

OCCURRENCE OF OVARIOLAR DILATIONS IN NULLIPAROUS MOSQUITOES¹

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Active interest in techniques for age-grading mosquitoes was generated when Gillies (1958) reviewed significant work by Russian scientists that had not been widely available previously. Of great value to medical entomologists are the techniques that enable them to distinguish parous females (i.e., those that have laid eggs) from nulliparous females (those that have not) because by making this distinction in examining specimens of a species that transmits disease, important information is obtained toward assessing the potential infectivity of each individual female. However, conditions that we have observed (Bellamy and Corbet, 1973) in the ovaries, of *Culex tarsalis* Coq. show that in this species (and perhaps in others that have a similar pattern of ovarian development) certain of the standard criteria commonly used for diagnosing the parous condition can be misleading unless applied with caution and qualification.

After a mosquito has laid eggs a dilatation commonly forms on the stalk of each ovariole from which an oocyte was shed, in each case marking the position where before ovulation there had been a mature follicle; accordingly, dilatations have been used to recognize mosquitoes that are parous. However, dilatations may also form on other ovarioles if their contemporary follicles fail to mature and are resorbed. These events are well known (Gillies, 1958; Detinova, 1962; Clements, 1963) but the fact that in certain circumstances these phenomena may invite misinterpretation has apparently been overlooked or insufficiently appreciated.

We have confirmed the above sequence of events in *C. tarsalis* and have found that, particularly in females whose ovaries have matured without a prior blood meal (i.e., autogenous females), dilatations resulting from resorbed follicles can be numerous. The point we wish to emphasize is that such dilatations can occur in nulliparous, as well as in parous, females: we found them in gravid autogenous females that had not laid eggs. If without knowing their history we had applied to these mosquitoes age-grading criteria as they are now used, we would probably have classified

them as parous. Mosquitoes that mature only a few follicles (a frequent occurrence in autogenous females) are particularly likely to be incorrectly classified as parous since the small number of mature follicles would normally be interpreted as relict (or retained) eggs following a presumed oviposition. Accordingly, we call attention to the likelihood of the presence of dilatations in such mosquitoes being misinterpreted, and caution against the unqualified acceptance of dilatations as invariable indices of the parous condition.

We did this work while at the Canada Department of Agriculture Research Institute, Belleville, Ontario.

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PHLEBOTOMINE SANDFLIES IN MONTANA: FIRST REPORT

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The species diversity and population density of phlebotomine sandflies is highest in the tropical areas of the world. They become less and less abundant in the temperate zones with an increase in latitude. Until relatively recently, the known northernmost distribution of these flies was Maryland on the east coast and central California on the west coast. These limits have now been extended considerably by the efforts of a few entomologists. For instance, 4 species are known from the state of Washington (Fairchild & Harwood 1961), 3 from British Columbia and southern Alberta (Harwood 1965), and 1 from southern Ontario in eastern Canada (Downes 1972).

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