

ANOPHELES SACHAROVII (FAVRE 1903) IN TURKEY

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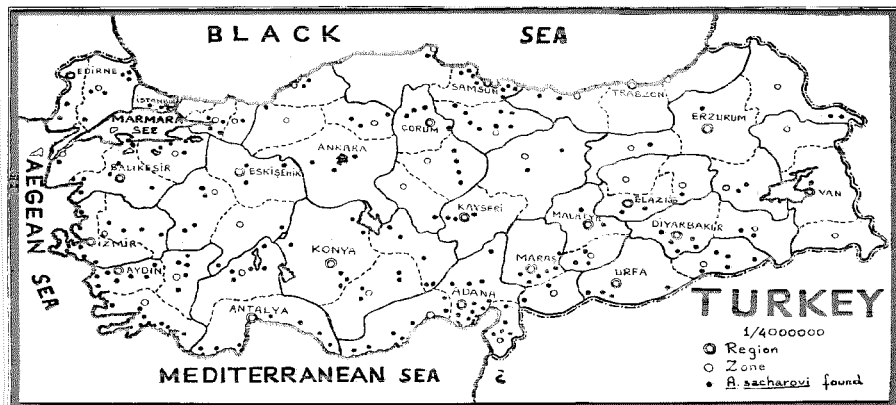
According to the surveys made before 1925, prior to the establishment of the Malaria Control Organization and following the epidemiological and entomological investigations carried out by the staff of the Organization, there were ten different *Anopheles* species in Turkey. These *Anopheles* were *sacharovi* (Favre 1903), *maculipennis* (Meigen 1818), *hyrcanus* (Pallas 1771), *claviger* (Meigen 1804), *algeriensis* (Theobald 1903), *plumbeus* (Stephens 1818), *marteri* (Senevet and Prunelle 1927), *superpictus* (Grassi 1899), *multicolor* (Cambouliu 1902), *sergenti* (Theobald 1907). Of these, the most important vector of malaria is *sacharovi*. The secondary vector is *superpictus*. Although *claviger* and *sergenti* play an important role in the transmission of malaria in the neighboring countries of Israel and Jordan, and are found in malaria transmission areas in Turkey, the majority of *Anopheles* present are *sacharovi*.

A. sacharovi is widely distributed throughout Turkey. However, in coastal plains and near the marshy areas, it is

often found breeding with *maculipennis melanoon* (Hackett 1934) and *maculipennis messeae* (Falleroni 1926). Toward the Anatolian Plateau, it is found with *maculipennis typicus* (Hackett and Misiroli 1935) and *superpictus*. *A. hyrcanus*, *A. sergenti* and species of *Uranotaenia*, *Culiseta* and *Culex* may also be found with *sacharovi*.

Eggs. Eggs of *A. sacharovi* are light grey in color, usually without floats. Those found in the spring may have rudimentary floats. The eggs found in the surrounding breeding places of Lake Van (1,720 m.) had floats.

LARVAE. The hatching of larvae usually takes 1-2 days, according to the local summer temperature. Breeding places of larvae vary in different areas. In the southern and western coastal areas of Turkey, breeding takes place near the sea, in saline waters, in streams, in small lakes and ponds formed by lagoons and in brackish waters, in rice field irrigation canals, near river banks, lakes, in water next to wells, in water collected in horse footprints, in ponds, and barrage lakes.



They can be found together with *A. superpictus* in pools of mountain torrents during summer. *A. sacharovi* also breed on high land up to 1,720 meters in the Van region and it can be found in springs, lakes or drains and in breeding places next to mountain lakes. Breeding places have generally clean, still and sunny waters, with green vegetation. When they cover extensive areas and especially where there is irrigation, it is almost impossible to control the breeding of larvae.

ADULTS. In the Middle East, *A. sacharovi* feeds mostly on man and other domestic animals. It is found abundantly in stables. Following the last ten years of DDT spraying, *A. sacharovi* recently began to show a tendency to be less domestic in habits. By resting in caves in Savur in the East of the Country, in Adana

Region in the South, they cause outdoor transmission. Insecticide spraying does not cause their complete disappearance, but where insecticide spraying is neglected they increase abundantly. They hibernate as adults in stables where hundreds of them may be collected. It is also possible to find a great number of *A. sacharovi* specimens in Maras region, due presumably to DDT resistance.

They are found resting on ceilings and walls of stables above one meter from the floor in half shaded places, along with *A. hyrcanus*, *A. superpictus*, and others. They are also found in rooms of houses, in darkish corners, inside cupboards, between objects hanging from walls, in back of and beneath furniture, and in other similar situations.

ANOPHELES DISTRIBUTION AND ITS RELATION TO THE MALARIA ERADICATION PROGRAM IN CENTRAL NEPAL

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The high Himalayan Kingdom of Nepal is not spared the devastation of malaria (Karan and Jenkins, 1960), which for centuries has plagued, hampered and killed the Nepalese people. Starting in 1952, the United States foreign aid program, working in collaboration with the Nepalese government, undertook a small malaria control project especially to assist the people living in the hyperendemic areas. It was at this time that the first efforts were made to survey the mosquito population and discover the vectors.

The initial steps in malaria control proved most successful. As time passed, the control program steadily increased in

magnitude. Then, with the intensity of malaria eradication programs increasing throughout the world, with the neighboring successful Indian eradication program progressing favorably and with a World Health Organization pilot project proving very successful in Nepal, it was felt that a Nepalese eradication program was not only feasible, but would prove more advantageous to Nepal than a control program. Therefore, in December 1958 two coordinated bilateral agreements were signed between His Majesty's Government of Nepal, the World Health Organization (WHO) and the United States International Cooperation Administration (ICA) to undertake a malaria eradication project in Nepal.

For the purposes of the eradication program, the country was divided into three zones consisting of an Eastern Zone,

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