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Source: Florida Entomologist, 90(4) : 792-794

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/0015-4040(2007)90[792:ESLEAL]2.0.CO;2

ELACHISTA SACCHARELLA (LEPIDOPTERA: ELACHISTIDAE), A LEAFMINER INFESTING SUGARCANE IN LOUISIANA

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A leafminer was discovered infesting sugarcane (interspecific hybrids of *Saccharum* spp.) in Terrebonne Parish (near Schriever, LA, 29.38°N, 90.50°W) during the summer of 2006. Larvae were collected from the field, returned to the laboratory, and placed on sugarcane borer, *Diatraea saccharalis* (F.), meridic diet (Southland Products, Lake Village, AR). Emerged adults were identified as *Elachista saccharella* (Busck) (Lepidoptera: Elachistidae) (Fig. 1a). *Elachista saccharella* is a blotch leafminer. Each leaf mine begins as a longitudinal mine on the underside of a sugarcane leaf that sometimes extends 12 cm or more in length and terminates in a leaf blotch (Fig. 1b). These specimens represent a new distribution record for Louisiana and south-central United States and a significant range extension for the species.

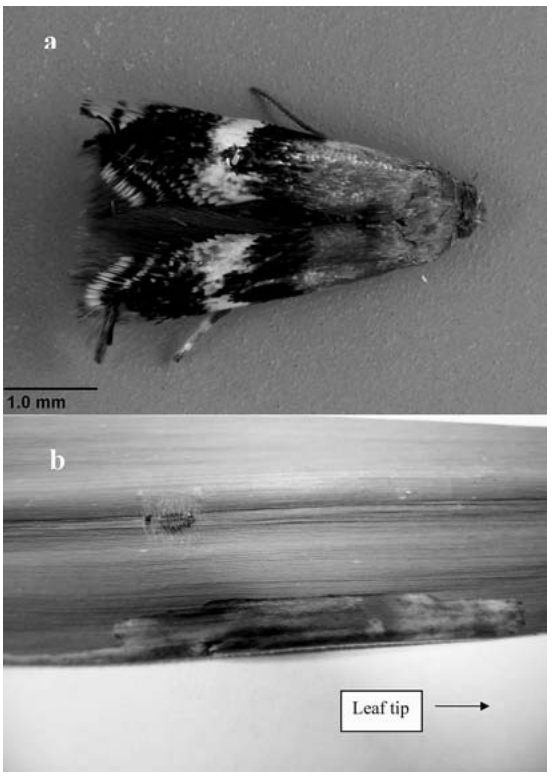

Fig. 1a. *Elachista saccharella*, adult. 1b. *E. saccharella* leaf blotch mine and pupae on mid-rib of the ventral surface of a sugarcane leaf.

Elachista saccharella was first reported in sugarcane in the U.S. in Florida in 1982 (Hall 1984). It was previously reported in Cuba by Scaramuzza & Barry (1959). An unidentified elachistid also was found in sugarcane in Papua New Guinea by Bourke (1968). *Elachista saccharella* also has been reported in reed grass, *Phragmites australis* (Cav) Trin ex Steud, a plant invader of salt marshes along the east coast of North America (Gratton & Denno 2005).

We initiated a survey of sugarcane growing areas of Louisiana on 16 Aug 2006. Twenty parishes were surveyed by sampling 4 sites per parish for the presence of the leafminer. Survey sites were commercial cane fields chosen at random, but were selected to be a minimum of 9 km distance from each other. We assumed that our survey would include most of the varieties that are recommended for growing (Legendre & Gravois 2007), and based on our collective experience in variety identification, we are confident this was the case. The sample scheme of individual fields was patterned after that of White et al. (1995, 2001) such that 2 sites of 10 separate stools of cane in perpendicular directions (1 side of the field and then across the front of the field) were examined for presence of a leaf mine. When a leaf mine was found, the position of the leaf harboring the lesion was noted relative to the leaf associated with the top visible dewlap (TVD = 0). The leaf just under the TVD was designated -1, the next -2, and so forth. The lesion was then removed from the leaf and returned to the laboratory. We dissected the lesion and recorded the following three conditions: larva present, moth emerged, or parasitoids emerged. Recovered larvae were placed on a meridic diet. If the larva produced a moth or if parasitoids emerged, this information was recorded.

Average statewide infestation was approximately 10% (n = 1600 stalks sampled) ranging from 0 to 33% (Table 1). Except for the western region (a non-traditional sugarcane growing area of the state), where leafminers were not found, the entire sugarcane production area was infested by *E. saccharella*. We noted, however, that the infestation intensity was somewhat higher in the southwest part of the region.

Although widely distributed in sugarcane growing areas, *E. saccharella* probably does not represent an economic threat to the Louisiana sugarcane industry. Firstly, parasitism was very high (avg. = 69%) throughout the sugarcane grow-

TABLE 1. INFESTATION DISTRIBUTION, INTENSITY, AND PARASITISM OF *E. SACCHARELLA* IN 20 SUGARCANE PRODUCING PARISHES IN LOUISIANA, 2006.

Region	Parish	Percent of stalks infested[1]	Percent parasitism
North	Avoyelles	21	76
North	East Baton Rouge	5	25
North	Iberville	9	86
North	Pointe Coupee	10	75
North	Rapides	9	43
North	West Baton Rouge	10	75
Average		11	63
Southeast	Ascension	14	91
Southeast	Assumption	8	67
Southeast	Lafourche	11	78
Southeast	St. Charles	11	89
Southeast	St. James	25	65
Southeast	St. John	4	100
Southeast	Terrebonne	14	91
Average		12	83
Southwest	Iberia	11	100
Southwest	St. Martin	13	30
Southwest	St. Mary	33	73
Southwest	Vermilion	9	43
Average		17	62
West	Acadia	0	—
West	Calcasieu	0	—
West	Jefferson Davis	0	—
Average		0	—
Overall Average		10	69

[1]Eighty stalks were examined in each Parish for a total of 1600 stalks.

ing area, but approximately 20% higher in the southeastern region (83%) than the north (63%) and southwest (62%) (Table 1). Parasitoids emerging from *E. saccharella* were sent to the Systematic Entomology Laboratory (USDA), Beltsville, MD for identification, but results have not been returned. At least two species appear to be involved. Hall (1988) reported two parasitoids from specimens collected in Florida that were identified as *Chrysocharis imbrasus* (Walker) and *Cirrospilus* sp. (Hymenoptera: Eulophidae).

Secondly, the amount of observed physical injury to the leaf by *E. saccharella* was minimal. We randomly collected 13 sugarcane leaves and used an electronic image analyzer (Microtek USA, Carson, CA) to determine the percentage (Assess Image Analysis Software, APS, St. Paul, MN) of the total leaf area affected by the mines. Lesions averaged 3.2 ± 0.8% (SE) of the total sugarcane leaf area and ranged from 1.0 to 11.5%. Generally 1 leaf per stalk was infested, but occasionally more infested leaves were observed. In most instances we found only 1 lesion per leaf, but a maximum of 4 lesions per leaf were observed. Finally, the leafminer was most frequently found on leaf -5 from the TVD leaf. A leaf at this position is deep within the sugarcane canopy where absorption of light and CO_2 is minimized and, therefore of little negative consequence to overall photosynthesis (Irvin 1972). However, on occasion, leaves close to the whorl and as low as -9 also were infested by the miner.

Thanks are extended to Randy Richard, USDA, ARS Sugarcane Research Laboratory, Houma, LA, for technical assistance and for providing the photograph in Fig. 2, to Dr. Richard Johnson, Research Agronomist, USDA, ARS Sugarcane Research Laboratory, Houma, LA, for conducting leaf scans, and to Jimmy Flanagan, County Agent for St. Mary and Iberia Parishes, who assisted with the survey in the southwestern region. We thank Richard L. Brown, John Brown, John Heppner, and Lauri Kaila for assistance with identifying the moth. We are especially grateful to L. Kaila for providing a copy of his monograph that allowed a positive determination (Kaila 1999). Voucher specimens are deposited in the Louisiana State Arthropod Museum in Baton Rouge, LA and the USDA, ARS Systematic Ento-

mology Laboratory, Washington, DC. This paper has been approved by the Director of the Louisiana Agricultural Experiment Station as manuscript number 07-26-0336. Mention of trade names or commercial products in this article is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the U.S. Department of Agriculture.

SUMMARY

The leafminer, *Elachista saccharella* (Busck) (Lepidoptera: Elachistidae) was found in Louisiana on 12 Jul 2006 and documented as a new distribution record for Louisiana. The leafminer was found in 17 of 20 sugarcane producing parishes surveyed. Although distributed generally throughout the sugarcane growing region, only 11% of the stalks sampled (n = 1600) were infested and 69% of the samples collected were parasitized. The lesions made by the leafminer constituted only 3% of the total leaf area, and were usually detected on older leaves deep within the canopy. For these reasons, it does not appear that *E. saccharella* will be an economic threat to sugarcane in Louisiana.

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