

**KEY TO THE SUBFAMILIES OF NORTH & CENTRAL AMERICAN ICHNEUMONIDAE:
SECTION 3**

- 32(10). Apex of middle tibia with one spur.
.....33
- 32'. Apex of middle tibia with two spurs.
.....34
- 33(32). Supraclypeal area with large, flat or concave shield-shaped area bordered by carinae; dorsal margin of supraclypeal area with projection between antennal sockets (fig. 3.01).
.....**METOPIINAE** (*Metopius*)
- 33'. Supraclypeal area without shield-shaped area or dorsal projection.
.....**TRYPHONINAE** (*Exenterini*)
- 34(32). Clypeus not separated from supraclypeal area by groove, in lateral view forming almost continuous, strongly to weakly convex bulge (figs. 3.02 – 3.05).
.....35
- 34'. Clypeus separated from supraclypeal area by more or less distinct groove (groove may be weak medially but is present laterally) (figs. 3.06 – 3.08), **or**, if rarely groove absent, **then** supraclypeal area rather flat (fig. 3.09).
.....38
- 35(34). Eye with conspicuous setae (fig. 3.10). Areolet of fore wing absent. Female tarsal claws with large basal lobe (fig. 3.11).
.....**PIMPLINAE** (*Schizopyga*)
- 35'. Eye usually without setae. Areolet of fore wing present or absent. Female tarsal claws simple or pectinate.
.....36
- 36(35). Dorsal margin of supra-antennal area produced into triangular process extending between or over bases of antennal sockets (figs. 3.12 – 3.13).
.....**METOPIINAE** (most)
- 36'. Dorsal margin of supra-antennal area simple, not produced as triangular process above or between antennal sockets. Mandible small and slender, with one to two teeth (ventral tooth, when present, much smaller than dorsal tooth) (fig. 3.14). Small, usually delicate species, fore wing 1.7-4.7 mm long.
.....37
- 37(36). Scape subcylindrical, in dorsal view 1.8-2.4x as long as wide (figs. 3.14 - 3.15). Malar space usually with subocular groove (figs. 3.14 - 3.15). Metasomal segment 1 in dorsal view with lateral margins evenly expanded posteriorly or \pm parallel (fig. 3.16). Anterior transverse carina of propodeum absent (fig. 3.16).
.....**ORTHOCENTRINAE** (*Orthocentrus* genus-group)
37. Scape in dorsal view about 1.7x as long as wide (fig. 3.17). Malar space without subocular groove (fig. 3.17). Metasomal segment 1 in dorsal view with anterior section rather abruptly narrowed (fig. 3.18). Anterior transverse carina of propodeum present (fig. 3.18).
.....**METOPIINAE** (*Scolomus*)

- 38(34). Dorsal tooth of mandible wide, more or less distinctly divided by weak notch or impression, thus mandible apparently 3-toothed (fig. 3.19). T1 in dorsal view rectangular and not distinctly narrowed basally (fig. 3.20). Hind wing with vein 1/Cu about as long as vein cu-a (fig. 3.21a). Ovipositor not extending beyond metasomal apex. Rather small species (fore wing about 3.0-8.0 mm long) with transverse head.
.....**DIPLAZONTINAE**
- 38'. Dorsal tooth of mandible not subdivided, thus with one or two teeth, **or** if dorsal tooth rarely more or less divided **then** T1 in dorsal view narrowed basally (fig. 3.22) **and** hind wing with vein 1/Cu \leq 0.4x length vein cu-a (usually much less) (fig. 3.21b). Otherwise not as above.
.....39
- 39(38). Metasoma joining propodeum distinctly above hind coxal cavities (ventral margin of propodeal foramen **above** dorsal margins of coxal cavities) (figs. 3.23 – 3.24). Flagellum often slightly enlarged apically, circular in cross-section (fig. 3.25).
.....**LABENINAE** (Labenini)
- 39'. Metasoma joining propodeum between or just above hind coxal cavities (ventral margin of propodeal foramen **below or level with** dorsal margins of coxal cavities) (figs. 3.26 - 3.27). Flagellum not enlarged apically, sometimes tapering apically.
.....40
- 40(39). Female hypopygium in lateral view very large and triangular, folded along midline, elongated and projecting beyond metasomal apex (figs. 3.28 – 3.29). Ovipositor long (\geq metasomal length) and without dorsal subapical notch.
.....**ACAENITINAE** (females)
- 40'. Female hypopygium smaller and shorter, not conspicuously projecting beyond metasomal apex. Ovipositor length variable, sometimes with dorsal subapical notch.
.....41
- 41(40). T1-4 in dorsal view with impressed median triangular area that does not extend to tergite margins (fig. 3.30). Dorsolateral corner of propodeum projecting anteriorly and engaging with small hook on metanotum (figs. 3.31 – 3.32).
.....**LYCORININAE**
- 41'. T1-4 in dorsal view smooth or with various impressions, sometimes with median pair of deep oblique grooves (fig. 3.33), paired sublateral tuberculate swellings, or impressed median area that touches anterior tergite margin (fig. 3.34). Dorsolateral corner of propodeum without projection.
.....42
- 42(41). Labrum conspicuously exposed below apical margin of clypeus (fig. 3.35) **and** vein 2/Cu of hind wing absent (fig. 3.36) **and** mesopleuron with foveate groove (may be weak) extending from anterior margin to middle coxa (fig. 3.37). Mesoscutum with vertical carina on each side anterad notaulus (fig. 3.38).
.....**ORTHOPELMATINAE**
- 42'. Labrum not or only slightly exposed below apical margin of clypeus **or** vein 2/Cu of hind wing present **and** mesopleuron without foveate groove. Mesoscutum without vertical carinae.
.....43
- 43(42). Ovipositor long and needle-like, sheaths long and rigid (fig. 3.39). Gonoforceps of male produced as elongate process (fig. 3.40). Ocelli large, with lateral ocelli close to or contiguous with eyes (fig. 3.41).
.....**MESOCHORINAE** (*Cidaphus*)

- 43'. Ovipositor almost always stouter, usually with dorsal subapical notch; sheaths often curved. Gonoforceps of male not produced as elongate process, apex triangular or convex. Ocelli rarely enlarged, lateral ocelli usually separated from eyes by at least 0.5x their diameter or greater
.....44
- 44(43). Apex of fore tibia with dorsal tooth (figs. 3.42 – 3.44) **and** vein 2m-cu of fore wing without strong median angulation. Clypeus often wide and short, with apical margin rounded or blunt (as in figs. 3.45 – 3.47).
.....45
- 44'. Apex of fore tibia without dorsal tooth **unless** vein 2m-cu with strong median angulation (fig. 3.48). Clypeus various, often with apical margin thin and sharp.
.....47
- 45(44). Laterotergite of T3 not especially large and usually separated by crease (figs. 3.49 – 3.50) (if crease absent, then supra-antennal area with vertical carina next to eye – fig. 3.51). Ovipositor barely or not extending beyond metasomal apex, and with dorsal subapical notch (except species with needle-like ovipositor).
.....**CTENOPELMATINAE**
- 45'. Laterotergite of T3 large and not separated by crease (figs. 3.52 – 3.53) **and** supra-antennal area without vertical carina next to eye. Ovipositor 0.5-1.5x as long as metasoma and without dorsal subapical notch.
.....46
- 46(45). Fore wing 7.6-13.6 mm long. Laterotergite of T2 separated by crease (fig. 3.53). Stigma of fore wing elongate (fig. 3.54).
.....**SISYRISTOLINAE** (*Erythrodiolus*)
- 46'. Fore wing 2.6-2.8 mm long. Laterotergite of T2 not separated by crease (lateral margin of T2 curved over to laterotergite without interruption; fig. 3.52). Stigma of fore wing short and broadly triangular (fig. 3.55).
.....**PHRUDINAE** (*Peucobius*)
- 47(44). Head in lateral view with supraclypeal area strongly produced anteriorly at level of antennal sockets (figs. 3.56 – 3.57).
.....48
- 47'. Head in lateral view with supraclypeal area not produced at level of antennal sockets.
.....49
- 48(47). Metasomal segment 1 with sternite 0.5-0-0.6x as long as tergite (fig. 3.58). Apex of hind tibia with deeply impressed polished groove, surrounded by stout setae (fig. 3.59). Fore wing with cell 2R1 broadly triangular (fig. 3.60a).
.....**MICROLEPTINAE**
- 48'. Metasomal segment 1 with sternite about 0.3x as long as tergite (fig. 3.61). Apex of hind tibia unmodified and without stout setae. Fore wing with cell 2R1 more elongate (fig. 3.60b)
.....**ORTHOCENTRINAE** (*Hyperacmus*)

- 49(47). T3 (and sometimes T2) with laterotergite large and not separated by crease (as in fig. 3.52) **and** vein 2m-Cu of fore wing with 1 bulla (fig. 3.62). Ovipositor tapered to slender point and without dorsal subapical notch or apical teeth on ventral valve. Fore wing 1.4-3.4 mm long.
.....**PHRUDINAE** (*Astrenis*, *Earobia*, and *Phrudus*)
- 49'. T3 with laterotergite large to vestigial, separated by crease (as in figs. 3.49 – 3.50). Vein 2m-cu with 1 or 2 bullae (as in fig. 3.63). Ovipositor often with dorsal subapical notch or apical teeth. Fore wing length various.
.....50
- 50(49). Maxillary palpus long, reaching ventral posterior corner of mesopleuron (fig. 3.64). Metasomal apex of female as figured: hypopygium large, ovipositor sheaths expanded and apically sharply pointed (fig. 3.65). Metasomal segment 1 elongate, glymma absent, spiracle at midpoint, and sternite long and extending to or posterad spiracle (fig. 3.65).
.....**OXYTORINAE** (some)
- 50'. Maxillary palpus shorter, not reaching ventral posterior corner of mesopleuron. Metasomal apex of female not as above: hypopygium usually inconspicuous and ovipositor sheaths closely conforming to ovipositor shaft. Metasomal segment 1 not as above: glymma often present, spiracle usually near base, S1 shorter.
.....51
- 51(50). Pronotum mediodorsally with raised bifurcate flange or bilobate process (figs. 3.66 – 3.67). Propodeum with two broad mediolateral contacts with metanotum, interrupting propodeal furrow (fig. 3.68). Flagellum flattened and widened medially (fig. 3.69). Ovipositor short and inconspicuous.
.....female **EUCEROTINAE**
- 51'. Pronotum mediodorsally without flange or process. Propodeum not in contact with metanotum, propodeal furrow uninterrupted (fig. 3.70). Flagellum not flattened or widened medially. Ovipositor short to long, usually prominent.
[The lateral longitudinal carinae and median longitudinal carinae usually have small pointed projections into the propodeal furrow, and the metanotum often has corresponding projections opposite those of the lateral longitudinal carinae (as in fig. 3.70). These, however, do not occlude the propodeal furrow, unlike the situation in Eucerotinae.]
.....52
- 52(51). Females.
.....53 (**Section 4**)
- 52'. Males (*correct placement of males to subfamily for the following groups is difficult for the beginner; most males will key out to the correct subfamily but cross-checking with the key to females and use of subfamily diagnoses is recommended*).
.....69 (**Section 5**)

Figures

The American Entomological Institute photograph voucher code for an individual specimen follows the species name. For example, '0137-03' is the third photograph taken of voucher specimen 137. All specimens are in the American Entomological Institute collection unless otherwise noted. Line drawings are from *Memoirs of the American Entomological Institute* 11, 12, 13, and 17 unless otherwise noted.

- Fig. 3.01 - *Metopius pollinctorius* 0939-01
Fig. 3.02 - *Leurus caeruliventris* 0940-01
Fig. 3.03 - *Colpotrochia texana* 0941-01
Fig. 3.04 - *Orthocentrus* sp. 6 0009-02
Fig. 3.05 - *Schizopyga pulchra* 0942-01
Fig. 3.06 - *Pimpla maura* 0945-01
Fig. 3.07 - *Exenterus* sp. 1 0946-01
Fig. 3.08 - *Lissonota alveata* 0947-01
Fig. 3.09 - *Rhorus* sp. 0948-01
Fig. 3.10 - *Schizopyga podagrica* or *circulator* 0944-01
Fig. 3.11 - *Schizopyga pulchra* 0943-01
Fig. 3.12 - *Colpotrochia texana* 0949-01
Fig. 3.13 - *Exochus albifrons* 0950-01
Fig. 3.14 - *Plectiscus* sp. 0951-01
Fig. 3.15 - *Orthocentrus* sp. 6 0009-01
Fig. 3.16a - *Picrostigeus* sp.
Fig. 3.16b - *Plectiscus impurator*
Fig. 3.17 - *Apolophus talamanca* 0952-01
Fig. 3.18 - *Apolophus borealis*
Fig. 3.19 - *Diplazon tibiator occidentalis* 0953-01
Fig. 3.20a - *Syrphoctonus elegans*
Fig. 3.20b - *Diplazon laetatorius*
Fig. 3.21a - *Diplazon laetorius*
Fig. 3.21b - *Banchus pictus*
Fig. 3.22a - *Banchus pictus*
Fig. 3.22b - *Ceratogastra ornata*
Fig. 3.23 - *Labena marginata* 0954-01
Fig. 3.24 - *Labena marginata* 0955-01
Fig. 3.25 - *Apechoneura longicauda* 0956-01
Fig. 3.26 - *Pimpla aequalis* 0957-01
Fig. 3.27 - *Megarhyssa greenei* 0958-01
Fig. 3.28 - *Coleocentrus occidentalis* 0137-02
Fig. 3.29 - *Mesoclistus cushmani* 0143-02
Fig. 3.30 - *Lycorina glaucomata* 0959-01
Fig. 3.31 - *Lycorina continentalis* 0960-03
Fig. 3.32 - *Lycorina glaucomata* (schematic illustration of 'hook and catch')
Fig. 3.33 - *Glypta* sp. 0961-01
Fig. 3.34 - *Zatypota parva* 0962-01
Fig. 3.35 - *Orthopelma occidentale*
Fig. 3.36 - *Orthopelma* sp.
Fig. 3.37 - *Orthopelma occidentale* 0964-01
Fig. 3.38 - *Orthopelma occidentale* 0963-01
Fig. 3.39 - *Cidaphus australis* 0965-01
Fig. 3.40 - *Cidaphus australis* 0966-01
Fig. 3.41 - *Cidaphus australis* 0965-02
Fig. 3.42 - *Trematopygodes* sp. 1 0967-01
Fig. 3.43 - *Ctenopelma ruficeps* 0968-01
Fig. 3.44 - *Lathrolestes asperatus* 0969-01
Fig. 3.45 - *Barytarbes* sp. 0970-01
Fig. 3.46 - *Absyrtus* sp. 0971-01
Fig. 3.47 - *Perilissus bicolor* 0972-01
Fig. 3.48 - *Tryphon rutilator*
Fig. 3.49 - *Ctenopelma* sp. 0973-01
Fig. 3.50 - *Euryproctus* sp. 0974-01
Fig. 3.51 - *Opheltes glaucopterus* 0975-01
Fig. 3.52 - *Peucobius piceus* 0976-01
Fig. 3.53 - *Erythrodiolus griffithsorum* 0977-02
Fig. 3.54 - *Erythrodiolus calamitosus*
Fig. 3.55 - *Peucobius fulvus*
Fig. 3.56 - *Microleptes rallus* 0980-01
Fig. 3.57 - *Hyperacmus crassicornis* 0981-01
Fig. 3.58 - *Microleptes rallus* 0980-02
Fig. 3.59 - *Microleptes* sp. 0982-02
Fig. 3.60a - *Microleptes* sp.
Fig. 3.60b - *Hyperacmus crassicornis*
Fig. 3.61 - *Hyperacmus crassicornis* 0981-02
Fig. 3.62 - *Phrudus monilicornis*
Fig. 3.63 - *Cylloceria melancholica*
Fig. 3.64 - *Oxytorus alfredi* 0978-01
Fig. 3.65 - *Oxytorus knappae* 0979-01
Fig. 3.66 - *Euceros* sp. 0984-01 (dorsal view of mesosoma)
Fig. 3.67 - *Euceros* sp. 0984-02 (lateral view of mesosoma)
Fig. 3.68 - *Euceros* sp. 0984-03
Fig. 3.69 - *Euceros* sp. 0983-01
Fig. 3.70 - *Xorides stigmapterus*. 1024-02

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