THE CENTERS FOR DISEASE CONTROL'S PERSPECTIVE OF THE INTRODUCTION OF *AEDES ALBOPICTUS* INTO THE UNITED STATES[1]

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ABSTRACT. The Asian "tiger mosquito" *Aedes albopictus* has become established in the southern United States. The Centers for Disease Control has taken a number of steps to respond to the problem. Appropriate state and international agencies have been informed, and data on biology, public health importance and identification have been prepared and distributed to state and local agencies. Studies on insecticide susceptibility and vector competence are in progress, as is surveillance throughout the southeast, in cooperation with state and local agencies. The introduction of *Ae. albopictus* presents a major challenge to the mosquito control community.

INTRODUCTION

On January 30, 1986, the Division of Vector-Borne Viral Diseases (DVBVD), Centers for Disease Control (CDC), Fort Collins, Colorado, was informed by the Harris County Mosquito Control District (Texas) that the so-called Asian "tiger mosquito" (Robertson and Hu 1935) *Aedes albopictus* (Skuse) had been established over a large portion of Harris County. Since that time, infestations have been found in other Texas counties and in Louisiana (CDC 1986a, 1986b).[2]

The CDC views the introduction of *Ae. albopictus* as a potentially serious public health problem, both for the United States and for other countries in the hemisphere; we are devoting a major portion of our time and effort to the matter. We have informed state, federal, and international agencies of the introduction. Together with the Texas Department of Health, the Harris County Mosquito Control District, the University of Texas School of Health Sciences and a group of consultants, we have identified actions that might be taken and major questions to be answered before selecting a particular control strategy. We have prepared background brochures on the biology, identification, and public health importance of *Ae. albopictus* for distribution to state and local agencies. In Fort Collins, we are currently establishing insecticide susceptibility and vector competence profiles of the Houston *albopictus* population.

In cooperation with state and local health departments and mosquito control districts, the CDC is gathering the following crucial information on *Ae. albopictus*: (1) the present distribution and density and the types of larval habitats (e.g., tree holes and other natural containers); (2) routes of spread from infested areas to uninfested areas within the United States; and (3) mode of importation of this and other container-breeding species into the United States from overseas.

We are strongly encouraging state and local agencies that find this species within their jurisdictions to initiate control measures against it. Eggs and larvae seem to move from one area to another in shipments of used tire casings for the retreading and recycling industry. Thus, a major component in confining infestations involves the cooperation, and possible regulation, of these businesses. It is a large business, and tires are routinely shipped over long distances. Tire retreaders and recyclers need to be made aware of the seriousness of the problem and ensure that they are not helping to spread the mosquito.

Aedes albopictus is an efficient vector of dengue virus and the dog heartworm *Dirofilaria immitis* in nature, and we know that it is susceptible to a variety of pathogens in the laboratory (Shroyer 1986). Based on what is known about host preference and other behavioral characteristics, the question is what other New World pathogens of medical or veterinary importance might be vectored by this species? Since United States populations of *Ae. albopictus* are capable of diapausing,[3] what is the likehood of the species extending its range northward and eventually becoming

[1] This and the accompanying papers in this issue (Bartnett, Knudsen, Rai and Shroyer) and that of Sprenger and Wuithiranygool (1986) are adapted from presentations at a symposium held at the New Orleans meeting of the American Mosquito Control Association, April 21, 1986, at the suggestion of Dr. George B. Craig.

[2] As of September 30, 1986, infestations had been reported in Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Louisiana, Mississippi, Missouri, Ohio, Tennessee and Texas, as well as in three states in Brazil.

[3] Hawley, W. A., P. Reiter, R. S. Copeland, C. B. Pumpuni and G. B. Craig, Jr. *Aedes albopictus* in North America: Probable introduction in tires from northern Asia. In preparation.

involved in La Crosse virus transmission in the midwest?

We currently lack sufficient information to formulate a truly rational control-eradication program. A few of the questions that still require answers are: (1) Can *Ae. albopictus* be eradicated from the United States, and if so, at what cost? If not eradication, then can targeted source reduction lower urban populations sufficiently to prevent epidemics? (2) If eradication is attempted, will there be rapid selection for tree-hole breeding, sylvan populations as suggested for *Ae. aegypti* by McClelland (1967)? (3) Will *Ae. triseriatus* and indigenous species prevent colonization of natural container habitats or will *Ae. albopictus* replace one or more indigenous species? (4) What will be the long- and short-term costs of the several alternatives that are open to us? (5) What are the hemispheric implications of the possible responses available to us?

The introduction and establishment of *Ae. albopictus* in the United States presents major challenges to the mosquito control and medical entomology community by testing what we know about optimal strategies for vector control. It also presents a challenge to governmental agencies and other decision-making bodies that must establish program priorities, such as funding for direct control; research on biology, behavior and disease vector capacity; and prevention of introduction and movement. The emphasis placed on each of these latter program components will be based, in large part, on the overall strategy (e.g., eradication, localized source reduction, etc.). It is important that the overall strategy be selected with the greatest possible care, using all of available data—both biologic and economic.

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