

The Distribution of Anopheles in the State of Veracruz.

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The State of Veracruz extends along the curve of the Gulf of Mexico for about 900 kilometers between 22° 27' and 17° 10' N. Latitudes and 93° 30' to 98° 40' Long. W. of Greenwich as a narrow strip of land varying from as much as 212 km. to as little as 36 km. in width. Within this territory of about half the size of the State of Florida one finds coastal plains, high mountains, deserts and jungles and from tropical through temperate to cold climates. By travelling over the highway which stretches across one of the widest portions of the State one can pass through cold and desert climates down to the tropical coastal jungles within a few hours time. Thus we find ideal conditions prevailing for a diversity of fauna and flora not easily encountered in other States and are only handicapped in our explorations by the lack of proper communications accentuated during the rainy season when travel in certain portions of the State is practically at a stand still.

The State of Veracruz is considered to lie within the Neotropical Region and it has been found to mark the northern boundary of extension of the Neotropical Culicines. On the other hand we have found true too that within this State some of the Nearctic species will fade out of the faunal picture. The oc-

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currance of the Nearctic species usually coincides with the colder portion of the year during which they attain their peak of production, being relatively scarce during the hotter rainy season when the Neotropical species will show their maximum abundance.

For the last three years an Anopheline survey has been carried out which has added two species to the list of Anophelines occurring in the State as well as distribution data for each particular species.

The list of species of Anophelines in the State of Veracruz now stands as follows:

Nearctic species:

1. *Anopheles crucians crucians* Wiedemann.
- 1^a *Anopheles crucians bradleyi* King.
2. *Anopheles quadrimaculatus* Say.
3. *Anopheles walkeri* Theobald.

Neartctic and Neotropical:

4. *Anopheles pseudopunctipennis pseudopunctipennis* Theobald.

Neotropical species:

5. *Chagasia bathanus* Dyar.
6. *Anopheles parapunctipennis parapunctipennis* Martini.
7. *Anopheles eiseni* Coquillett.
8. *Anopheles vestitipennis* Dyar and Knab.
9. *Anopheles argyritarsis* Robineau-Desvoidy.
10. *Anopheles albimanus* Wiedemann.
11. *Anopheles strodei* Root.
12. *Anopheles apicimacula* Dyar and Knab.
13. *Anopheles punctimacula* Dyar and Knab.
14. *Anopheles neomaculipalpus* Curry.
15. *Anopheles neivai* Howard, Dyar and Knab.

1. *A. crucians crucians* Wiedemann.

A. crucians has been taken in countries of Central America, so we are just able to bridge gaps existing in the

distribution records, having found it to occur from the northern tip of the State down to the southern portion and from coastal plains up to an elevation of 1200 meters above sea level.

1^a **A. crucians bradleyi** King.

A. crucians bradleyi was found at Nautla located about 200° N. Lat., and the literature records it for Coatzacoalcos down at 18° N. Lat.

2. **A. quadrimaculatus** Say.

The range of *A. quadrimaculatus* extends from the northern boundary of the State down to Tlacotalpan located at 95° 40' and 18° 36' N. Lat. always restricted to the coastal plain area.

3. **A. walkeri** Theobald.

A. walkeri is recorded in the literature as having been found at Pánuco about 22° N. Lat., and we have been unable to locate it during our survey.

4. **A. pseudopunctipennis pseudopunctipennis** Theobald.

This dry season Anopheline is the only one which can claim an almost uninterrupted range from North to South and from the coast to high altitudes (1200 meters).

5. **Chagasia bathanus** Dyar.

This is the first record of this species for the State of Veracruz where it was located at Sayula (94° 55' W. Long. 17° 52' N. Lat.)

6. **A. parapunctipennis parapunctipennis** Martini.

This high altitude Anopheline was found for the first time in the State during the course of the survey, occurring along the high mountain ranges between 19° and 20° N. Lat. from altitudes ranging from 1250 to 2680 meters above sea level, and one locality farther north, Huayacocotla at 20° 30' N. Lat. at 2200 meters above sea level.

7. *A. eiseni* Coquillet.

A. eiseni occupies territory with elevations from 800 meters upwards in the central portion of the State between 18° 30' and 20° N. Lat.

8. *A. vestitipennis* Dyar and Knab.

Occurs in the State of Veracruz from the southern tip of the State as far north as Pánuco at 22° N. Lat.

9. *A. argyritarsis* Robineau-Desvoidy.

Ranges from the southern border northward to Papantla at 20° 25' N. Lat.

10. *A. albimanus* Wiedemann.

By far the most abundant of all Anophelines in the State which occupies all the coastline including elevations from sea level to 1000 meters. Occasionally it is found at elevations beyond these fixed limits, being established for instance at a place located at 1190 mts. and accidentally carried up to as high as 1400 mts. where immature larvae have been collected.

11. *A. strodei* Root.

The occurrence of this Anopheline in the State was recorded by Vargas for Chinameca, Ver., and our survey has located specimens from the southern border of the State to the Municipality of Veracruz to about 19° 15' N. Lat.

12. *A. apicimacula* Dyar and Knab.

13. *A. punctimacula* Dyar and Knab.

A. apicimacula has been recorded for the southern and central portions of the State ranging up to 20° N. Lat. coinciding practically with the range occupied by *A. punctimacula* which has been recorded as far north as Lat. 20° 30'.

14. *A. neomaculipalpus* Curry.

This Anopheline has been found in the southern portion of the State extending northward to the Municipality of Paso de Ovejas (19° 15'); to occupy about the same territory as *A. strodei*.

15. *A. neivai* Howard, Dyar and Knab.

A bromelias breeder was located by Knab in the rainforests around Cordoba in the central portion of the State and so far has never again been taken.

Anopheline breeding was found in general to conform to known patterns and were only found in unusual habitats during the dry season when breeding areas are much reduced and it is then that sun loving larvae of *Anopheles albimanus* or *Anopheles argyritarsis* will be found in deeply shaded pools in intermittent streams or seepage areas usually preferred by jungle breeders. On the other hand we have taken our biggest collections of shade loving jungle breeders after an unusually heavy downpour right out in brilliant sunshine.

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