

# A KEY TO THE NYMPHS OF THE FAMILIES OF HEMIPTERA (HETEROPTERA) OF AMERICA NORTH OF MEXICO

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## ABSTRACT

A key is presented for the nymphs of the 41 families of Hemiptera (Heteroptera) found in America North of Mexico. The most important structures used for separation are the trichobothria and the dorsal abdominal scent glands.

There are no comprehensive keys for family identification of immature Heteroptera of North America. Butler (1923) and Leston and Scudder (1956) have published on the British Heteroptera, and Jordan (1951) has keyed the families in the German fauna. The Chu (1949) and Lawson (1959) papers on North American nymphs are of limited value since they key selected families only.

In the following key, the breakdown of the suborder into Hydrocorisae, Amphibicorisae, and Geocorisae is solely for convenience in identification. Although the 3 series are still in general use, with varying familial constitution, the Geocorisae are considered by most workers to be an unnatural group. The diversity of the families usually contained within this series renders it possible to split the Geocorisae into as many as 7 equivalent groups (Cobben 1968). No 2 workers seem to agree as to what these groups should be or what families are included in each.

Our choice of family names is very much that of China and Miller (1959), except that we have elevated a few of their subfamilies (e.g. Scutelleridae, Rhopalidae, Alydidae). Since the phymatids are easily separable from the reduviids, they are left as a family even though Carayon, Usinger, and Wygodzinsky (1958) assigned them to subfamily rank.

The most important structures used for the separation of the families are the trichobothria and the dorsal abdominal scent gland openings. The trichobothria (or hair-bearing spots) may occur either on the head (all Amphibicorisae) or in various patterns on dull spots on the underside of the abdomen (some Geocorisae). It has been pointed out by China and Miller (1959) that the presence of regularly arranged trichobothria is easy to observe but their absence is much less easy to ascertain. The location, number, and pattern of the dorsal abdominal scent gland openings are easy to see and in many cases completely diagnostic.

## KEY TO THE FAMILIES

1. Antennae short, concealed in grooves on underside of head (sometimes visible from above) † true aquatics and shorebugs. Series Hydrocorisae ..... 3
- 1'. Antennae long, conspicuous, not concealed in grooves on head ..... 2

2(1'). Head with three pairs of trichobothria on vertex <sup>1</sup> ; venter clothed with dense silvery pubescence; waterstriders and some shorebugs. Series Amphibicorisae .....	10
2'. Head without trichobothria; venter without dense silvery pubescence; terrestrial bugs. Series Geocorisae .....	17
3(1). Dorsal abdominal scent glands present .....	4
3'. Dorsal abdominal scent glands absent .....	6
4(3). Scent gland openings present between segments III-IV, IV-V and V-VI .....	CORIXIDAE
4'. Scent gland openings present between segments III-IV only .....	5
5(4'). Scent gland opening single; body strongly arched dorsally (Fig. 11) .....	PLEIDAE
5'. Scent gland opening double; body flattened (Fig. 12) .....	NAUCORIDAE
6(3'). Large ciliated metasternal plates present (Fig. 13) .....	BELOSTOMATIDAE
6'. Metasternal plates absent .....	7
7(6'). A pair of long respiratory filaments present on apex of abdomen, body usually long and quite slender .....	NEPIDAE
7'. Respiratory filaments absent, body always elongate-oval or oval and flattened .....	8
8(7'). Body strongly arched dorsally, elongate-oval .....	NOTONECTIDAE
8'. Body not strongly arched dorsally, oval and flattened .....	9
9(8'). Legs slender, fore femora not enlarged; front of head with a crown of heavy upright spines .....	OCHTERIDAE
9'. Legs with fore femora enlarged; head without spines ..	GELASTOCORIDAE
10(2). Dorsal abdominal scent gland(s) present .....	11
10'. Dorsal abdominal scent glands absent .....	15
11(10). A pair of scent glands located on suture between segments III and IV .....	12
11'. Only a single gland, located either on segment IV or on suture between segments IV and V .....	13
12(11). Rostrum and fore femora with many spines .....	LEPTOPODIDAE
12'. Rostrum and fore femora without spines .....	SALDIDAE
13(11'). Antennal segment I short, equal to or shorter than interocular width; scent gland on segment IV .....	HEBRIDAE
13'. Antennal segment I longer than interocular width; scent gland on segment IV .....	14
14(13'). Eyes divergent posteriorly, legs spiny .....	MESOVELIIDAE
14'. Eyes parallel; legs without spines .....	MACROVELIIDAE
15(10'). Head elongate, longer than thorax; claws apical .....	HYDROMETRIDAE
15'. Head not longer than thorax; claws subapical .....	16
16(15'). Head with a median longitudinal suture or groove .....	VELIIDAE
16'. Head without a median longitudinal suture or groove .....	GERRIDAE
17(2'). Trichobothria present on abdomen ventrally .....	18
17'. Trichobothria absent from abdomen .....	28
18(17). Mesothoracic wing pads widely separated, scutellar lobe prominent, free portion extending posteriorly at least one-third the length of the free portion of wing pad .....	19

<sup>1</sup>Many rhyparochromine lygaeids have 3 pairs of trichobothria on the head but the venter is not clothed with dense silvery pubescence.

18.' Mesothoracic wing pads close together; scutellar lobe without a free portion or with free portion extending posteriorly for at most one-sixth the length of free portion of wing pad .....	21
19(18). Anterior dorsal abdominal scent gland with a pore at each end; tibiae without strong spines .....	20
19.' Anterior scent gland without pores; tibiae with strong spines. (Fig. 1) .....	CYDNIDAE
20(19). The 3 pairs of dorsal abdominal scent gland pores lying in 2 parallel longitudinal rows (Fig. 2) .....	PENTATOMIDAE
20.' Dorsal abdominal scent gland pores not lying in parallel rows; the anterior pair more widely separated than the others (Fig. 3) .....	SCUTELLERIDAE
21(18'). Antennae inserted above a line drawn between the center of eye and tip of tylus as seen from the side; 2 scent glands present .....	22
21.' Antennae inserted on or below a line drawn between the center of eye and tip of tylus as seen from the side; 2 or 3 scent glands present ....	25
22(21). First antennal segment filiform, clavate apically, longer than head and pronotum taken together; trichobothria present on abdominal segment II only .....	(=Neididae) BERYTIDAE
22.' First antennal segment not filiform nor clavate apically, shorter than head and thorax taken together; trichobothria present on segments II through VI .....	23
23(22'). Abdominal scent glands lying close to one another so that tergum V is constricted at the midline (Fig. 4) .....	(=Corizidae) RHOPALIDAE
23.' Abdominal scent glands not lying close to one another, both slightly displaced posteriorly, tergum V not constricted at midline (Fig. 5) ..	24
24(23'). Head including eyes, more than two-thirds and most often nearly equal to width of prothorax; body without spines or at most with a very few; abdomen soft .....	(=Coriscidae) ALYDIDAE
24.' Head including eyes no more than two-thirds the width of prothorax; body often covered with spines; abdomen not soft .....	COREIDAE
25(21'). Jugae (from above) projecting well in front of tylus; abdominal segments V and VI with single sublateral trichobothria on each side .....	PIESMATIDAE
25.' Jugae not projecting in front of tylus; more than 1 trichobothrium on each side of abdomen; these placed laterally on some segments, or present medially on segments II and III .....	26
26(25'). First antennal segment at least one-third longer than first rostral segment; all spiracles ventral; abdomen with 3 dorsal scent glands (Fig. 6, 7) .....	27
26.' Without the above combination of characters; first antennal segment equal to or shorter than first rostral segment, or at least 1 pair of spiracles dorsal, or only 2 dorsal abdominal scent glands .....	LYGAEIDAE
27(26). Trichobothrial hairs of fifth abdominal segment arranged in a more or less linear sequence on 3 separate dull spots (Fig. 8) .....	LARGIDAE
27.' Trichobothrial hairs of fifth abdominal segment grouped together at antero-lateral corner on a single dull spot (Fig. 9) .....	PYRRHOCORIDAE
28(17'). Rostrum 3-segmented .....	29
28.' Rostrum 4-segmented .....	36

29(28). Prothorax with a cross-striated stridulatory groove between the fore coxae .....	30
29.' Prothorax without a stridulatory groove between fore coxae .....	31
30(29). Fore femora enlarged, triangular, short; head with a groove above eye for reception of antennae .....	PHYMATIDAE
30.' Fore femora sometimes enlarged but never triangular; head without a groove above eye for reception of antennae .....	REDUVIIDAE
31(29'). Coiled stylets visible in tylus from beneath, or if not visible, then tylus greatly swollen; abdomen with many pigmented sclerites .....	ARADIDAE
31.' Stylets not coiled, tylus not greatly swollen; abdomen without pigmented sclerites .....	32
32(31'). Wing pads absent .....	CIMICIDAE
32.' Wing pads present .....	33
33(32'). Labrum greatly enlarged, much wider than long, not fitting over labial groove (parasitic on bats, rare) .....	POLYCTENIDAE
33.' Labrum not greatly enlarged, elongate, not wider than rostrum, and fitting over labial groove (not parasitic) .....	34
34(33'). Antennal segments III and IV filiform, more than twice the length of I and II taken together .....	35
34.' Antennal segments III and IV often filiform but always less than twice the length of I and II taken together .....	40
35(34). Eyes projected outward, not overlapping front angles of pronotum; head and tibiae with strong bristles .....	DIPSOCORIDAE
35.' Eyes projected both outward and backward, overlapping front angles of pronotum; head and tibiae without strong bristles ..	SCHIZOPTERIDAE
36(28'). First rostral segment laid open, very wide, stylets plainly visible .....	THAUMASTOCORIDAE
36.' First rostral segment sometimes thicker than following segments but never laid open so that the stylets are plainly visible .....	37
37(36'). With 3 dorsal abdominal scent glands .....	NABIDAE
37.' With less than 3 dorsal scent glands .....	38
38(37'). With 2 dorsal abdominal scent glands; body often covered with spines (Fig. 10) .....	TINGIDAE
38.' With 1 dorsal abdominal scent gland; body not covered with spines .....	39
39(38'). Scent gland on abdominal segment III; head 2-lobed .....	ENICOCEPHALIDAE
39.' Scent gland on suture between segments III and IV; head not 2-lobed .....	MIRIDAE
40(34'). Tarsi 2-segmented .....	ANTHOCORIDAE
40.' Tarsi 1-segmented .....	MICROPHYSIDAE

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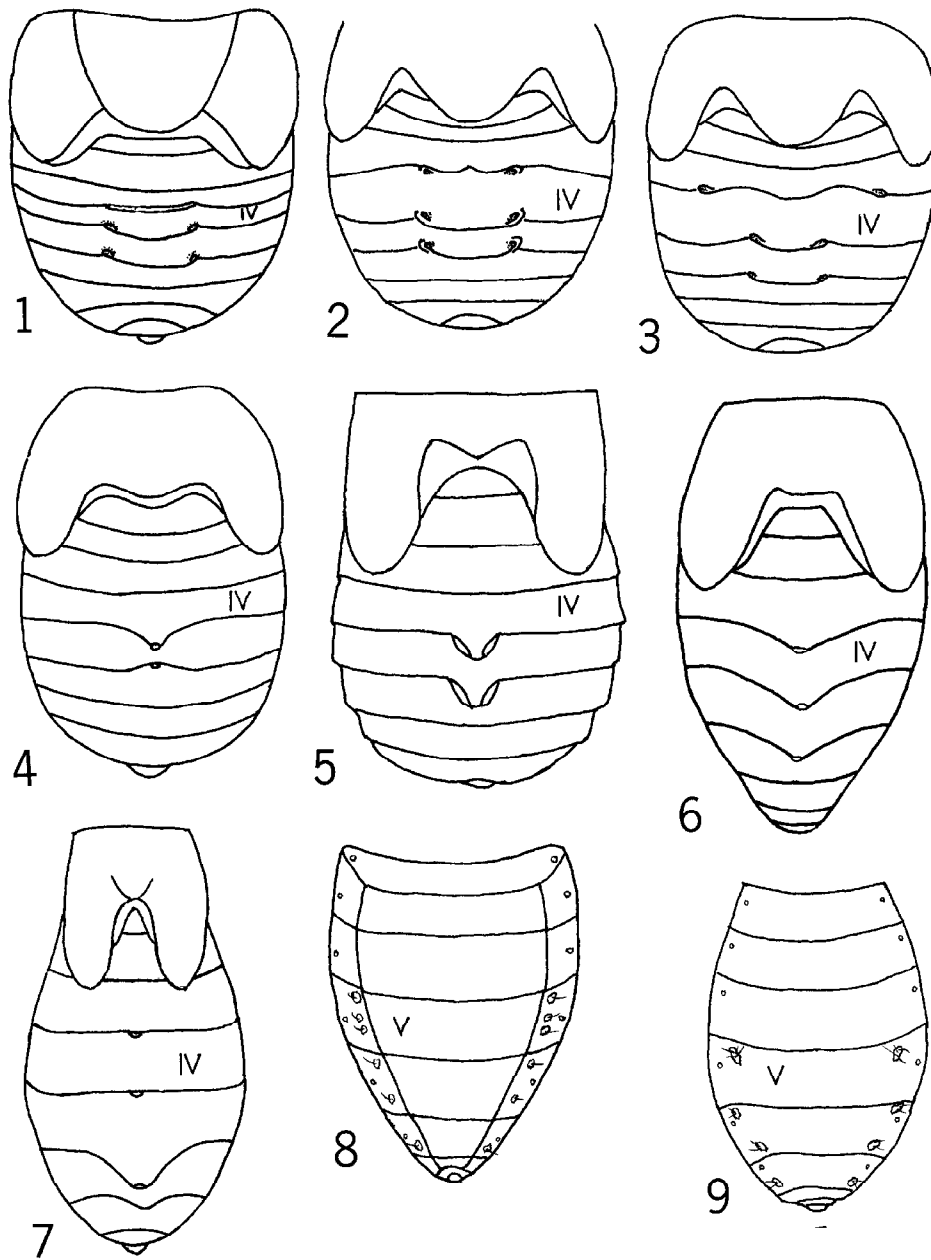


FIG. 1-9: 1) Cydnidae, *Pangaeus congruus* (Uhler), abdomen, dorsal. 2) Pentatomidae, abdomen, dorsal. 3) Scutelleridae, *Camirus* sp., abdomen, dorsal. 4) Rhopalidae, *Niesthrea louisianica* Sailer, abdomen, dorsal. 5) Coreidae, *Acanthocephala femorata* (F.), abdomen, dorsal. 6) Largidae, *Largus* sp., abdomen, dorsal. 7) Pyrrhocoridae, *Dysdercus* sp., abdomen, dorsal. 8) Largidae, *Largus* sp., abdomen, ventral. 9) Pyrrhocoridae, *Dysdercus* sp., abdomen, ventral.

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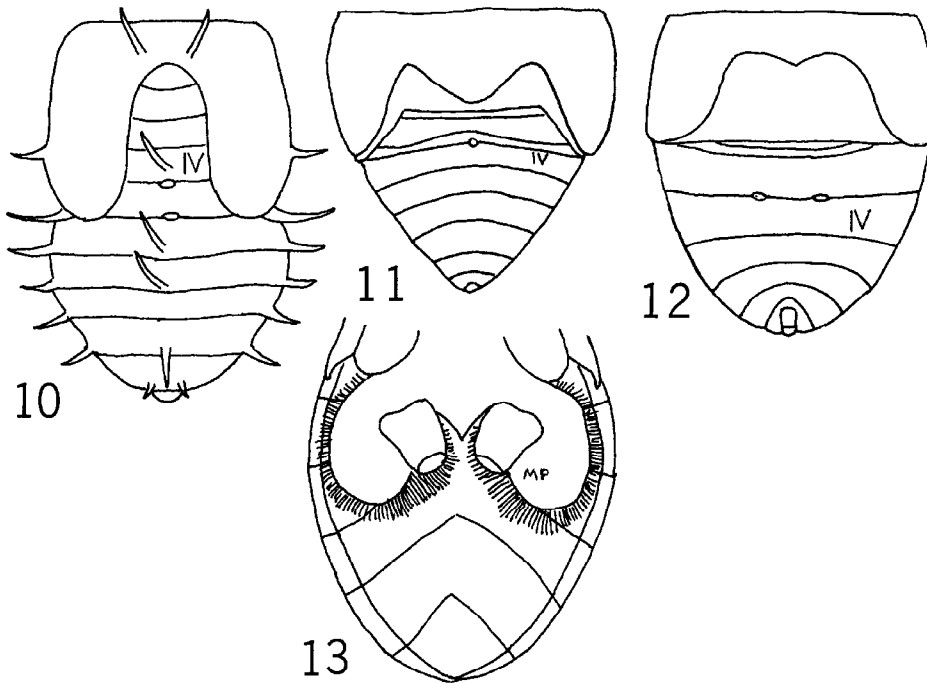


Fig. 10-13: 10) Tingidae, *Stephanitis pyrioides* (Scott), abdomen, dorsal. 11) Pleidae, *Plea* sp., abdomen, dorsal. 12) Naucoridae, *Pelocoris femoratus* (P. de B.), abdomen, dorsal. 13) Belostomatidae, *Lethocerus* sp., abdomen, ventral.

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