

ENTOMOLOGY

Chairman: HAROLD L. ZIMMACK
Ball State University, Muncie, Indiana 47306

Chairman-Elect: ALAN C. YORK
Purdue University, West Lafayette, Indiana 47907

Abstracts

Polyacrylamide Gel Electrophoresis of Esterase Enzymes in the Insect Order Collembola. JOHN W. HART and BETTY D. ALLAMONG, Departments of Natural Resources and Biology, Ball State University, Muncie, Indiana 47306.——Polyacrylamide gel electrophoresis was used to study B- and C-esterases in five species of Collembola. E_f values were computed for zymograms of 105 individuals and compared both within and between species. Certain bands, three to six in number, were found to predominate in zymograms of individuals of each species. Different bands predominated among the five species studied, and it was concluded that enzyme differences between species would be valuable in concert with classical morphology in the determination of species in this order.

The Genus *Desmopachria*, a Taxonomic Nightmare (Coleoptera: Dytiscidae). FRANK N. YOUNG, Biology Department, Indiana University, Bloomington, Indiana 47401.——Most of the small water beetles of the genus *Desmopachria* are adapted for burrowing in the organic debris at the margins of freshwater ponds, lakes, and slow streams. A few tropical species live in water holding plants such as the bromeliads. Many species resemble tiny plant seeds more than insects. Color, size, and general shape are the only external characters for classification, and even scanning electron microscopy does not reveal any integumental features of value. The external male genitalia, however, prove to be both unique in structure and very diverse in different species. On the basis of the genitalia, four species are recognizable in Florida, three others in Mexico and Texas, and three in Brazil, all of which are nearly indistinguishable on external examination. These species are truly pseudosiblings of which the males cannot even be distinguished from females by external characters. A few species, in the western U.S. and Mexico have developed color patterns on the dorsum which are considered disruptive coloration, some tropical species have the elytra spotted or fasciate, but the majority are remarkably similar externally. All must be dissected before a positive identification can be made.

Mosquito Studies in Delaware County, Indiana, 1978. I Larval Studies. ROBERT M. KRUGER, Department of Biology, Ball State University, Muncie, Indiana 47306 and ROBERT R. PINGER, Department of Physiology and Health Science, Ball State University, Muncie, Indiana 47306.——A qualitative study of mosquito species in Delaware County was made based on larval collections. The study was designed to update the 1964 mosquito larval study by Dr. R. E. Siverly

and to lay the foundation for further mosquito research such as arbovirus and dog heartworm studies.

Larvae were collected from April through September, 1978, using a white enamel dipper, and transported to the laboratory for species identification. Samples were reared to adulthood, when necessary, to confirm larval identification. Specimens from selected sites were preserved and cataloged for future reference.

A total of 3000 individual larvae were identified from 54 different sites. Of the 19 species identified, 4 represent new county records, *Culex tarsalis*, *Orthopodomyia alba*, *Aedes hendersoni*, and *Psorophora howardii*. *Culex pipens* and *Aedes vexans* were the most frequently encountered.

Mosquito Studies in Delaware County, Indiana 1978. II Light Trap Studies. ALICE K. THOMAS and ROBERT R. PINGER, Department of Physiology and Health Science, Ball State University, Muncie, Indiana 47306._____Four New Jersey light traps were operated daily from April to October to sample adult mosquito populations in Delaware County, Indiana in 1978. Supplementary adult collections were made from time to time with Dry-ice baited CDC miniature light traps.

Approximately 10,000 mosquitoes comprising 22 species were collected and identified. The first mosquito collected, *Culiseta inornata*, was captured on April 9th. *Aedes vexans*, *Aedes trivittatus* and *Culex pipiens* predominated in the New Jersey light trap collections. Peak adult populations occurred during the second half of July.

Culex tarsalis was collected at three different sites in Delaware County and was also taken in a CDC trap in neighboring Grant County. These represent new county records for this important disease vector. *Aedes dorsalis*, reported from a single site in Delaware County in 1972 was collected at several new sites in 1978.

The Susceptibility of Indiana Mosquito Populations to Five Insecticides Commonly Used in Control Programs. WILLIAM E. BLUE, DIANE BERGOCH, and MICHAEL J. SINSCO*, Indiana State Board of Health, Indiana._____Several counties in the State of Indiana have started mosquito control programs as a result of the epidemic of St. Louis Encephalitis in 1975. Since mosquito populations in some of these areas have never been subjected to prior pesticide selection pressure, this has provided an opportunity to collect susceptibility base-line data. *Culex pipiens* and *Aedes vexans* populations have been tested for susceptibility to malathion, temephos, fenthion, propoxur and Flit-MLR^R in widely scattered areas of the State. All mosquitoes were found to be highly susceptible to all insecticides. These data will be used as a base-line for regular testing in the future.

Introduction of *Rhinocyllus concicus* (Froelich) (Coleoptera; Curculionidae) for Biocontrol of Musk Thistle in Indiana. JOHN J. FAVINGER, Indiana

*Will present paper at Fall meeting.

^RTrade Name.

Department of Natural Resources, Indianapolis, Indiana 46204.——The musk or nodding thistle (*Carduus nutans* L.) is an introduced biennial weed that has become established along roadsides and in pastures and waste areas in many southern Indiana counties. Appreciable control has been effected in several states, notably Montana, Virginia and West Virginia, by the introduction of a seed-feeding weevil *Rhinocyllus conicus* (Froelich) host specific to four genera of thistles, *Carduus*, *Cirsium*, *Silybum* and *Onopordum*. In July 1977 approximately 600 adult weevils from Pulaski County Virginia were released by Division of Entomology personnel at dense thistle sites in Switzerland, Jefferson and Johnson Counties. An additional 1000 adult weevils were obtained from the same source and released at one prime site in Switzerland County May 22, 1978 as well as in Johnson County. Adult weevils were recovered from infested heads later in the summer at both major release sites. No recoveries have been made to data that can be attributed to the 1977 releases. Additional summer adults obtained from Monroe County, West Virginia were released July 25 and 29 at three Ohio County sites and in Johnson County.

Insect Control on Vegetables by Companionate Planting. ALAN C. YORK and KATHY O'GUIN, Purdue University, West Lafayette, Indiana 47907.——In garden size plots in which vegetable plants were surrounded with companionate plants, or sprayed with home remedy sprays or carbaryl, the following differences were observed. On cabbage, *Pieris rapae* was significantly reduced in number using a garlic mixture spray versus the companionate plants, onions, tarragon, dwarf marigold, nasturtium, or untreated. None of the treatments had any significant effect on *Trichoplusia ni*. On cucumbers, no significant differences existed between treatments with respect to cucumber beetles or yield. On snap beans, least damage occurred in the carbaryl treatment, but yields were not significantly different. Significantly fewer *Epilachna varivestis* larvae occurred in the garlic/hot pepper spray treatment than with dwarf marigold or summer savory. No differences existed in the number of *E. varivestis* egg masses. Differences in *Empoasca fabae* numbers were erratic between treatments. On eggplant fewest flea beetles and feeding scars occurred in the carbaryl treatment. Other treatments did not differ from one another including the untreated.

ULD applications of synergized pyrethrins for stored product pests. KAREN L. MCINTOSH, Purdue University, West Lafayette, Indiana 47907.——ULD applications of synergized pyrethrins were evaluated for control of rice weevils and confused flour beetles given various levels of protection. The distribution of droplets were also studied to examine the relationship between insect mortality and droplet penetration into harborage areas.