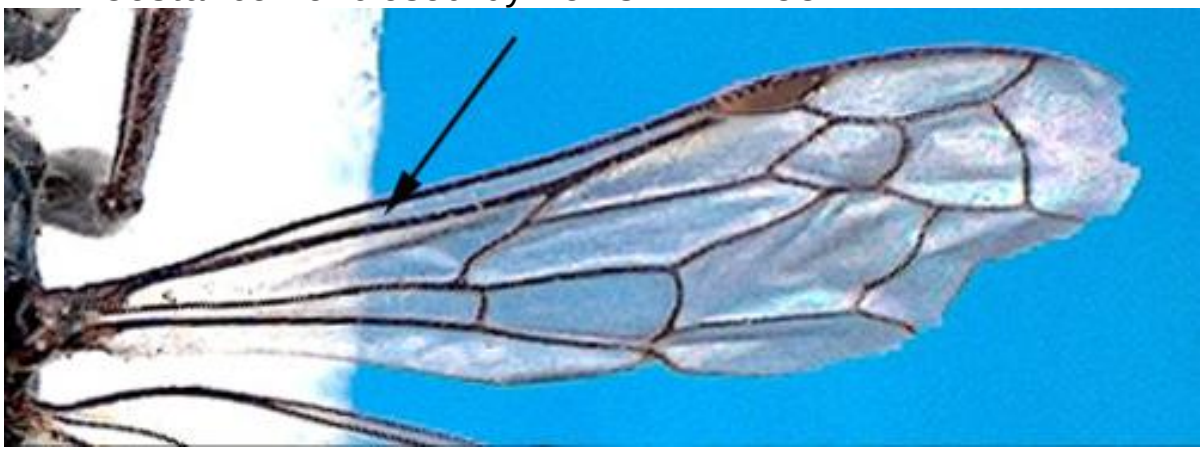
For use with winged specimens

1 Costal cell present in forewing (elongated, narrow and either enclosed by veins, or open to forewing margin) 2



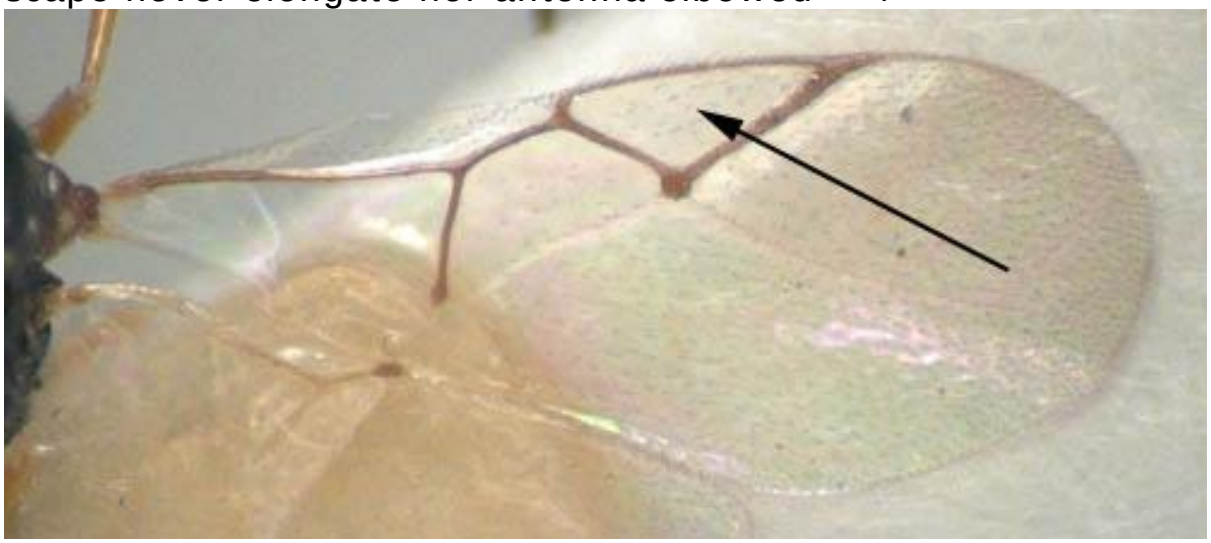
1‘ Costal cell absent from forewing 25

2 Costal cell enclosed by veins 53



2 ‘ Costal cell open to forewing margin 3

3 ‘Triangular’ cell present in forewing. Metasoma laterally compressed and quite thin, much higher than wide. Antennal scape never elongate nor antenna elbowed 4

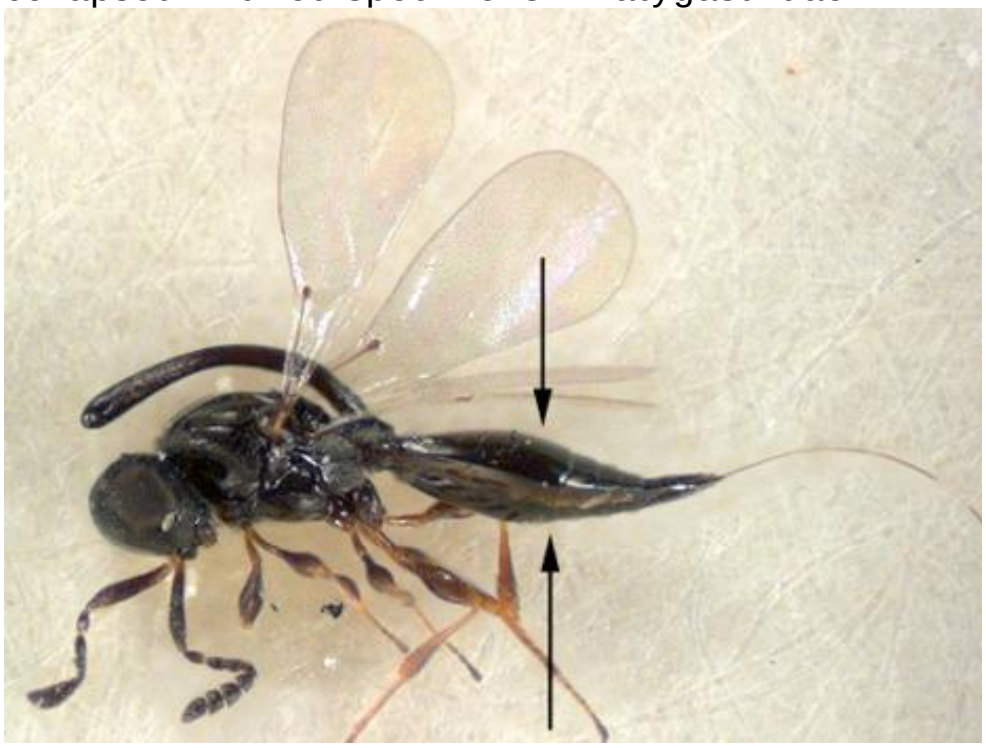


3‘ No ‘triangular’ cell present in forewing. Metasoma usually wider than high. If laterally compressed then antennal scape elongate and antenna elbowed 5

4 Mesoscutellum rounded. Head hairy and mesopleuron either striate or micropunctate Cynipidae

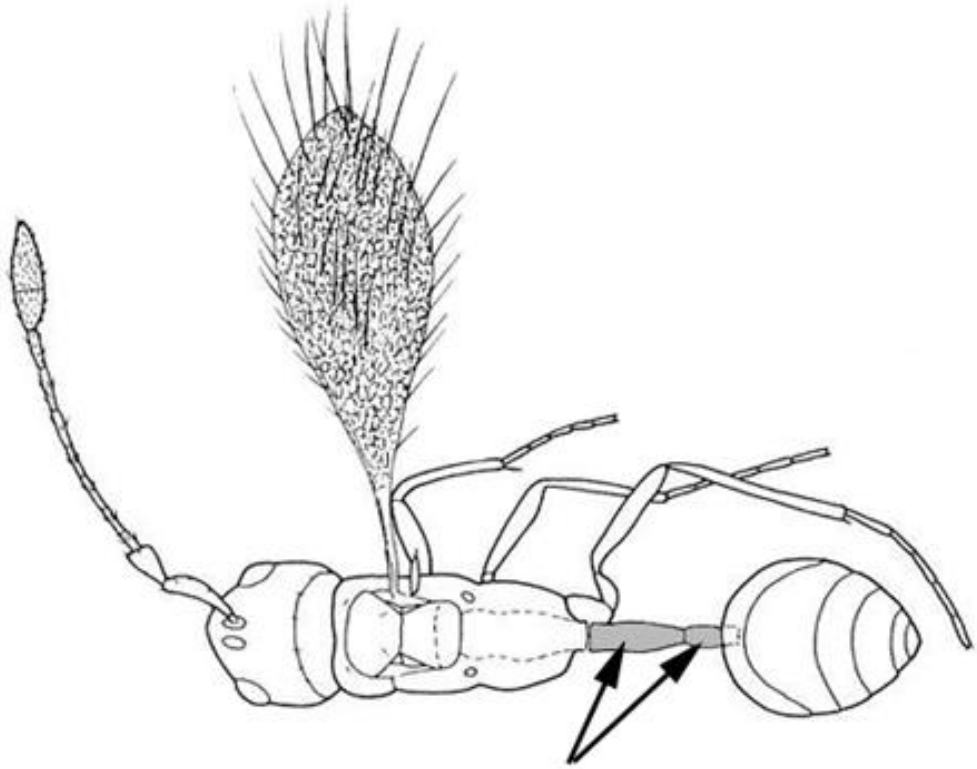
4‘ Mesoscutellum either raised, teardrop shaped, produced into a spine, or rounded. If rounded, then head and mesopleuron smooth, few hairs Figitidae

5 Never with metallic colouring (usually black or brown), the metasoma often strongly dorso-ventrally flattened. Ovipositor issuing from apex of metasoma. Petiole often not differentiated. Robust specimens, metasoma and head rarely collapsed in dried specimens Platygastridae

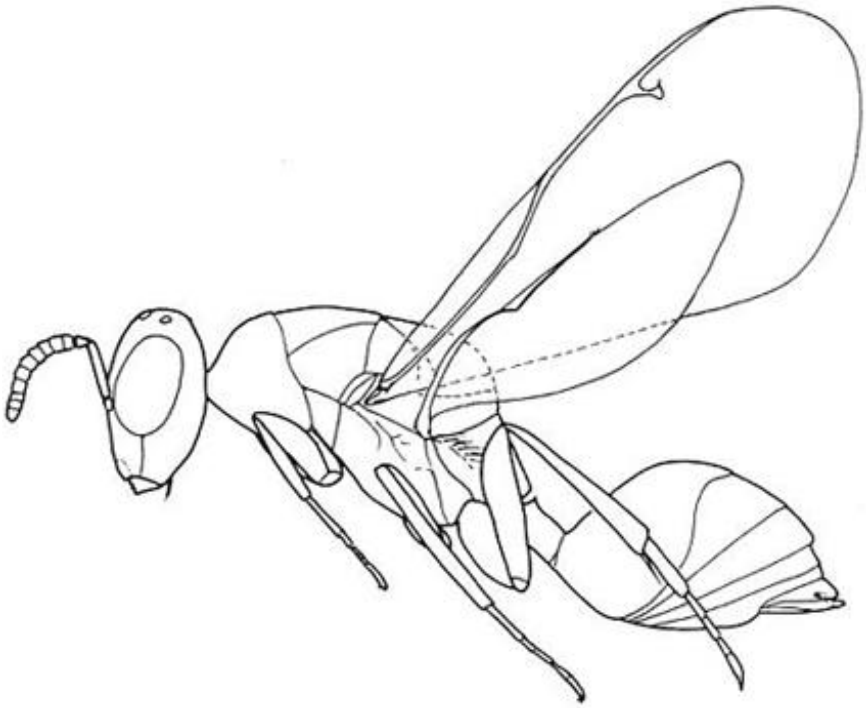


5‘ Often with metallic colouring, the metasoma not dorso-ventrally flattened. Ovipositor issuing from anterior to apex of metasoma. Petiole always present but sometimes not easily visible. Metasoma and head often collapsed in dried specimens 6

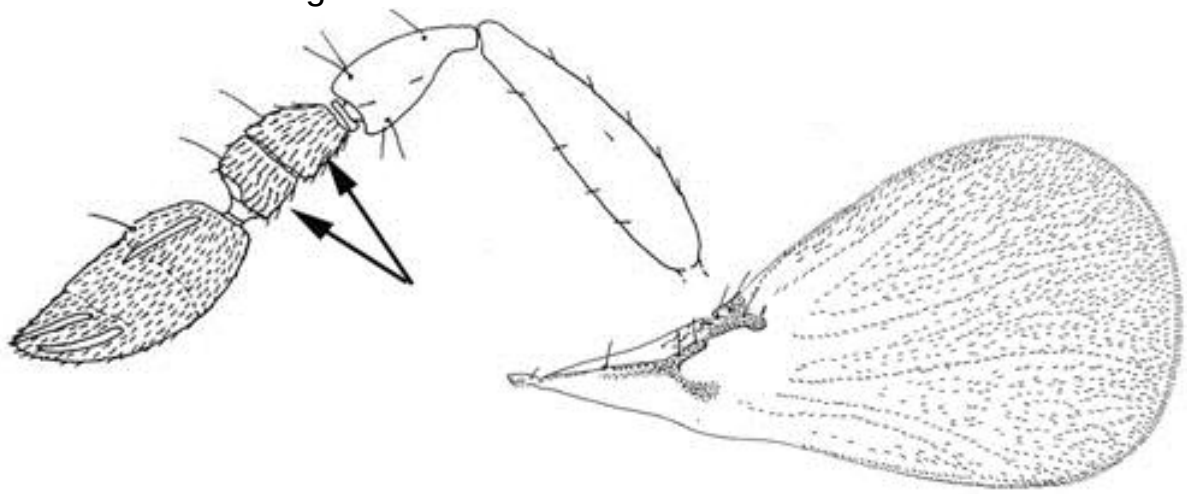
6 Abdominal petiole long, two segmented. Forewing stalked, spoon shaped, with a fringe of long setae around the margin and with a reticulate network of honey-comb shapes. Minute, less than 0.75mm long Mymarommatidae



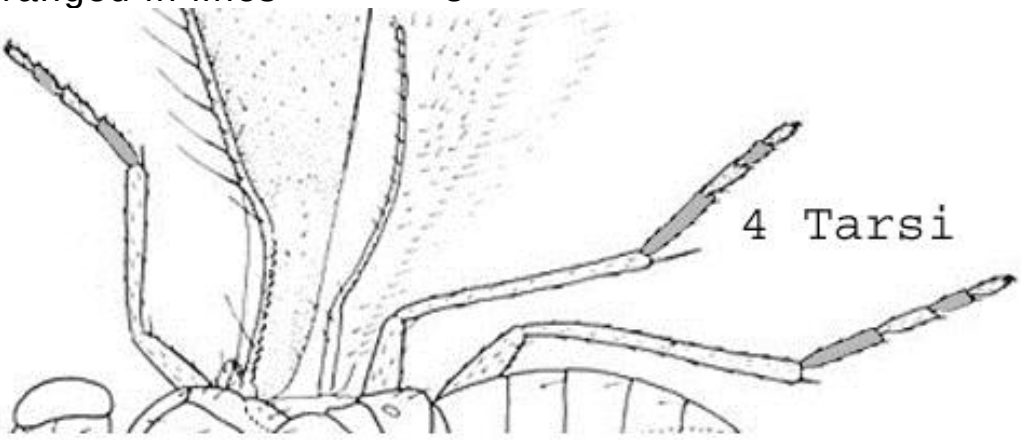
6‘ Abdominal petiole one segmented, often indistinct or obscured. If forewing stalked then not reticulate. Most often longer than 0.75mm 7



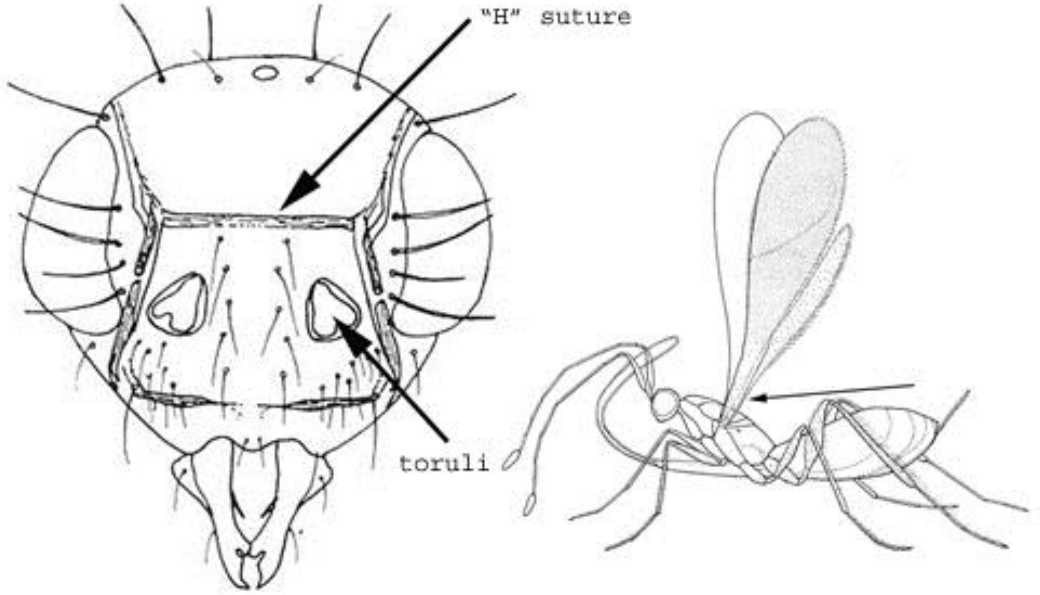
7 Tarsi three segmented. Antennae short, the funicle with no more than two segments. Hairs on wings often formed into lines Trichogrammatidae



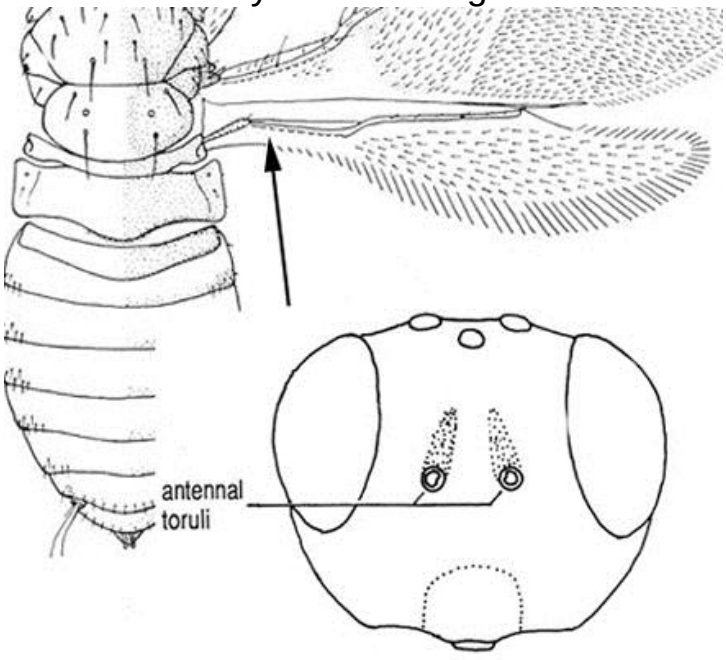
7‘ Tarsi four or five segmented. Hairs on forewings not arranged in lines 8



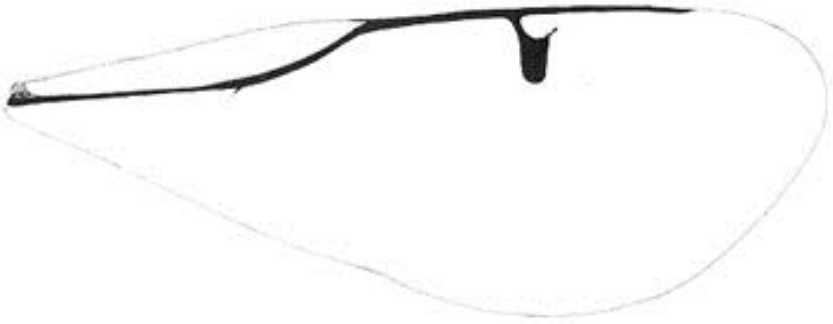
8 Antennae long relative to body. Antennal toruli situated much closer to eyes than each other. Frons with a straight, transverse suture a little above toruli which connects with vertical sutures adjacent to each orbit and thus forming an "H". Membrane of hindwing not extending to base thus giving wing a 'stalked' appearance Mymaridae



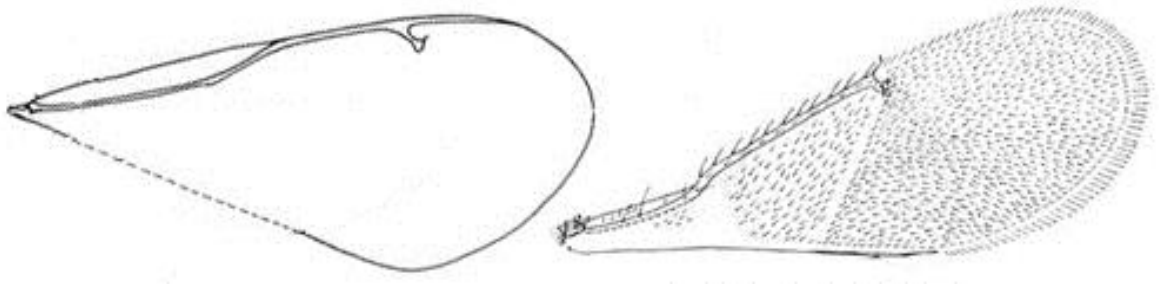
8' Antennal toruli situated as close to or closer to each other than to eyes or very nearly so. Frons occasionally with a transverse suture which may be straight or V-shaped, but never with vertical sutures running adjacent to inner orbits. Hindwing membrane always extending to base 9



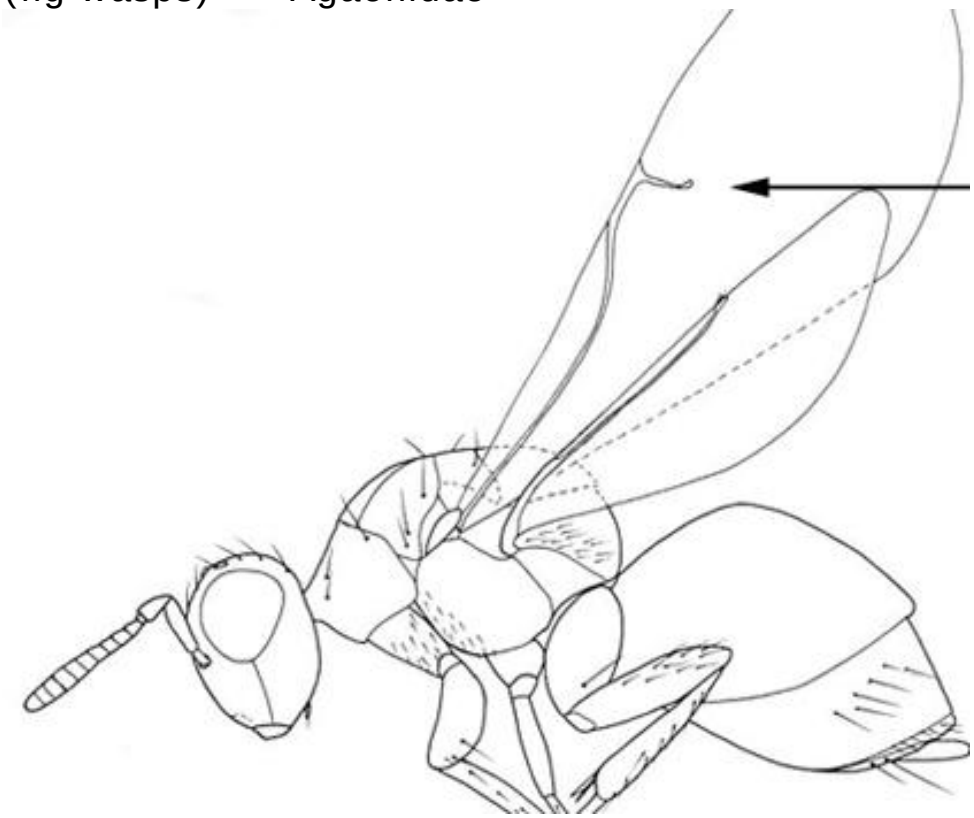
9 Apex of stigmal vein much enlarged and swollen, round or tear-drop shaped and with uncus very close to postmarginal vein Torymidae



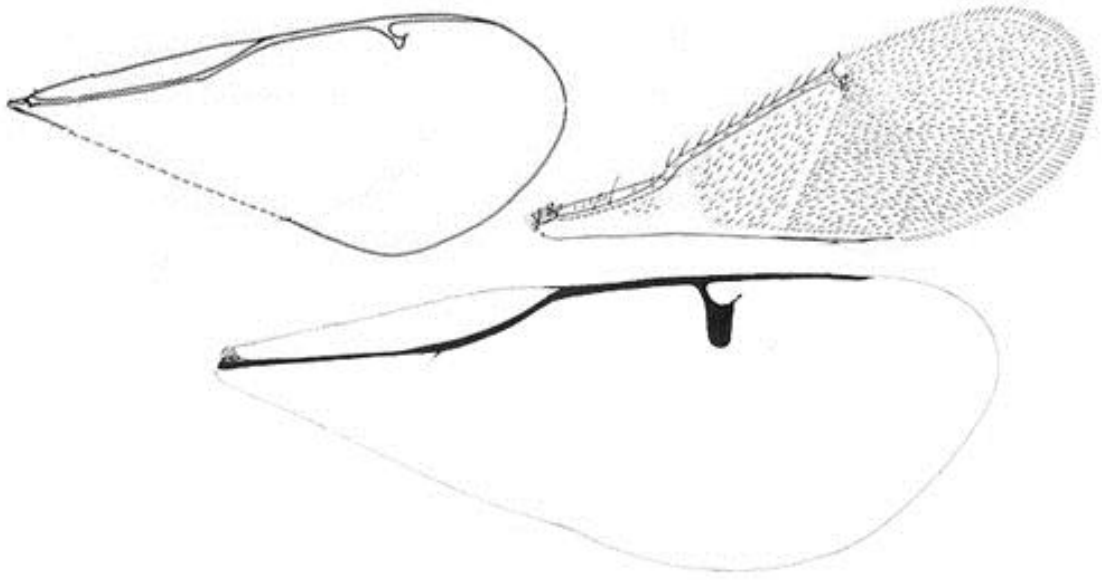
9‘ Stigmal vein not as above 10



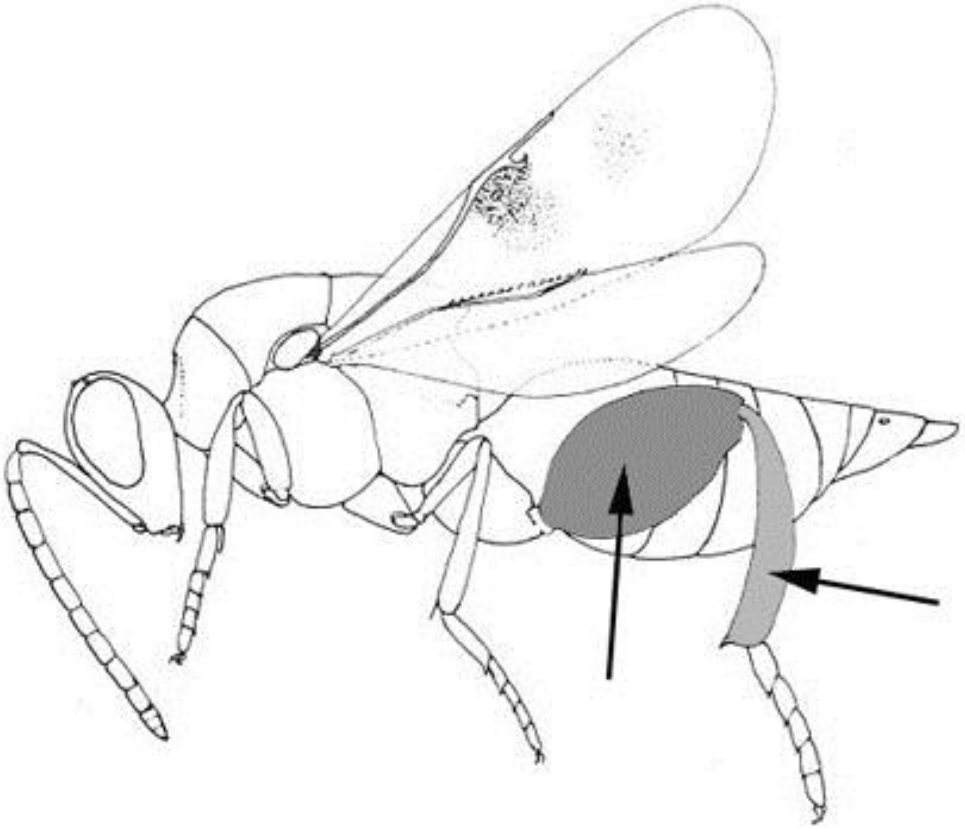
10 Stigmal vein of forewing long and forming an angle of about 90 degrees with marginal vein. Associated with fig fruits (fig wasps) Agaonidae



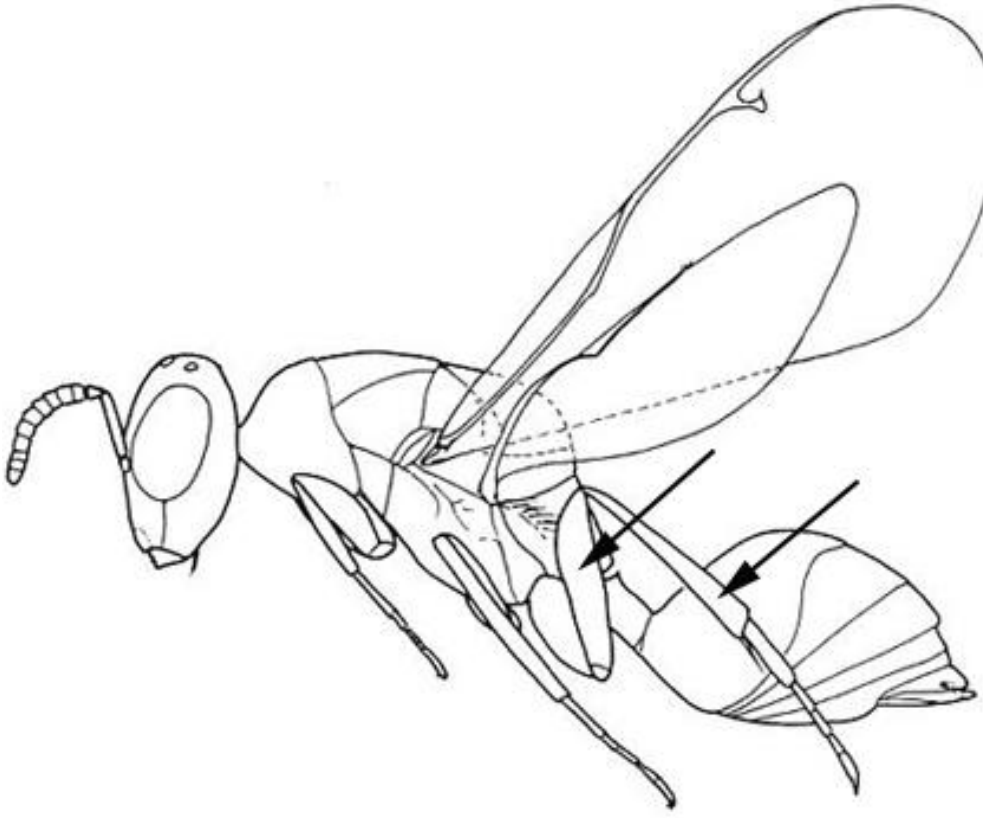
10‘ Stigmal vein at acute angle to postmarginal vein, never perpendicular to wing margin 11



11 Hind leg with femur swollen and tibia curved around it 12



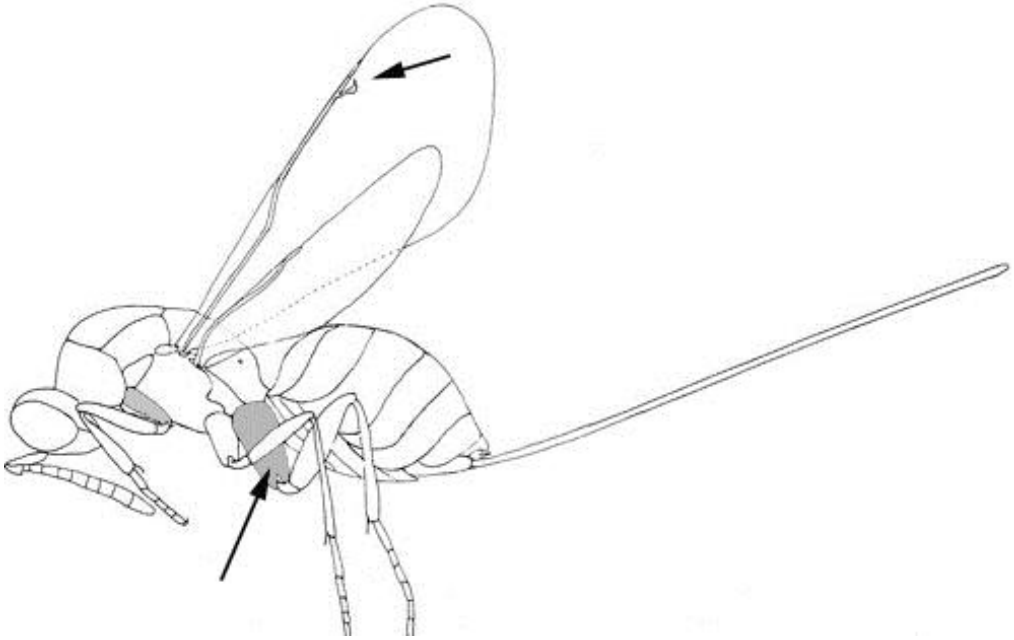
11‘ Hind leg with femur not swollen and tibia straight 13



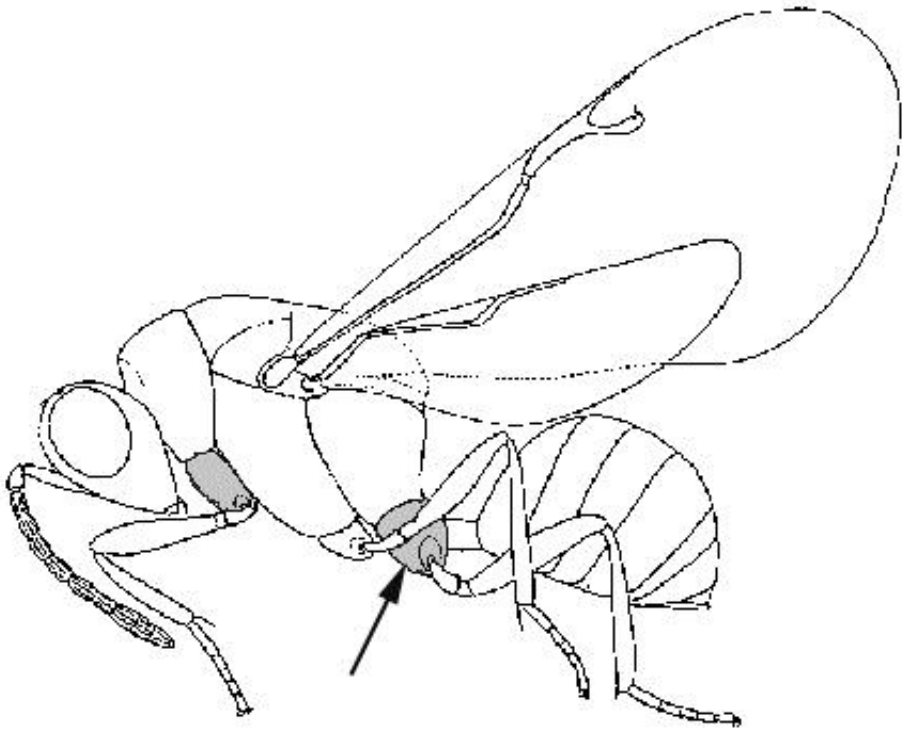
12 Body always black, without metallic colouring Chalcididae

12‘ Head and mesosoma metallic green Torymidae

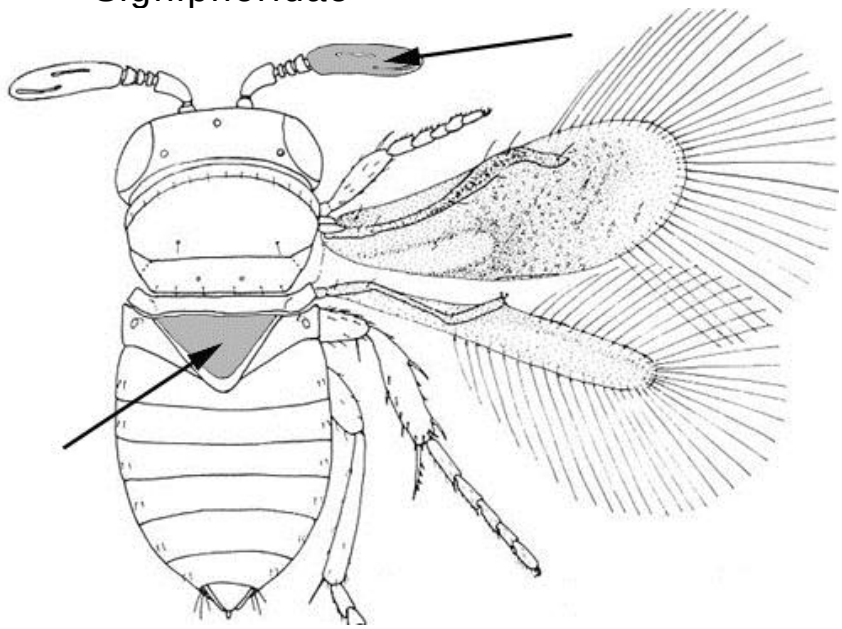
13 Hind coxa elongate, at least about twice as long as fore coxa. Forewings with stigmal vein short and uncus hardly separated from the well developed postmarginal vein. Ovipositor well exserted Torymidae



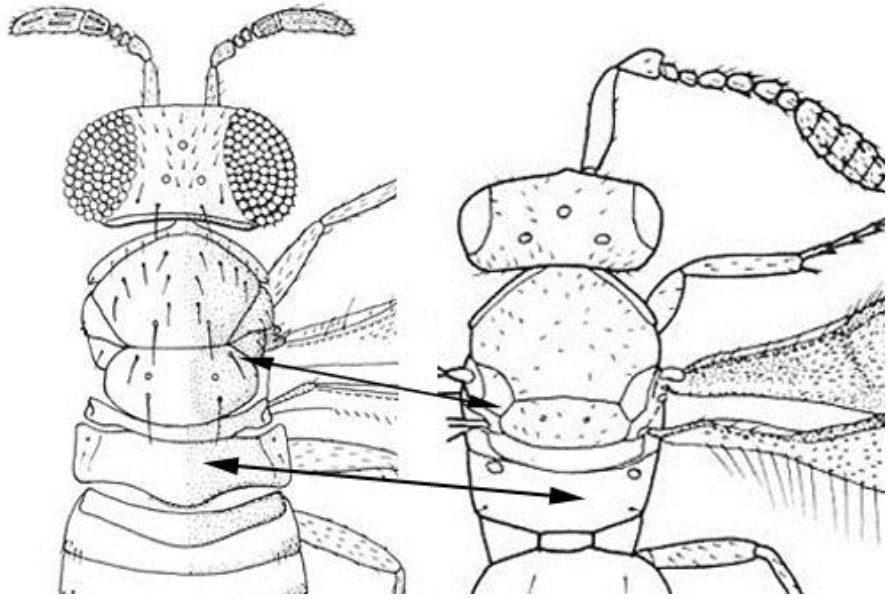
13‘ Hind coxa not so enlarged, not or hardly longer than fore coxa. Forewing usually with stigmal vein longer and uncus well separated from postmarginal vein, or postmarginal vein absent. Ovipositor normally hardly exserted 14



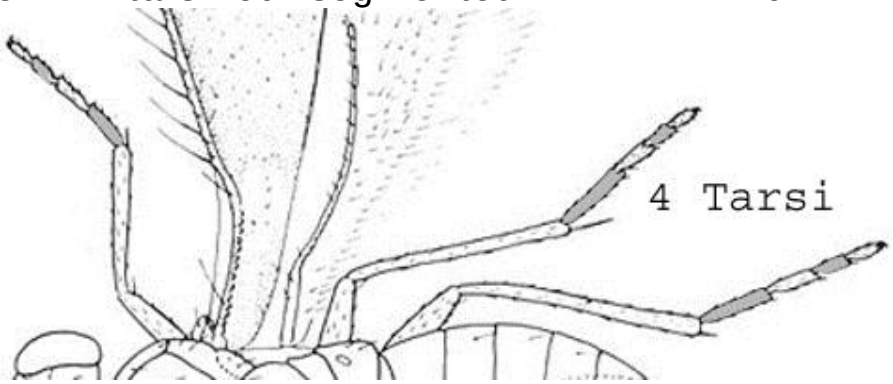
14 Antenna with a very long, unsegmented clava and funicle composed of two-four indistinct, strongly transverse segments. Body shining black or yellow. Axillae not distinctly marked off from scutellum, the two together forming a strongly transverse band about three times as broad as long; propodeum with a large, shiny, central triangular area, wings 'see-through' Signiphoridae



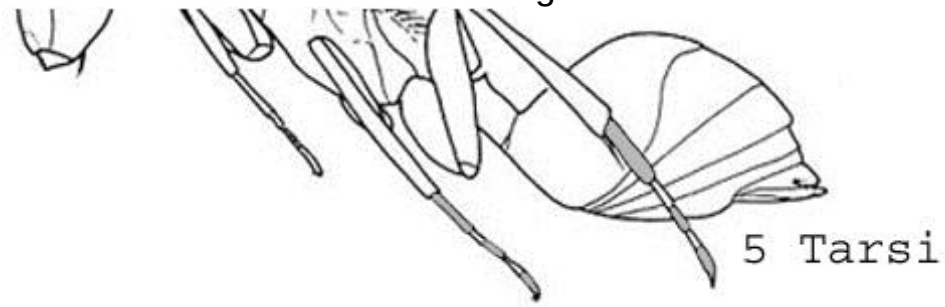
14' Antenna not as above; occasionally clava long and unsegmented, but then funicle composed of only two strongly transverse segments, and body metallic green. Scutellum shield-shaped, about as long as broad or slightly transverse, usually with axillae distinctly marked off. Propodeum without a distinct triangular central area 15



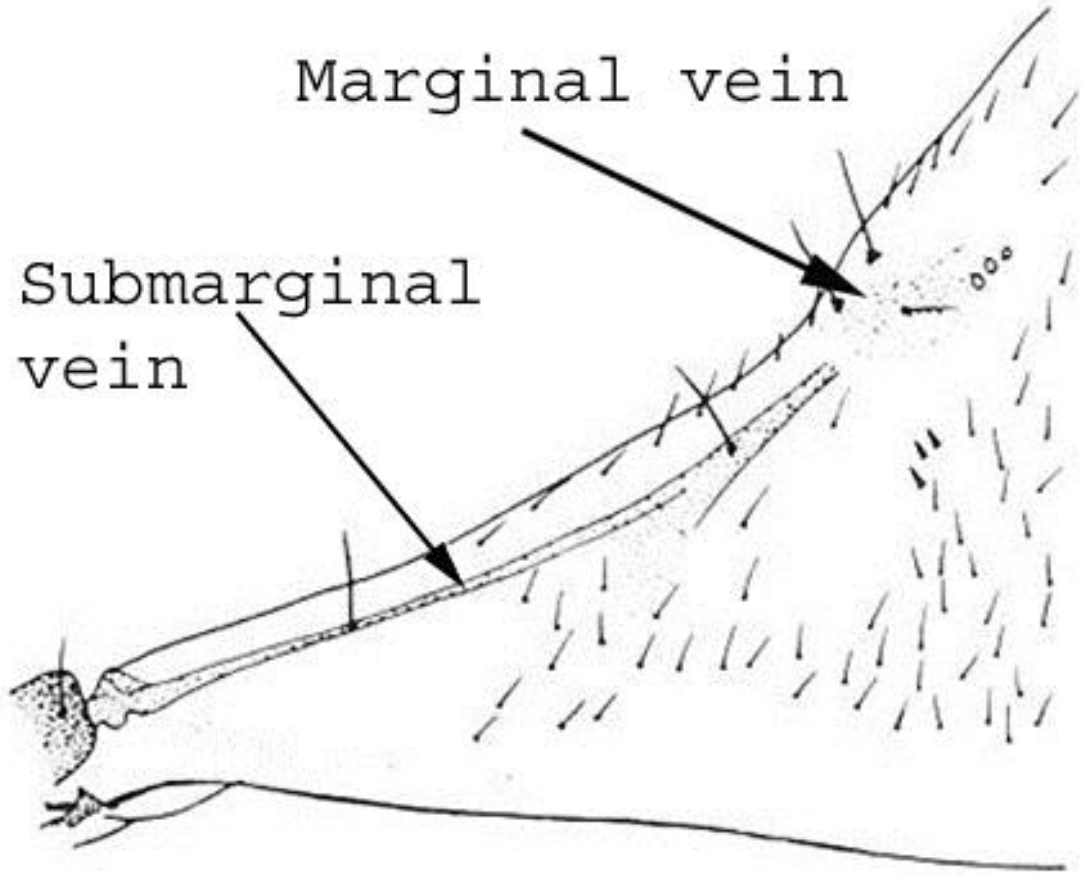
15 All tarsi four segmented 16



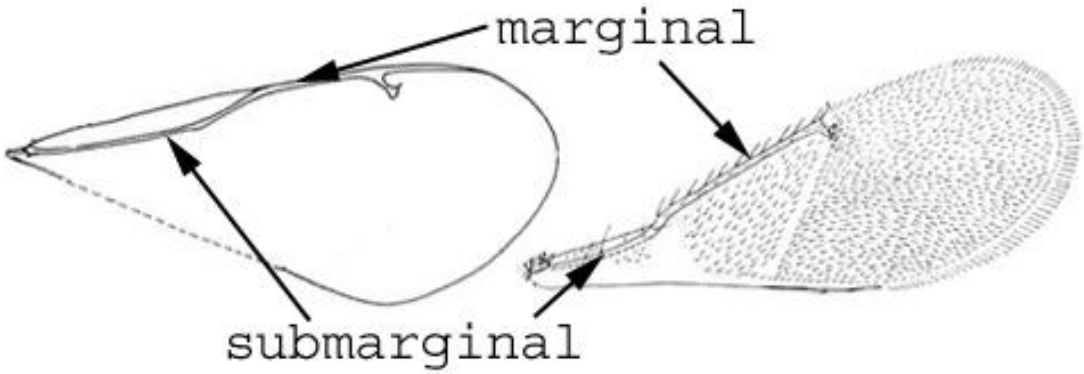
15‘ At least hind tarsi five segmented 19



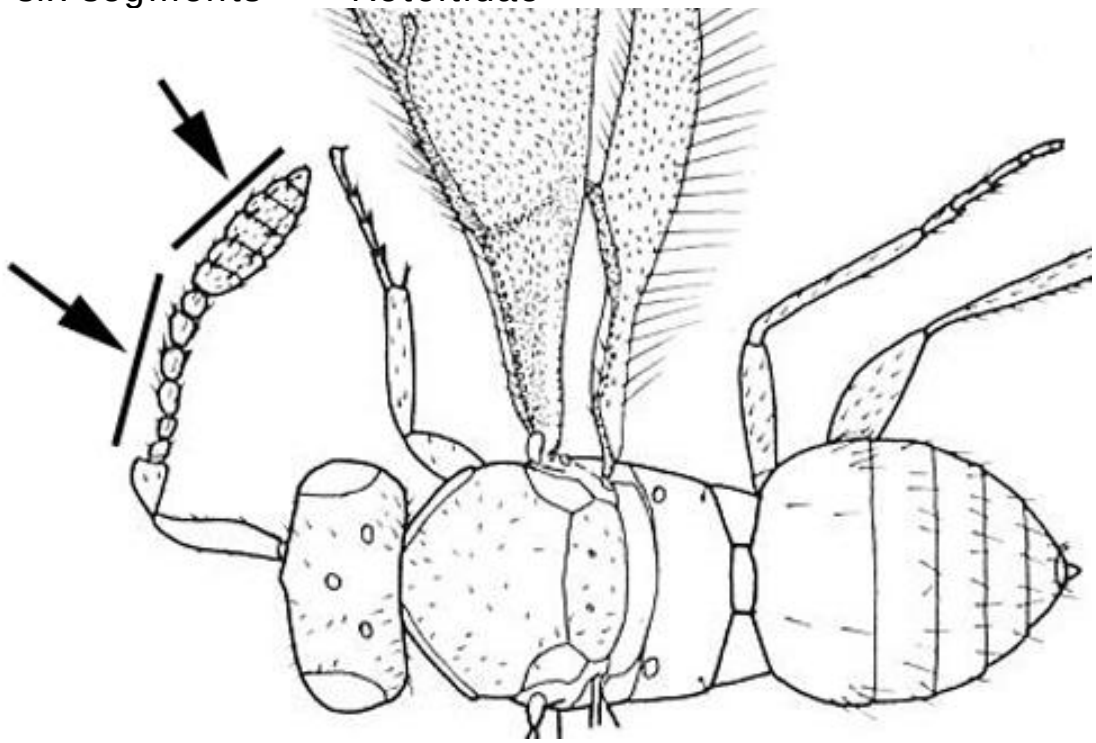
16 Forewing marginal vein indistinct, more or less punctiform Encyrtidae



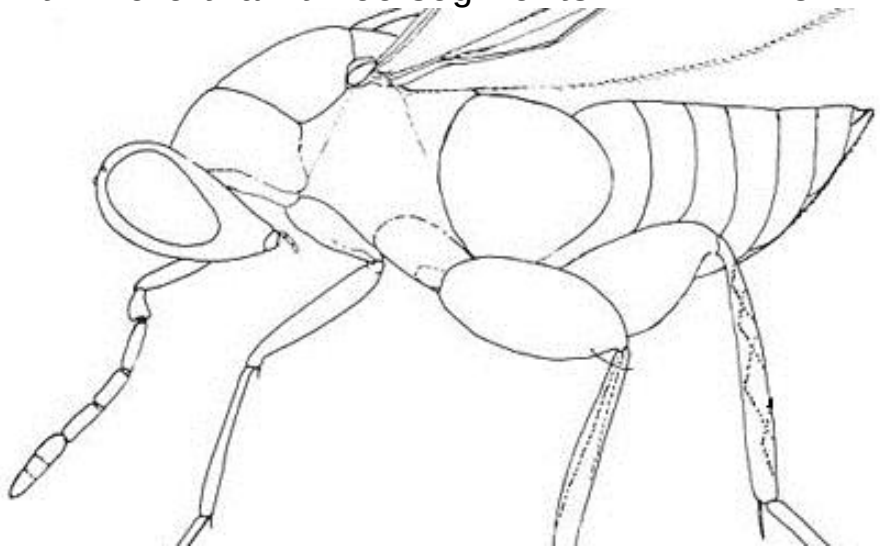
16‘ Forewing marginal vein distinct, several times longer than broad 17



17 Antenna 14-segmented. Funicle and clava each composed of six segments Rotoitidae

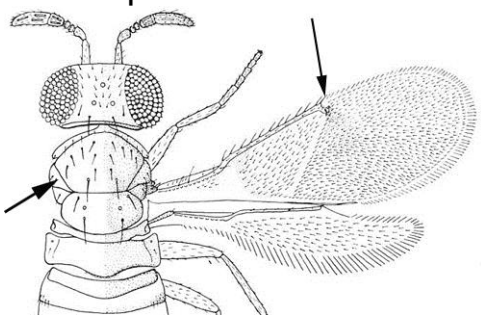


17‘ Antenna with not more than 12 segments. Funicle composed of not more than five segments, and clava never with more than three segments 18

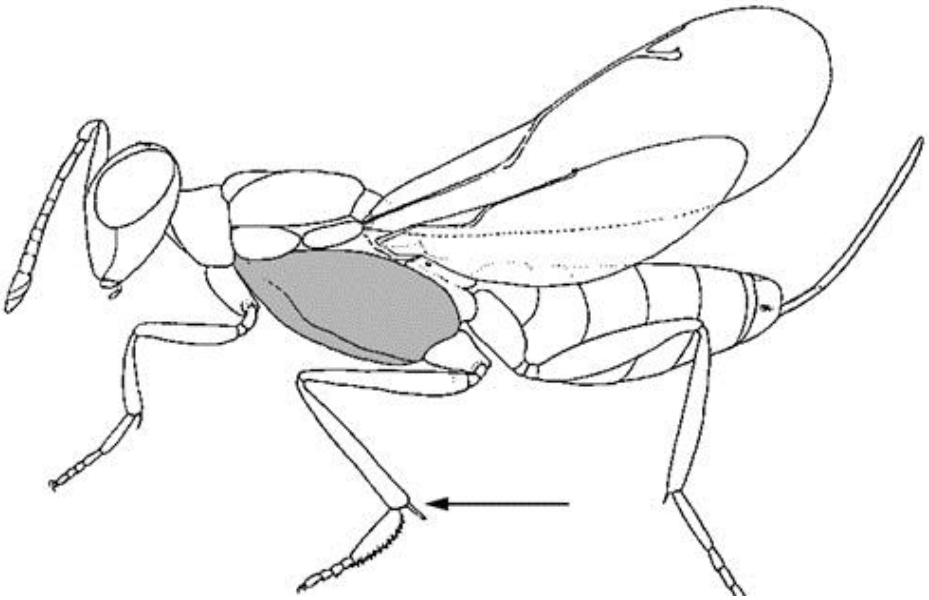


18 Metasoma distinctly constricted at junction with propodeum. Forewing with postmarginal and stigmal veins frequently long and distinct. Body almost always at least partly metallic. Notaular lines, if complete, almost always curved
Eulophidae

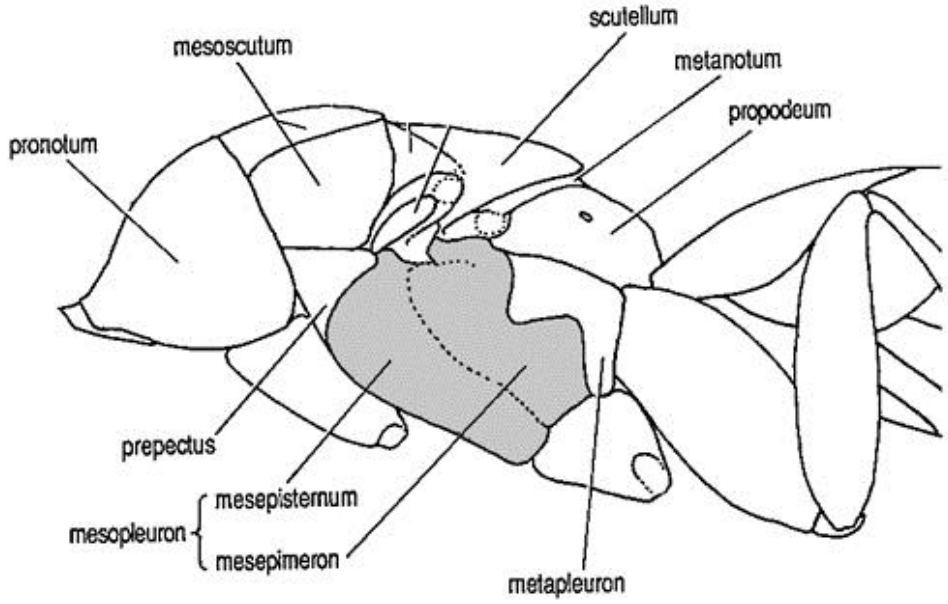
18‘ Metasoma at base about as broad as propodeum, not distinctly constricted. Forewing with postmarginal vein absent, or almost so, and stigmal vein very short. Body non-metallic, usually brown or black. Notaular lines complete, straight
Aphelinidae



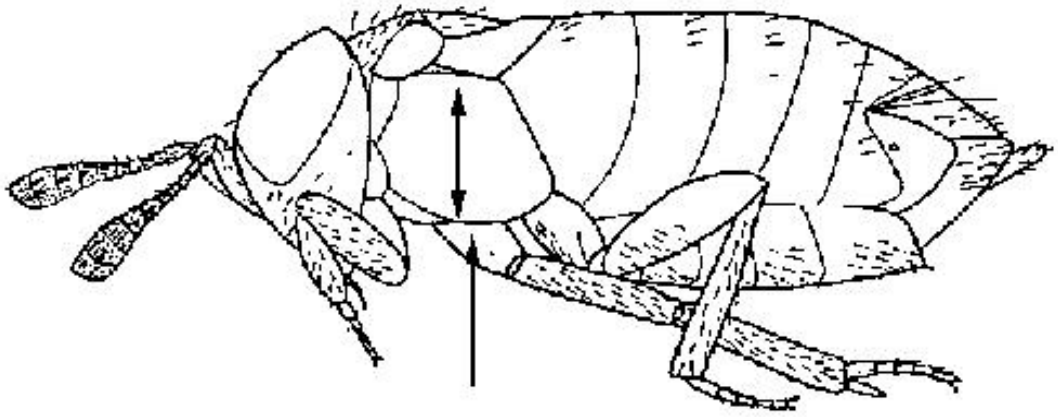
19 Either mesopleuron undivided, relatively large and shield-shaped or metasoma broadly sessile. Middle tibia usually with a strong apical spur 20



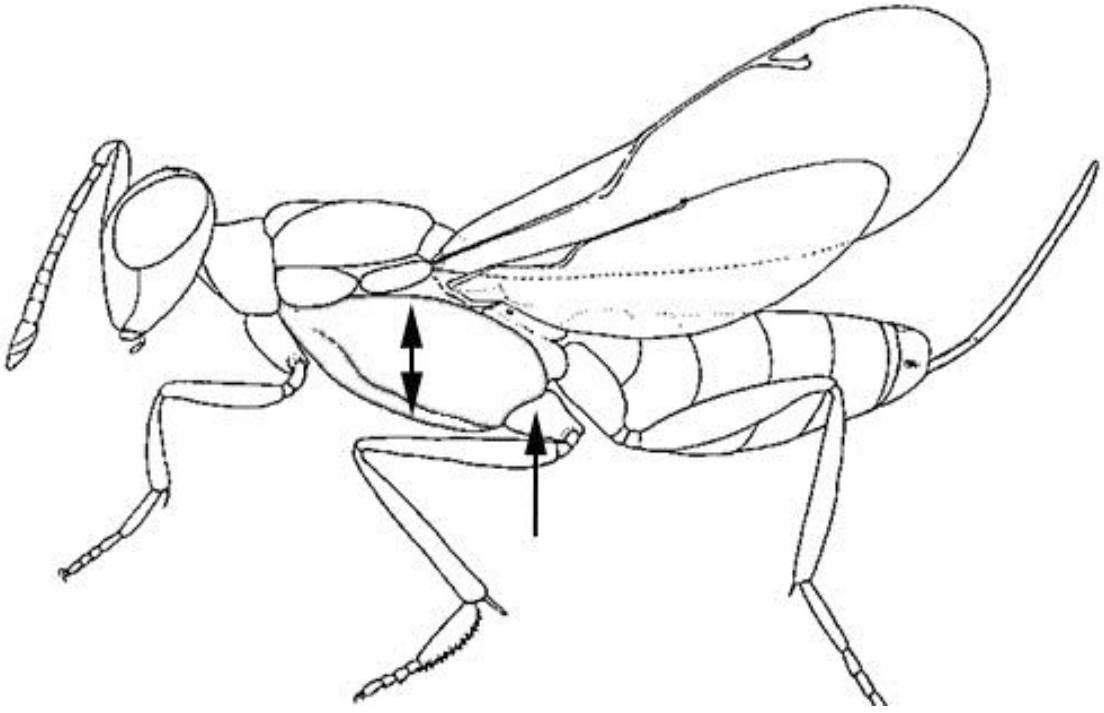
19‘ Mesopleuron divided into mesepisternum and mesepimeron, the two parts often w9ith distinctly different sculpture. Metasoma never broadly sessile, at least with a distinct constriction at junction with propodeum, often petiolate. Middle tibia with spur of normal proportions 22



20 Mid coxa closer to fore coxa than hind coxa, or positioned about half way between. Forewing with marginal vein short, usually not more than three to four times as long as broad
Encyrtidae

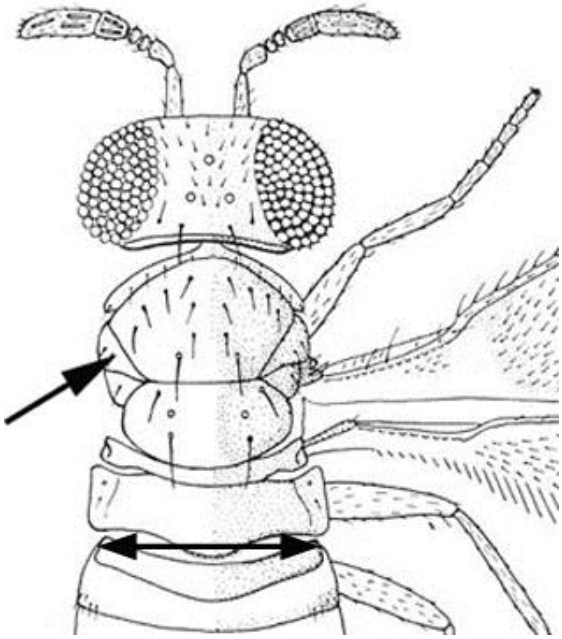


20‘ Mid coxa closer to hind coxa than fore coxa. Forewing with marginal vein always at least six to seven times as long as broad 21

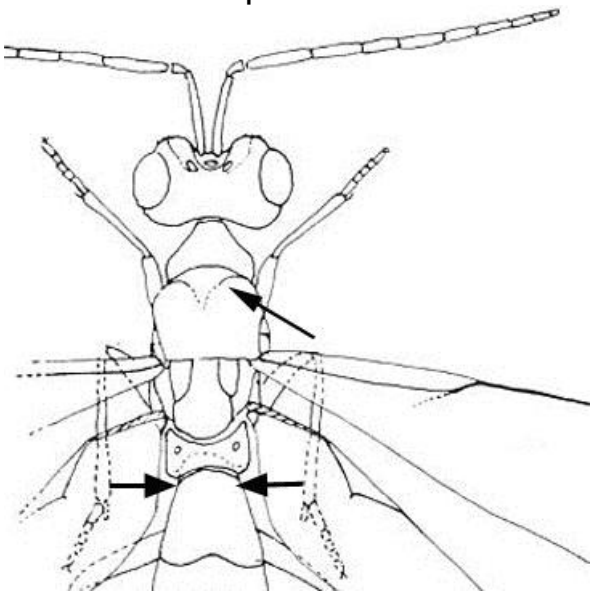


21 Antenna with flagellum not more than seven segmented; metasoma sessile, broadly attached to propodeum. Mesoscutum at least slightly convex, with notauli always present and straight. Body length not more than 1.5mm

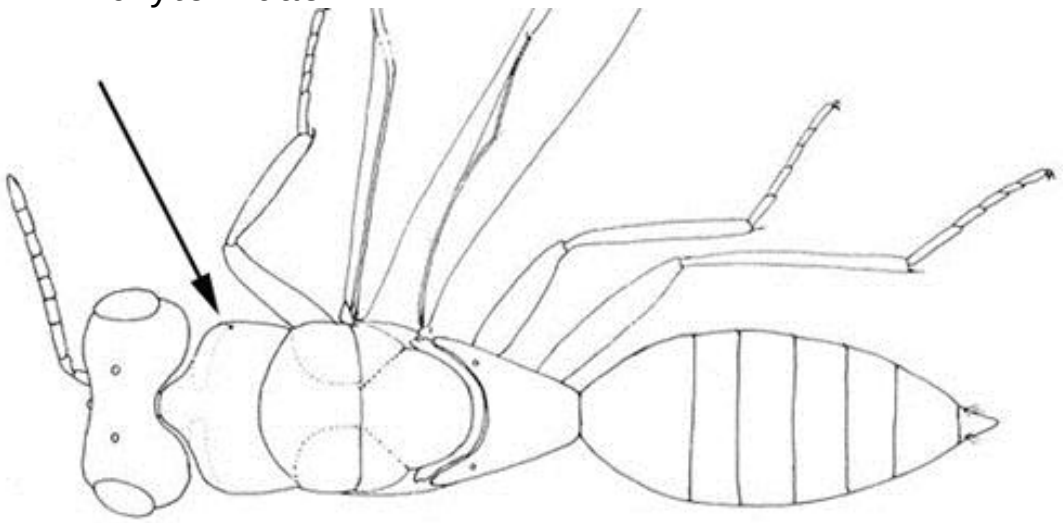
Aphelinidae



21‘ Antenna with flagellum eight or nine segmented. Metasoma distinctly constricted at junction with propodeum, or petiolate. Mesoscutum either impressed or convex, with notauli very inconspicuous. Body length almost always greater than 1.5mm Euplemidae

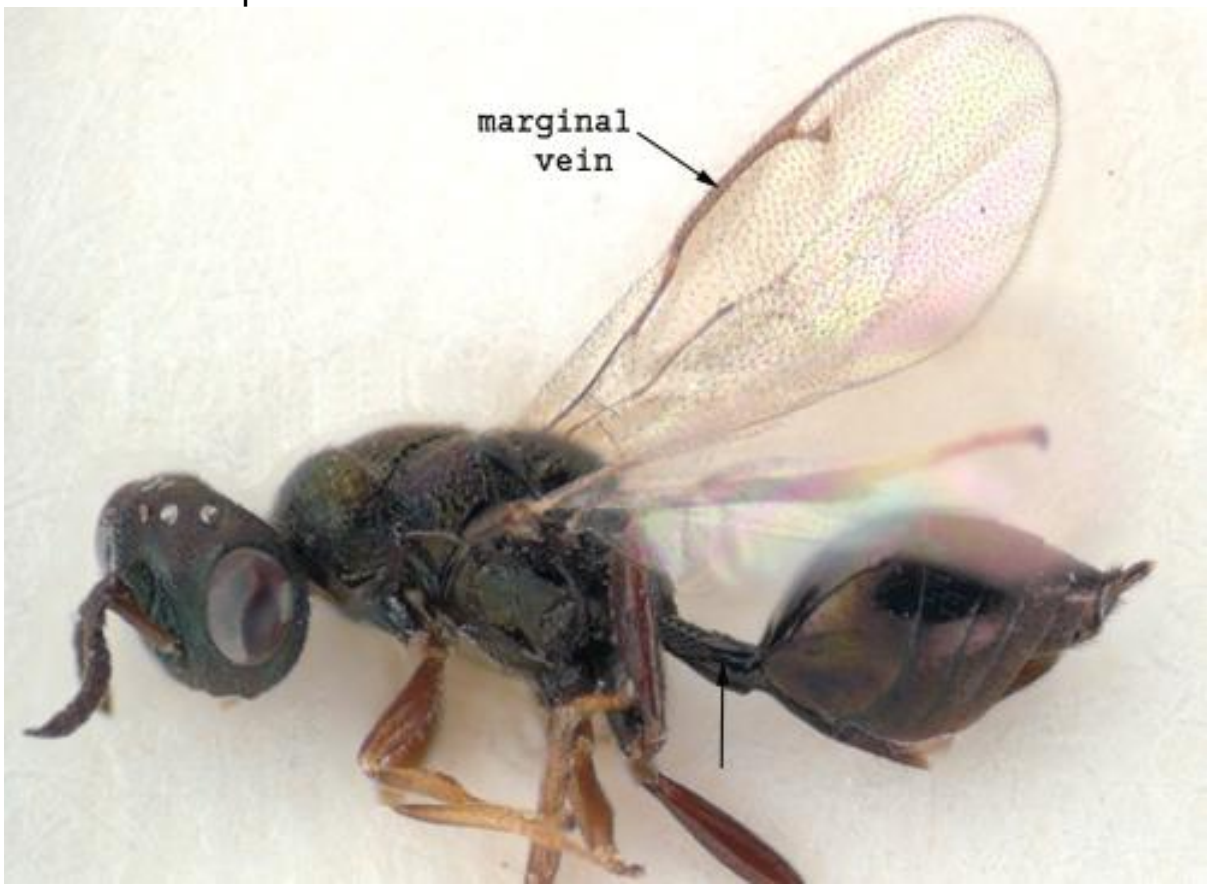


22 Pronotal collar large, subrectangular, at least about two-thirds as long as mesoscutum. Antenna with not more than six funicle segments. Head and dorsum of thorax with numerous conspicuous, piliferous punctures which often give rise to very coarse sculpture. Gena (cheek) sharply margined posteriorly
Eurytomidae



22‘ Pronotal collar not large and subrectangular, shorter than half length of mesoscutum, or if longer then antenna with seven funicle segments, or sculpture of head and thorax shallow, or gena not with a sharp edge 23

23 Forewing marginal vein at least 3.5x as long stigmal vein. Petiole at least 1.5x as long as broad; antennae inserted above lowest eye margins, without a crest or tubercle between them Perilampidae



23‘ Forewing marginal vein less than 3.5x as long as stigmal vein, or if relatively longer then either petiole not longer than broad, or antenna inserted well below lowest margin of eye, or a sharp crest or tubercle present between antennal toruli 24

24 Forewing marginal vein always more than twice as long as stigmal vein. Antenna with seven funicle segments and a single small anellus. Mesopleuron divided by a very weak, inconspicuous depression. Notaular grooves complete. Scutellum conspicuously hairy. Males only Euplemidae

24‘ Marginal vein mostly less than twice as long as stigmal vein. Antenna usually with six or fewer funicle segments, often with as many as three anelli. Mesopleuron distinctly divided into mesepisternum and mesepimeron. Notaular grooves sometimes incomplete. Scutellum usually without conspicuous pilosity. Males and females Pteromalidae

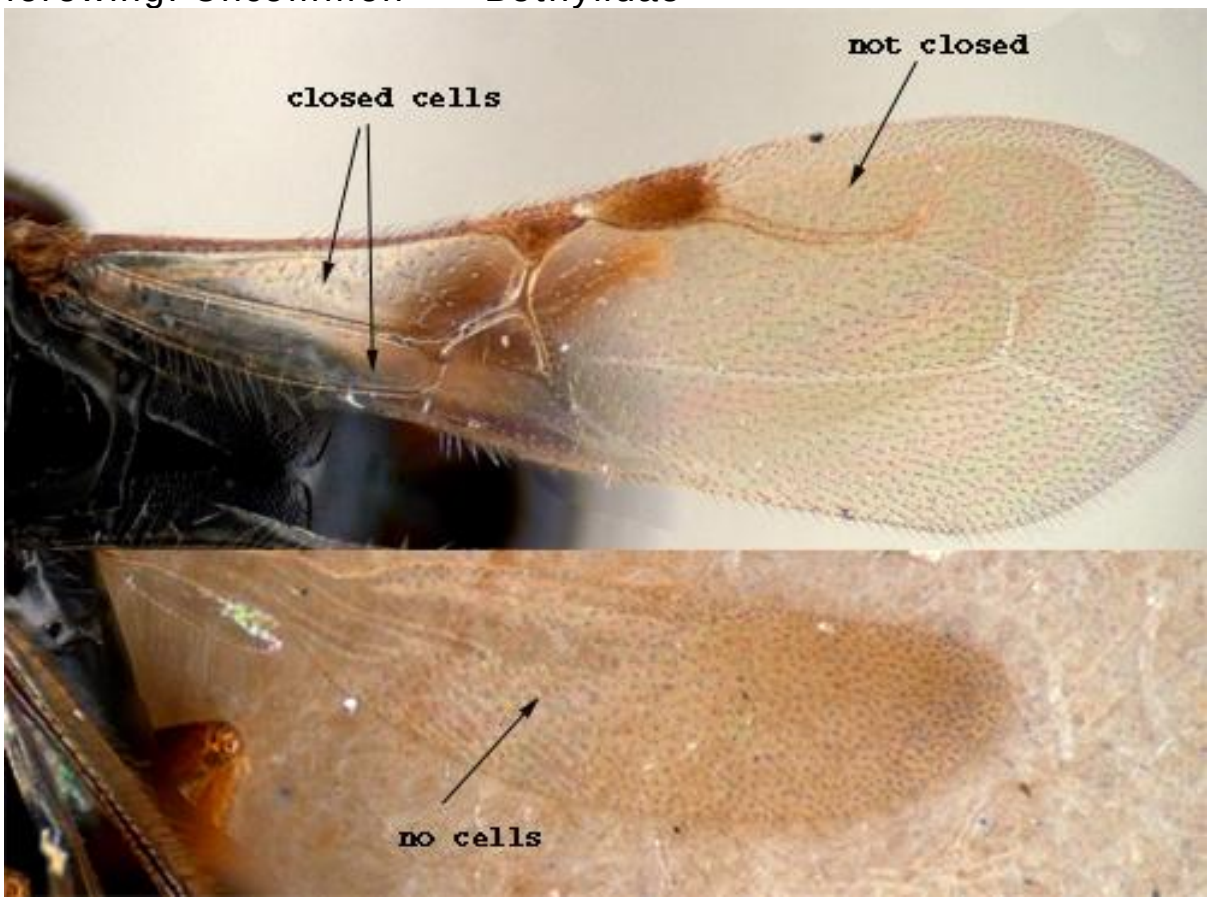
25 Antennae rising from a ‘shelf’ on head, and with three or fewer cells in forewing and no cells in the hindwing Diapriidae

25‘ Antennae not rising from a ‘shelf’ on head 26

26 Cells present in forewing 27

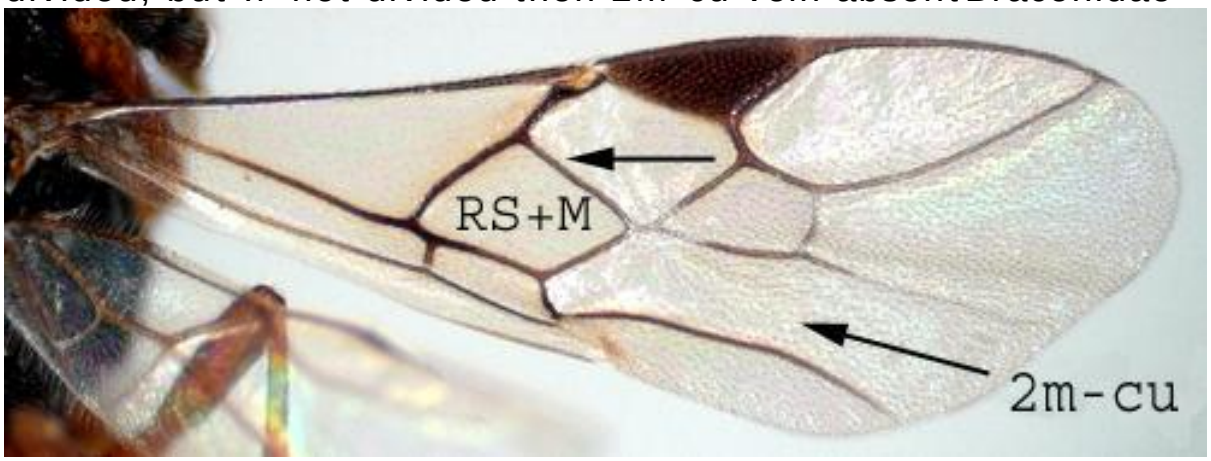
26‘ No cells in forewing 29

27 No cells in hindwing. Three or fewer closed cells in forewing. Uncommon Bethylidae

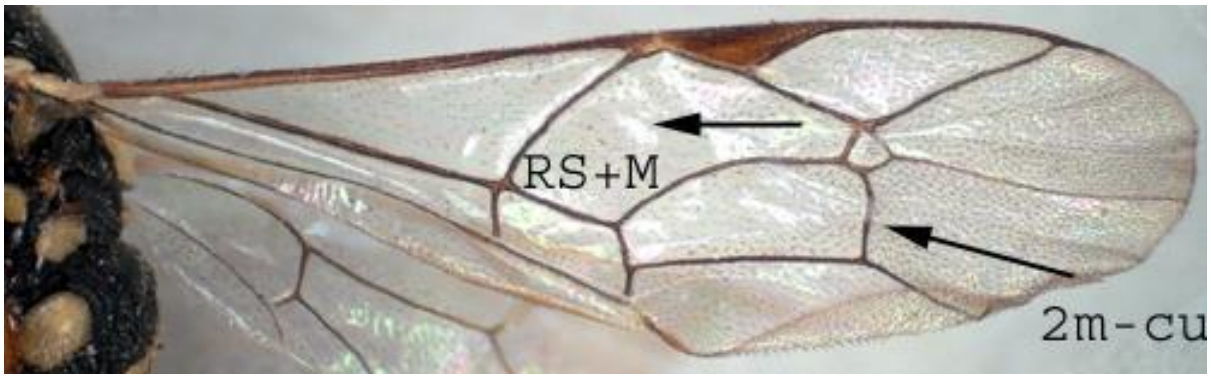


27‘ One-two cells in hindwing. Four or more closed cells in forewing 28

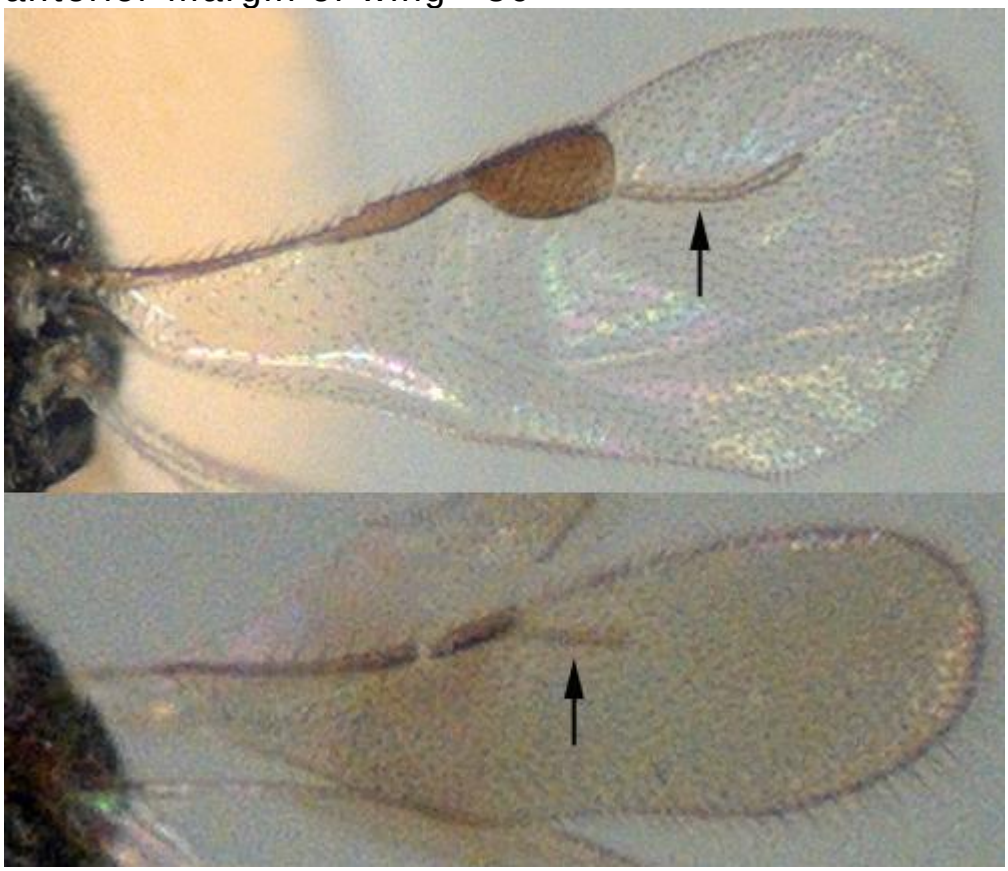
28 Forewing with RS+M cell (‘horsehead’ cell) usually divided, but IF not divided then 2m-cu vein absent Braconidae



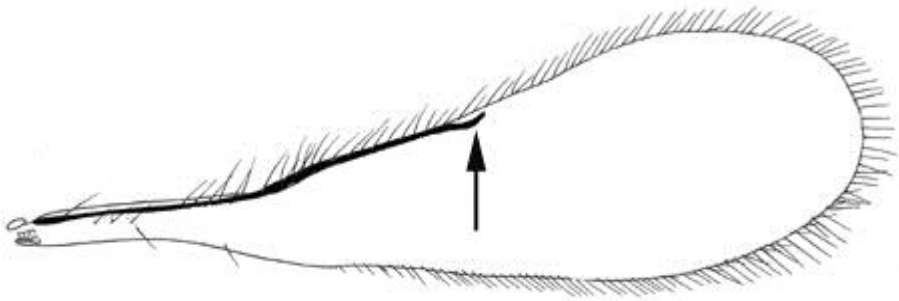
28‘ Forewing with RS+M cell (‘horsehead’ cell) usually not divided, but IF divided then 2m-cu vein present Ichneumonidae



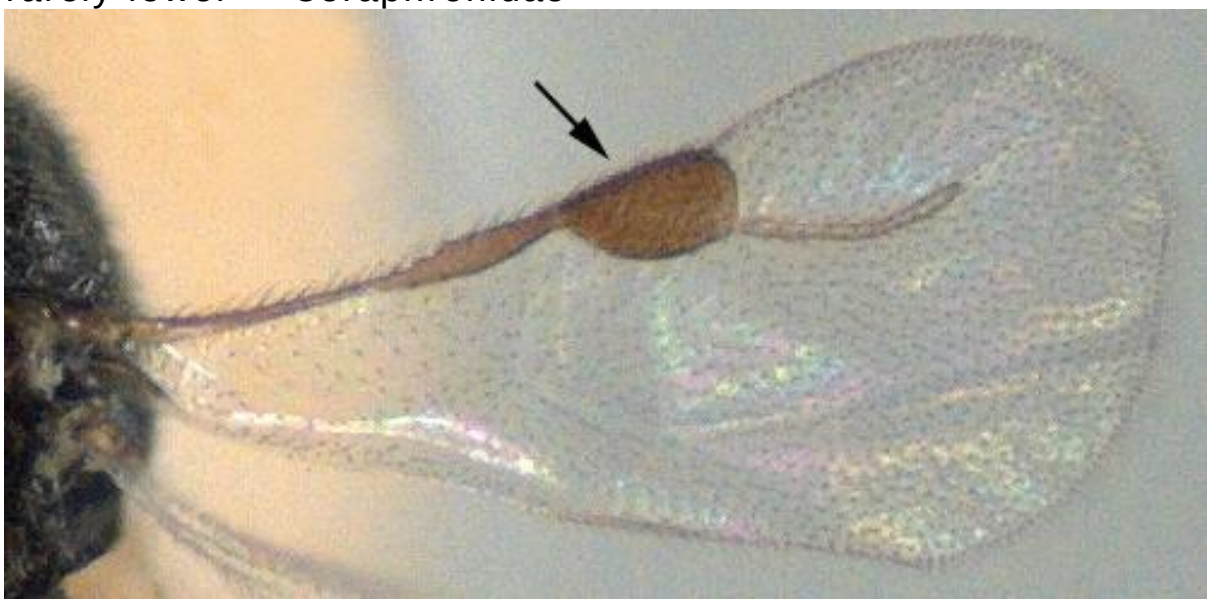
29 Stigmal vein of forewing long and gently curved towards anterior margin of wing 30



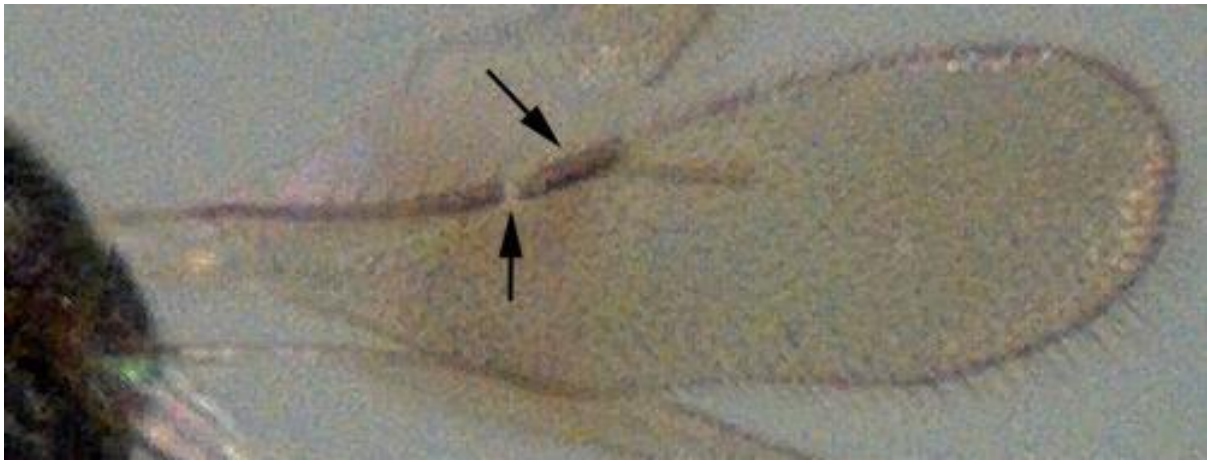
29‘ Stigmal vein of forewing absent or very short and straight 31



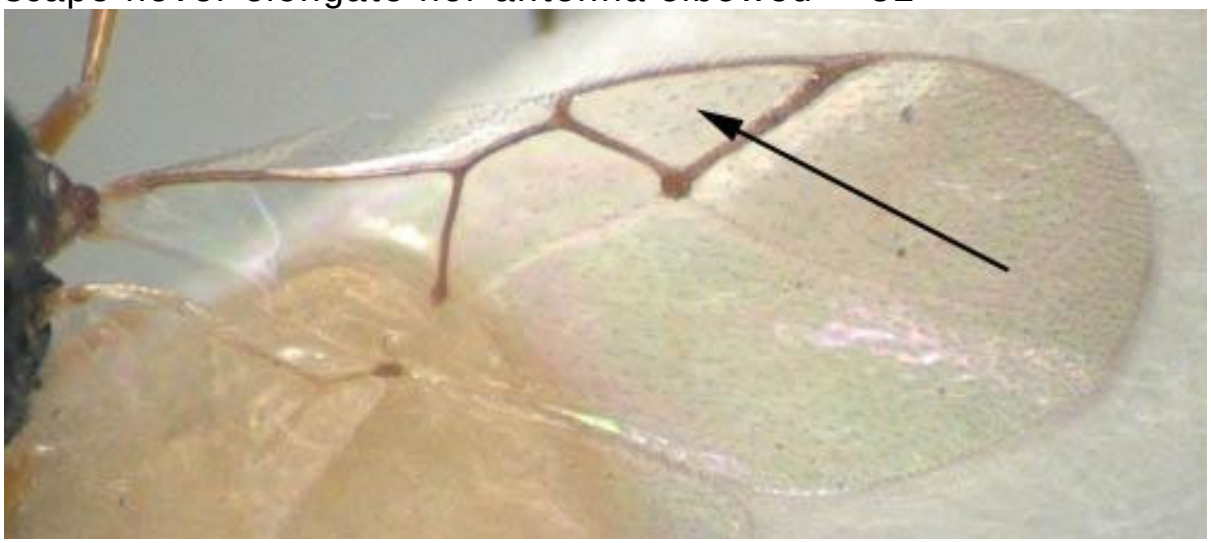
30 Stigma linear. Vein on margin of forewing with small break (gap). Antennal segmentation 10-11 (female-male), rarely fewer Ceraphronidae



30‘ Stigma enlarged. Vein on margin of forewing without small break (gap). Antennal segmentation 11-11 (female-male) Megaspilidae



31 ‘Triangular’ cell present in forewing. Metasoma laterally compressed and quite thin, much higher than wide. Antennal scape never elongate nor antenna elbowed 32

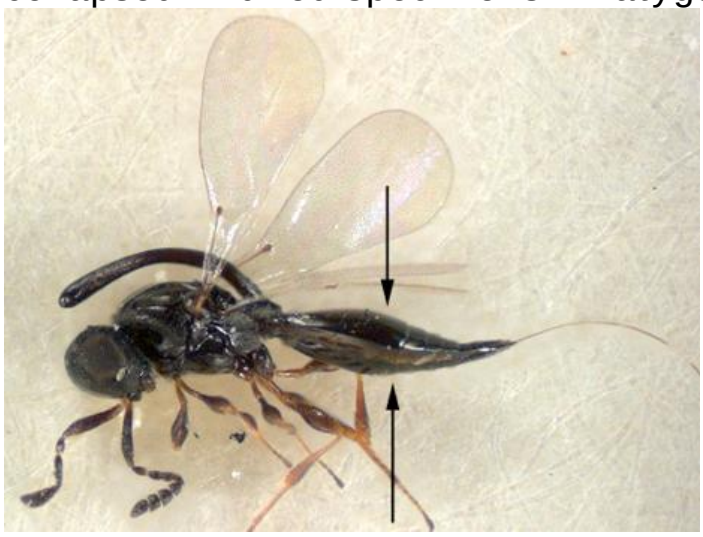


31‘ No ‘triangular’ cell present in forewing. Metasoma usually wider than high. If laterally compressed then antennal scape elongate and antenna elbowed 33

32 Mesoscutellum rounded. Head hairy and mesopleuron either striate or micropunctate Cynipidae

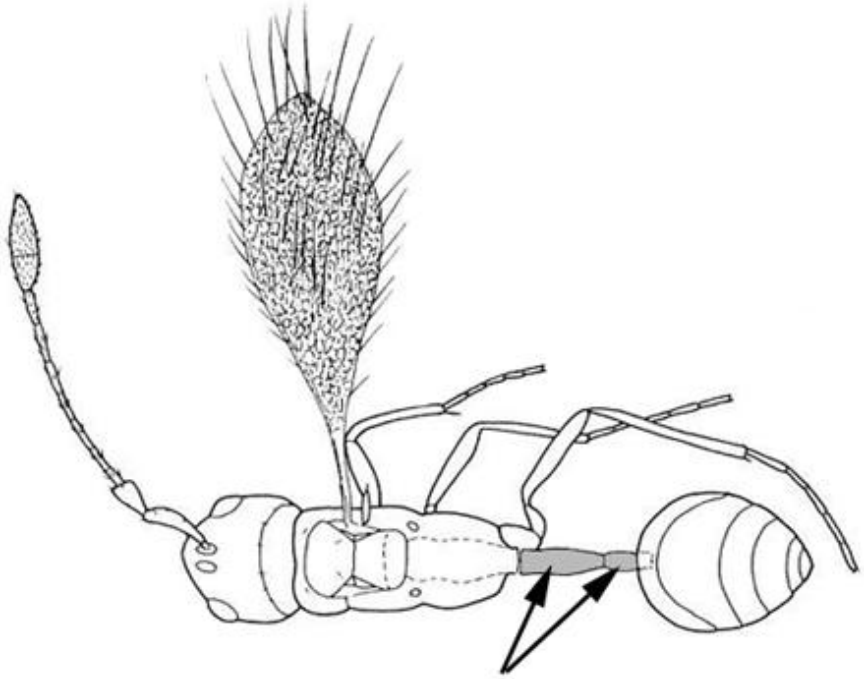
32‘ Mesoscutellum either raised, teardrop shaped, produced into a spine, or rounded. If rounded, then head and mesopleuron smooth, few hairs Figitidae

33 Never with metallic colouring (usually black or brown), the metasoma often strongly dorso-ventrally flattened. Ovipositor issuing from apex of metasoma. Petiole often not differentiated. Robust specimens, metasoma and head rarely collapsed in dried specimens Platygastridae

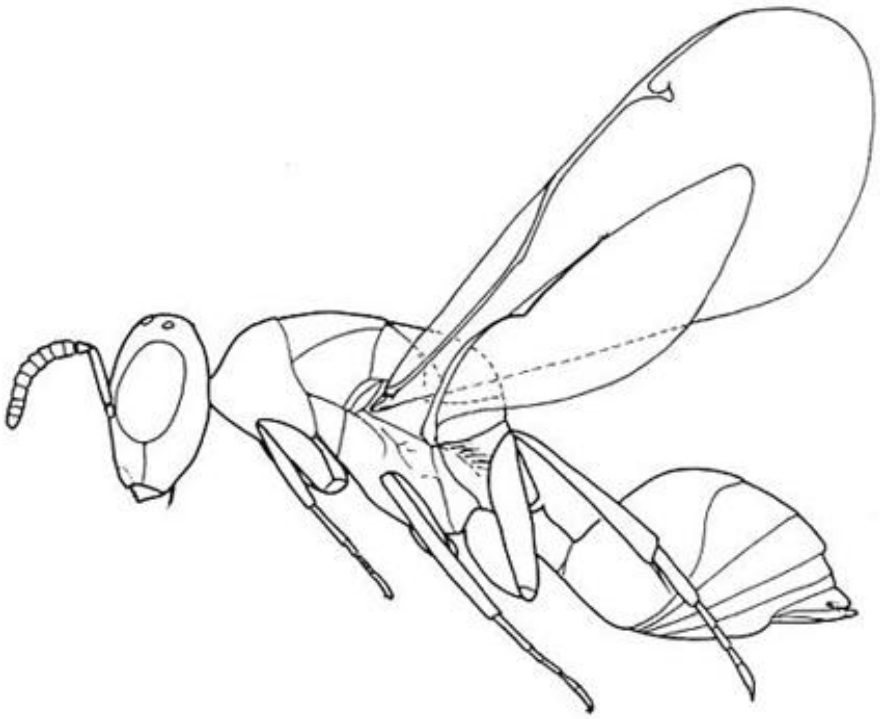


33‘ Often with metallic colouring, the metasoma not dorso-ventrally flattened. Ovipositor issuing from anterior to apex of metasoma. Petiole always present but sometimes not easily visible. Metasoma and head often collapsed in dried specimens 34

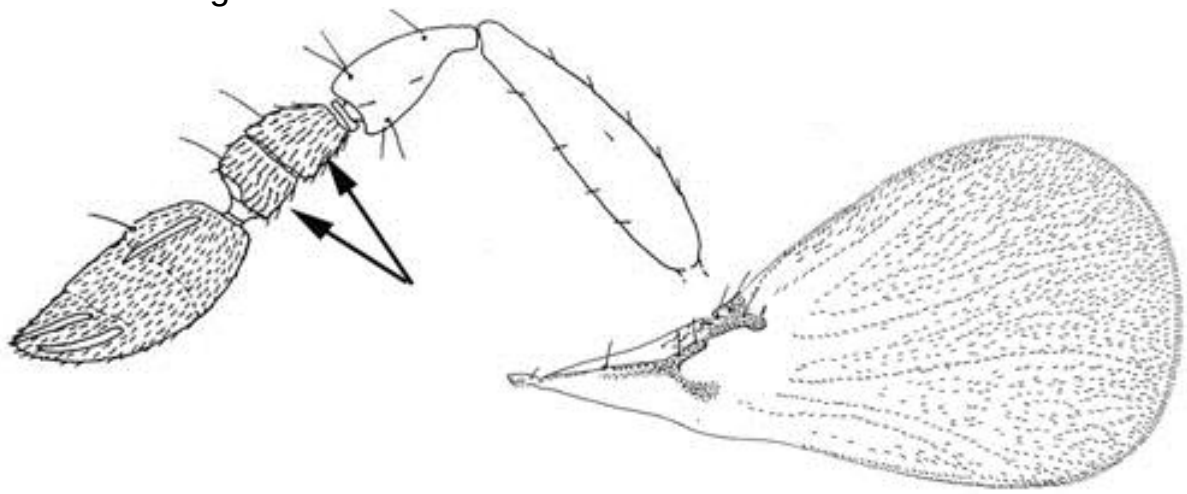
34 Abdominal petiole long, two segmented. Forewing stalked, spoon shaped, with a fringe of long setae around the margin and with a reticulate network of honey-comb shapes. Minute, less than 0.75mm long Mymarommatidae



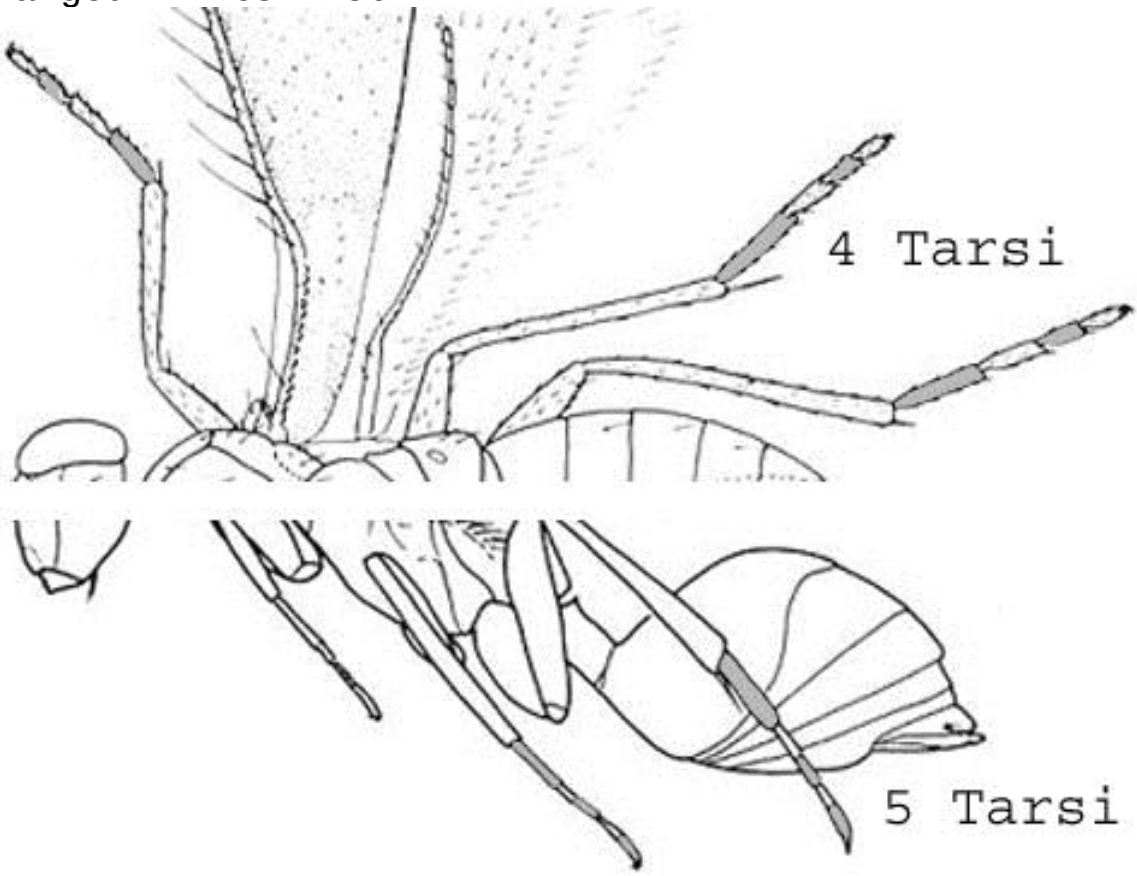
34‘ Abdominal petiole one segmented, often indistinct or obscured. If forewing stalked then not reticulate. Most often longer than 0.75mm 35



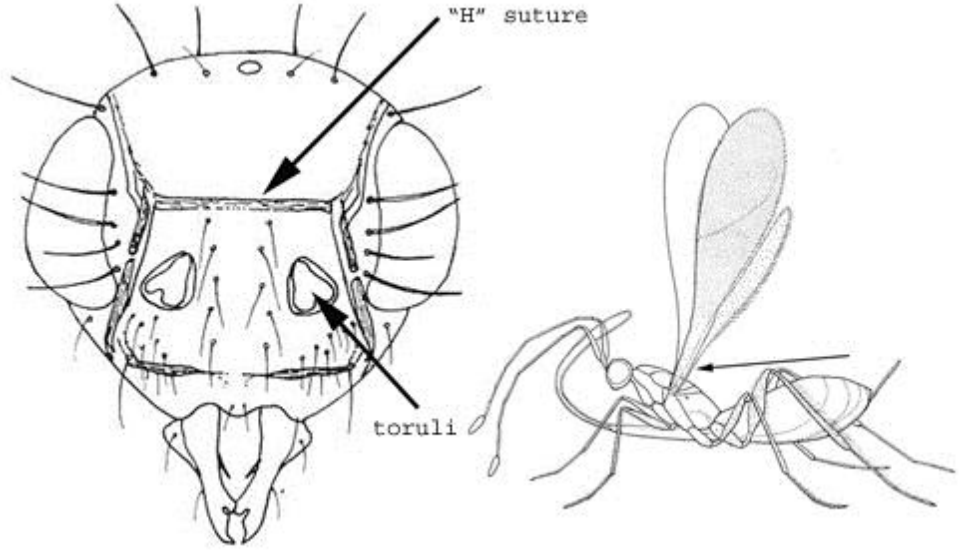
35 Tarsi three segmented. Antennae short, the funicle with no more than two segments. Hairs on wings often formed into lines Trichogrammatidae



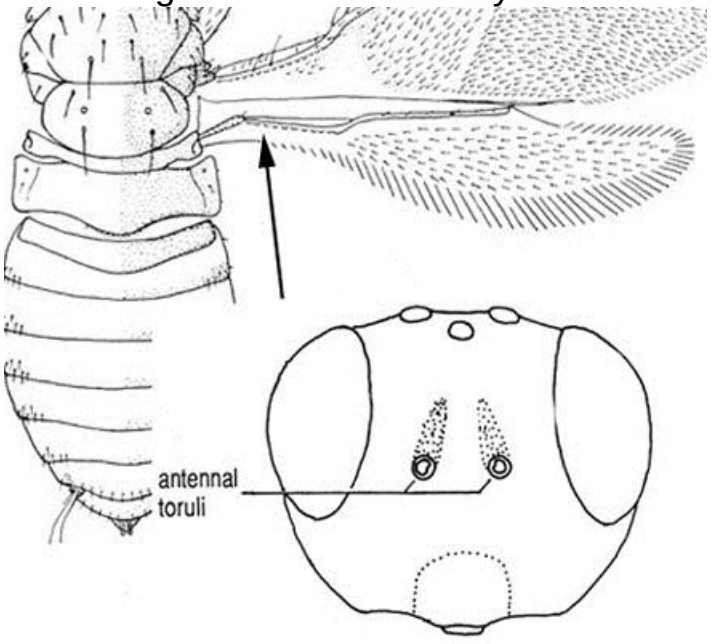
35 Tarsi four or five segmented. Hairs on forewings not arranged in lines 36



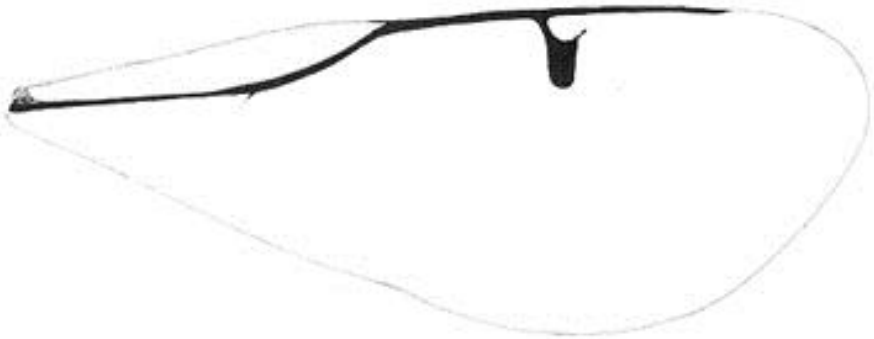
36 Antennae long relative to body. Antennal toruli situated much closer to eyes than each other. Frons with a straight, transverse suture a little above toruli which connects with vertical sutures adjacent to each orbit and thus forming an "H". Membrane of hindwing not extending to base thus giving wing a 'stalked' appearance Mymaridae



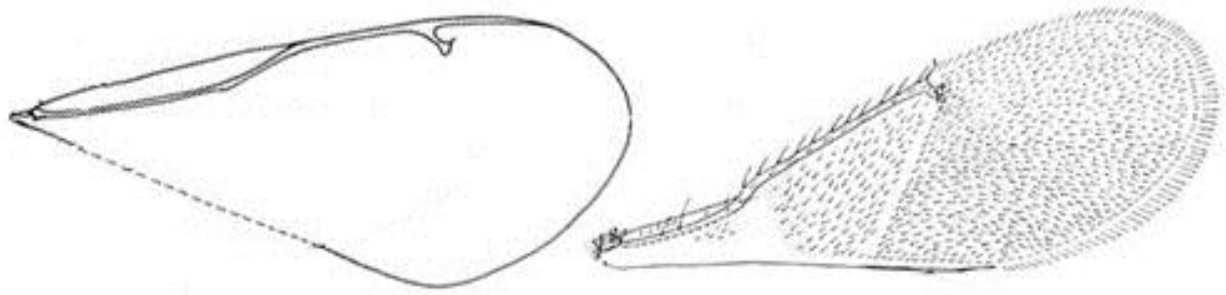
36 Antennal toruli situated as close to or closer to each other than to eyes or very nearly so. Frons occasionally with a transverse suture which may be straight or V-shaped, but never with vertical sutures running adjacent to inner orbits. Hindwing membrane always extending to base 37



37 Apex of stigmal vein much enlarged and swollen, round or tear-drop shaped and with uncus very close to postmarginal vein Torymidae

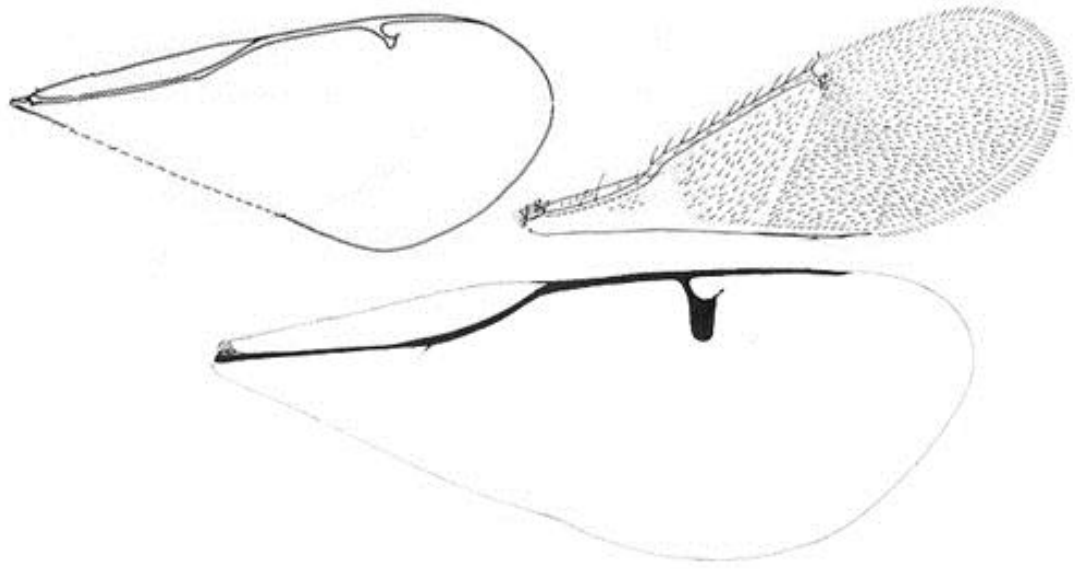


37 Stigmal vein not as above 38

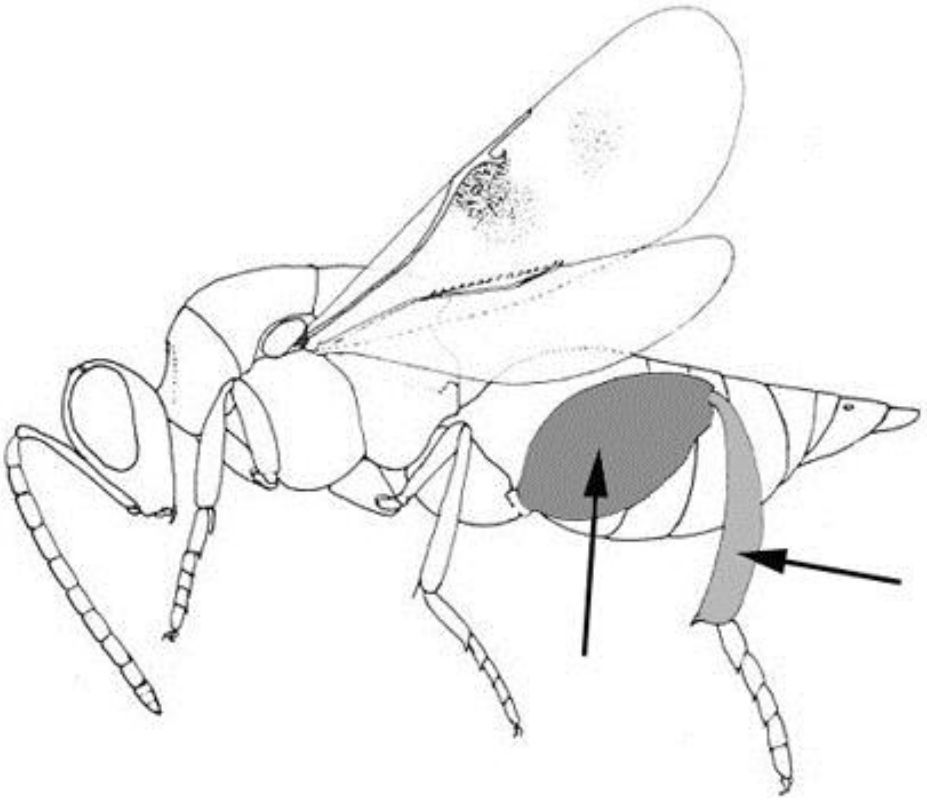


38 Stigmal vein of forewing long and forming an angle of about 90 degrees with marginal vein. Associated with fig fruits (fig wasps) Agaonidae

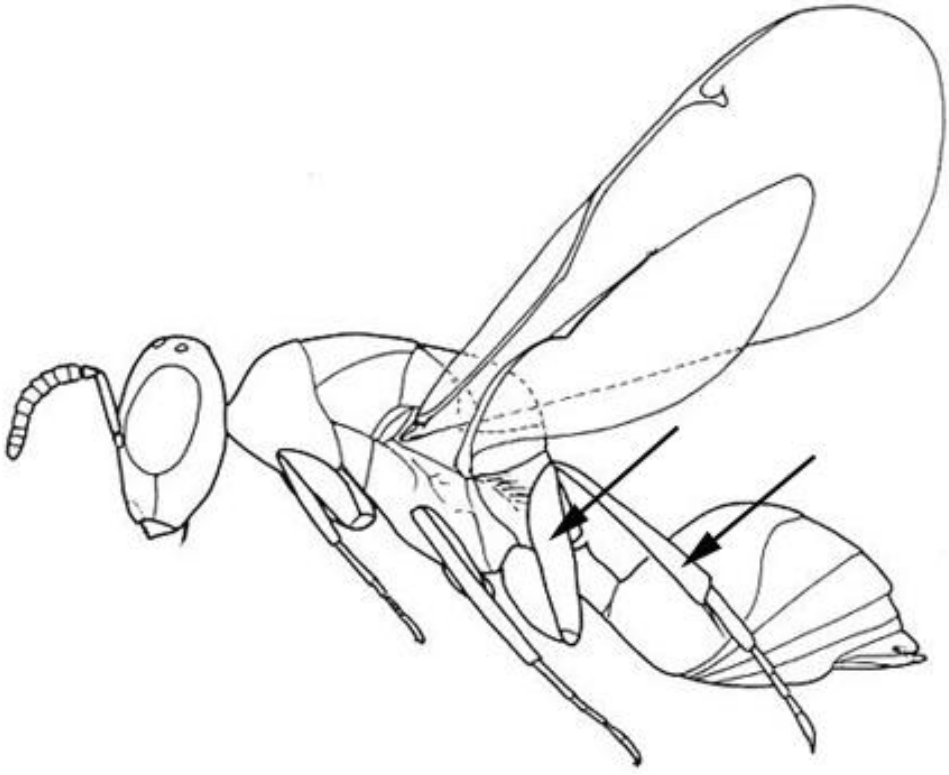
38 Stigmal vein at acute angle to postmarginal vein, never perpendicular to wing margin 39



39 Hind leg with femur swollen and tibia curved around it
40



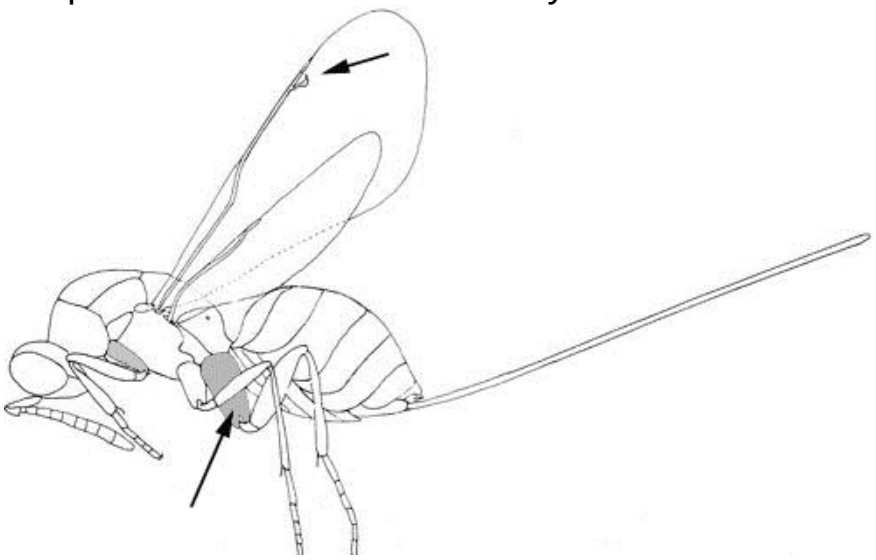
39 Hind leg with femur not swollen and tibia straight
41



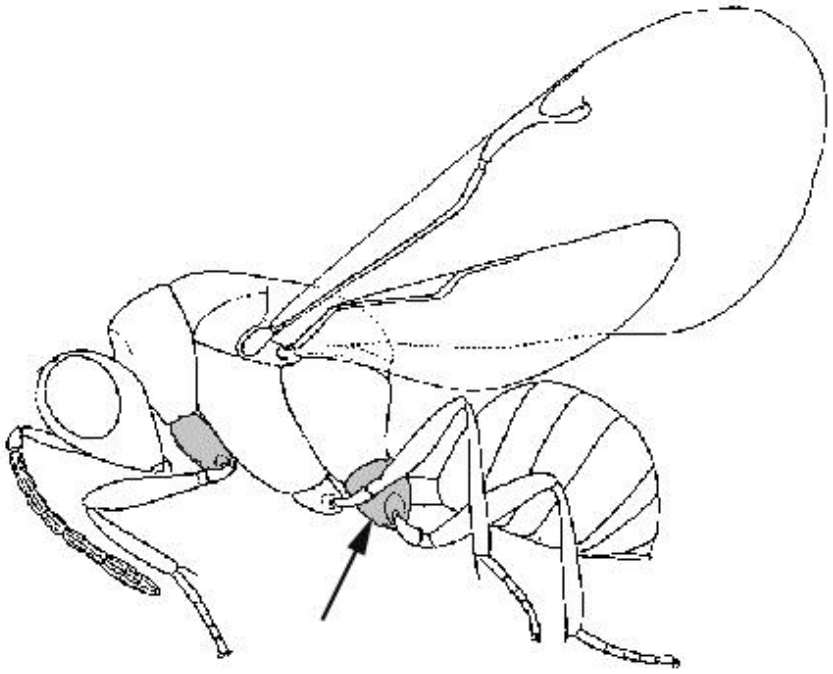
40 Body always black, without metallic colouring Chalcididae

40 Head and mesosoma metallic green Torymidae

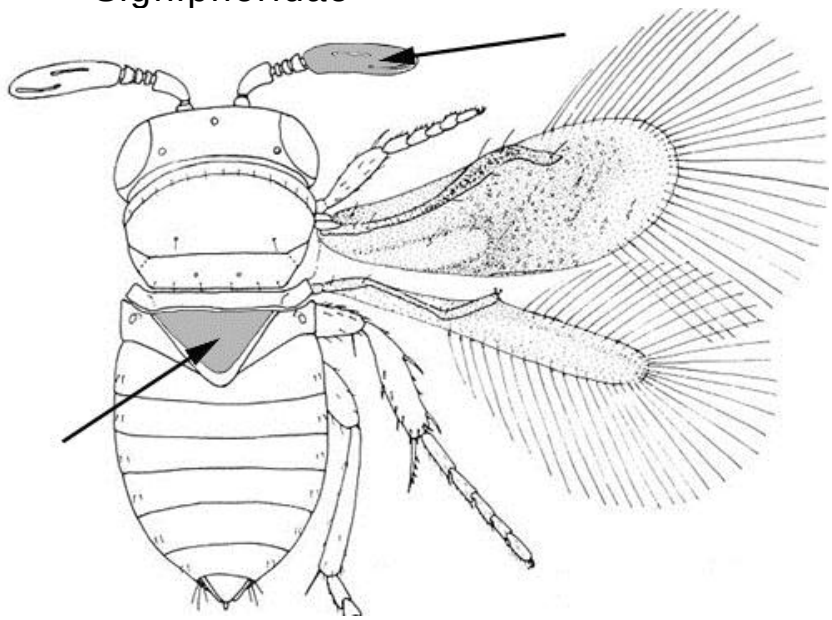
41 Hind coxa elongate, at least about twice as long as fore coxa. Forewings with stigmal vein short and uncus hardly separated from the well developed postmarginal vein. Ovipositor well exserted Torymidae



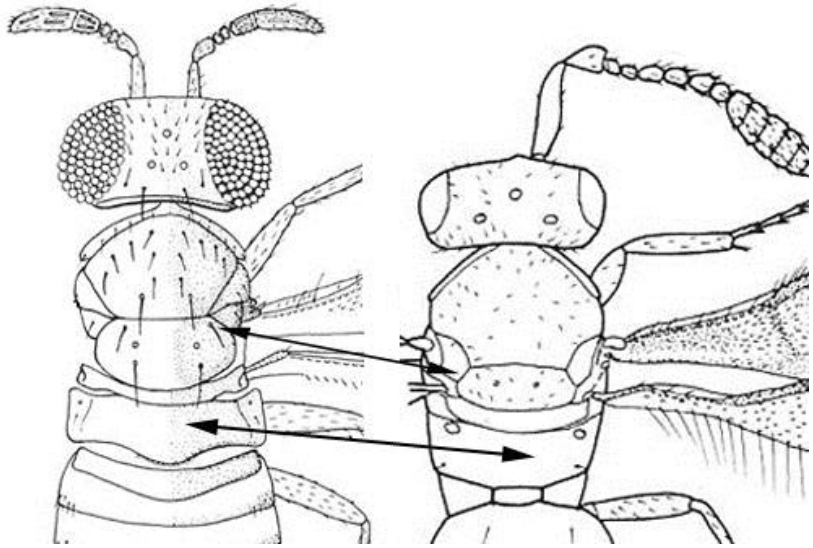
41 Hind coxa not so enlarged, not or hardly longer than fore coxa. Forewing usually with stigmal vein longer and uncus well separated from postmarginal vein, or postmarginal vein absent. Ovipositor normally hardly exserted 42



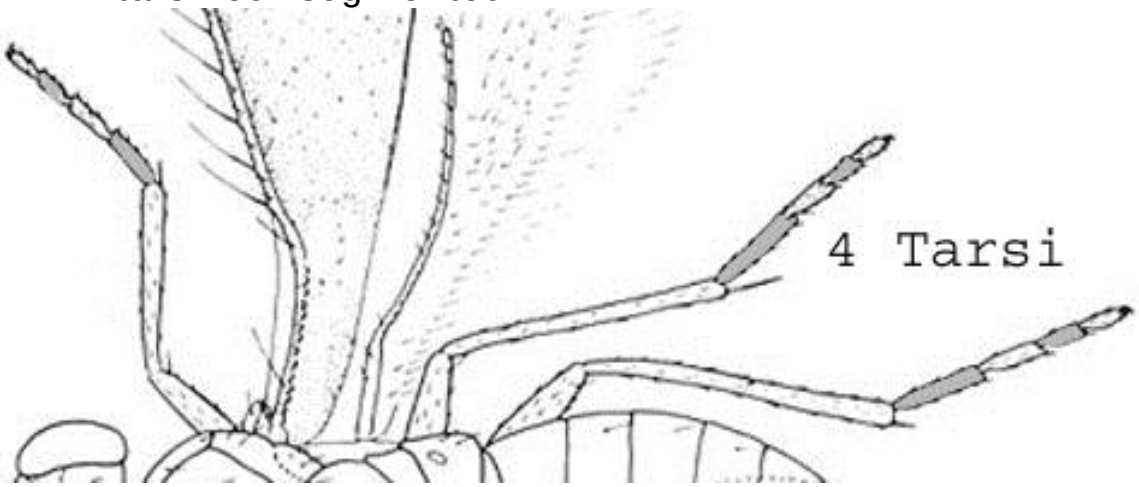
42 Antenna with a very long, unsegmented clava and funicle composed of two-four indistinct, strongly transverse segments. Body shining black or yellow. Axillae not distinctly marked off from scutellum, the two together forming a strongly transverse band about three times as broad as long; propodeum with a large, shiny, central triangular area, wings ‘see-through’ Signiphoridae



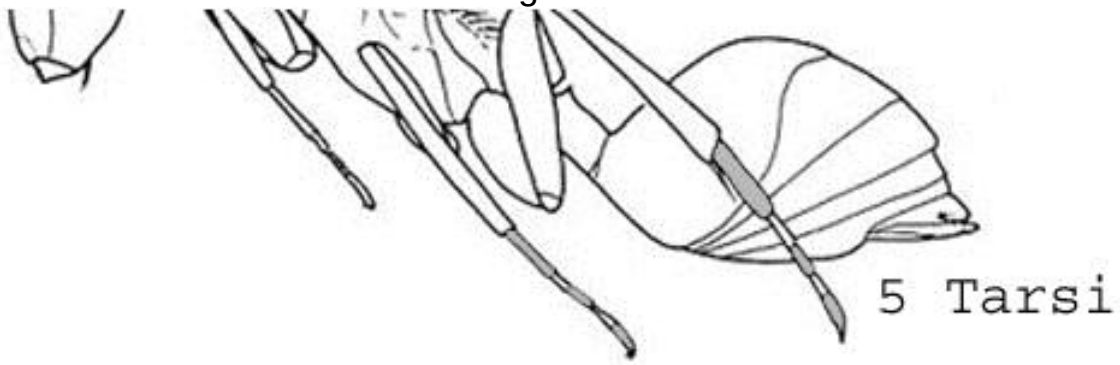
42 Antenna not as above; occasionally clava long and unsegmented, but then funicle composed of only two strongly transverse segments, and body metallic green. Scutellum shield-shaped, about as long as broad or slightly transverse, usually with axillae distinctly marked off. Propodeum without a distinct triangular central area 43



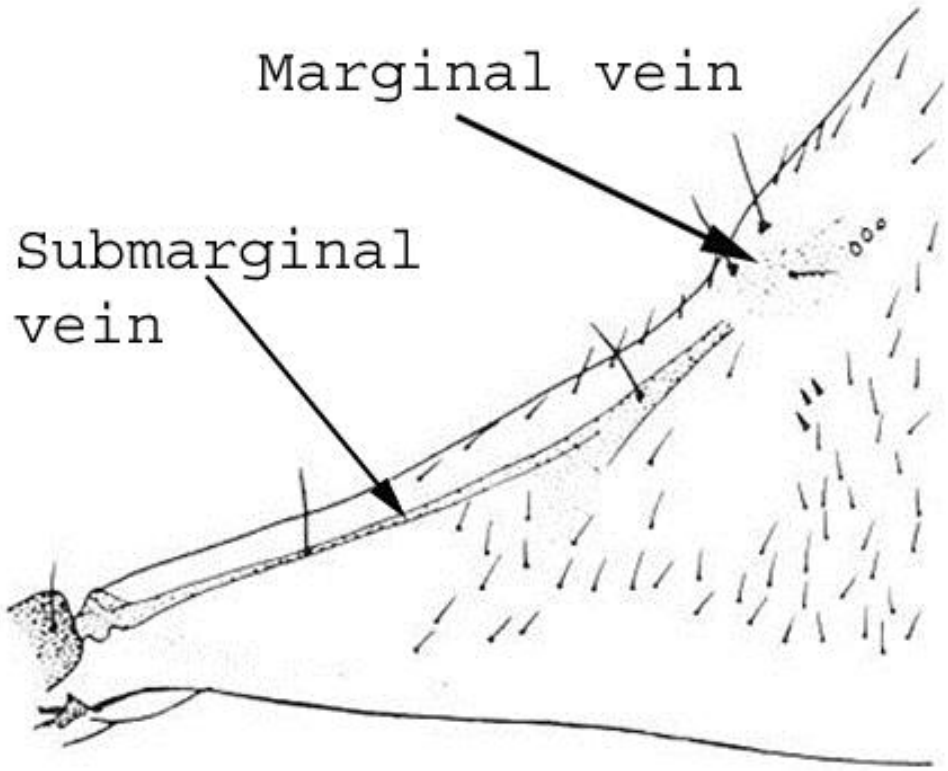
43 All tarsi four segmented 44



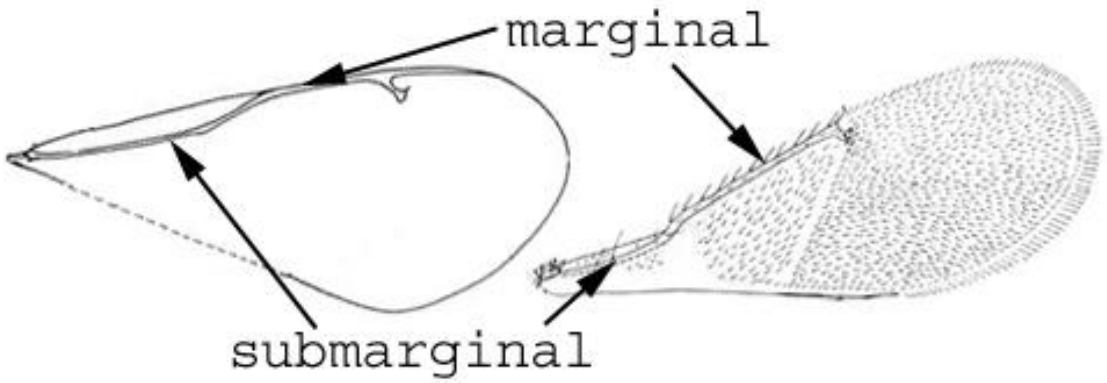
43 At least hind tarsi five segmented 47



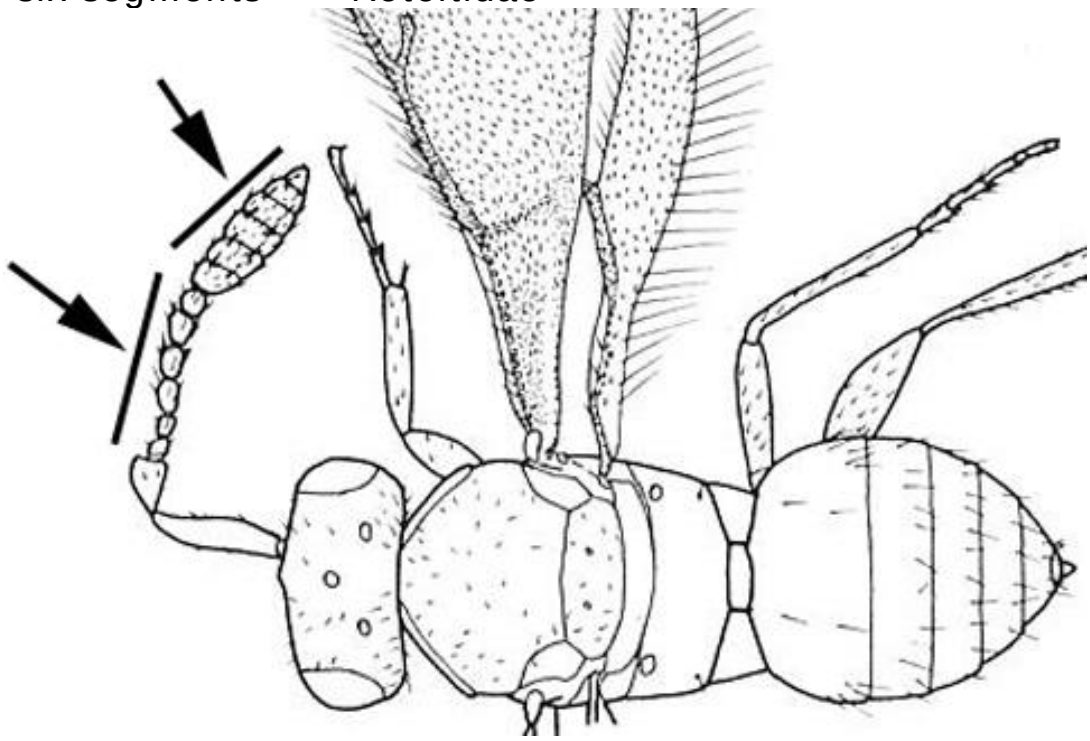
44 Forewing marginal vein indistinct, more or less punctiform Encyrtidae



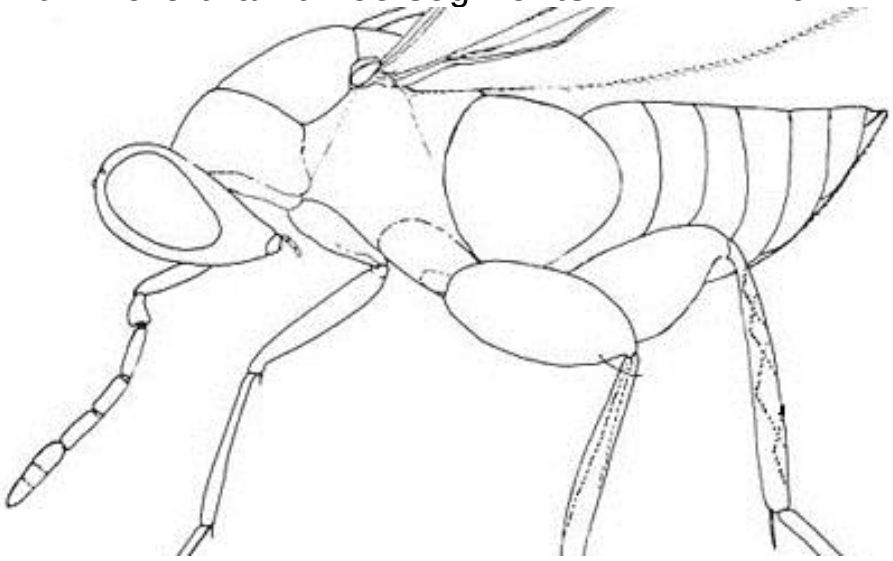
44 Forewing marginal vein distinct, several times longer than broad 45



45 Antenna 14-segmented. Funicle and clava each composed of six segments Rotoitidae

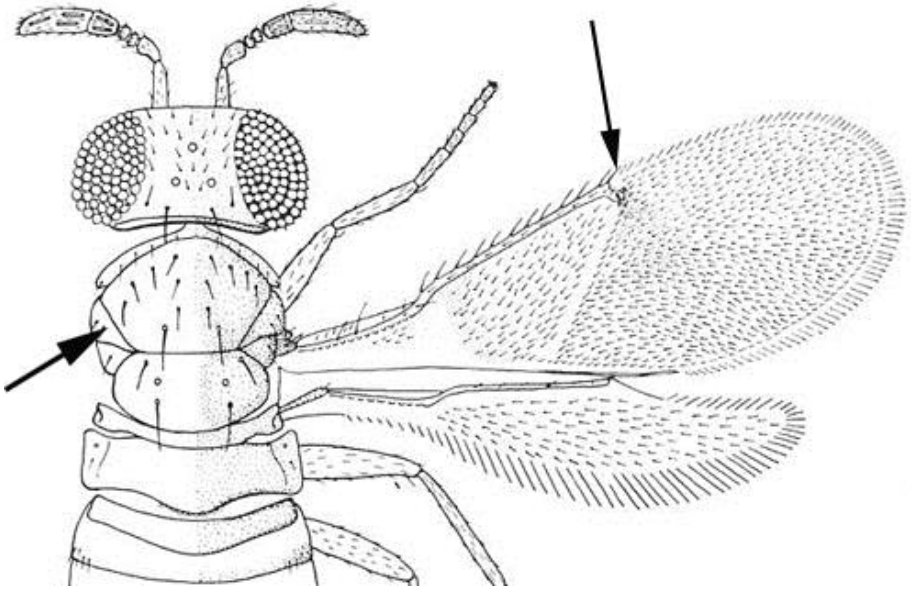


45 Antenna with not more than 12 segments. Funicle composed of not more than five segments, and clava never with more than three segments 46

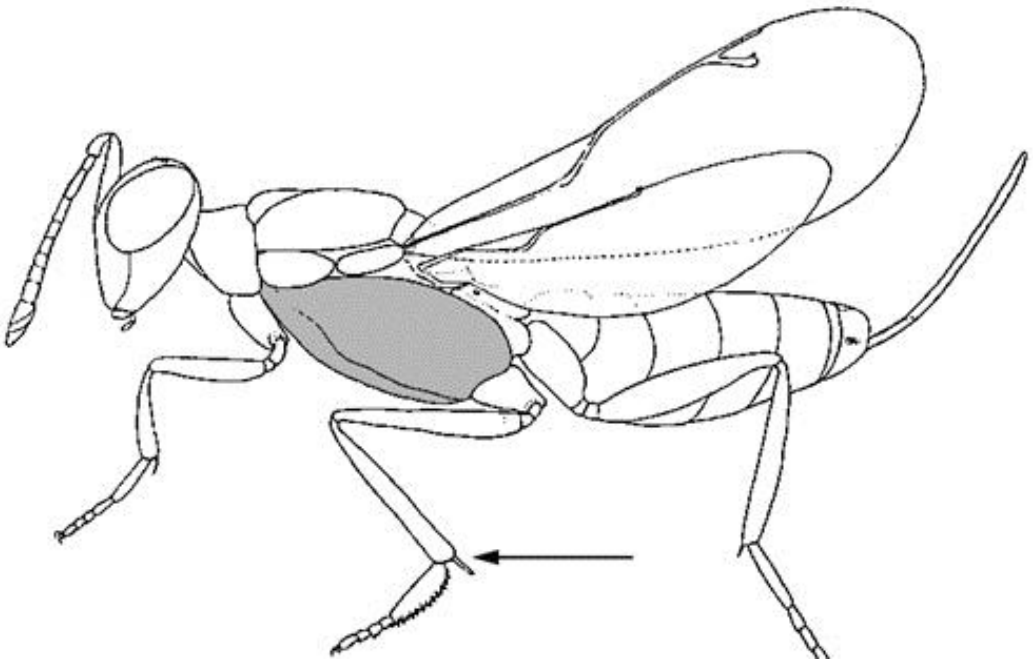


46 Metasoma distinctly constricted at junction with propodeum. Forewing with postmarginal and stigmal veins frequently long and distinct. Body almost always at least partly metallic. Notaular lines, if complete, almost always curved
Eulophidae

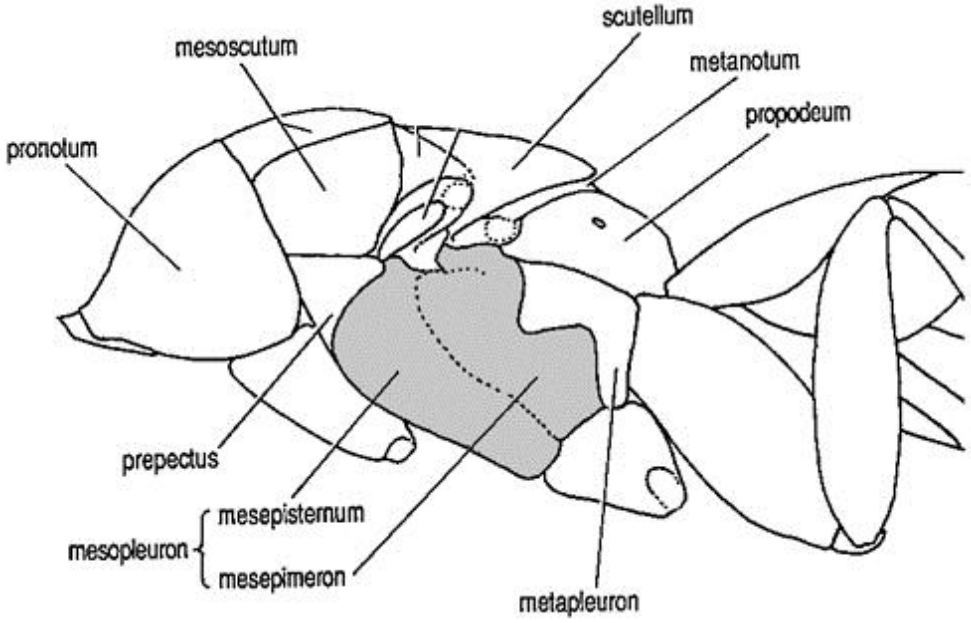
46 Metasoma at base about as broad as propodeum, not distinctly constricted. Forewing with postmarginal vein absent, or almost so, and stigmal vein very short. Body non-metallic, usually brown or black. Notaular lines complete, straight
Aphelinidae



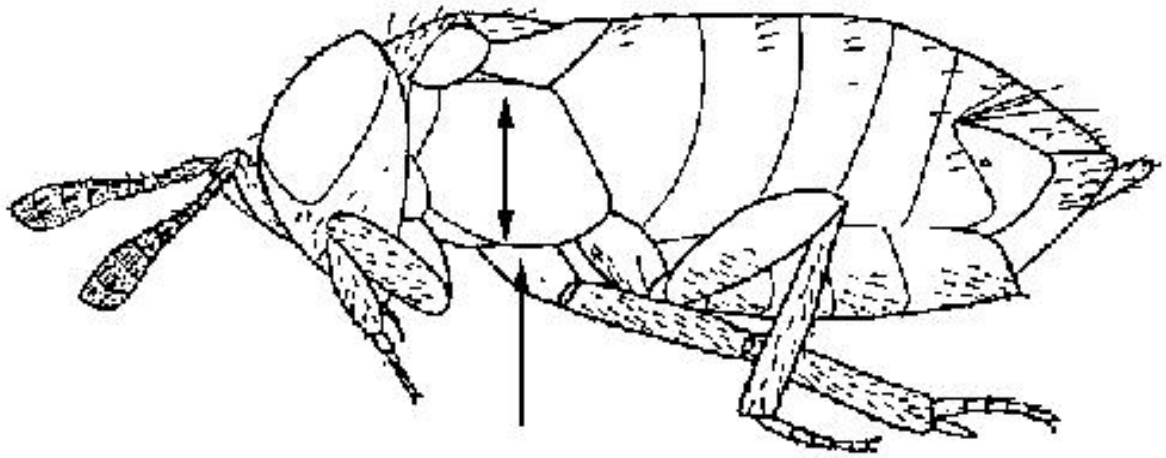
47 Either mesopleuron undivided, relatively large and shield-shaped or metasoma broadly sessile. Middle tibia usually with a strong apical spur 48



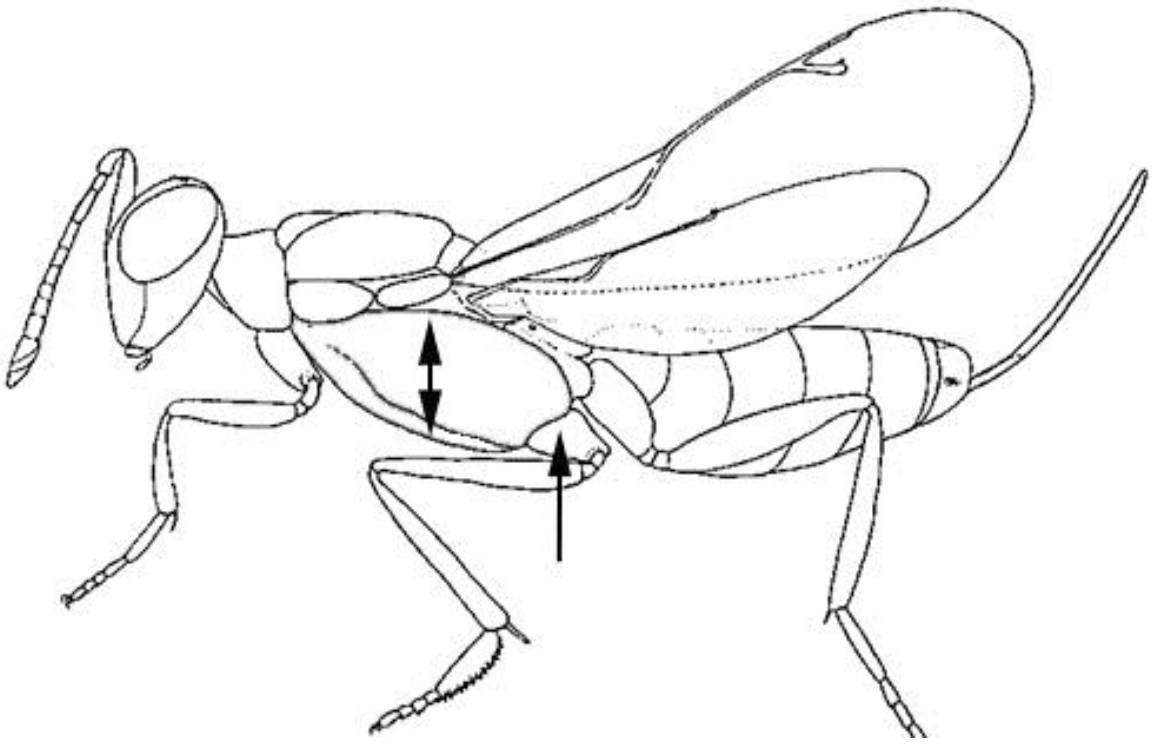
47 Mesopleuron divided into mesepisternum and mesepimeron, the two parts often with distinctly different sculpture. Metasoma never broadly sessile, at least with a distinct constriction at junction with propodeum, often petiolate. Middle tibia with spur of normal proportions 50



48 Mid coxa closer to fore coxa than hind coxa, or positioned about half way between. Forewing with marginal vein short, usually not more than three to four times as long as broad
Encyrtidae

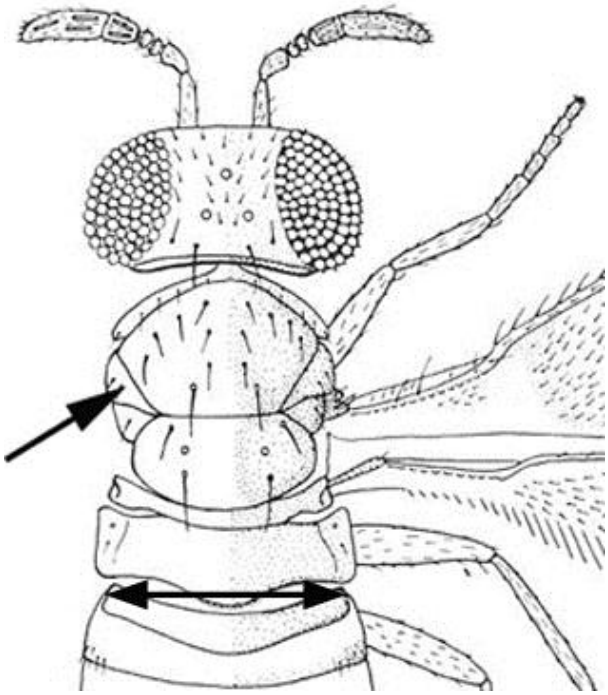


48 Mid coxa closer to hind coxa than fore coxa. Forewing with marginal vein always at least six to seven times as long as broad 49

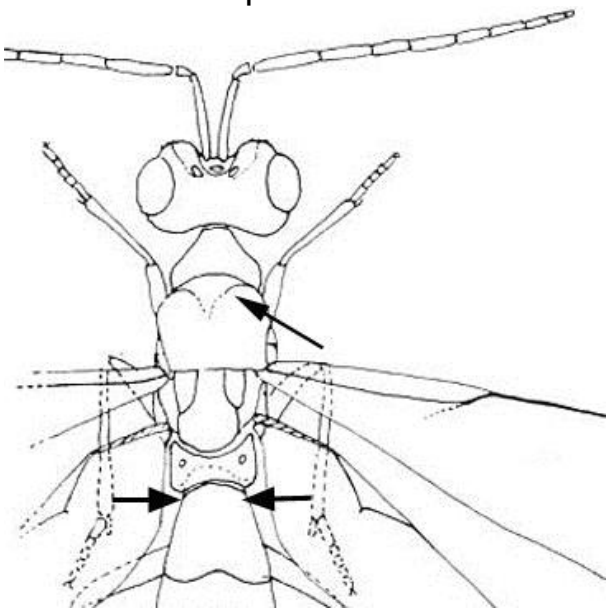


49 Antenna with flagellum not more than seven segmented; metasoma sessile, broadly attached to propodeum. Mesoscutum at least slightly convex, with notauli always present and straight. Body length not more than 1.5mm

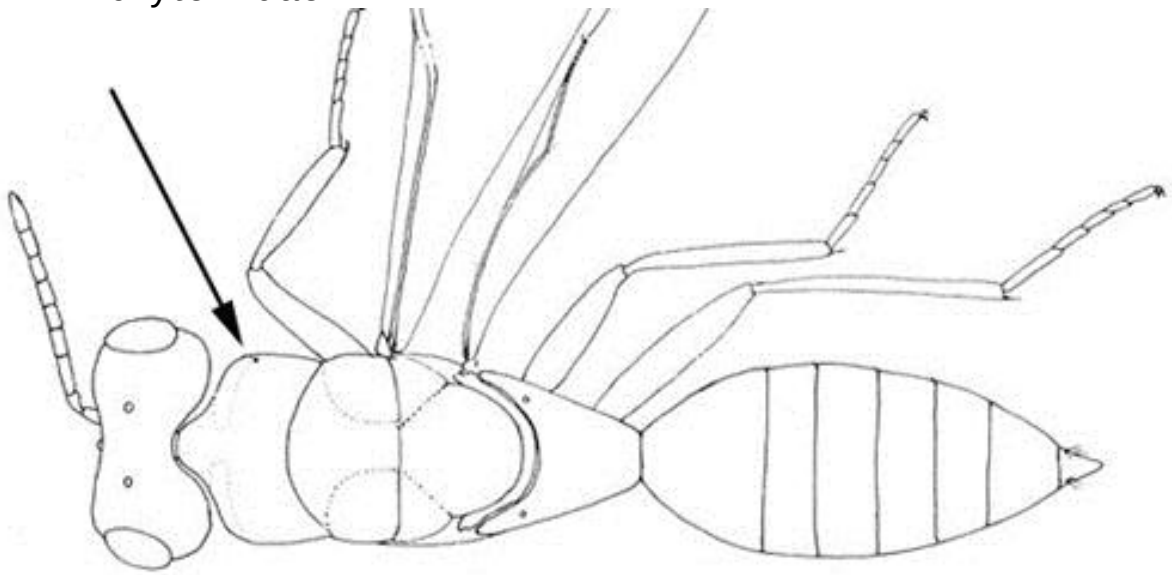
Aphelinidae



49 Antenna with flagellum eight or nine segmented. Metasoma distinctly constricted at junction with propodeum, or petiolate. Mesoscutum either impressed or convex, with notauli very inconspicuous. Body length almost always greater than 1.5mm Euplemidae

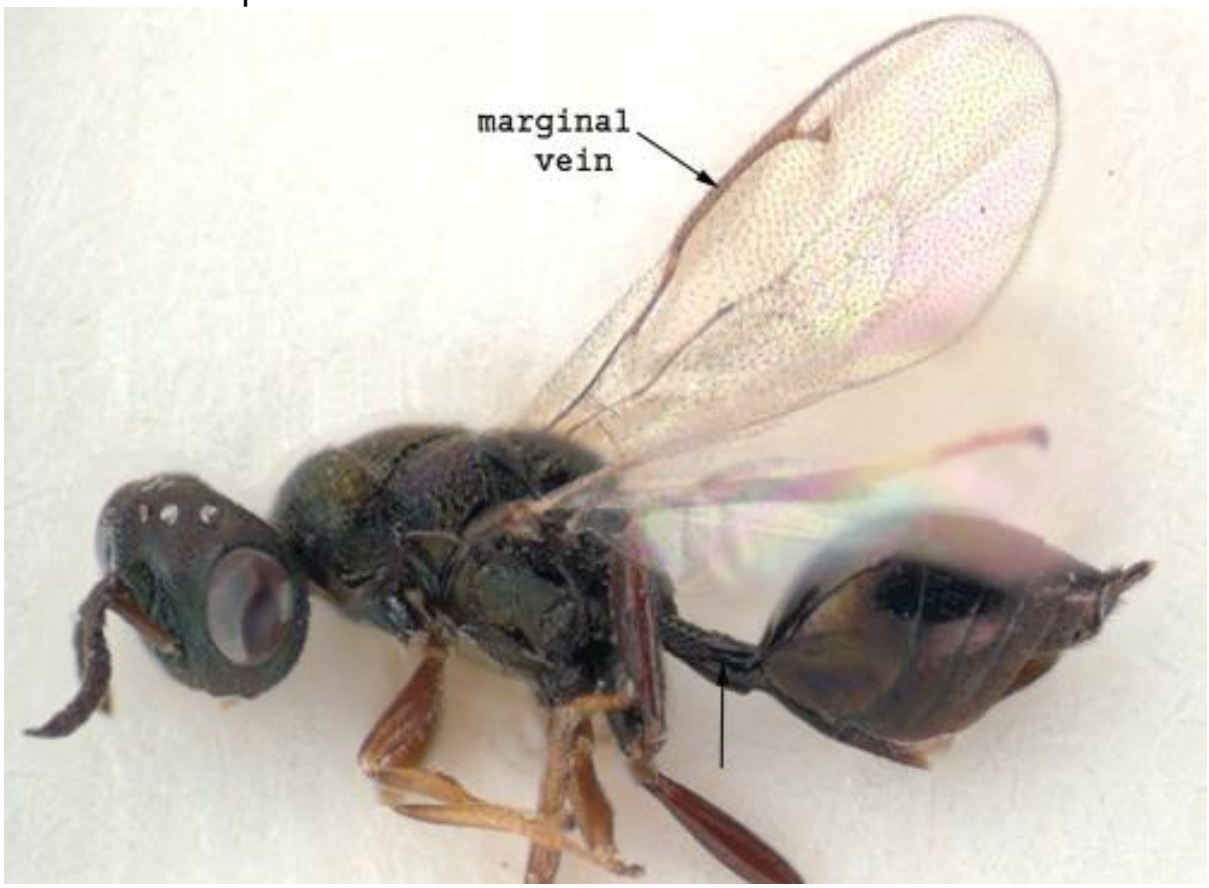


50 Pronotal collar large, subrectangular, at least about two-thirds as long as mesoscutum. Antenna with not more than six funicle segments. Head and dorsum of thorax with numerous conspicuous, piliferous punctures which often give rise to very coarse sculpture. Gena (cheek) sharply margined posteriorly
Eurytomidae



50 Pronotal collar not large and subrectangular, shorter than half length of mesoscutum, or if longer then antenna with seven funicle segments, or sculpture of head and thorax shallow, or gena not with a sharp edge 51

51 Forewing marginal vein at least 3.5x as long stigmal vein. Petiole at least 1.5x as long as broad; antennae inserted above lowest eye margins, without a crest or tubercle between them Perilampidae



51 Forewing marginal vein less than 3.5x as long as stigmal vein, or if relatively longer then either petiole not longer than broad, or antenna inserted well below lowest margin of eye, or a sharp crest or tubercle present between antennal toruli 52

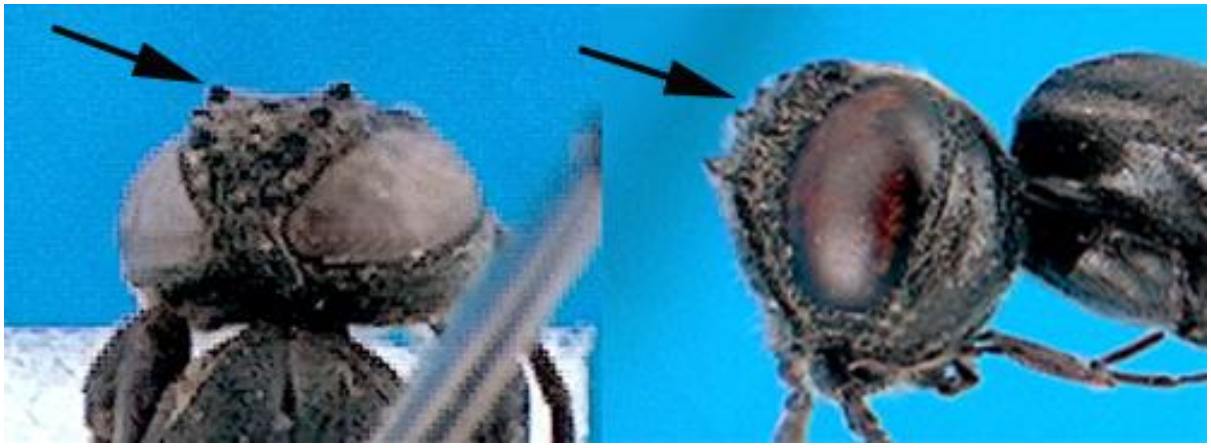
52 Forewing marginal vein always more than twice as long as stigmal vein. Antenna with seven funicle segments and a single small anellus. Mesopleuron divided by a very weak, inconspicuous depression. Notaular grooves complete. Scutellum conspicuously hairy. Males only Euplemidae

52 Marginal vein mostly less than twice as long as stigmal vein. Antenna usually with six or fewer funicle segments, often with as many as three anelli. Mesopleuron distinctly divided into mesepisternum and mesepimeron. Notaular grooves sometimes incomplete. Scutellum usually without conspicuous pilosity. Males and females Pteromalidae

53 Body not constricted between mesosoma and metasoma (in dorsal view specimen appears as a ‘robust rectangular box’). Three or more closed cells in hindwing 54

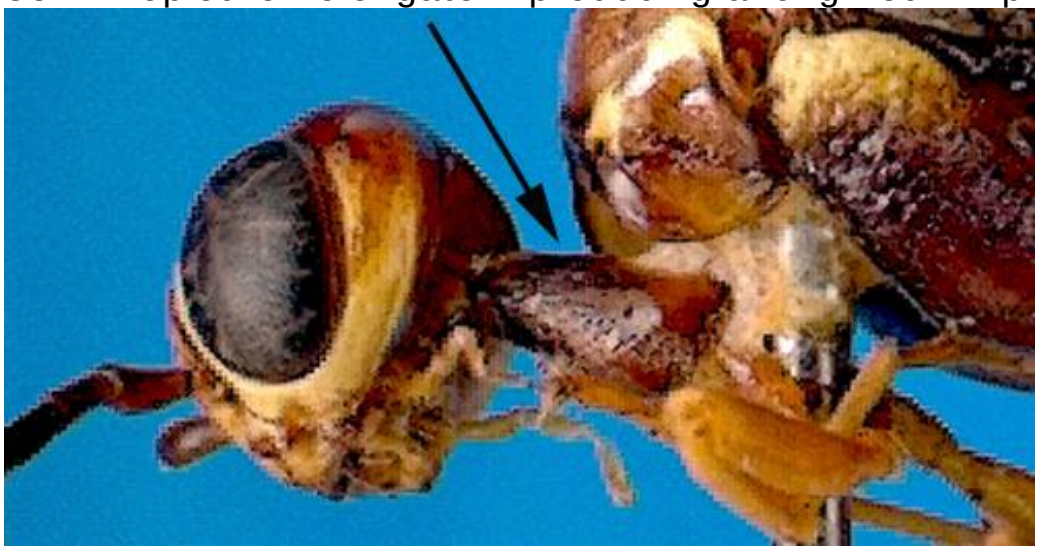
53 Body constricted between mesosoma and metasoma (i.e. with a narrow ‘waist’). With three or fewer closed cells in hindwing 58

54 Crown of head with teeth Orussidae



54 No teeth on head 55

55 Propleuron elongate – producing a long neck Xiphydriidae

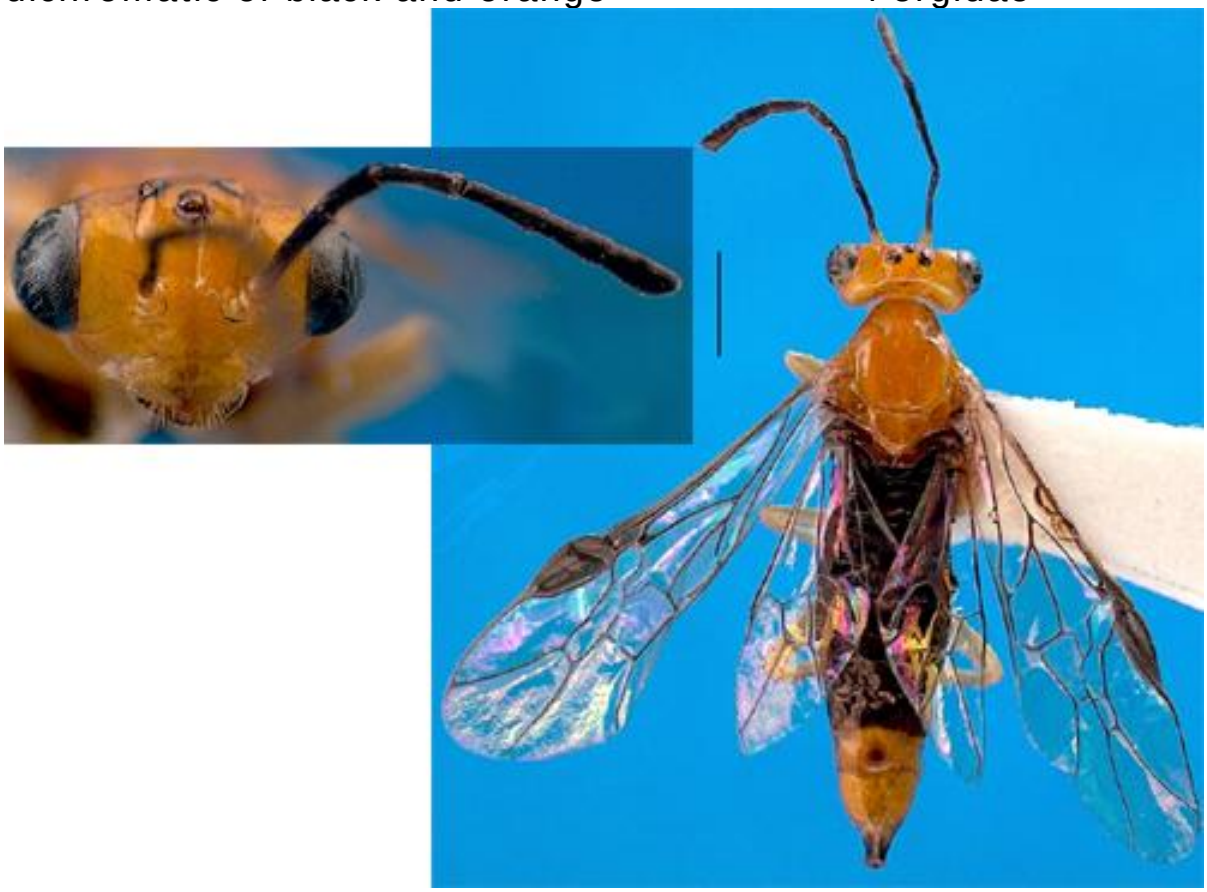


55 Neck not elongate 56

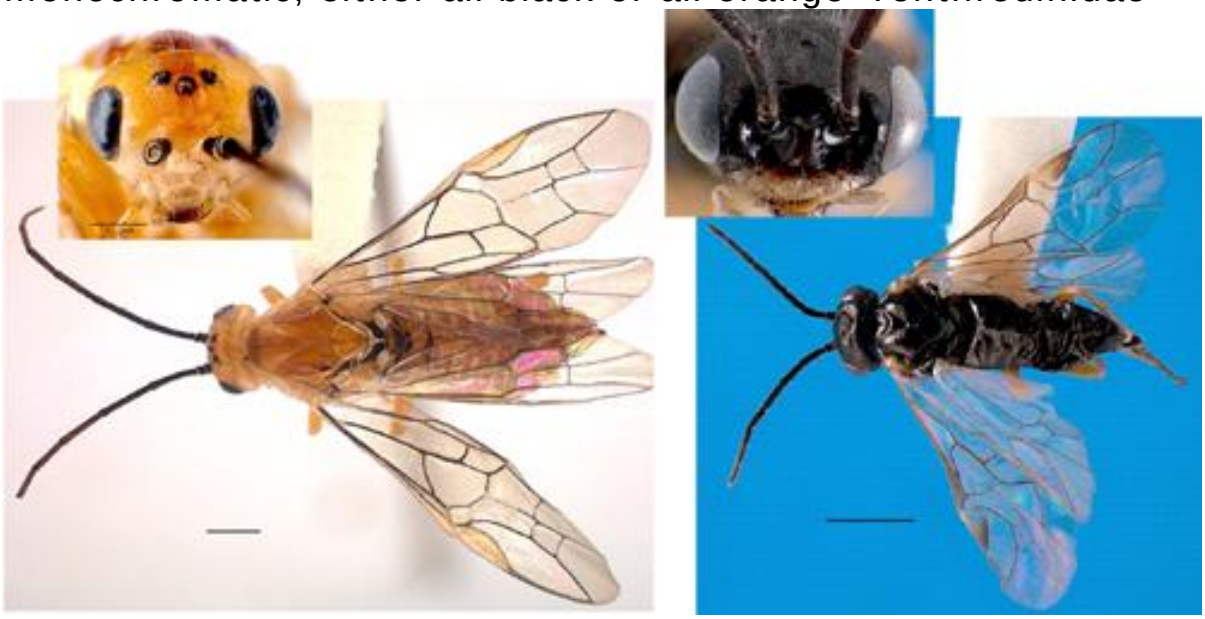
56 Large body (greater than 10mm, usually 30-40mm), robust shoulders, with a long ‘horntail’ at end of metasoma
Siricidae

56 Smaller body (less than 10mm), not with horntail 57

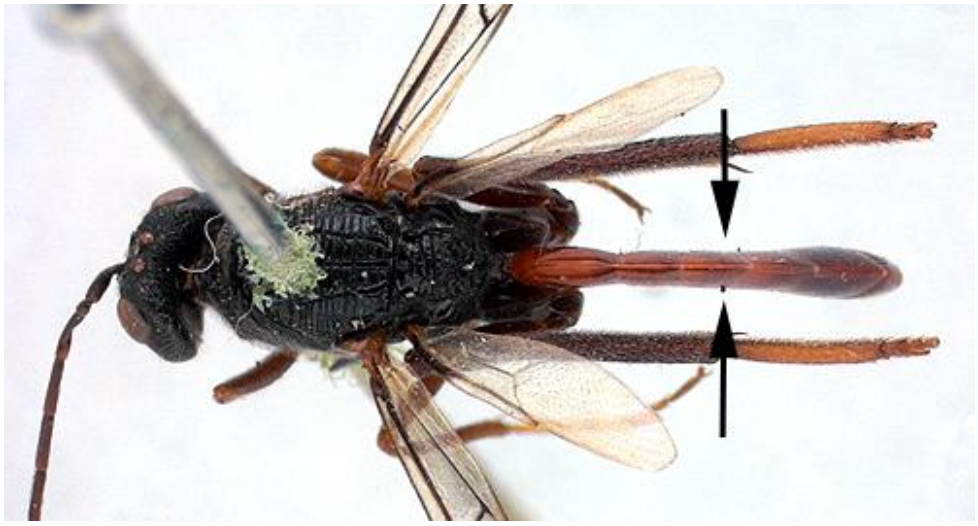
57 Eight segments in antennae. Head and body colour dichromatic of black and orange Pergidae



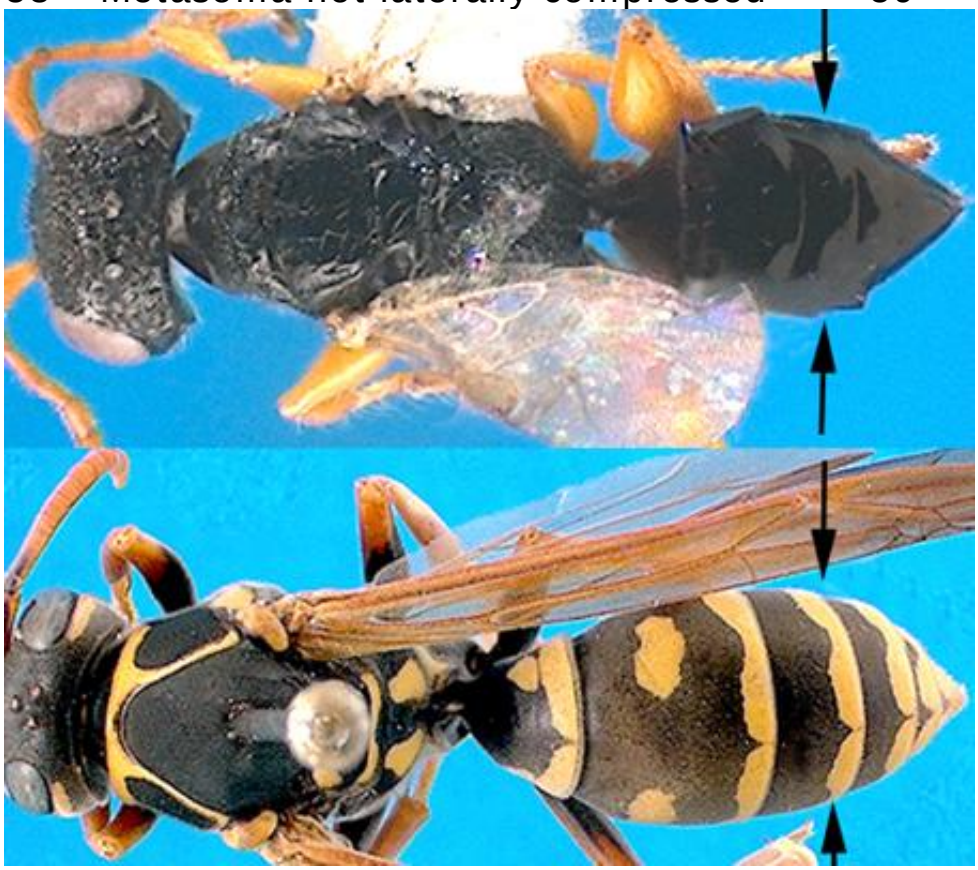
57 Nine segments in antennae. Head and body monochromatic, either all black or all orange Tenthredinidae



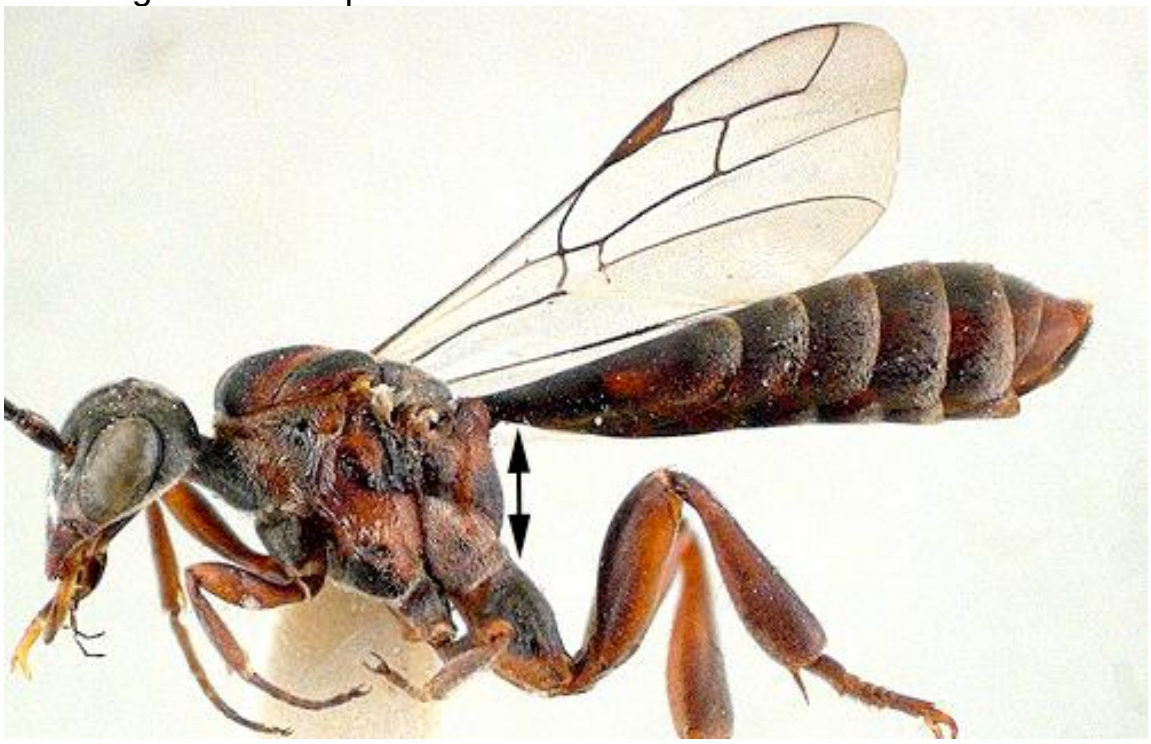
58 Metasoma laterally compressed and very thin (‘knife-like’) Ibaliidae



58 Metasoma not laterally compressed 59



59 Metasoma attached high on propodeum well above the hind legs Gasteruptiidae

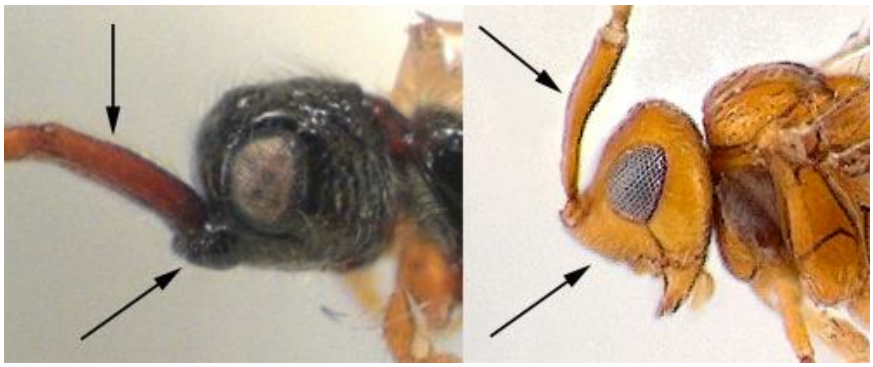


59 Metasoma attached lower on propodeum close to hind legs 60

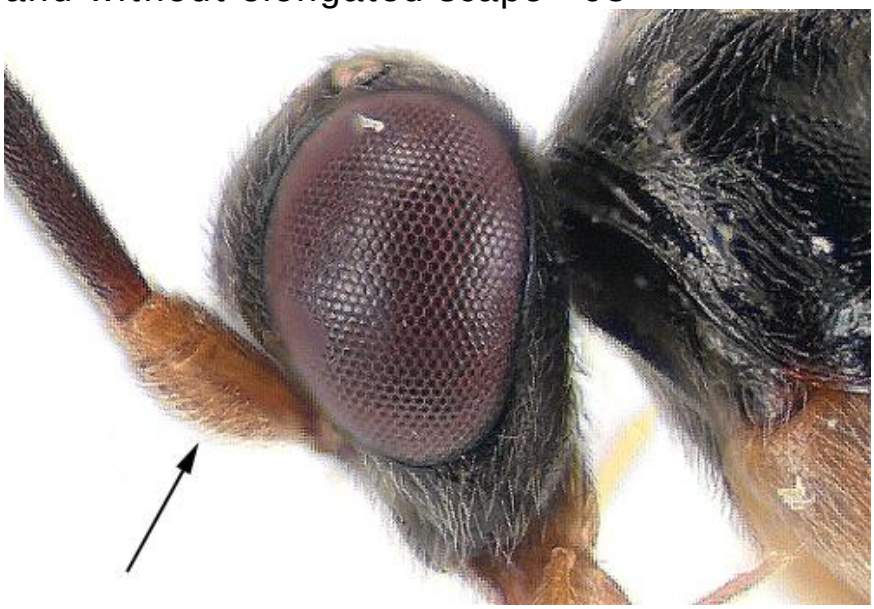
60 Forewings with two or fewer closed cells (include only costal cell and cells completely closed by tubular veins and not lines of pigmentation that indicate vein/cell position). 61

60 Forewings with three or more closed cells 64

61 Head in lateral view with antennae on frontal shelf in middle of face, antennae elbowed and with an elongated scape 62



61 Head in lateral view with antennae not on a distinct shelf, antennae inserted lower and closer to mouthparts, not elbowed and without elongated scape 63



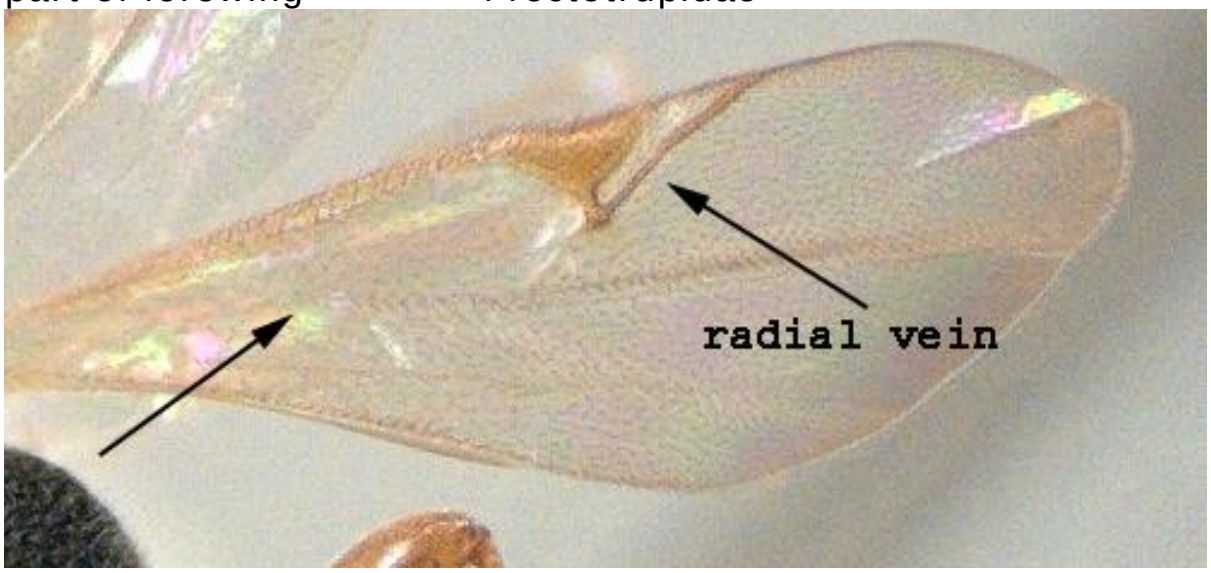
62 First tergite of metasoma as long as or shorter than the second. Lateral panel of pronotum is distinct with striate microsculpture, concave, and coloured white or grey

Maamingidae

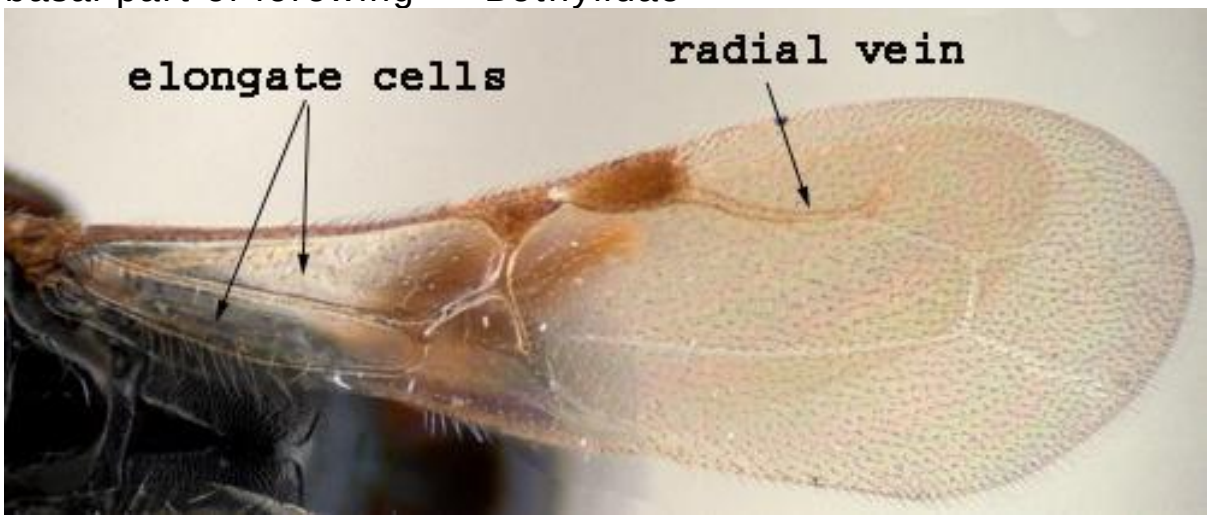
62 First tergite of metasoma much longer than the second. Pronotum without distinctive striate microsculpture

Diapriidae

63 Radial vein curved towards and reaching wing margin, making a very narrow closed radial cell between it and the stigma. Never with elongate cell below the costal cell in basal part of forewing Proctotrupidae



63 Radial vein not reaching wing margin so no enclosed radial cell. With at least one elongate cell below costal cell in basal part of forewing Bethylidae



64 Hindwing with one or fewer closed cells 65

64 Hindwing with greater than one closed cells 68

65 Propleuron elongate – producing a long neck Scolebythidae

65 Neck not elongate 66

66 Antennae high up on face, well above the mouthparts and on forward-projecting prominence (‘conehead’) Embolemidae

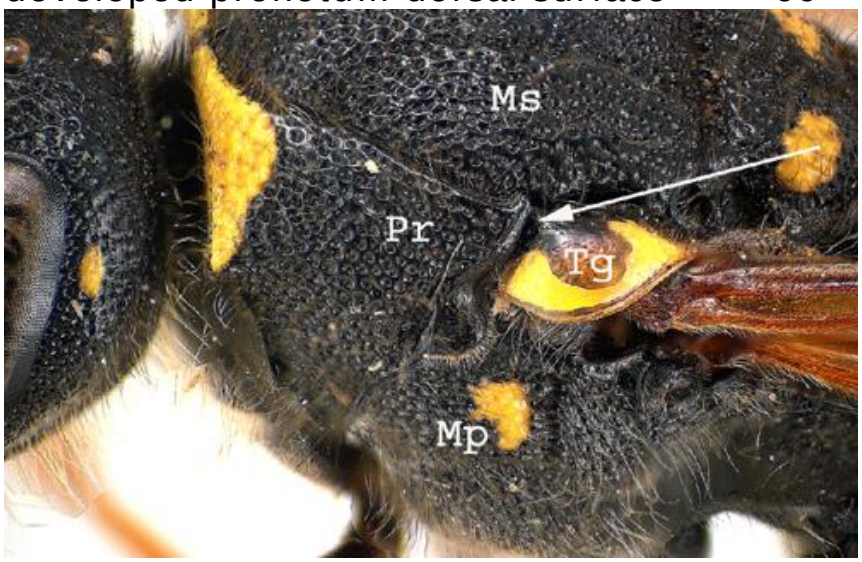
66 Antennae low on face, just above the mouthparts, not on a prominence

67

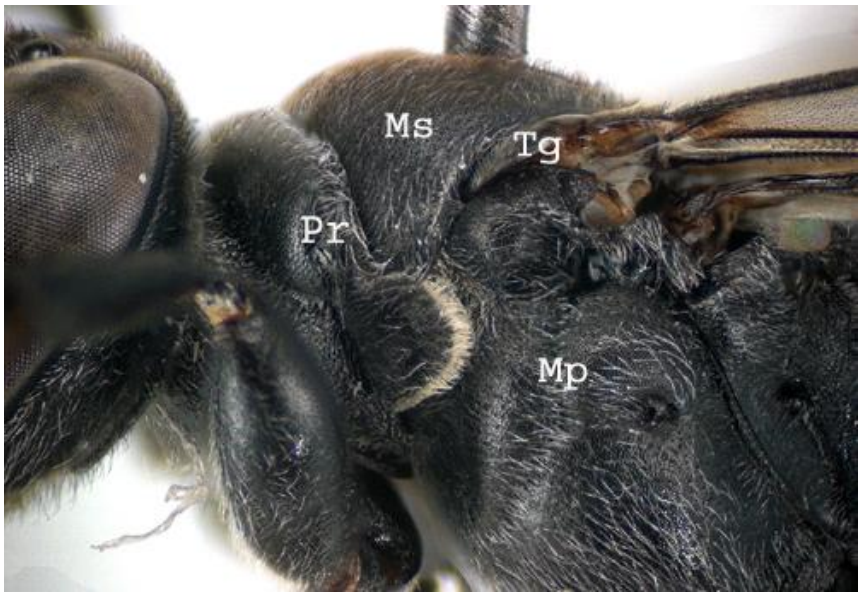
67 Antenna 13-segmented, rarely 12-segmented. Fore tarsi of female not modified Bethylidae

67 Antenna 10-segmented. Female with pincer-like fore tarsi Dryinidae

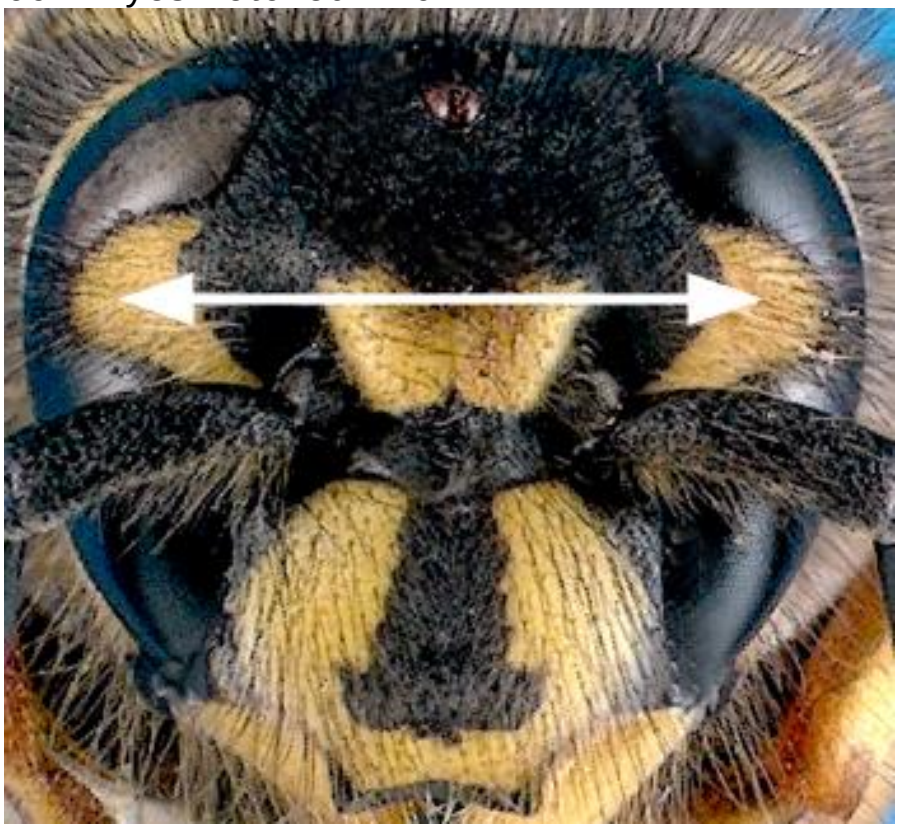
68 Posterolateral corners of prototum (Pr) reaching or exceeding tegula (Tg, sclerite covering base of forewing). Well developed pronotum dorsal surface 69



68 Posterolateral corners of prototum (Pr) not reaching tegula (Tg), so that the mesopleuron (Mp) and mesoscutum (Ms) touch. Often with plumose or branched hairs. Hind basitarus often thick/wide 73



69 Eyes notched 70



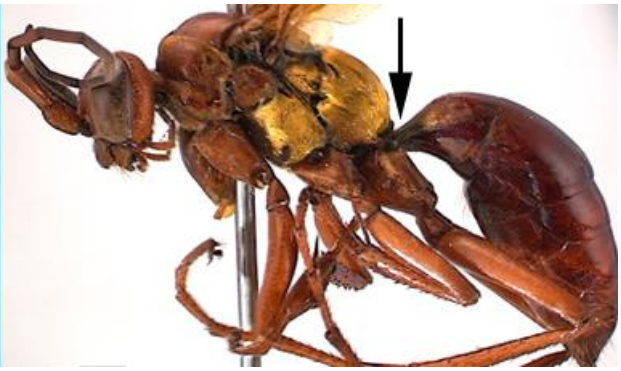
69 Eyes not notched 71

70 Wings with parallel ‘wrinkles’ (best seen at distal end of forewing, ‘leathery appearance’) Scoliidae

70 Wings not ‘wrinkled’ Vespidae

71 Body length less than 10 mm. Petiole(s) distinct with either 1 or 2 nodes Formicidae

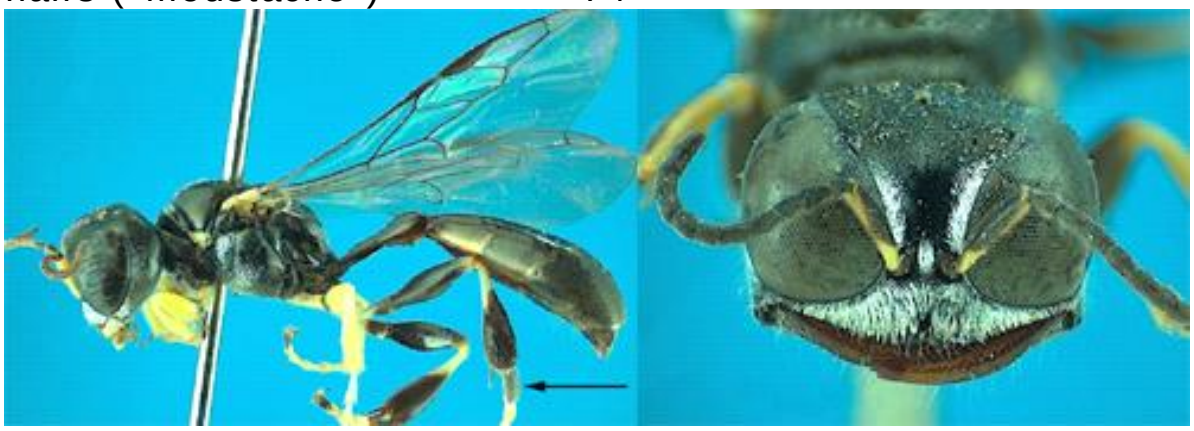
71 Body length greater than 10 mm. Petiole not distinct (without node) 72



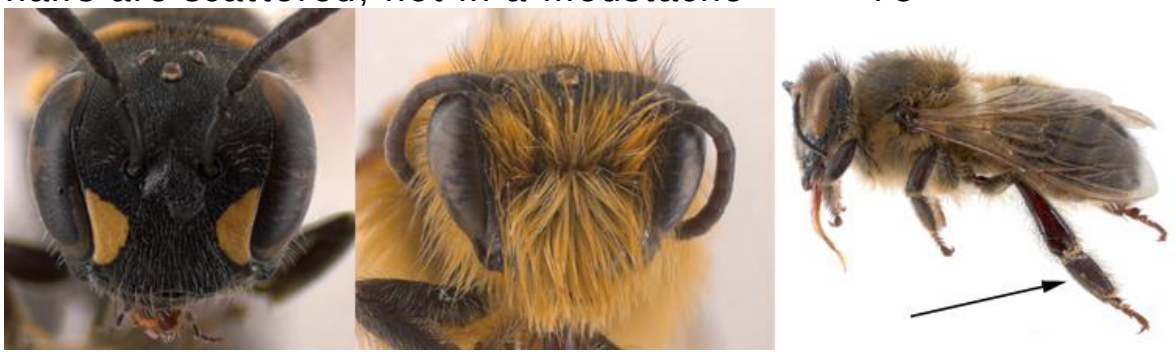
72 Mesopleuron with transverse groove separating mesopleuron into mesepisternum and mesepimeron. Tibial spur on hind leg with row of brush-like setae. Males without apical metasomal spines Pompilidae

72 No groove on mesopleuron. Tibial spur without row of brush-like setae. Males with two apical metasomal spines Mutillidae

73 Hind leg with first tarsomere about as wide as following tarsomeres. Body setae simple, unbranched. Relatively few hairs on body. Lower face often with short golden or silvery hairs (“moustache”) 74



73 Hind leg with first tarsomere wider than following tarsomeres (often considerably). At least some branched hairs (feather-like) on body, particularly parts of mesosoma. With relatively few hairs to very hairy. Lower face dull, if hairy then hairs are scattered, not in a moustache 75



74 Body size greater than 15mm, red band on apical-middle of metasoma Sphecidae

74 Body size less than 15mm (approximately 10mm). Almost always no band on metasoma (all black). If metasoma has orange-red then all of metasoma is coloured Crabronidae

75 Forewing with two submarginal cells 76

75 Forewing with three submarginal cells 77

76 Body with few hairs Colletidae

76 Body very hairy Megachildae

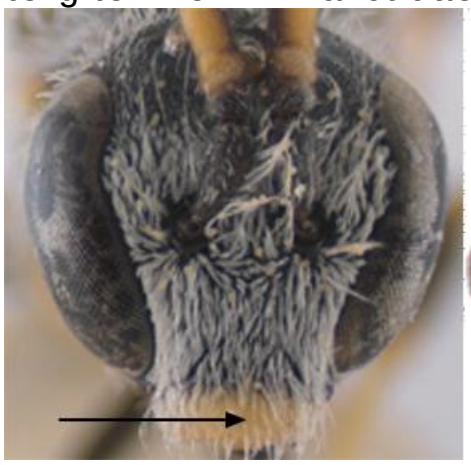
77 Large (10-20mm), robust, burly 78

77 Body size less than 10mm 79

78 Mesosoma densely covered in hairs so body surface cannot be easily seen Apidae

78 Mesosoma covered in hairs but body surface clearly seen Halictidae

79 Head and mesosoma with relatively short hairs. Clypeus of male (identified by 13 antennal segments) with pale spot (yellow to whitish). Metasoma of female (identified by 12 antennal segments) with narrow 'strip' (pseudopygidium) on tergite five Halictidae



79' Head and mesosoma very hairy. Clypeus of male black. Female metasoma with triangular pygidial plate Colletidae