**FROM:** Ubick, D., P. Paquin, P.E. Cushing, and V. Roth (eds). 2005. *Spiders of North America: an identification manual*. American Arachnological Society. 377 pages.

**Chapter 67**

# ULOBORIDAE

7 genera, 16 species

Brent D. Opell

## Common name —

Hackled band orb-weavers.

## Similar families —

Uloborids might be confused with small members of the family Araneidae (p. 68), but are easily identified by the presence of a cribellum and calamistrum.

## Diagnosis —

Small spiders that lack cheliceral poison glands and their fang openings. Femurs II, III, and IV bear a row of long trichobothria. Females have an oval cribellum (undivided) and a calamistrum formed of a single row of setae. A row of short, ventral macrosetae extends from the distal one-half to one-third of metatarsus IV to the end of tarsus IV.

## Characters —

**body size:** 4 – 8 mm.

**carapace:** pear or oval shaped in orb-weaving species, broad in *Hyptiotes* species, and rectangular in *Miagrammopes* species. Thoracic groove shallow, transverse, and situated in center or posterior third of carapace.

**sternum:** oval, widest between first and second coxae, becoming progressively narrower between successive coxae. Sternum entire in all genera but *Miagrammopes*, where it is divided into three regions by weakly sclerotized transverse bands (Opell 1979, 1984b).

**eyes:** orb-weaving genera have two rows of four eyes each. The ALE's of *Hyptiotes* species are very small and the posterior row is strongly recurved and features prominent PLE tubercles. *Miagrammopes* species lack an anterior eye row and have prominent PLE tubercles (Opell 1988, Opell & Cushing 1986, Opell & Ware 1987).

**chelicerae:** of average size with a few small teeth along the prolateral and retrolateral margins of the fang furrow. All species lack poison glands and their associated cheliceral fang openings.

**mouthparts:** length of endites about 1.5 times their width except in *Miagrammopes* species, where length is twice width. Labium free from sternum and not rebordered. Labium length and width similar except in *Miagrammopes* species, where length is at least twice width.

**legs:** first two pairs of legs directed anteriorly, last two pairs directed posteriorly. The legs of *Hyptiotes* species are short and robust; the legs of *Miagrammopes* species are elongated, particularly leg I. Femurs II, III, and IV bear a row of long trichobothria (Opell 1979). The calamistrum of females is formed of a single setal row (Opell 2001a). Like mature males of most other cribellate spiders, male uloborids lack a calamistrum. A row of short, ventral macrosetae extends from the distal one-half to one-third of metatarsus IV to the end of tarsus IV (Opell 1979).

**abdomen:** oval with greatest width and height reached at the anterior one-third, where there is often a prominent low tubercle or pair of tubercles. The abdomen of *Hyptiotes* species is nearly spherical, and that of *Miagrammopes* species nearly cylindrical (Opell 1989a).

**spinnerets:** conical, short, and tightly clustered; cribellum not divided.

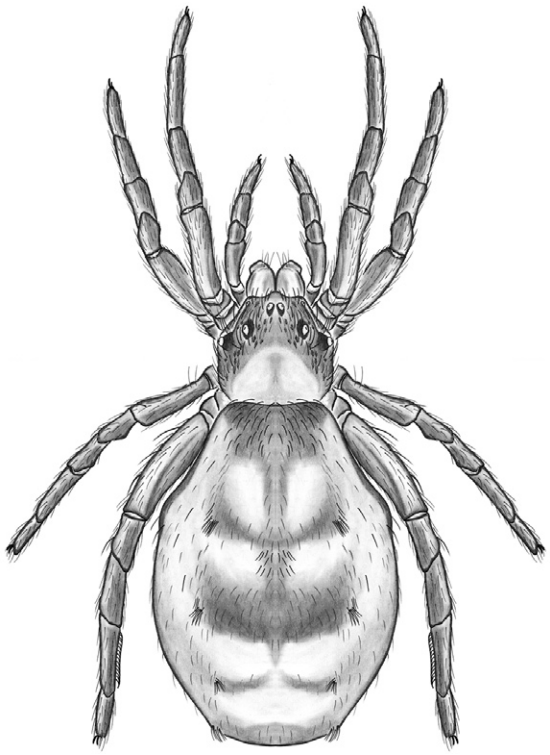


**Fig. 67.1** *Hyptiotes cavatus* (Hentz 1847)

**respiratory system:** a pair of stout tracheal trunks extend anteriorly from a common atrium that opens just anterior to the cribellum. Several smaller tracheae extend posteriorly from the atrium. In *Philoponella* species the two tracheal trunks divide into small branches that are confined to the abdomen. In members of the other genera the two tracheal trunks exhibit one of two patterns: 1. They extend into the cephaothorax before dividing into tracheoles that then enter the legs or 2. They first divide into smaller tracheoles before passing into the cephalothorax (Opell 1979, 1987, 1990, 1998).

**genitalia:** entelegyne; ***female*** of the North American representatives of this family possess an epigynum that features either a central, sclerotized crypt into which the sperm ducts open (*Philoponella*), a central raised area or hood with ducts opening on its posterior margin (*Hyptiotes*, *Miagrammopes*, and *Siratoba*), or a pair of median (*Zosis*) or posterior (*Uloborus* and *Octonoba*) lobes with duct openings on their posterior margins. The ***male*** palp of most North American genera features a large, concave cymbium and a large basal hematodocha, crowned by a disk-shaped tegulum. A dome-shaped median apophysis originates in the center of the tegulum and bears a claw-shaped or enrolled median apophysis spur. The embolus arises from beneath the median apophysis and extends

upward toward the median apophysis spur. In *Uloborus* and *Philoponella,* the embolus is guided by a conductor that originates from the base of the median apophysis. In *Zosis* and *Octonoba*, the conductor is absent and a tegular spur guides the embolus. The palpi of *Siratoba*, *Hyptiotes*, and *Miagrammopes* also feature a median apophysis with one or two apical spurs, a conductor, and, in the case of *Siratoba*, a radix (Opell 1979). However, in these three genera, these sclerites are often larger and more intertwined, making them more difficult to distinguish and identify.

## Distribution —

*Uloborus* and *Hyptiotes* are represented by several species throughout the United States and Canada, whereas *Miagrammopes mexicanus* O. Pickard-Cambridge 1893b is found only in southern Texas. *Siratoba referens* (Muma & Gertsch 1964) and *Philoponella* species are restricted to the Southwestern United States and Texas. *Zosis geniculata* (Olivier 1789) is found only in the Gulf Coast states. *Octonoba sinensis* (Simon 1880b) is an introduced Asian species with a wide, but patchy distribution east of the Rocky Mountains, where it appears to be confined to greenhouses and barns (Muma & Gertsch 1964, Opell 1979, 1983).

## Natural history —

The seven uloborid genera represented in North America construct capture webs of three types: orb webs (*Octonoba, Philoponella, Siratoba, Uloborus*, and *Zosis*), triangle webs (*Hyptiotes*) and simple webs that are formed of only a few capture lines and lack a stereotypic architecture (*Miagrammopes*) (Lubin *et al*. 1978, Opell 1979, 1982, 1994a, 1996). Each of these web forms contains cribellar capture threads (Opell 1994a, 1994b, 1999). Triangle webs are oriented vertically. In contrast to Araneoid orb-webs (except most Tetragnathidae), uloborid orbwebs are typically oriented horizontally. The web's hub remains intact and a linear or spiral stabilimentum is often present (Eberhard 1971, 1972, 1973). *Hyptiotes* females deposit their egg sacs on small twigs, *Octonoba* females place their egg sacs at the edge of the web, and *Zosis* females incorporate their egg sacs in the orb (Opell 1984c). *Uloborus* females attach a growing chain of egg sacs along a radius at the edge of the orb (Cushing 1989, Cushing & Opell 1990a, 1990b). *Philoponella* and *Miagrammopes* females hold their egg sacs with one first leg until spiderlings emerge (Opell 1989b, 2001b, Smith 1997).

## Taxonomic history and notes —

Walckenaer (1841) described the genus *Zosis*. O. Pickard-Cambridge (1870a) described the genus *Miagrammopes*, suggesting that it was related to *Zosis* and *Hyptiotes* and that these three genera were allied with the family Epeiridae. However, Thorell (1869) was the first to formally recognize this by establishing the Uloborinae as a subfamily of Epeiridae. O. Pickard-Cambridge (1871c) subsequently established the family Uloborides for the genera *Hyptiotes* and *Uloborus* and the family Miagrammopides for the genus *Miagrammopes*. Simon (1874a) combined these two families to form the family Uloboridae. He later expanded the family to include members of the present day families Deinopidae and Dictynidae as well as the uloborid genus *Sybota* Simon 1892a, a name that he introduced to replace a preoccupied genus name introduced by Nicolet (1849). O. Pickard-Cambridge (1896a) added the genus *Ariston* to the Uloboridae. The family Uloboridae assumed its current identity when Pocock (1900a) removed the Dictynidae and Comstock (1912) removed the Deinopidae. Mello-Leitão (1917b) described the genus *Philoponella*. Strand (1934) introduced the genus name *Orinomana* to replace a preoccupied name introduced by Chamberlin (1916). Muma & Gertsch (1964) revised the uloborid species of the United States and Canada. Lehtinen (1967) examined the family's diversity and described the genera *Daramuliana, Polenecia, Purumitra*, and *Tangaroa*. Opell (1979) reexamined the family and described the genera *Octonoba*, *Ponella, Siratoba*, and *Waitkera*. The genera *Conifaber* and *Lubinella* were subsequently described (Lubin *et al*. 1982, Opell 1984a).

## Genera —

*Hyptiotes* Walckenaer 1837, *Miagrammopes* O. Pickard-Cambridge 1870a, *Octonoba* Opell 1979, *Philoponella* Mello-Leitão 1917b, *Siratoba* Opell 1979, *Uloborus* Latreille 1806, *Zosis* Walckenaer 1841.

## Key to genera — North America North of Mexico

**1** Eight eyes of similar size distributed in two rows, PLE not on prominent tubercles, carapace pear-shaped or oval (Figs. 67.2-67.8), constructs orb-webs that are usually horizontally oriented ..... **2**

— PLE on tubercles that extend to carapace margin, ALE very small or entire anterior eye row absent, carapace rectangular or with an abruptly narrowed cephalic region (Figs. 67.9-67.10), constructs triangular webs or irregular webs of only a few threads ..... **11**

**2(1)** Female ..... **3**

— Male ..... **7**

**3(2)** Epigynum with a large, heavily sclerotized central crypt (Fig. 67.11), posterior eye row nearly straight (Fig. 67.2), spider hangs from hub of web with first legs flexed so that metatarsus and tarsus lie above sternum ..... ***Philoponella***
**Div.** 3 species — **Dist.** TX and southwestern USA — **Refs.** Muma & Gertsch 1964, Opell 1979, Opell & Eberhard 1983

— Epigynum with a single median hood (Fig. 67.12) or pair of posterior or median extensions that are weakly or strongly sclerotized (Figs. 67.13-67.15), posterior eye row recurved so that a line across the anterior margins of the lateral eyes passes along or posterior to the posterior margins of the median eyes ..... **4**

**4(3)** Epigynum with a single broad, rounded median lobe (Fig. 67.12), carapace as in Fig. 67.4, spider hangs from hub of web with first legs extended and held together ..... ***Siratoba***
**Div.** 1 species: *Siratoba referens* (Muma & Gertsch 1964) — **Dist**. southwestern U.S. — **Refs.** Muma & Gertsch 1964, Opell 1979, Opell & Eberhard 1983

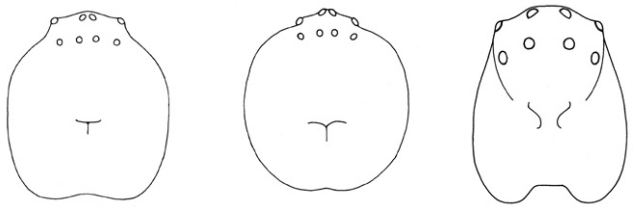
— Epigynum with a pair of posterior or median lobes (Figs. 67.13-67.15) ..... **5**

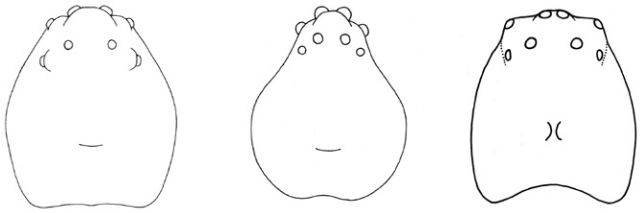
**5(4)** Prominent setal brush on first tibia (Fig. 67.17), epigynum with two weakly sclerotized posterior lobes (Fig. 67.13), carapace as in Fig. 67.5, spider hangs from hub of web with first legs extended, held together, and flexed at tibia-metatarsus joint ..... ***Uloborus***
**Div.** 5 species — **Dist.** throughout USA and southern CAN — **Refs.** Muma & Gertsch 1964, Opell 1979, Opell & Eberhard 1983

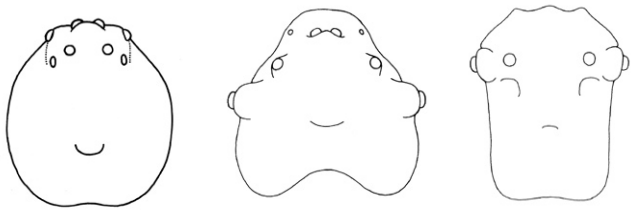
— First tibia without conspicuous setal brush, epigynal lobes with distal sclerotization ..... **6**

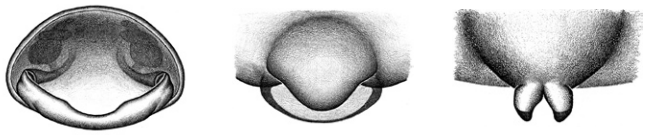
**6(5)** Epigynum with broad median lobes (Fig. 67.14), spider hangs from hub of web with first legs extended and widely spread ..... ***Zosis***
**Div.** 1 species: *Zosis geniculata* (Olivier 1789) — **Dist.** Gulf Coast states — **Refs.** Muma & Gertsch 1964, Opell 1979, Opell & Eberhard 1983

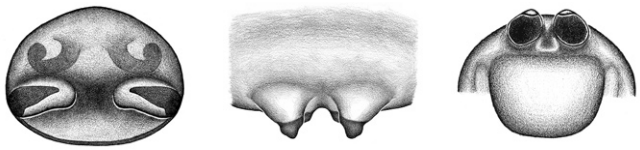
— Epigynum with narrow posterior lobes whose tips are well sclerotized (Fig. 67.15), a round crypt is found on the posterior surface of each lobe (Fig. 67.16), carapace as in Fig. 67.7, spider hangs from hub of web with first legs extended and slightly spread ..... ***Octonoba***
**Div.** 1 species: *Octonoba sinensis* (Simon 1880b) — **Dist.** introduced Asian species, east of the Rocky Mountains in greenhouses and barns — **Refs.** Muma & Gertsch 1964, Opell 1979, Opell & Eberhard 1983


67.2 67.3 67.4


67.5 67.6 67.7


67.8 67.9 67.10


67.11 67.12 67.13


67.14 67.15 67.16


67.17

**7(2)** Carapace elongate or pear shaped (Fig. 67.6) ..... **8**

— Carapace nearly round (Figs. 67.3, 67.8) ..... **9**

**8(7)** Simple palpus with a dome shaped median apophysis, a claw-shaped median apophysis spur, and a narrow conductor (Fig. 67.18) ..... ***Uloborus***
**Div.** 5 species **— Dist.** throughout USA and southern CAN **— Refs.** Muma & Gertsch 1964, Opell 1979

— Complex palpus with three large sclerites: a coiled radix that surrounds the embolus, a V shaped conductor, and a grooved median apophysis, Fig. 67.19), southwestern U.S. ..... ***Siratoba***
**Div.** 1 species: *Siratoba referens* (Muma & Gertsch 1964) **— Dist.** southwestern USA **— Refs.** Muma & Gertsch 1964, Opell 1979

**9(7)** Palpus with a broad, grooved median apophysis spur, no conductor present, and a very small tegular spur near the tip of the emboolus (Fig. 67.21), carapace as in Fig. 67.8, introduced Asian species, east of the Rocky Mountains in greenhouses and barns ..... ***Octonoba***
**Div.** 1 species: *Octonoba sinensis* (Simon 1880b) **— Dist.** introduced Asian species, east of the Rocky Mountains in greenhouses and barns **— Refs.** Muma & Gertsch 1964, Opell 1979

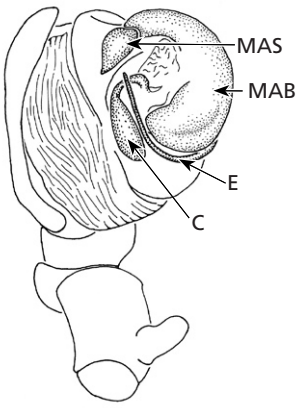
— Palpus with a claw-shaped median apophysis and some form of well-developed embolus guide or conductor (Figs. 67.20, 67.22) ..... **10**

**10(9)** Palpus with a large, somewhat transparent tegular spur that enfolds and supports the embolus (Fig. 67.20), lacks a conductor that extends from the base of the median apophysis, Gulf Coast States ..... ***Zosis***
**Div.** 1 species: *Zosis geniculata* (Olivier 1789) **— Dist.** gulf coast states **— Refs.** Muma & Gertsch 1964, Opell 1979

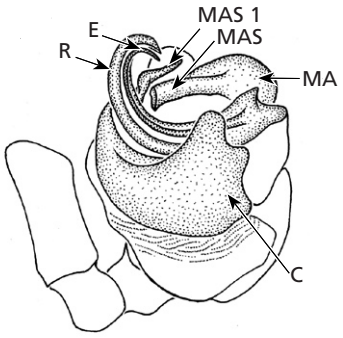
— Tegular spur absent, prominent conductor with conductor spur and basal lobe extend from the base of the median apophysis (Fig. 67.22), carapace as in Fig. 67.3 ..... ..... ***Philoponella***
**Div.** 3 species **— Dist.** TX and southwestern USA **— Refs.** Muma & Gertsch 1964, Opell 1979

**11(1)** Carapace trapezoidal with abruptly narrowed cephalic region (Fig. 67.9), anterior eye row present, but ALE very small, abdomen nearly round (Fig. 67.1), female calamistrum extends along proximal half of metatarsus IV, leg I short and stout, male tibia I with without dorsal macrosetae, spider constructs triangular webs ..... ***Hyptiotes***
**Div.** 4 species **— Dist.** throughout USA and CAN **— Refs.** Muma & Gertsch 1964, Opell 1979

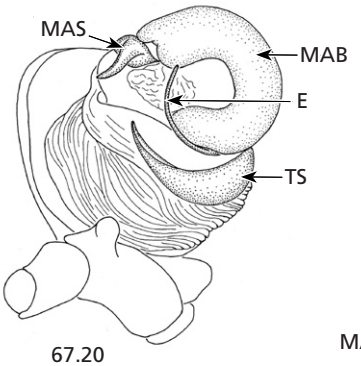
— Carapace rectangular (Fig. 67.10), anterior eye row absent, abdomen cylindrical, female calamistrum restricted to proximal one-third of metatarsus IV, leg I elongated, male tibia I with with dorsal macrosetae, spider construct irregular webs of only a few strands ..... ***Miagrammopes***
**Div.** 1 species: *Miagrammopes mexicanus* O. Pickard-Cambridge 1894a **— Dist.** southern TX **— Refs.** Muma & Gertsch 1964, Opell 1979



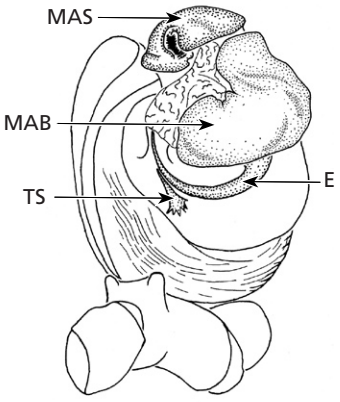
67.18



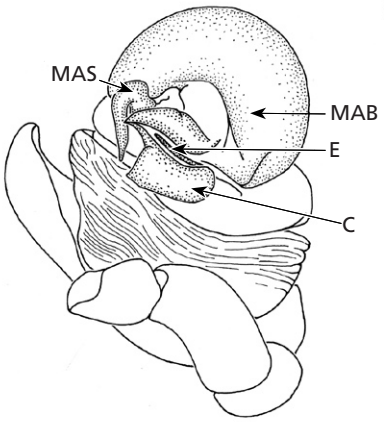
67.19



67.20



67.21



67.22

C conductor
E embolus
MA median apophysis
MAB median apophysis bulb
MAS median apophysis spur
MAS 1 median apophysis spurs in the case of *Siratoba* where the MA has 2 extensions
R radix
TS tegular spur