MIDGE NOTES

NO. 1 - DECEMBER 1987

Published by the Midge Research Steering Committee

UPDATE ON MIDGE CONTROL

In July this year State and Local Government agreed to jointly fund a three-year investigation into improved methods of midge control. This Note gives some background to the increasing midge problem and describes the research planned for 1987-88. Further editions of Midge Notes will give more information on midges, control methods, and results of research.

MIDGES - A PROBLEM NEAR WETLANDS

The midge is a small non-biting insect which inhabits Perth's wetlands. Following breeding many adult midges may be blown by prevailing winds into surrounding areas including nearby residences. They may also be attracted by lights. These "spent" adults do not bite however at times they may occur in large numbers and cause discomfort to local residents.

MIDGE CONTROL

Where the discomfort is severe Local Councils do their best to reduce the number of midges. The lakes are usually sprayed with chemicals to kill midges at the larval or "wriggler" stage.

During the past ten years or so the chemical most commonly used has been an organophosphate insecticide known as Abate (brand name) or Temephos. This has usually controlled midges effectively and has been relatively low in toxicity to most other forms of aquatic life. A review of midge control methods by the Environmental Protection Authority (EPA) in 1979 concluded that Temephos was the most suitable chemical available.

PROBLEMS WITH CURRENT CONTROL METHODS

In recent years, however, some concern has been raised about the potential for Temephos to poison waterbirds when it is applied in very shallow water. There has also been some evidence that on lakes where Temephos has been in use for many years it may be losing its effectiveness in killing midge larvae. Some "resistance" to Temephos appears to be developing.

PRELIMINARY STUDIES

During 1985 and 1986 the Department of Conservation and Land Management (CALM) funded some preliminary research by Murdoch University into the ecology of midge populations at Lake Forrestdale near Armadale. These studies showed that midge control is a more complex problem than appears at first glance. There are at least nine different species of midge in Lake Forrestdale. Several of these are "nuisance" species and each differs in the timing of its life cycle and in its sensitivity to control by insecticides.

A report on the midge studies at Forrestdale Lake was published in 1987 and copies were sent to Local Authorities involved in midge control.

CO-OPERATIVE FUNDING

In March 1987 the City of Cockburn wrote to the State Government requesting that a study into methods of long term control of the midge problem be undertaken. A meeting of concerned Local and State agencies was held at CALM Headquarters on 9 July 1987 to consider the matter. From this meeting came a commitment to co-operatively fund research into improved methods of dealing with the midge nuisance both in the short and long terms.

The Midge Research Steering Committee was formed, with representation from Armadale, Cockburn, Melville, Perth, Stirling and Wanneroo City Councils, the EPA, State Planning Commission (SPC) and CALM. The three State Government authorities have statutory responsibilities for ensuring that control methods used are environmentally acceptable.

The 1987/88 midge research program is being conducted under contract by a research team of the Murdoch University School of Biological and Environmental Sciences. Total funding is $60,000, with $30,000 coming from the six Local Councils involved and a matching $30,000 from the State Government.

THE NEXT STEP

The research planned for spring and summer of 1987/88 is as follows:

- **Immediate review of chemical control options**

.This task, completed in September, involved a rapid search for possible alternatives to Temephos for the coming summer. Extensive enquiries were made through the scientific literature and leading chemical manufacturers both in Australia and overseas. Two new chemicals which have some potential for midge control were found.

- **Laboratory testing**

Temephos and the two possible alternatives are now being tested in the laboratory against different species of larvae from several Perth wetlands. This work began in October, and will continue throughout spring and summer, as further species of midge appear.

- **Field testing**

Following the laboratory trials, the most promising chemicals will be field tested in conjunction with the normal annual midge control programs carried out by the Councils. If field trials this summer (1987/88) produce suitable alternatives to Temephos these may be incorporated in future chemical control programs.

- **Monitoring of midge larvae numbers**

An intensive field sampling program will monitor larval numbers on six important wetlands at fortnightly intervals throughout spring and summer. Forrestdale, Monger, Booragoon, Jackadder, Goollelal and North Lakes will be sampled.

The main aim of this program will be to assist Councils in deciding upon the most effective time to apply their normal control sprays. For controls to be most effective, the lakes need to be sprayed before the adult midges emerge, that is, when larvae are in greatest numbers. Larvicides do not kill adult midges.

The larval sampling programs will be very time consuming due to the large number of mud and water samples which will have to be taken from each lake and the difficulty of counting and identifying the various species of midge larvae. For this reason no more than six lakes can be monitored by the research team during 1987/88. Knowledge gained from studying these lakes will however, be useful in dealing with other problem wetlands such as Bibra and Yangebup Lakes.

- **Identification of nuisance species**

The aim of this part of the study will be to confirm which species of midge are responsible for the "midge nuisance". There are at least sixteen species of midge which are natural inhabitants of Perth wetlands. Only two or three of these are thought to be a problem. It is important to know which ones these are so that midge controls can be "targeted" precisely. Adult midges will be collected and identified from lake edges and nearby residential areas.

- **Long term control options**

The need to look for possible long term alternatives to the continued use of toxic chemicals for midge control has been emphasized by both Local and State Government authorities.

Long term alternatives are likely to include the planting of trees and shrubs to provide natural "screens" between lakes and nearby houses, the use of midge-attracting lights, the reduction of excess nutrient inputs into lakes, and controls on urban expansion in close proximity to midge-producing wetlands. Part of the study team's research effort in 1987/88 will be allocated to these long term aspects of the midge problem.

Although no firm commitments have yet been given, the general view of the agencies represented at the July 9 meeting was that because of the complexity of the problem at least three years of research would be needed to adequately address both short and long term aspects of midge nuisance control.

FURTHER INFORMATION

More information concerning the midge nuisance problem, control options, research findings etc. will be provided by the Midge Research Steering Committee in future Midge Notes.

For assistance or advice concerning midge problems and midge control operations in your area, contact your local City Council.