

Eupatorium odoratum is a common weed native to lowland tropical America including Trinidad, where it occurs in open land but not in forest. Introduced to the Old World, it is a serious weed in tropical forests, plantations, and pasture.

In Trinidad it is attacked by many polyphagous and oligophagous insects. Descriptions are given of the life cycles of the latter, comprising Lepidopterous, Dipterous, and Coleopterous species, attacking buds, stems, leaves and seeds.

The ecology is described of a leaf-feeding Arctiid Ammalo insulata Wlk. In South and Central America, geographic variations are found with some infertility between extremes. Adults were caught in light-traps, and larvae were occasionally abundant; both are nocturnal. When plant growth recommences with the rains in June, populations of this moth increase, but decrease in the dry season to a minimum in May. Eggs are parasitised by Telenomus sp. and larvae by five tachinids and are affected by a nuclear polyhedrosis virus.

Females preferentially oviposit on leaves of E. odoratum. In laboratory tests larvae rejected most plants without trial and completed development only on three species of Eupatorium. This moth, if freed of virus, is recommended for release against E. odoratum.

The results are discussed; populations of some insects especially where the larvae require young growth, may be limited by lack of suitable plant during the dry season. Parasites, predators, or inter-specific competition may regulate population size of others. Large seasonal

population fluctuations in A. insulata are controlled by the host plant growth cycle; long-term regulation may result from parasite and predator attack at low population densities, and mortality from virus at high densities.

It is suggested that in the Neotropics insect attack prevents the growth of E. odoratum in forest, and restricts its growth generally.

Dr. B. Alcock was also my supervisor initially, and subsequently Professor J. Kenny and Dr. D. Stodding assisted especially by reading and criticising the manuscript. I would also like to thank Dr. A. Chertoff for advice and assistance, Mr. S. Barnes for considerable help with statistical problems and for processing data in the computer, and Mr. Thomas Kellie for identifying and obtaining plant material. Mr. J. Longworth of the Invertebrate Pathology Unit at Oxford gave advice about insect viruses and Dr. H. Galle of the Department of Zoology, University of Oxford, operated one light trap during 1967 and has helped with the supply of bulls since.

Most of the insects were identified by Dr. R.G. Fernald and his staff at the Commonwealth Institute of Entomology, or by Dr. R.L. Keller and the staff of the United States Department of Agriculture Insect Identification Service; their help is gratefully acknowledged. Thanks are especially due to the late Dr. W.R. Thompson, Dr. F.D. Burke, Dr. R.J. Gagné, Dr. D. Kieckhefer, Dr. P. Vassio, Dr. E.W. Hodges, Mr. J.E. Bradley, Mr. W.H. Falgar, and Dr. W.R.T. Faus, all of whom provided particular help with certain groups.

Typing of all the drafts was done by Mrs. Joan Stanley, and of the final drafts by Mrs. Sharon Jan, and I thank them for their helpfulness and patience.

This project was financed from funds provided by the Nigerian Institute for Oil Palm Research.