

The Florida Entomologist

Official Organ of the Florida Entomological Society

Vol. XIV

AUTUMN NUMBER
SEPTEMBER, 1930

No. 3

CICADAS SEVERELY DAMAGING ASPARAGUS PLUMOSUS*

J. W. WILSON

The growers of so called "ferns" (*Asparagus plumosus*) in the vicinity of Jupiter, Florida have observed for the last two years that the production has been noticeably reduced in quantity. In one "fernery" the plants were dying out so badly that in 1928 they were dug up and *Sansaviera* planted. Many growers attributed the trouble to the effects of the hurricane of 1928 because the plants never seemed to recover and grow well after the sheds had been blown down upon them. Cast nymphal cicada skins were repeatedly observed in the "fernery" but it was not until 1930 that these insects were connected with the poor condition of the asparagus. In April of this year nymphal cicadas in large numbers were found attached to the roots of the asparagus, and in June specimens were sent to Professor Watson for identification. This is the first time that reports of this insect's attacks on asparagus plants in Florida had been brought to the attention of the Department of Entomology.

The "ferneries" which have suffered injury from the attack of this insect are located at Jupiter, about twenty miles north of West Palm Beach, and as far as is known it is only in this region that the cicada is seriously injuring asparagus plants. The "ferneries" nearest Jupiter are located near Miami about 80 miles south, and as far as is known they are not infested with this cicada. Mr. Schultz at Auburndale reports that he has occasionally observed cast cicada skins in his "fern" sheds at Auburndale but never in sufficient numbers to be a serious menace. Auburn-dale is about 125 miles northwest of Jupiter, which indicates that cicadas breed in "ferneries" all over the state in very small numbers.

*Contribution from Department of Entomology, Fla. Ag. Exp. Sta.

The "ferneries" at Jupiter are located on both the north and south sides of the Loxahatchee River and are usually within one mile of the river, many of them being located near the bank of the stream. The soil on the north side of the river is made up of a coarser sand and contains less humus than on the south side. In addition to being coarser the soil on the north side has a slightly higher elevation, and consequently it is better drained. The "ferneries" on the north side are more severely infested with cicadas at present, although cicadas are present and are causing some damage on the south side of the river. The two "ferneries" most severely infested in 1930 are planted close to the road. The other three sides are enclosed by uncultivated ground, which has scrub oak, pine trees, wire grass, and a number of weeds growing on it. In most cases at least one side of the "ferneries" is bordered by an uncultivated field.

The eggs of this species have not yet (Aug. 20) been found although a few adult females have been captured in the fields near the asparagus sheds.

Cicadas taken from beneath the asparagus plants are distinctly divided into three definite sizes which perhaps represent three distinct broods one year apart.

The smallest individual measures about 6 mm. in length and 2.5 mm. in width at the widest point. It is white in color with a light brownish tinge to the large tibiae and tarsi of the first pair of legs. The body tapers from front to back, the end of the abdomen being large and rounded. The antennae are seven jointed and superficially resemble a fourth pair of legs.

The individuals of the intermediate size are dark grey in color with narrow dark brown bands at the posterior border of each abdominal segment, the tibiae and tarsi of the first pair of legs are darker brown, and the second and third pair of legs are very light brown. The head as compared with the remainder of the body is much larger than in the small form, but the abdomen is by far the largest part of the body. The integument of the body is soft and flexible. Wing pads have not begun to appear even on the largest individuals of the brood. The smallest individual of this brood measures 10 mm. in length and 5.1 mm. in width, while the largest individual is 12 mm. long and 6.5 mm. wide.

The full grown nymphal cicada is light brown in color, and the integument is shell like in texture. The wing pads are well

developed. Individuals of this brood vary in length measuring from 17 to 20 mm. and from 9.5 to 11 mm. in width.

The injury to asparagus is caused by the nymphal cicada which is usually found attached to the roots near the crown of the plant. The nymphal cicada grasps the root between the pincher like tibia and tarsus of the first pair of legs and inserts the beak into the root. They remain in this position during the whole of the nymphal stage sucking plant juices from the roots which gradually turn dark and lose all of the lateral feeders. In the case of plants which are severely injured the entire root system dies back to the crown. At this time the effect becomes decidedly noticeable above ground as the plant begins to turn brown and die back. Large areas in many of the "ferneries" are dying back from the effects of the cicadas. In other parts of the "fernery" the plants are small and do not respond to fertilizing or other cultural practices.

It was suggested that this was an accidental infestation resulting from planting asparagus on recently cleared ground since the cicadas have not been previously reported as affecting asparagus. It is improbable that it is an accidental infestation since many of the "ferneries" which have been planted for a number of years have been severely infested with the cicadas. One of the "ferneries" on the Pennock Plantation which had been planted for twenty years was so severely injured in 1928 that most of the plants died. Sansevieria and Pandanas were planted in this shed. The Sansevieria was not affected by the cicadas but the Pandanas did not grow well for the first two years. At the end of two years, however, the Pandanas were large enough that they did not show the effects of cicada attacks. The roots of one Pandana plant were examined on June 28th but no cicadas were found. In another "fernery" on the same plantation the manager reports that in 1929 the number of cast skins left by cicadas emerging from the ground was such that it was impossible to step in the fernery without covering at least six of these cast skins with the foot. This "fernery" had been planted approximately twenty years. Several plants were examined in this fernery and from one to three cicadas were found on the roots of each plant. And yet the plants seemed to be recovering from the effects of the heavy infestation of the previous year. Shed number three on the Pennock Plantation had been planted two years and no cicadas were found in this "ferenery". Mr. Sullivan, whose "fernery" has been planted fifteen years reports that in

1928 large numbers of the cast skins were present in his "fernery". In 1929 there were fewer skins but the "fernery" is still producing only about one-fourth the amount of salable asparagus that it produced two or three years previous to 1928. Mr. Wilkinson states that his three "ferneries" have been planted nine, five, and three years respectively. All three "ferneries" are infested with the cicadas and are not producing as much as one-fourth the amount of "fern" that they should. The "fernery" which has been planted five years seems most heavily infested, and it was placed under cultivation three years before the asparagus plants were set out. A part of Mr. Holmes "fernery" has been set out five years, another part eighteen months, and a third part twelve months. The cicadas have not yet attacked the two younger parts of the "fernery" while they are seriously damaging the older part of the "fernery". It is evident then that the infestation is not accidental since the cicadas are found only on the three year and older plantings.

Several localities outside the "ferneries" were examined to determine the number of cicadas found on plants outside the "fernery" and the kinds of plants attacked. Only three cicadas were found during an afternoon of looking for them outside the fernery. One was found on the roots of wire grass and two on scrub oak roots.

In order to determine the number of cicadas present in the "fernery" ten plots twelve inches square and eight inches deep were examined, and the number of cicadas counted. These counts gave an average of 8.3 cicadas to the square foot; the largest numbers found in two such plots were thirty one and twelve respectively, while two individuals was the smallest number found in a single plot. The number of cicadas found at this time (June 28th) is somewhat smaller than if the counts had been made four weeks earlier as some of the cicadas have already left the ground and emerged from the pupal stage.

This outbreak of cicadas at Jupiter is interesting for several reasons. Although cicadas are generally distributed over the state they have been reported as doing serious damage only in the vicinity of Jupiter. Very little is known about the life history and habits of this species so that much remains to be worked out along this line. Work on control measures has been started, and results of this phase of the problem will be reported later.