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New records of *Xorides* (Hymenoptera: Ichneumonidae: Xoridinae) from Florida

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Abstract. *Xorides albopictus* (Cresson) and *Xorides calidus* (Provancher) are recorded for the first time from Florida. New Florida records are given for *Xorides semirufus* Townes, previously known only from the holotype female collected near Archer in Alachua County in 1953. A key is provided to the Florida species of *Xorides*. A photograph of *X. semirufus* is included.

Resumen. Se citan por primera vez para Florida las especies *Xorides albopictus* (Cresson) y *Xorides calidus* (Provancher). Se proporcionan nuevos registros para Florida de *Xorides semirufus* Townes, especie de la cual antes se conocía un solo ejemplar, el holotipo coleccionado en 1953 cerca de Archer en el Condado de Alachua. Se da una clave de las especies de *Xorides* conocidas del Estado de Florida.

Introduction

Xorides Latreille (1809) is a cosmopolitan genus of medium sized to large ichneumonids which parasitize larvae of wood boring beetles, especially Buprestidae and Cerambycidae. They have a long ovipositor and the spiracle of the first gastric tergite located at or basad of its middle. This makes them superficially similar to other ichneumonid taxa that attack similar hosts in the same habitat, such as Rhyssinae, Poemeniinae, Acaenitinae, Labeninae, and some Cryptinae, but *Xorides* may be distinguished from these by the following combination of characters:

(1). Mandible without apical teeth, its apex chisel-shaped.

(2). Female flagellum subapically curved or elbowed with 2 or more stout, erect 'flag setae' on outer surface of the bend.

(3). Mesoscutum with a prominent transverse break or suture in front of prescutellar groove.

(4). Prescutellar groove with a strong median longitudinal carina.

(5). Sternaulus weak or absent.

(6). Fore and mid tibia of female inflated and twisted.

(7). Areolet absent.

(8). Second recurrent vein with 2 bullae.

(9). Propodeum with strong transverse and longitudinal carinae which enclose well defined areas.

(10). Gaster inserted low on the propodeum near base of the hind coxae.

(11). Female subgenital plate (hypopygidium) transverse, always inconspicuous.

Xorides is known from all biogeographic regions of the world except the Neantarctic. There are 14 described species in the Neotropics, 21 in the Nearctic, 45 in the Palaearctic, 40 in the Oriental tropics, 14 in the Afrotropics, and 8 in the Australian region (Yu & Horstmann 1997). Townes (1960) records 4 species from Florida, *X. humeralis* (Say), *X. stigmapterus* (Say), *X. rileyi* (Ashmead), and *X. semirufus* Townes. Subsequent fieldwork has added *X. albopictus* (Cresson) and *X. calidus* (Provancher) to the Florida list as well as providing additional records for *X. semirufus* which previously was known only from the holotype female. These new locality records are now documented and a revised key is given to the Florida *Xorides* species.

Key the Florida Species of *Xorides*

- | | |
|-----|--|
| 1. | Temple conspicuously marked with white; ovipositor about 0.7 as long as fore wing 2 |
| 1'. | No white on temple; ovipositor 1.0-1.4 as long as fore wing 3 |
| 2. | Occipital carina complete above; gaster in female red on at least tergites 1-4, in male entirely black
<i>Xorides calidus</i> |
| 2'. | Occipital carina briefly interrupted above at middle; gaster black with conspicuous white markings <i>Xorides albopictus</i> |
| 3. | Occipital carina broadly interrupted above; tooth at upper end of epomia not strongly projecting; |

- propodeum on apex of 2nd lateral area with a conspicuously projecting tooth; 2nd gastric tergite finely aciculate with weak punctures; ovipositor 1.3-1.4 as long as fore wing; 3rd and 4th front tarsomeres white. *Xorides stigmapterus*
- 3'. Occipital carina complete; tooth at upper end of epomia strongly produced; propodeum with a low broadly triangular or blunt tooth on apex of 2nd lateral area; 2nd tergite at least in part with strong punctation or reticulo-punctation; ovipositor about 1.0 as long as fore wing; 3rd and 4th front tarsomeres blackish or dull orange 4
4. Second trochanter of fore leg with a subapical thorn in front; temple with longitudinal striae throughout; central lobe of mesoscutum with a broad median longitudinal groove; female anteriorly on front tibia with only faint bristlelike setae *Xorides humeralis*
- 4'. Second trochanter of fore leg without a subapical thorn in front; temple at least on upper 0.5 without striae; central lobe of mesoscutum without a median longitudinal groove or with a vestigial groove; fore tibia of female with some stout, bristlelike setae on its front surface ... 5
5. Head and mesosoma bright red; 3rd and following gastric tergites more or less white on apex; hind coxa mostly black; 1st gastric tergite stout, almost parallel sided, in female coarsely rugosopunctate; fore tibia of female in front with a row of 4 strong, spinelike bristles *Xorides semirufus*
- 5'. Head and mesosoma mostly black with some dull red staining; no white on gastric tergites; hind coxa in Florida specimens mostly bright red; 1st gastric tergite more slender, narrowing from apex to base, in female with strong, mostly well spaced punctation; fore tibia of female in front with numerous (up to 15 or 16) strong, appressed, unaligned spinelike setae *Xorides rileyi*

***Xorides semirufus* Townes**

(Fig. 1)

Material Examined. 2 females and 12 males. FLORIDA. Alachua Co., 2 miles west of Archer, 1 female, 25-III-1953, H.F. Howden [AEI]; SE Gainesville, Kincaid Rd., 1 mile No. of Payne's Prairie, Old Field at edge of dry Oak Hammock, in Malaise Trap, 2 males, 3-31-I-1999, 6 males, 20-II-6-III-1999, 1 male, 24-30-III-1999, 2 males, 3-IV-1999, B.D. Sutton [FSCA]; Gainesville, Beville Heights, 18-20-V-1979, in Black Light Trap, 1 male, L.A. Stange [FSCA]; Gainesville, Rock Creek, VIII-1984, in Malaise Trap, 1 female, V.K. Gupta [FSCA]. For many years *X. semirufus* was known only from the

female holotype collected in scrub oak and pine woods near Archer, Florida. Recent collecting by Malaise Trap has yielded a second female and 12 males. Most of the new records also are from sand ridge habitats. Like many other Florida ichneumonids, this species is most abundant in winter and spring, with 2 records for January, 6 for February, 2 for March, 2 for April, 1 for May, and 1 for August.

***Xorides rileyi* (Ashmead)**

Material Examined. 3 females and 1 male. FLORIDA. Alachua Co., Gainesville, DPI woods, female, 2-V-1997, 1 female, 21-V-1989, 1 male, 4-VI-1989, C. Porter; San Felasco Hammock State Preserve, 1 female, 7-IV-1985, C. Porter. [FSCA]. This conspicuous but rarely collected species inhabits hardwood forests in the eastern United States from New York to Minnesota and south to Florida. In the northeast it has been reared from cerambycid beetle larvae (*Anoplodera*, *Phymatodes*) in *Quercus* and *Castanea* (Fagaceae). Florida specimens have the hind coxa bright red, as opposed to black or black and reddish in populations from farther north. Rohwer (1913) regarded this form as a distinct species and described it as *Xylonomus ruficoxis* on the basis of a single female from Apalachicola in Franklin County. Florida specimens were collected from early April to the beginning of June, while farther north it has been most often found in June and July (Townes 1960).

***Xorides calidus* (Provancher)**

Material Examined. 1 male. FLORIDA. Alachua Co., Gainesville, DPI woods, 29-I-1986, V.K. Gupta [FSCA]. *Xorides calidus* is common in Temperate Deciduous forest of eastern North America from Ontario to Saskatchewan south to North Carolina and Missouri. It has been reared from *Astylopsis macula* (Cerambycidae) in *Castanea dentata* (Fagaceae) and from unidentified hosts in *Acer* (Aceraceae) and, more surprisingly, in the coniferan *Juniperus* (Cupressaceae).

***Xorides albopictus* (Cresson)**

Material Examined. 5 females and 2 males. FLORIDA. Alachua Co., Gainesville, north of Payne's Prairie off US 441, moist hardwoods, 4 females, 29-I-6-II-1972, C. Porter; San Felasco Preserve, mature Hardwood Hammock, 1 female and 1 male, 8-22-V-1986, C. Porter; Suwannee Co., Suwannee

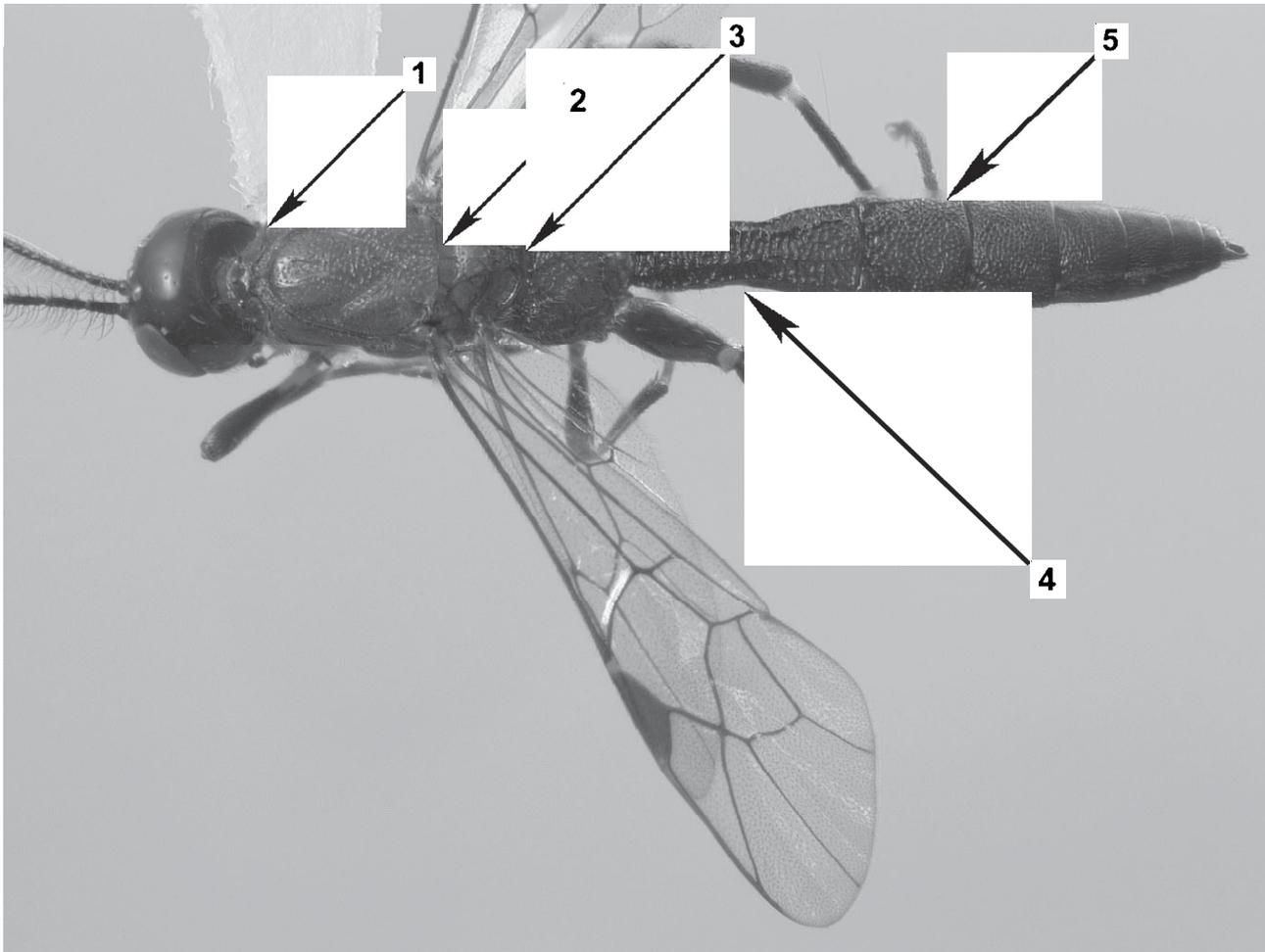


Figure 1. *Xorides semirufus*, male, entire insect in dorsal view. (1) Projecting tooth at upper end of epomia; (2) Transverse suture on mesoscutum in front of prescutellar groove; (3) Longitudinal median carina in prescutellar groove; (4) Coarsely rugose and nearly parallel sided 1st gastric tergite; (5) Coarsely punctate and puncto-rugose 2nd gastric tergite.

River State Park, riparian hardwoods, in Malaise Trap, 16-III-2-V-1997, C. Porter [FSCA]. This relatively abundant species ranges throughout the eastern United States and southern Canada, where it frequents hardwood forests in which it may be found on the trunks and branches of recently dead trees. It is known to parasitize cerambycid larvae of the genus *Saperda* (Townes 1960), including *S. discoidea* in *Carya* (Juglandaceae) and *S. tridentata* in *Ulmus* (Ulmaceae). In Florida it is active in winter and spring, but farther north it is most often collected in June and July.

Xorides stigmatopus (Say)

Material Examined. 10 females and 18 males. FLORIDA. Alachua, Collier, Gadsden, Highlands, Liberty, Leon, and Santa Rosa Counties [FSCA].

The records from Collier County (Naples, 2 males, 24-V-1987, Belmont Trap 17) and Highlands County (Archbold Biological Station, 2 males, in Malaise Trap, 15-16-I-1979, H.V. Weems, 30-IV-1978, L. Lampert) are the first for subtropical south Florida. *Xorides stigmatopus* occupies an immense geographic range from subarctic Labrador and Alaska south to Minnesota and Iowa on the west and Florida in the east. Specimens from the northern part of the range have the head and thorax mostly black; whereas, the head and thorax are red in material from the southeastern states along the Coastal Plain from Maryland to Florida. Ashmead (1890) described the southern form as *Xylonomus floridanus* on the basis of a single female from Archer, Florida (Alachua County) and Townes (1960) relegated it to subspecific status under *Xorides stigmatopus*. *Xorides stigmatopus floridanus* oc-

curs in various kinds of pine forest and in mixed pine and hardwood associations. There are no host records but I have observed it ovipositing in dead trunks of *Pinus taeda* at Hudson, Maryland and of *Pinus palustris* at Gainesville, Florida. However, Townes (1960) records a specimen that emerged from a 'decayed sweetgum log' at Clyro, Georgia. On the other hand, *X. s. stigmapterus*, at least in the northeastern United States, occurs in Temperate Deciduous Forest and has been reared from cerambycid beetle larvae of the genera *Anoplodera* in *Carya* (Juglandaceae) and *Dryobius* in *Tilia* (Tiliaceae). Further study of host and habitat preferences thus may show that '*X. stigmapterus*' is actually a complex of two or more sibling species. Like many other Florida ichneumonids, this species attains maximum abundance in spring, with 3 records in January, 2 in March, 7 in April, 11 in May, 2 in June, and 2 in August. Farther north it is most abundant in summer but may appear as early as April and as late as November.

Xorides humeralis (Say)

Material Examined. 21 females and 14 males. FLORIDA. Alachua, Collier, Dade, Highlands, Hillsborough, Lake, Liberty, Manatee, Marion, Polk, Saint Lucie, Seminole, Sumpter, and Wakulla Counties [FSCA]. This widely distributed and conspicuous species occurs throughout the United States and southeastern Canada south into Mexico. It shows considerable geographic variation in color and this has led Townes (1960) to divide it into 6 subspecies but these must be abandoned because the characters used are unstable. Many Florida specimens, for example, are extensively ferruginous but some are largely black. Most records of *X. humeralis* are from hardwood forests or from mixed hardwoods and pines. No host data is available for Florida but in other states this species has been reared from buprestid larvae of the genus *Dicerca* in *Diospyros* (Ebenaceae) as well as from the cerambycids *Neoclytus* in *Ilex* (Aquifoliaceae), and *Phymatodes* in *Quercus* (Fagaceae). In Florida, this species has been collected at all seasons but is most numerous in spring. I have 1 record for February, 4 in March, 8 in April, 5 in May, 6 in June, 2 in July,

6 in September, 1 in October, 1 in November, and 2 in December. Townes (1960) reports 1 Florida capture in March, 3 in April, 2 in May, 1 in June, and 1 in July. In the northeastern United States it may appear as early as April and as late as September but is most abundant in the summer months.

Collections

AEI. American Entomological Institute, 3005 S.W. 56th Avenue, Gainesville, Florida 32608.

FSCA. Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, P.O.Box 147100, Gainesville, Florida 32614.

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