

A Literature-based Key to SIRICIDAE (Hymenoptera) of Florida (Horntails and Woodwasps)

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[This manuscript is the result of research by the above listed student. It is intended to provide a dichotomous key to species of Siricidae listed as occurring or may potentially occur in Florida. Records are based on literature only.]

Siricid woodwasps (Hymenoptera: Siricidae) are a relatively small family in North America with 23 species occurring in five genera. Of the 23 species of woodwasps, six species have been documented in Florida, one species, *Sirex edwardsii*, occurs in Georgia slash pine stands and may occur in Florida, and *Sirex noctilio* has been intercepted at southern ports on several occasions (see fig.1) (Hoebeke et al. 2005, Ciesla 2003). *Sirex noctilio* has established itself in New York ca. 2005 and its distribution has since been expanding south. The only limiting factor of its spread is the distribution of host tree species, such as pine (see Fig. 2) (Schiff et al. 2006).

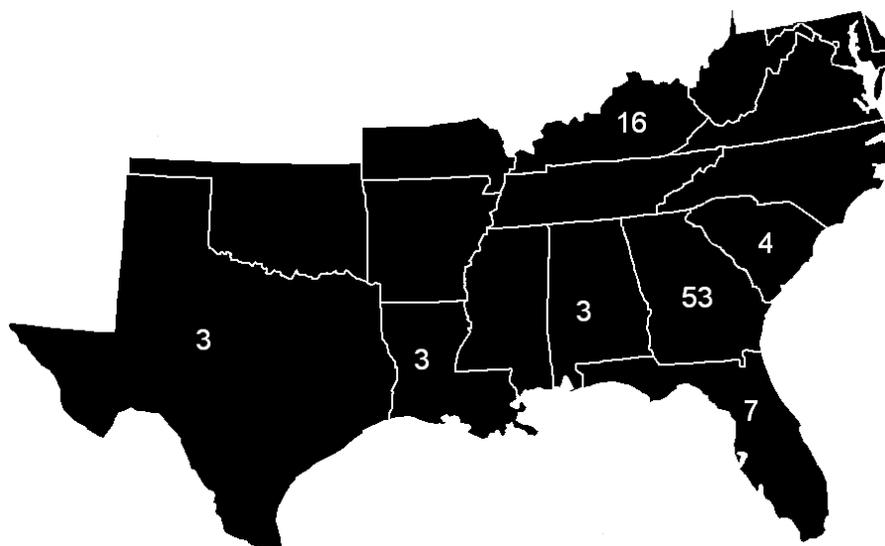


Fig 1. This map of the southern United States shows the number of Siricid woodwasps, including *Sirex noctilio*, intercepted at ports of entry between 1985 -2000. Many of the interceptions were of larvae that made identification to the genus and species level difficult, so they were only listed in the database as Siricid interceptions. Source USDA APHIS Port Information Network Database (Image adapted from Hoebeke et al. 2005)

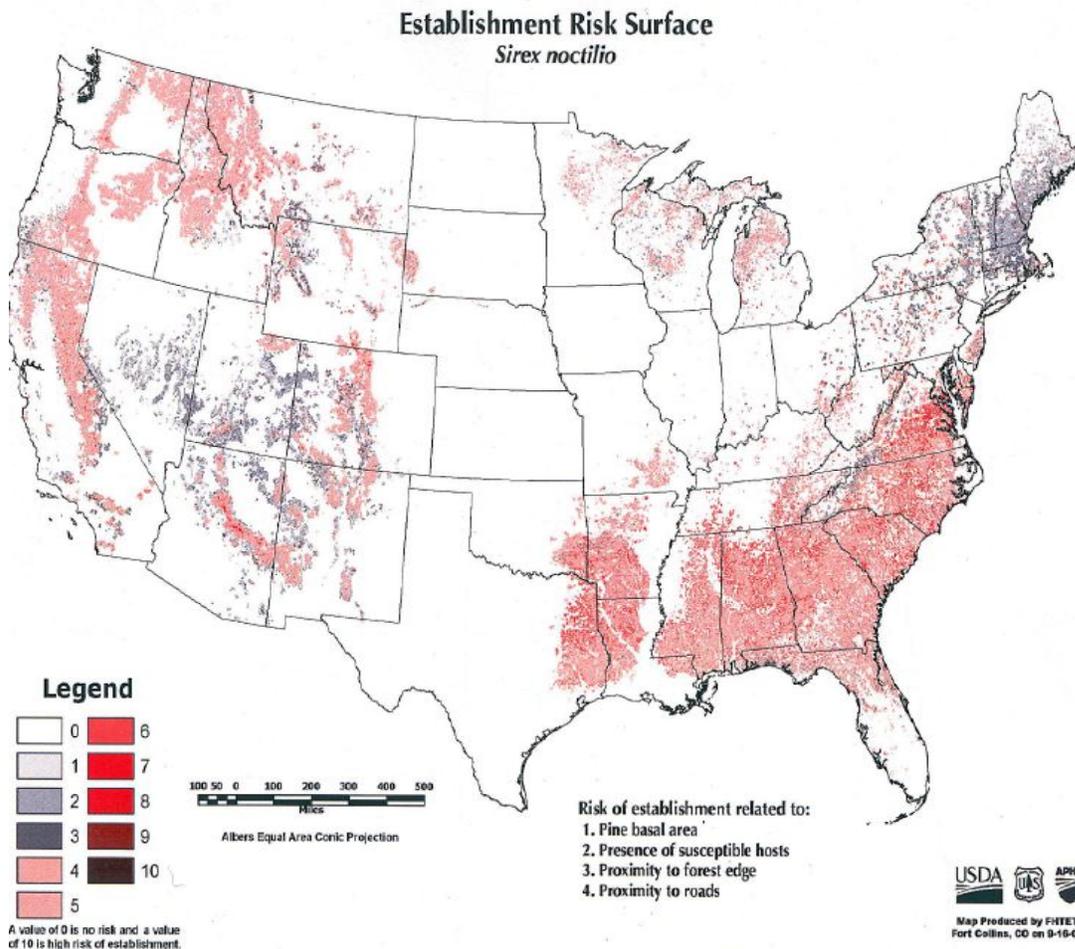


Fig. 2. This map of the United States shows areas of risk if *Sirex noctilio* continue to spread throughout the country. Risk is quantified by pine-forest basal area, abundance of susceptible hosts, and proximity to forest edges and roads. The southeast is a high risk area that includes northern Florida. (Image from the Nature Conservancy 2007).

Siricid woodwasps, also called horntails, are large wasps, usually greater than 20 mm in length, which can be economically important predators of timber stands throughout the world, especially when introduced to a non-native area. Most native species of woodwasp larvae tend to attack stressed or dead trees, both angiosperm and gymnosperm trees, causing minimal economic damage, but exotic species, specifically *Sirex noctilio*, can cause great damage in young, otherwise healthy trees. Although the woodwasp's larvae are tree predators, the main threat comes from the woodwasp's fungal

symbiont—wood-decaying fungi in the genus *Amylostereum* (Smith and Schiff 2002, USDA-APHIS 2006). It is possible that the woodwasp larvae feed on the fungi rather than the host trees, but little is known about the wasp-fungi relationship (Stange 1996).

The Adult woodwasps have a cornus, or hornlike projection, on the last abdominal tergite granting them the common name “horntail.” They also have a pair of hard, raised cecri on the mesonotum, long antennae, and only one foretibial spur (Stange 1996). Size within a species can range between 1 to 5 cm and color variations may also be present throughout a single species. Although colors can vary within species, contrasting colors (e.g. red vs. blue) between species can be used for identification (Schiff et al. 2006).



Fig. 3. *Eriotremex formosanus* on a laurel oak damaged by a lightning strike. Note the cornus on the last abdominal segment (Photo: L. Buss, University of Florida).

Because of the proximity of documented *Sirex edwardsii* distribution to Florida and the available habitat present in Florida, it has been included. *Sirex noctilio* has also been included because of the great threat that the species holds if it passes unnoticed through a port of entry.

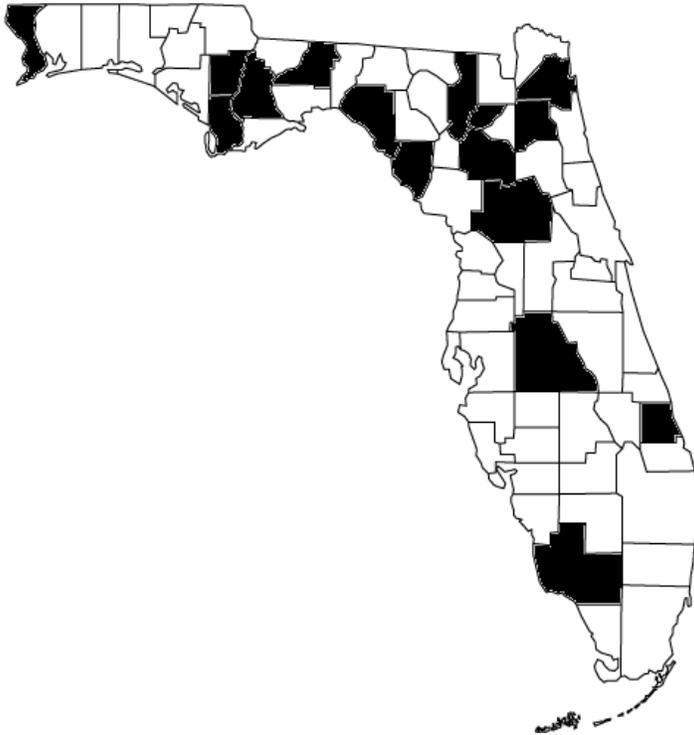


Fig. 4. Florida counties that have documented Siricid woodwasps are in black.

Checklist of the Siricid woodwasps of Florida and their known American tree hosts

Eriotremex formosanus (Matsumura) — Hardwoods: hickory, oak and sweetgum.

Sirex areolatus (Cresson) — Conifers: cypress, juniper, cedar, pine, Douglas-fir, redwood and baldcypress.

Sirex edwardsii Brulle — Conifers: spruce and pine.

Sirex nigricornis Fabricius — Conifers: spruce and pine.

Sirex noctilio Fabricius — Conifers: fir, larch, spruce, pine and Douglas-fir.

Trimex Columba (Linnaeus) — Hardwoods: beech, elm, maple, poplar, hickory, sycamore, apple, pear and hackberry.

Urocerus cressoni Norton — Conifers: fir, spruce and pine.

Urocerus taxodii (Ashmead) — Conifers: bald cypress.

Key to the Siricidae of Florida:

- 1a. Antennae with less than 16 segments, head and mesoscutum mostly orange
.....*Trimex Columba* (Linnaeus)
- b. Antennae with 16 or more segments, head and mesoscutum not as above.....2
- 2a. Abdomen with long golden hairs..... *Eriotremex formosanus* (Matsumura)
- b. Abdomen without long golden hairs.....3
- 3a. Head with pale areas behind eyes, female cornus long and slender with a constriction
in the middle (*Urocerus*).....4
- b. Head uniformly dark behind eyes, female cornus short and triangular without a
constriction in the middle (*Sirex*).....7
- 4a. Male (no ovipositor).....5
- b. Female (ovipositor present).....6
- 5a. Legs black, first antennal flagellomere no longer than the second
.....*Urocerus cressoni* Norton
- b. Legs with dark orange on fore and mid legs, and white on hind legs, first antennal
flagellomere longer than the second.....*Urocerus taxodii* (Ashmead)
- 6a. Abdomen mostly reddish.....*Urocerus cressoni*
- b. Abdomen black or blue-black *Urocerus taxodii*
- 7a. Male (no ovipositor).....8
- b. Female (ovipositor present).....11
- 8a. Abdomen reddish with only 1 or 2 basal segments black...*Sirex nigricornis* Fabricius
- b. Abdomen reddish, black at base *and* apex.....9
- 9a. Abdominal segments 5-6 yellow.....*Sirex edwardsii* Brulle
- b. Abdominal segments 3-7 yellow.....10
- 10a. Hind femur red..... *Sirex noctilio* Fabricius
- b. Hind femur black..... *Sirex areolatus* (Cresson)
- 11a. Abdomen red..... *Sirex nigricornis*
- b. Abdomen blue-black.....12
- 12a. Ovipositor long..... *Sirex areolatus*
- b. Ovipositor short.....13

- 13a. Ovipositor with large, closely spaced pits, mesopluron densely punctured, legs red
 *Sirex noctilio*
- b. Ovipositor with small distantly spaced pits, mesopluron with smooth areas between
 punctures, legs black..... *Sirex edwardsii*

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