

# Sirex woodwasp

Business



The Sirex Woodwasp, *Sirex noctilio*, is an invasive parasite from Europe, Asia, and northern Africa. It goes by several names such as the Sirex Woodwasp, European Woodwasp and the Eurasian Woodwasp.

In its native homelands, it is a secondary pest, and is easily controlled by natural predators. It isn't a huge problem to the parts of the world that it is native to. Ever since the Woodwasp was discovered in Fulton, New York, in the year, 2004, it has been a major pest, causing major die offs of the many pine species in the United States. A predicted 80% mortality rate has followed the accidental introduction of this invasive species. *Sirex noctilio* has spread throughout the United States in many ways. Firewood is a major culprit.

Since the life cycle of the Sirex Woodwasp lasts about a year, with most of the life inside of the host, it is easily transported during the larval stage to other places in logs. Another method is in solid packing materials. Wooden boxes made from potential target trees can unknowingly spread this pest insect. The invader was accidentally introduced in a shipment of goods from somewhere in Asia or Europe in wooden crates made from host trees. From there, it was discovered in a trap and swiftly identified. Despite cautions and laws to prevent the spread, the Sirex Woodwasp has expanded its area of influence.

The parasitic wasp has a great environmental impact. It is a parasitic brooder, meaning that it must use a host to raise their young to adults. When the female is ready to reproduce, she will find a tree, one of the numerous *Pinus* species, and stab through the bark with her ovipositor. She

then injects a mixture of The White Rot Fungus (*Amylostereum areolatum*), eggs, and a toxic mucus that kills the tree, into the outer sapwood. The fungus feeds upon the dying wood that is affected by the toxic mucus, and when the eggs finally hatch, the larvae will feed upon this fungus.

If eggs are unfertilized, they will turn into females, creating more eggs in the future at the time of maturity. Working together, the mucus, fungus and larvae will eventually kill the tree. The Sirex Woodwasp attacks almost exclusively members of the pine family. In its natural regions, Scotch pine (*Pinus sylvestrus*), Austrian pine (*P. nigra*), and Maritime pine (*P.*

*pinaster*). The insect was introduced to New Zealand, Australia, south America, and North America, where they attack Monterey pine (*P. radiata*), Loblolly Pine (*P. taeda*), and many others. The wasp has strayed from its regular hosts that are native to its original home, and has taken to many exotic pine species.

There is, literally, not a species of *Pinus* that is safe from the wrath that is wrought by this insect. You can identify a tree that has been attacked by this noxious pest by a few novel characteristics such as pitch leaking from the ovipositor and exit wounds, a yellowing of the needles until they redden and fall off, and the signature tunnels from the larvae carving into the healthy sapwoods. You may also see the fungus growing in tree crevices or on the tree itself. When a tree is attacked by the Sirex Woodwasp, it is doomed to die. The Sirex Woodwasp is bad enough by itself, but it is also paired with a disease, The White Rot Fungus.

This causes major damage and eats the wood it has killed. They are relentless. You could not have a better pair of an insect and disease if you ever wanted to do a lot of damage in a short period of time. Other areas of the world that have been affected by *Sirex noctilio* include New Zealand, Australia, Argentina, Brazil, Chile, and the southern part of Africa. In these places, the damage is pretty much the same as in the United States. The damage cannot be contained easily because there are not many natural predators in these new areas of introduction.

The characteristics of the parasitic Woodwasp differ slightly between the genders. The male has a short spike, not a stinger, where the telltale stinger is located on most wasps and bees. He has a blue-black head and the front half of the body is the same hue. The abdomen is of an orange color, with a dark tip. Females tend to be a metallic blue with reddish-amber legs. Her wings are amber-colored too.

She has a noticeable ovipositor, a modified stinger that is engineered to pierce the bark and sapwood of her victim trees. This is also the part of the body that she uses to inject her lethal concoction. The *Sirex* Woodwasp lacks the thin waist that many wasp species seem to have. The female typically measures between 15 and 35 millimeters while the males range 13 to 32 millimeters. It is rare to have a male larger than the female of this particular species.

The males, being only necessary to produce males are becoming rarer, though they are still numerous. A female does not need to mate to produce offspring. The offspring start out as an egg, but when they hatch the larvae

are distinctly segmented, creamy white colored, and have a very noticeable spike at the end of their ' tail'. They have an obvious head and three pairs of very short, stubby legs. They look like a typical grub. At the end of the larval stage, we have the pupation stage.

The pupae start off with the coloration of the grub, a creamy white, but as the insect matures inside its pupa, the pupa becomes a darker color, more closely resembling the coloration of the adult, though vaguely so. When the adult emerges from its pupa, it crawls its way out of the tree and starts its adult life, trying to create more monstrous larvae. They can most often be seen in the months of August and September, where they are most active as adults. Control measures have been taken to reduce the spread of the Sirex Woodwasp and research has begun on a parasitic nematode that feeds on the White Rot Fungus. This nematode, *Deadenus siricidicola*, when eaten by the Sirex Woodwasp will invade the ovaries of the larvae and sterilize them, therefore making it impossible for them to reproduce.

The Sirex Woodwasp will unknowingly spread this nematode when she injects her concoction of nematode filled eggs, fungus, and her noxious mucus into a tree. We have started researching methods to introduce the nematode into sick pines to stop Sirex noctilio dead in their tracks. The cost of the damages caused by Sirex noctilio can be estimated at millions or even billions of dollars. The pine species that it attack are used for firewood, boxes, packing materials and many other things, and with their absence, these will be more costly and less convenient. This insect is not in any way helpful. It can, and will disrupt whole ecosystems.

Many animals that depend on the pine species to provide food and a home will be soon without food and homes for themselves and will have to evolve, be relocated, or die. Moving firewood is limited and heavily considered under many laws and is a violation in many areas due to insects like this Sirex Woodwasp and other insects that are harmful and almost impossible to keep contained. Fines can follow if you do not follow certain regulations regarding the movement of firewood. Also, we have native wasps that tend to feed on other wasps. Some are parasitic and use other wasps for reproduction.

This could be a good control measure. These wasps can feed on the adult or larvae, or inject their eggs into the victim wasp. How ironic it would be to have the Sirex Woodwasp, a brooding parasite, getting attacked by yet another brooding parasite. Sirex noctilio was a secondary pest where it came from, but turned into a very large pest in the areas it has been introduced to. The Woodwasp has no benefits.

It is very dangerous, and should be eliminated. Ever since its introduction in Fulton, New York, it has caused widespread havoc.