

## THE DISCOVERY OF A MEMBER OF THE *ANOPHELES* *MACULIPENNIS* COMPLEX BREEDING IN TREEHOLES IN FRANCE

ROBERT A. HEDEEN<sup>1</sup>

**INTRODUCTION.** Since the discovery by Falleroni in 1926 (Falleroni, 1926) that *Anopheles maculipennis* Meigen, an important vector of malaria in the Old World, could be separated into different races or varieties on the basis of differences in the eggs, a large amount of research has been performed on this species. Hackett, Martini, and Missiroli (1932) discovered that the races of the species differ greatly in their ability to transmit malaria, and that their feeding and breeding habits are quite diversified. Russell, Rozeboom, and Stone (1943) recognize seven varieties in the complex which occur in the European Region. These are *A. sacharovi* Favé, *A. melanoon melanoon* Hackett, *A. melanoon subalpinus* Hackett and Lewis, *A. labranchiae atroparvus* van Thiel, *A. labranchiae labranchiae* Falleroni, *A. maculipennis maculipennis* Meigen, and *A. messeae* Falleroni. A variety of breeding places have been reported for each of these "species" with each one usually having a definite preference. For example, *maculipennis maculipennis* larvae usually occur in fresh water in hilly sections, whereas *labranchiae atroparvus* larvae are usually found in brackish water along coastal areas, (Russell, *et al.*, 1943). As far as can be determined no previous investigator has reported any member of this complex in Europe breeding in tree holes.

**THE PRESENT STUDY.** On 1 July 1954, members of the Survey Section of the 485th Medical Company (Preventive Medicine) (Separate) made a routine collection of mosquito larvae from a tree hole about 15 miles east of La Rochelle, Charente-Maritime, France. These specimens were brought to the laboratory, and at that time

it was noticed that a number of fourth instar *Anopheles* larvae were present in the collection. These were removed and mounted, and all were identified as *Anopheles plumbeus* Stephens, with the exception of one specimen which was identified by the writer as *A. maculipennis*. The following day the tree hole was visited again, and all the water from the hole was removed with the aid of a suction pump. Ten more *plumbeus* and two more *maculipennis* were taken on this occasion. All the specimens were fourth instar at the time of the collection. The two *maculipennis* larvae were placed in a finger bowl containing water taken from the tree hole and placed under a bell jar in an effort to secure adults. One of these larvae died on 4 July 1954, and it was removed and mounted. The other specimen continued its development in a normal manner. It pupated on 9 July 1954 and emerged as an adult female on 13 July 1954. An effort was made to rear this adult in the hope of securing ova in order that an exact determination could be made. The specimen died, however, on 14 July 1954. It was mounted and determined by the writer to be a member of the *maculipennis* complex. On subsequent visits to the tree hole no more specimens of either species were found. As no ova were obtained from the original specimens, it was impossible to determine which member of the *maculipennis* complex had been collected.

The tree from which the specimens were taken was *Platanus acerifolia* Willd., a species quite common in this section of France. The hydrogen ion concentration of the water in the tree hole was determined to be 7.2. An associated species, present in large numbers with *Anopheles maculipennis* and *A. plumbeus*, was the common European tree hole breeder, *Aedes geniculatus* Oliv.

<sup>1</sup> 1st Lt. Medical Service Corps, USA, 485th Medical Company (Preventive Medicine) (Separate) APO 219, New York, New York.

Ten additional fourth instar specimens of *A. maculipennis* were collected from another tree hole on 31 October 1954, near the city of Rochefort, also in the Department of Charente-Maritime. These specimens were all mature at the time of collection. Five were mounted as larvae, and five were allowed to continue development. Two of these five eventually emerged as adult females on 9 November 1954 and were readily identified as *A. maculipennis*. These specimens died soon after emerging as adults. The tree from which these specimens were taken was *Fraxinus angustifolia* Vahl. The hydrogen ion concentration of the water in the cavity was 7.2, as in the original collection. Associated species were *A. plumbeus* and *Aedes geniculatus*, as in the original collection.

Of the ten larvae collected on this occasion, one was unique in that it possessed two well developed antennal hairs. These hairs were of equal size and inserted quite close to each other on the basal fourth of the antenna.

**SUMMARY.** Thirteen specimens of *Anopheles maculipennis* were collected from rot cavities in the trees *Platanus acerifolia* Willd., and *Fraxinus angustifolia* Vahl, in the Department of Charente-Maritime, France, near the cities of La

Rochelle and Rochefort by members of the 485th Preventive Medicine Company. As far as can be determined, this is the first instance of this species of mosquito having been found breeding in a tree hole. Three larvae were reared to maturity and emerged as adult females which were readily identified as members of the *maculipennis* complex. As no eggs were secured, it was impossible to determine the variety of the specimens collected. One of the larvae was noticed to possess two well developed antennal hairs.

**ACKNOWLEDGEMENTS.** The writer is indebted to Dr. Paul Jovet of the French Museum of Natural History in Paris for determining the species of trees. He also is indebted to SFC Earl G. Wilcox and Sgt. William W. Zack of the 485th Preventive Medicine Company for their assistance.

#### Literature Cited

- FALLERONI, D. 1926. Fauna anofelica italiana e sue habitat (paludi risaie, canali). Riv. di Malar. 5:553-93.
- HACKETT, L. W., MARTINI, E., and MISSIROLI, A. 1932. The Races of *A. maculipennis*. Amer. Jour. Hyg. 16:137-62.
- RUSSELL, PAUL F., ROZEBOOM, LLOYD E., and STONE, ALAN. 1943. Keys to Anopheline Mosquitoes of the World, Publ. by Amer. Ent. Soc., Lancaster Press, Lancaster, Penna. 152 pp.