

ENTOMOLOGY

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ABSTRACTS

A Comparison of the Pathological Effects on the Midgut of the European Corn Borer Treated with *Bacillus thuringiensis* and *Bacillus subtilis*: A Preliminary Report. PHILLIP L. EICHMAN and HAROLD L. ZIMMACK, Department of Biology, Ball State University, Muncie, Indiana 47306.—Research is currently being conducted to compare the pathological effects of *Bacillus thuringiensis* and *Bacillus subtilis* on the midgut of the European corn borer (*Ostrinia numilalis*). *Bacillus thuringiensis* is known to be a virulent pathogen of many insects and to cause pathological damage to the midgut of the corn borer. Some degree of pathology has been observed in corn borers treated with *B. subtilis*, however, no quantitative data have been gathered. This study will attempt to compare quantitatively and qualitatively the pathology caused by these two bacterial species.

The research will include mortality studies and histological examination of midgut tissues utilizing both the light and transmission electron microscopes. It is hypothesized that there will be observable differences in the pathology caused by these two organisms, and that such a comparison may be employed to evaluate future biological control organisms.

Status of Gypsy Moth, *Lymantria dispar* (Linnaeus), (Lepidoptera, Lymantria) in Indiana. JOHN J. FAVINGER, Indiana Department of Natural Resources, Indianapolis, Indiana 46204.—Gypsy moth has become an increasingly serious defoliator of shade and forest trees in the eastern U.S. since its escape from a Medford, Massachusetts laboratory in 1869. Gypsy moth was confined to the New England states until the early 1950s when it broke through to the Hudson River. The use of DDT slowed its natural spread for a number of years, but after DDT sprays were discontinued, the pest spread quickly to other eastern states and Michigan.

In 1980 gypsy moth larvae defoliated 5.1 million acres of forest land and this area was more than doubled in the spring of 1981. Three years of successive defoliation usually results in a high mortality of oak and other susceptible deciduous hosts while one defoliation will often kill coniferous trees.

Extensive trapping for many years using a sex-pheromone (disparlure) sticky trap, disclosed only an occasional lone male gypsy moth in Indiana. Last year (1980) there was a multiple find in Vigo County. Intensive trapping this year disclosed a total of 32 moths at 11 locations in close proximity to the 4 moths captured in 1980. Fifteen moths were captured at one location.

Another significant area is in Elkhart County where a total of 16 moths were found in 8 trap locations.

Another multiple find was 3 moths at one Wayne location. Single finds were

recorded from 2 places in Allen and Tippecanoe, and 1 each in Bartholomew, Boone, Lake, LaPorte, and at a separate Wayne County location for a total of 60 moths.

Indiana is probably several years away from defoliating populations of gypsy moth but it would appear that there are incipient infestations in Elkhart and Vigo counties although, to date, no life stages other than adult males have been noted.

Aside from timber depredation the recreational use of parks, woodlands and camp grounds is greatly diminished by the presence of gypsy moth caterpillars in great numbers.

New Indiana Records of Hemiptera and Homoptera. ROBERT R. HEATON and VIRGIL R. KNAPP, Indiana Department of Natural Resources, Indianapolis, Indiana 46204—Thirty three new records of Tingidae, Cicadellidae, Fulgoridae, and Aphididae from the state are listed with annotations and hosts. Many of these species, it is believed, have been established in the state but have not previously been reported by scientific name. A couple are new inhabitants of the state as well as of the United States.

New Indiana Records

The different species are not listed in any of the varied systematic arrangements but alphabetically by genera and species within genus and family.

The initials of the collectors of all specimens are placed in parentheses after each record. The collectors and their initials are: H. R. Bollinger (HRB); J. A. Clark (JAC); R. Bruce Cummings (RBC); Robert R. Heaton (RRH); G. Earl Huff (GEH); and Virgil R. Knapp (VRK).

New Indiana Records of Tingidae

- Stephanitis rhododendri* (Horvath 1905) Rhododendron lace bug
Rhododendron sp. Marion Co., In. June 26, 1974 (RRH).
Stephanitis takeyai (Drake & Maa 1905) Andromeda lace bug
Pieris japonica Marion Co., In. June 20, 1974 (RRH).

New Indiana Records of Cicadellidae

- Balclutha punctata* (Fabricius, 1775)
 Grasses Morgan Co., In. October 20, 1975 (RRH).
Erythroneura aclys McAtee, 1920
Ceris canadensis Hendricks Co., In. May 11, 1977 (RBC).
Erythroneura bistrata McAtee, 1920
Ceris canadensis Hendricks Co., In. May 11, 1977 (RBC).
Erythroneura tricineta Fitch, 1851 Threebanded leafhopper
Nyssa sylvatica Marion Co., In., June 25, 1974 (RRH).
Eutettix luridus (Van Duzee, 1890).
Lespedeza Morgan Co., In. October 1, 1974 (RRH).
Fieberiella florii (Stal, 1864).
 Red raspberry Marion Co., In., July 22, 1976 (JAC).
Macropsis sordida (Van Duzee, 1894).
 Birch Wabash Co., In., July 1, 1974 (HRB).
Orientus ishidae (Matsamura, 1902).
Crataegus sp. Vigo Co., In., July 3, 1974 (GEH).
Scaphoideus opalinus Osborn, 1905
Rhus sp. Marion Co., In., August 2, 1976 (JAC).
Sorhoanus debilis (Uhler) 1876
 Sweeping weeds, Marion Co., In., June 22, 1979 (RRH).

New Indiana Records of Fulgoroidea

Achilinae (Achilidae)

- Catonia bicinctura* Van Duzee, 1915
Sweeping Morgan Co., In., September 22, 1976 (RRH).
Catonia impunctata (Fitch, 1830)
Weeds Morgan Co., In., July 25, 1977 (RRH).
Catonia lunata Metcalf, 1923
Peony. Morgan Co., In., September 22, 1976 (RRH).

Delphacinae (Delphacidae)

- Copicerus irroratus* Schwarz, 1802, on house
Morgan Co., In., October 2, 1975 (RRH).
Delphacodes detecta (Van Duzee, 1897)
Grass Spencer Co., In., October 3, 1974 (RRH).
Pissonotus brunneus Van Duzee, 1894
Meadow Morgan Co., In., July 25, 1977 (RRH).
Pissonotus delicatus Van Duzee 1897
Weeds Morgan Co., In., October 9, 1980 (RRH).

Derbinae (Derbidae)

- Cedusa edentula* (Van Duzee, 1912)
Meadow Morgan Co., In., July 28, 1977 (RRH).
Cedusa vulgaris (Fitch, 1851)
Weeds in Woods, Morgan Co., In., June 22, 1979 (RRH).

New Indiana Records of Aphids

- Amphorophora rubi* (Kalt., 1843)
Black Raspberry, LaPorte Co., In., July 24, 1974 (RBC).
Aphis carduella Walsh 1963
Cirsium vulgare (Thistle) White Co., In., August 22, 1978 (VRK).
Aphis citricola Vander Goot 1912
Amelancher sp. LaPorte Co., In., June 11, 1976 (RBC).
Brachycolus asparagi Mordvilko, 1929 Eastern Asparagus Aphid
Asparagus offinalis Marion Co., In., August 27, 1980 (VRK).
Det. Mrs. M. B. Stoetzel
Chaitophorus populifolii Gill & Pal. 1928
Populus deltoides Marshall, White Co., In., August 8, 1973 (VRK).
Eomacrosiphon nigromaculosus (Mac Dougall, 1926).
Rose, Marion Co., In., November 2, 1976 (VRK).
Hyadaphis tataricae (Azienberg, 1935).
Honeysuckle, tartarican, Jasper Co., In., September 22, 1980 (RBC).
Det. Mrs. M. B. Stoetzel
Macrosiphum geranii (Oestlund, 1887).
Ostrya virginiana Hophornbeam Marion Co., In., May 19, 1977 (VRK).
Melanocallis fumipennellus (Fitch, 1855).
Black Raspberry LaPorte, Co., In., May 31, 1977 (RBC).
Neophyllaphis araucariae Takahashi, 1937.
Araucariae excelsa, Marion Co., In., January 1967 (in greenhouses) (VRK).
Det. Miss. L. Russell
Pemphigus bursarius (Linn. 1758).
Lombardy poplar, Daviess Co., In., June 9, 1977 (VRK).

Sanbornia juniperi Pergande, 1920

Canartii juniper, Elkhart, Co., In., July 18, 1972 (RBC).

Sitobion ptericolens (Patch, 1919).

Bracken Fern, Pulaski Co., In., September 25, 1976 (VRK).

Recent Records of the Milkweed Beetle *Tetraopes melanurus* Schönher (Cerambycidae) from Indiana. MICHAEL P. KOWALSKI, Bloomington, Indiana 47401.—In July 1980 two male *Tetraopes melanurus* were collected 1.5 km south of Griffey Reservoir, Bloomington, Monroe County. These specimens represent the first reported occurrence of this species in Indiana since Blatchley's (1910) listing of it from Posey County. In July 1981 another male was collected from a field 0.5 km southeast of Griffey Reservoir, and subsequent field work east of Bloomington has uncovered a small breeding population. One of the 1980 specimens is presently in the collection of the University of California-Berkeley, and the other is in the collection of Indiana University-Bloomington.

The Distribution of the Walking Stick *Anisomorpha ferruginea* (Beauv.) in Indiana. MICHAEL P. KOWALSKI, Bloomington, Indiana 47401.—On October 18, 1979 a female *Anisomorpha ferruginea* was collected in a wood edge located 10 km east of Bloomington, Monroe County. The fact that the only reference to this species in Indiana in the literature is in Blatchley's *Orthoptera of Northeastern America* prompted me to update the status of this walking stick in the state. The counties in which *A. ferruginea* has been collected are Crawford, Jackson, Monroe, and Posey. Specimens are in the collections of the National Museum of Natural History, Purdue University, St. Francis College, and Indiana University-Bloomington.

Species Composition and Feeding Success of Mosquitoes Attracted to Dogs. ROBERT R. PINGER, Public Health Entomology Laboratory, Ball State University, Muncie, Indiana 47306.—During the summers of 1980 and 1981, field studies were conducted in Muncie, Indiana to determine the species composition of mosquitoes attracted to dogs. Dogs were placed in the field in modified kennel traps which allowed mosquitoes to approach and feed on the dogs but not escape. Trapped mosquitoes were collected at the end of each 3 hour testing period and identified to species. *Aedes trivittatus* constituted the greatest percentage of the catch each year with 73.6% in 1980 and 80.5% in 1981. *Aedes vexans* made up only 6.3% and 6.2% of the collections in 1980 and 1981 respectively. In contrast, *Ae. vexans* made up 22.5% and 49.5% of New Jersey light trap collections from the same site each year. Other mosquito species collected in the kennel traps were *Ae. canadensis*, *Ae. sticticus*, *Ae. stimulans*, *Ae. triseriatus*, *Anopheles punctipennis*, *Cosmosiphia perturbans*, *Culex erraticus*, *Cx. pipiens-restunans*, *Psorophora columbiae*, *Ps. ferox* and *Ps. horrida*. In summary, a strong mosquito-host association was found between *Ae. trivittatus* and dogs.

Confirmation of a LaCrosse virus (California Encephalitis group) focus in Delaware County. ALICE K. THOMAS and ROBERT R. PINGER, Ball State University, Muncie, Indiana 47306 and PAUL R. GRIMSTAD, University of Notre Dame, Notre Dame, Indiana 46556.—In 1978, the first isolation of LaCrosse virus from Indiana mosquitoes was reported from Delaware County. The isolation was from a pool of four *Aedes triseriatus* collected from a large wood lot ten miles north of Muncie. In 1980, a study was conducted using oviposition traps to determine whether infected larvae or pupae could be recovered from the area. One isolation of LaCrosse virus was made from fifteen pupae reared from eggs collected on July 28, 1980. This indicates that a focus of LaCrosse virus activity exists in this area.

Notorious *Rattus norvegicus* the Zoonotic Disseminator. WALTER WEBER, Indianapolis, Indiana 46217.—Norway rats have a bad reputation. That image is not improved by a review of medical literature (human or veterinary). Rats are involved in germ warfare playing an important part in perpetuation of over seventy pathogenic organisms. While many people voice concern about man-made environmental contamination, relatively few recognize the potential hazards of naturally occurring zoonotic organisms silently lurking in Norway rats, making them enemy number one ecologically and epidemiologically. A partial list of public health importance follows. Bacterial: *Brucella abortus*, *Borellia* spp., *Campylobacter fetus fetus*, *Erysipelothrix rhusipathae*, *Leptospira* 17 serovars, *Listeria monocytogenes*, *Mycobacterium avium*, *M. bovis*, *Pasteurella haemolytica*, *P. multocida*, *P. pneumotropica*, *P. pseudotuberculosis*, *P. tularensis*, *Pseudomonas pseudomallei*, *Salmonella* 18 serotypes, *Spirillum minus*, *Staphylococcus aureus*, *Streptobacillus moniliformis*, *Yersinia pestis*. Mycotic: *Histoplasma capsulatum*, *Microsporium gypseum*, *Trichophyton mentagrophytes*. Rickettsial: *Coxiella burneti*, *Rickettsia akari*, *R. rickettsii*, *R. siberica*, *R. typhi*. Viral: Lymphocytic choriomeningitis, Pseudorabies. Protozoan: *Balantidium coli*, *Entamoeba histolytica*, *Giardia lamblia*, *Leishmania donovani*, *Nosema cuniculi*, *Pneumocystis carinii*, *Sarcocystis lindermanni*, *Toxoplasma gondii*, *Trypanosoma cruzi*. Cestodes: *Hymenolepis diminuta*, *H. nana*, *Raillientiniasus garrison*, *Sparganosis spirometra*. Nematodes: *Ancylostoma braziliense*, *A. caninum*, *Angiostrongylus cantonensis*, *Capillaria hepatica*, *Gnathostoma spinigererum*, *Nippostrongylus brassiliensis*, *Strongyloides stercoralis*, *Toxocara canis*, *Trichinella spiralis*, *Trichostrongylus colubriformis*. Trematodes: *Echinostoma ilocanum*, *Heterophyes heterophyes*, *Paragonimus westermani*, *Schistoma incognitum*, *S. japonicum*, *S. mansoni*.