acquisition from membranes. As reported by STOREY, there does appear to be a barrier to absorption within the insect, which may be overcome in some cases by injection. Following injection of virus *C. mbila, C. triangula* and *C. chinai* transmitted efficiently, but *Dalbulus maidis* was inefficient. Using this technique all "strains" could be transmitted to maize, cv. Golden Bantam, regardless of their geographic origin or original host. Thus isolates from maize, coix, paspalum, setaria, sugarcane, panicum and other grasses could be transmitted to maize.

The sugarcane delphacid, Perkinsiella saccharicida (Homoptera: Delphacidae) in North America

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The sugarcane delphacid, *Perkinsiella saccharicida* KIRKALDY, was discovered in a Florida sugarcane field on August 4, 1982 by Dr. OMELIO SOSA, JR. The original collection was made on sugarcane, *Saccharum officinale,* approximately 22 km west of West Palm Beach, Florida. Identification was made by Dr. JAMES P. KRAMER, USDA Systematic Entomology Lab., U. S. National Museum, Washington, D. C. *P. saccharicida* originally occurred in Java, Formosa, southern China, the Malay States and Australia. It has been introduced into the Hawaiian Islands, Mauritius, Réunion, Madagascar, South Africa, Ecuador, and Peru, and of course, Florida.

Surveys conducted in September and October 1982 quickly revealed that sugarcane delphacids were present in most sugarcane fields in southern Florida. To date, the populations have remained below economic levels, and no insecticide treatments have been formally recommended. Instead, the emphasis has been on biological control. The predatory mirid, *Tytthus (= Cyrtorhinus) mundulus* (BREDDIN) was considered the most successful biological control agent introduced into Hawaii to control the sugarcane delphacid. It has been introduced into Florida sugarcane fields 4 times in the last two years. The colonies were obtained from Hawaii and were kept in quarantine for one generation before release. So far, about 500 individuals of *T. mundulus* have been released, but no specimens have been recovered in the field. Already established in Florida are *Tytthus parviceps* (REUTER) and a mymarid egg parasite, *Anagrus* sp. It is hoped that the combination of biotic factors, weather and cultural practices, will keep the delphacid populations at or below the present levels, and that the heavy damage reported in Hawaiian cane fields circa 1900 will not be repeated in Florida. Peak populations of the delphacid do not occur in Florida until October. At that time, the sugarcane has completed the maturity of its growth and harvesting begins. This may account for the low economic impact.

This delphacid is a double threat insofar as high populations can cause severe economic damage to sugarcane, and secondly, it is a vector of Fiji disease, a reovirus not reported in the Western Hemisphere but known from Asia and Africa and still a problem on cane in some areas, particularly Australia.

In 1982, surveys revealed the sugarcane delphacid in 10 southern Florida counties. In 1983, it was discovered in 14 more counties in central and northern Florida, plus one locality in extreme southeastern Georgia near the Georgia-Florida border. Nearly all these records were obtained in late summer to December when the delphacid populations increase and seem to have an instinctive urge to disperse. There are literature records of the delphacid 30 km from land over ocean water. In northern Florida there are no large commercial fields, the cane is grown in small patches for grinding into molasses. There is concern that the delphacid will disperse to other sugarcane growing areas of southern Mississippi, Louisiana, and Texas. Florida sugarcane has become a major agricultural industry with total value over 1 billion dollars per year and jobs for approximately 25,000 people. Florida sugarcane production has now surpassed Hawaii, with Florida producing 1.2 million metric tons of raw sugar last year. The presence of this delphacid and its capability to vector the Fiji disease virus makes the introduction and establishment of this disease more likely. Therefore, there is need to keep the vector population at the lowest level possible to protect the important sugarcane industry in Florida and other states in North America.

New concepts in classification of the Flatidae

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A preliminary study of supra-generic relationships in the Flatidae was done with a Fortran 77 computer program for Phylogenetic Analysis Using Parsomony (PAUP). This program was developed by D. L. Swofford, Illinois Natural History Survey. The operational taxonomic units were 15 genera representing the tribes and subtribes in the Metcalf Catalogue, and a member of the Ricaniidae used as an outgroup to root the tree. Other studies were made on 65 genera within the tribes and subtribes.

Twenty-five characters were selected for binary coding of character states. These included shape and structure of the head and tegmina, carinae, venation, metatibial spines, length of antennae and type of ovipositor. To give a few examples, the head can be produced or truncate, the metatibiae are unispinose or bispinose, veins R, S and M arise from the basal stem or S arises from R at a varying distance from the basal stem, vein Cu is branched or unbranched, a submarginal apical line of crossveins is present or absent, and the inner valvulae of the ovipositor are either bladelike or modified. Twelve of the characters applied to the tegmina.

In Australia and New Guinea, 96 percent of the genera have one preapical posttibial spine, and nearly all genera have a modified ovipositor.

The supra-generic tree (Fig. 1) showed branching relationships that could be reconciled with conventional classification, except that unexpected closeness was

Fifth Auchenorrhyncha meeting in Davos, Switzerland August 28-31, 1984

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