

Asian Horntail *Eriotremex formosanus* (Matsumura) (Insecta: Hymenoptera: Symphyta: Siricidae: Tremicinae)¹

You Li and Jiri Hulcr²

Introduction

The family Siricidae consists of 10 extant genera and 122 species worldwide, and is commonly referred to as wood wasps or horntails (Schiff et al. 2012; Smith and Schiff 2002; Morgan 1968; Benson 1950). Four genera have been recorded in Florida (representing six species): *Eriotremex* Benson, *Sirex* Linnaeus, *Tremex* Jurine, and *Urocerus* Geoffroy (Leavengood and Smith 2013). *Eriotremex* is a small genus of 13 species that range from Japan and Taiwan to eastern India and Papua New Guinea (Smith 2010) with one species, *Eriotremex formosanus*, introduced to North America. The earliest records of this introduction are from several counties in Florida and Georgia in 1974 (Smith 1996). It has since become the most common wood wasp in Florida (Smith 1996).

Synonymy

Tremex formosanus Matsumura (1912)

Eriotremex formosanus Benson (1943)

The genus *Eriotremex* belongs to the subfamily Tremicinae of the family Siricidae. The genus was last reviewed by Smith (2010), who described a new species and provided some new distributional records for the other 12 species.

Eriotremex formosanus is the only species of this genus adventitiously introduced to North America.

Distribution

The type species of *Eriotremex formosanus* was collected from Formosa, the historical Portuguese name for Taiwan. Taiwan wood wasp taxonomist Maa (1949, 1956) recorded *Eriotremex formosanus* in Vietnam and suggested it may also be present in surrounding areas of Indo-China. Gangrou (1983) found *Eriotremex formosanus* from Yunnan province in southern China. Togashi and Hirashima (1982) and Togashi and Inoue (2007) recorded *Eriotremex formosanus* in Honshu, Japan. More recently, Smith (2010) recorded specimens collected in Laos.

Following its introduction into the US, it has been documented throughout much of the Southeast (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia) as well as Utah (Chapin and Oliver 1986; Stange 1996; Smith and Schiff 2002; Schiff et al. 2006, 2012; Warriner 2008).

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2. You Li, Ph.D., School of Forest Resources and Conservation; and Jiri Hulcr, assistant professor, School of Forest Resources and Conservation and Entomology and Nematology Department; UF/IFAS Extension, Gainesville, FL 32611.

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Figure 1. World distribution of *Eriotremex formosanus* (Matsumura).
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Description

As with most wood wasps, *Eriotremex formosanus* exhibits distinct sexual dimorphism (male and female are quite different in appearance). Adult females have a 3 cm long body with a 4 cm wingspan. The short, blunt, antennae each consist of 20–21 black antennal segments that are sometimes lighter in color at the base and apex. The metatibia bears one apical spur. The females' abdomens consist of black segments, some of which have yellow bands. The thorax is yellow, and long, golden setae (hair-like projections) cover the body throughout.



Figure 2. Adult female wood wasp, *Eriotremex formosanus* (Matsumura).
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Originally, Stange (1996) stated that no males of this species have ever been collected. However, Schiff et al. (2006) presented an illustration of the first male from specimens reared in the United States. It was mostly black, with some yellow on the abdominal segments. Leavengood and Smith (2013) illustrated a male with an overall yellow color, with some black markings on most segments of the hind legs.

These differences imply that the coloration of the male may be variable.

Diagnosis

In Florida, there are six species of Siricidae: *Eriotremex formosanus* (Matsumura), *Sirex areolatus* (Cresson), *Sirex nigricornis* Fabricius, *Tremex columba* (Linnaeus), *Urocerus cressoni* Norton, *Urocerus taxodii* (Ashmead), and *Sirex noctilio* Fabricius. They had been reviewed by Leavengood and Smith (2013) who also provided [a key for all of Florida's six Siricidae species](#).

Eriotremex formosanus differs from other Siricidae species with antennae bearing 20–21 segments (Figure 3A) (other species have either more or fewer); both sexes with only one apical metatibial spur (Figure 3B); and body with long golden hairs (Figures 3C, D).

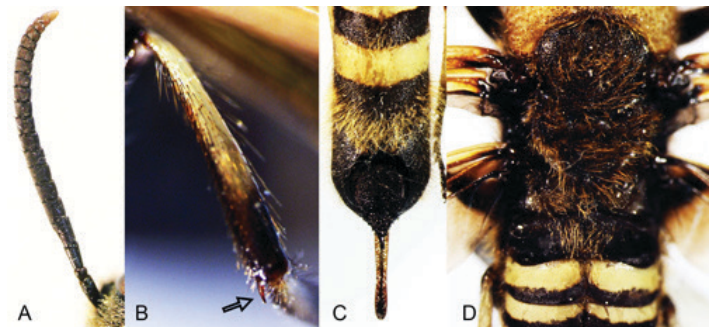


Figure 3. *Eriotremex formosanus* (Matsumura). A—antenna. BA—metatibial spur. Abdomen (C) and mesonotum (D) with long golden setae (hair-like projections).

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Biology

The biology of *Eriotremex formosanus* is not well known. Adults have been collected year-round in Georgia (Smith and Schiff 2002), though the majority are recorded from April to June and September to November. This suggests two peak flights a year, but few conclusions can be drawn from these data. Some specimens were collected using UV light traps. In the southeastern US, *Eriotremex formosanus* is abundant in both upland pine-dominated forests and bottomland hardwood forests (Ulyshen and Hanula 2010) and can develop in logs, but strongly prefers snags. Many siricids take two or more years to complete their life cycle, though *Eriotremex formosanus* may have one or more generations a year, which may explain its rapid spread after introduction to the US (Smith 1996).

Hosts

Whereas most siricid species in North America feed on gymnosperms, *Eriotremex formosanus* associates most strongly with angiosperms. Host trees in its native range

are currently unknown (Smith 2010) but reported hosts in North America include various oaks (e.g., *Quercus nigra*, *Quercus phellos*, *Quercus alba* and *Quercus laurifolia*), hickory (*Carya* spp.), and sweetgum (*Liquidambar styraciflua*). The species has also been reported from two pine species (*Pinus palustris* and *Pinus elliottii*) but conclusive evidence the species can complete development in gymnosperms is lacking (Stange 1996; Smith and Schiff 2002). In South Carolina, Ulyshen and Hanula (2010) found *Eriotremex formosanus* to strongly prefer water oak (*Quercus nigra*) over sweetgum and found the species to be absent from loblolly pine (*Pinus taeda*).

Management

Unlike the European woodwasp, *Sirex noctilio* Fabricius, the Asian woodwasp, *Eriotremex formosanus*, is not considered an economically important pest because it only attacks dying or dead trees (Warriner 2008). However, the species may someday prove to be a pest and its ecological impacts in North American forests remain unknown (Ulyshen and Hanula 2010). There are no native North American parasitoid wasps or nematodes which could assist in managing *Eriotremex formosanus* populations. Prevention of the movement of firewood and other wood products into uninfested areas is the most judicious method to control the spread of wood wasps. However, it is not expected to prevent the natural dispersal of the insect. Methyl bromide treatment and heat treatment are two effective methods to kill wood wasp larvae and pupae in the wood.

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