

CULEX QUINQUEFASCIATUS, *CULEX*
PIPIENS AND OTHER CULICINES
OVIPOSITING IN CONTAINERS IN THE
KAROO REGION OF SOUTH AFRICA

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Over a 15-month period from Feb. 1, 1970, plastic containers were exposed as mosquito oviposition sites at Bethulie in the southern part of the Orange Free State Province. This was carried out as part of a survey of the mosquito fauna at this locality and particularly to determine the distribution of *Culex quinquefasciatus* and *Cx. pipiens*. Bethulie is situated in the semi-desert Karoo region of South Africa which has very hot summers with low rainfall and cold winters. Over the period of the study there was a drought until the 2nd summer when 321 mm of rain fell (December 1970 through March 1971).

The containers were plastic, 40 cm long and 25 cm square in cross-section and were filled

with grass infusion to attract gravid mosquitoes. Each container was fitted with a withdrawable sieve for easy removal of larvae and was protected by a covering of 4 cm wire mesh. Five containers were sited in the environs of buildings in the town of Bethulie itself (urban) while 6 others were sited on 3 farms (rural) within 10 km of Bethulie. These oviposition sites were examined 10 times during the exposure period, usually monthly but sometimes after a 2-month interval. Samples of larvae were taken for identification and many of the determinations were confirmed by rearing these through to adults. Periodically the containers were cleaned out and filled with a fresh infusion.

Larvae collected are shown in table 1. *Culiseta longiareolata* and 5 different *Culex* species utilized the oviposition sites. *Cx. quinquefasciatus* occurred most frequently and except for 1 collection was confined to the urban area. Nearly as prevalent were *Cs. longiareolata*, which occurred to about the same extent in rural and urban environments, and *Cx. pipiens* which was commoner in the urban area. The remaining 3 species were much rarer.

On 10 occasions larvae of *Cx. quinquefasciatus* and *Cx. pipiens* were found co-existing. Samples of male mosquitoes were reared from such collections and the genitalia of 117 individuals were examined without, however, finding any evidence of hybridization between these 2 taxa. This supports the view that these 2 members of the *Cx. pipiens* complex are distinct species in South Africa.

Third or fourth instar larvae were present in 3 containers in the urban area during mid-winter on July 22. There were collections of *Cs. longiareolata*, *Cx. quinquefasciatus* and in the 3rd container *Cx. quinquefasciatus* and *Cx. pipiens* together which were probably larvae overwintering by quiescence. Such larvae have been recorded previously in the highveld region of South Africa in the case of 2 of these species—*Cx. pipiens* and *Cx. quinquefasciatus* (Jupp, 1969 and 1975) but this is a new observation in the case of *Cs. longiareolata*.

The overall total of 83 collections for larvae of all species taken from the containers in the 15 month period may be compared with only 15 similar collections made from the same number of identical containers exposed for the same duration in another project at Olifantsvlei near Johannesburg in the Highveld region (Jupp, unpublished). The difference in the number of collections at these 2

localities may be attributed to the relative abundance of other aquatic breeding sites at Olifantsvlei available to mosquitoes as compared to a shortage of such sites in the Bethulie area. Species of *Culex* and *Culiseta* in the arid environment of Bethulie tend, out of necessity, to utilize whatever oviposition site is made available to them. Furthermore, the much larger number of collections from containers in the urban area of Bethulie compared with the rural area may reflect a shortage of other breeding sites in the town as compared to the farms where there are dams and streams.

Literature Cited

- Jupp, P. G. 1969. Preliminary studies on the overwintering stages of *Culex* mosquitoes (Diptera: Culicidae) in the highveld region of South Africa. *J. Ent. Soc. Sth Afr.* 32:91–98.
- Jupp, P. G. 1975. Further studies on the overwintering stages of *Culex* mosquitoes (Diptera: Culicidae) in the highveld region of South Africa. *J. Ent. Soc. Sth. Afr.* 38:89–97.

AN AUTOMATIC APPARATUS FOR EXPOSING INSECT EGGS TO THIRTEEN PHOTOPERIODS (INCLUDING CREPUSCULAR PERIODS).

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INTRODUCTION

Investigations with arthropods have shown a marked sensitivity to length of day, particularly amongst those species exhibiting facultative diapause. Several species of culicids lay eggs which enter diapause when exposed to photoperiods of less than 12 hours.

The influence of photoperiod on the eggs of *Aedes (Ochlerotatus) caspius* (Pallas, 1771) has been studied (Sinègre 1974) as part of a larger programme aimed at the control of populations colonizing the temporary pools in the coastal marshes of Mediterranean France (Gabinaud 1975). For laboratory studies, an

Table 1. Number of occurrences of mosquito species in larval collections made from containers exposed for oviposition in rural and urban environments at Bethulie, February 1970 through March 1971.

	Rural	Urban
<i>Cs. longiareolata</i>	10	13
<i>Cx. pipiens</i>	5	14
<i>Cx. quinquefasciatus</i>	1	24
<i>Cx. theileri</i>	2	6
<i>Cx. tigripes</i>	1	0
<i>Cx. univittatus</i>	5	2
Totals	24	59