Aedes (Stegomyia) albopictus (Skuse), a Potential New Dengue Vector in Southern Cameroon

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Aedes albopictus, a mosquito vector of Dengue virus, has been recorded for the first time in Cameroon. Entomologic surveys in 2000 demonstrated that it is widespread in southern Cameroon, colonizing a wide variety of breeding sites and biting humans in every district surveyed. The presence of this vector increases the risk for emergence of dengue in Cameroon.

Materials and Methods

Study Sites

Surveys were conducted in the two main cities of Cameroon: Douala, pop. 1,400,000 (4°00'N, 9°45'E), commercial harbor and largest city in Cameroon, and Yaoundé, pop. 1,300,000 (3°41'50"N, 11°30'00"E) the capital city, located at an altitude of 800 m. Entomologic studies were also conducted in Campo (2°30'N, 9°50'00"E; pop. 4,000), Edea (3°45'N, 10°10'00"E; pop. 100,000), and Bafia (4°45'N, 11°15'00"E; pop. 50,000).

Larvae and Adult Mosquito Collections

Larval development sites of mosquitoes were investigated in four districts in Yaoundé (Gare, Cité Verte, Brasseries, and Biyemassi), four districts in Douala (Dibom, New Bell, Bonaberi, and Makepe), and three districts in Edea and Bafia. Approximately 20 potential breeding sites containing water were sampled in each district in Yaoundé and Douala; an average of seven breeding sites were sampled in each district in Edea and Bafia. A breeding site was recorded as positive when it contained mosquito larvae or pupae, whatever the species.

Biting behavior of mosquitoes was checked by five adult volunteers in the districts of Yaoundé, Douala, and Campo. These volunteers collected mosquitoes landing on their arms or legs from 5:00 to 6:30 p.m. All surveys were conducted in October and November 2000, at the end of the long rainy season.

Larvae and adults were identified by the morphologic identification keys and morphologic descriptions of African Aedes species (11-13). Male genitalia were dissected and examined under a microscope.

Results

Ae. albopictus was present in all five towns and in every district sampled. Species identification was confirmed on larvae and adult males and females. Of the positive larval development sites sampled, 75% of 36 in Yaoundé and 45% of 53 in Douala contained Ae. albopictus larvae. Ae. albopictus was found in five breeding sites in Edea and seven in Bafia (Table).

The volume of water in Ae. albopictus-positive breeding sites ranged from 50 mL to 100 L. Species found together in...
Ae albopictus is a competent vector for DV. Because this disease is expanding in the world (17), data are needed on the actual distribution of Ae albopictus throughout Cameroon and the potential risk for transmission of arbovirus. Surveillance of used tires, which seem to be its preferred breeding sites, can provide maximum information on species distribution at the lowest cost-effective rate. The presence of this vector, in association with Ae aegypti, increases the risk for emergence of dengue in Cameroon.

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References

Table. Breeding sites found positive for Aedes albopictus in 2000, southern Cameroon

<table>
<thead>
<tr>
<th>Types of breeding sites containing water</th>
<th>Number of positive sites sampled of each type</th>
<th>Percent Positive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used tire</td>
<td>36/77</td>
<td>47</td>
</tr>
<tr>
<td>Plastic container</td>
<td>7/27</td>
<td>26</td>
</tr>
<tr>
<td>Can and broken bottle</td>
<td>9/30</td>
<td>30</td>
</tr>
<tr>
<td>Plastic cup</td>
<td>3/6</td>
<td>50</td>
</tr>
<tr>
<td>200-L barrel</td>
<td>0/7</td>
<td>0</td>
</tr>
<tr>
<td>Abandoned car part</td>
<td>6/35</td>
<td>17</td>
</tr>
<tr>
<td>Cement washhtub</td>
<td>0/4</td>
<td>0</td>
</tr>
<tr>
<td>Flower pot</td>
<td>0/2</td>
<td>0</td>
</tr>
<tr>
<td>Tree hole</td>
<td>0/4</td>
<td>0</td>
</tr>
<tr>
<td>Cow horn</td>
<td>0/4</td>
<td>0</td>
</tr>
<tr>
<td>Cocoa pod</td>
<td>0/4</td>
<td>0</td>
</tr>
<tr>
<td>Enameled plate</td>
<td>1/6</td>
<td>17</td>
</tr>
<tr>
<td>Snail shell</td>
<td>1/3</td>
<td>33</td>
</tr>
</tbody>
</table>

The same sites were Ae aegypti, Anopheles gambiae s.s., Culex gr. decens, Cx. quinquefasciatus, Cx. poliipes, Cx. duttoni, Cx. (Culicomyia) sp., Cx. (Lutzia) bigripes, and Eretmapodites quinquevittatus. Of breeding sites positive for Ae albopictus or Ae aegypti, both species were found together in 68% of sites in Yaoundé, 50% in Douala, 33% in Edea, and 38% in Bafia.

Late afternoon captures of adults demonstrated that Ae albopictus is anthropophilic. The average number of Ae albopictus females collected per volunteer from 5:00 to 6:30 p.m. was 1.1 (range 0 to 8) in Douala and 3.0 (range 0 to 17) in Yaoundé. Other species collected were Ae aegypti, An. gambiae s.s., Cx. quinquefasciatus, Cx. antennatus, Cx. perfuscus, Cx. from neavel group, Cx. from decens group, Er. quinquevittatus, Mansonia uniformis, and Ma. africana. Ae albopictus was the species most often captured, accounting for 35% of all the mosquitoes.

Conclusions
In 2000, Ae albopictus was already widespread in South Cameroon. It was present in all the districts and towns sampled, in a wide variety of breeding sites, the most common being used tires, as described elsewhere (2). Used or retread tires are imported regularly from the United States, Nigeria, and America and Europe.

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