

SURFACE LANDING PREFERENCES OF ADULT FEMALE *Aedes (Stegomyia) aegypti* (Linnaeus)¹

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I. INTRODUCTION. In the laboratory handling of *Aedes (Stegomyia) aegypti* (Linnaeus), containers and cages constructed of various metals, plastics, wood, and paper have been used. The question has arisen many times as to the acceptability of these materials to *A. aegypti* adults as resting surfaces. If mosquitoes are caged in a container made of a material unacceptable as a resting surface, it is possible that there would be abnormal activity of the mosquitoes that might affect experimental results. For this reason, it was decided to investigate the acceptability to *A. aegypti* of several common cage construction materials as resting surfaces. Carpenter and LaCasse (1955) have stated that adult *A. aegypti* rest in closets and behind doors. Christophers (1960) mentions moist, porous surfaces as resting surfaces. Horsfall states that *A. aegypti* prefer wood for oviposition and suggests that tree holes were the original breeding area. Wood was, on this basis, accepted as a satisfactory material. In this study, the materials tested were brass, steel, aluminum, polyethylene, and waxed cardboard (ice cream carton), all of which have been used commonly to contain *A. aegypti*.

II. METHOD. The interior vertical wall surfaces of three one-gallon ice cream cartons were each divided into five parts. On a random basis, one part was covered with sheet brass, a second with sheet stainless steel, a third with sheet aluminum, and a fourth with sheet polyethylene. The last part was left blank in order to test the ice cream carton surface.

The tops of the cartons were cut away and the holes covered with nylon marquisette to provide for observation and ventilation.

So as to avoid undue activity caused by mixing sexes, one hundred female *A. aegypti* pupae (sexed using the Savannah pupal separator) were placed in one-pint ice cream cartons so mounted that the adults emerged into the one-gallon cartons. When all adults had emerged, small, thin balloons placed between the two cartons were inflated, sealing the large carton. Adult mosquitoes in the large carton were fed 10 percent Karo solution from cotton pads placed on the marquisette carton tops. All cartons were kept at 80 percent relative humidity and 80° F. in a temperature and humidity controlled room. Lighting was uniform.

Each of the three cartons of mosquitoes was rotated 180° to disturb resting mosquitoes, five minutes were allowed for the mosquitoes to land and the numbers of adults landing on each surface then counted in each of the three cartons. This process was repeated thirty times, a count being kept of the total number of landings per material per carton. Finally the mosquitoes were killed by placing the cartons in an oven at 180° F. and the experiment terminated.

III. RESULTS. Table I gives the total numbers of mosquito landings by material and by container. An analysis of variance of these data showed that the difference in numbers of landings between materials was highly significant ($F=361.7^{**}$). There was a marked preference by *A. aegypti* for the waxed cardboard of the ice cream cartons. To a lesser degree, aluminum appears to have

¹ The opinions expressed herein are those of the author only and do not necessarily reflect those of the United States Air Force.

TABLE I.—Numbers of Adult Landings on Different Surfaces.

Material	Number of Landings		
	Replicate 1	Replicate 2	Replicate 3
Brass	53	72	53
Steel	38	44	45
Aluminum	98	123	147
Polyethylene	18	36	32
Waxed Cardboard	692	783	829

been preferred by the mosquitoes to the materials other than ice cream carton.

IV. DISCUSSION. From the results of this experiment, ice cream cartons rather than the other materials tested appear to be markedly preferable as a resting surface to *A. aegypti*. However, this preference may be due either to the relative roughness of the surface of the carton or to the plasticity of the wax coating. Ideally, then, the other materials should be wax coated and tested again. However, common sense dictates that wax-coated metals or plastics will find little application as experimental containers for *A. aegypti*, since cardboard is much cheaper. Therefore, it would appear that, from the standpoint of resting area acceptability, waxed cardboard ice cream

cartons are a satisfactory container for adult *A. aegypti*.

V. SUMMARY AND CONCLUSIONS. The total numbers of adult female *A. aegypti* landing on five different materials in each of three one-gallon ice cream cartons, each containing 100 mosquitoes, were counted 30 times, each time after the carton had been rotated 180° and five minutes allowed for the adults to come to rest. The difference in numbers of landings per material was highly significant. Waxed cardboard ice cream cartons were markedly more acceptable as a landing surface than the other materials tested. Aluminum was superior to all other materials except ice cream carton.

Waxed cardboard ice cream cartons appear to be satisfactory containers for adult female *A. aegypti* from the standpoint of resting surface acceptability.

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