MIDGE NOTES

NO. 3 - NOVEMBER 1989

PROGRESS IN MIDGE RESEARCH

BACKGROUND

In July 1987 State and Local Government agreed to jointly fund a three-year investigation into improved methods of midge (choronomid) control. This move was in response to concerns about the decreasing effectiveness, increasing cost and potentially harmful environmental effects of current midge control methods.

The Midge Research Steering Committee was formed, with representation from Armadale, Cockburn, Melville, Perth, Stirling and Wanneroo City Councils, the Environmental Protection Authority, State Planning Commission and the Department of Conservation and Land Management. These authorities have recently been joined by the City of South Perth and the Shire of Swan.

The Local Authorities are involved or have an interest in midge control while the three State Government bodies have responsibilities for ensuring that control methods used are environmentally acceptable.

The midge research program is being conducted under contract by a research team from Murdoch University's School of Biological and Environmental Sciences. Total funding in 1989-90 is $105 000, with $60 000 coming from the eight local authorities and $45 000 from the State Government.

1989 RESEARCH REPORT

In June of this year, the Murdoch University Midge Research Team presented its second annual report.

Some important findings are as follows:

- Temephos ("Abate") is still effective in controlling midges. However, on those lakes with a long history of Temephos use, it is only effective at high application rates - four to five times those used ten years ago. This is at the upper limit of the approved dose rate.
- The effectiveness of Temephos is likely to decline further as midge larvae develop increased resistance. Costs of control will increase as more Temephos has to be used.
- Regular monitoring of midge larval numbers in the lakes is essential if midge plagues are to be prevented. Larvicides must be applied before mass emergences of adult midges occur if treatments are to be effective.
- Monitoring programs are also essential for determining how much of a lake needs to be treated. At North Lake, for example, monitoring has shown that most treatments need only be applied to the shallow edges of the lake. At Lake Forrestdale, however, midge larvae are widely distributed and the whole lake usually requires treatment.
- It is very important to ensure that pesticides are applied evenly. Patchy applications (due, for example, to pesticides being applied during windy conditions) are ineffective in controlling midge numbers.
- Because midges are developing resistance to Temephos alternative methods of dealing with the problem need to be developed soon.
- Several alternative compounds have been tested in the laboratory. Those which have shown some promise will be tested in the field during the coming summer. None, however, is ideal.
- The cheapest compounds are generally non-selective and kill other desirable species such as natural predators of midges. Compounds which affect only midges are more expensive. In either case midges are likely to develop resistance to these compounds in the long term.
- Additional means of dealing with the midge nuisance problem therefore need to be found. These are likely to include reducing the amount of nutrients flowing into midge-producing lakes. The research program has shown that lakes with the highest nutrient levels have the worst midge problems.

Copies of the 1989-90 Midge Research Report are available for viewing in each of the relevant State Government and Local Authority libraries.

PUBLISHED BY THE MIDGE RESEARCH STEERING COMMITTEE

Copies may also be purchased from the Murdoch University Bookshop at $12.00 per copy. Mail orders (also $12.00 including postage) may be addressed to: Mr A. Pinder, School of Biological and Environmental Sciences, Murdoch University, MURDOCH WA 6150. Cheques should be made payable to: Murdoch University Midge Account.

HOUSEHOLDER ACTION

The midge research program has to date concentrated on finding improved methods of reducing the numbers of midges being produced by each lake, in order to reduce the severity of midge nuisance experienced by nearby residents.

The problem might also be tackled at the other end. That is, around affected houses and other places where the nuisance is actually experienced.

Although there has been virtually no research into this aspect of midge nuisance control, research into other insect problems suggests there are a number of measures which individual householders can take to reduce or even eliminate the midge problems they experience.

The following suggestions are based upon comments received from Perth householders, Council health surveyors, members of the Murdoch University midge research team, and other people who have had some experience of the midge problem.

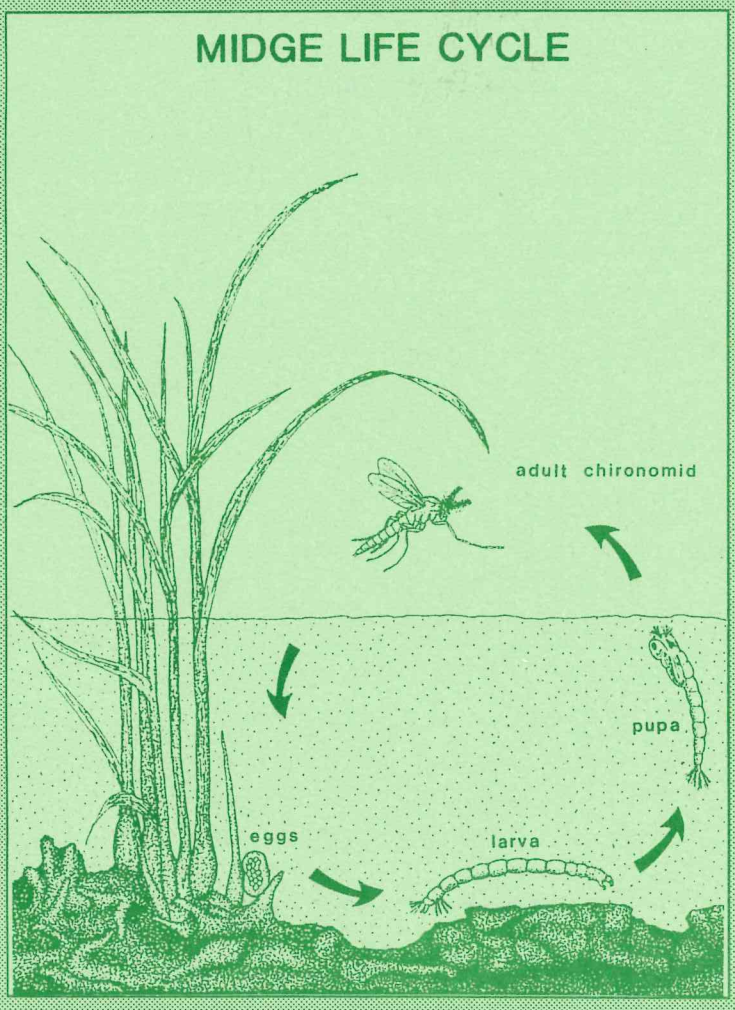
Lights

Midges, and many other species of night-flying insects, are attracted by light and warmth.

Light bulbs or tubes which emit large amounts of ultra violet (UV) light, e.g. mercury vapour lamps, are especially attractive to insects. White lights are also more attractive than yellow, red, orange, blue and green lights.

Lights which emit a large proportion of their energy as heat, e.g. 100 watt incandescent bulbs, are also very attractive to insects.

Householders wishing to minimise the number of midges attracted to their residences by exterior and interior lights should therefore consider taking the following steps.



Midges - A Problem Near Wetlands

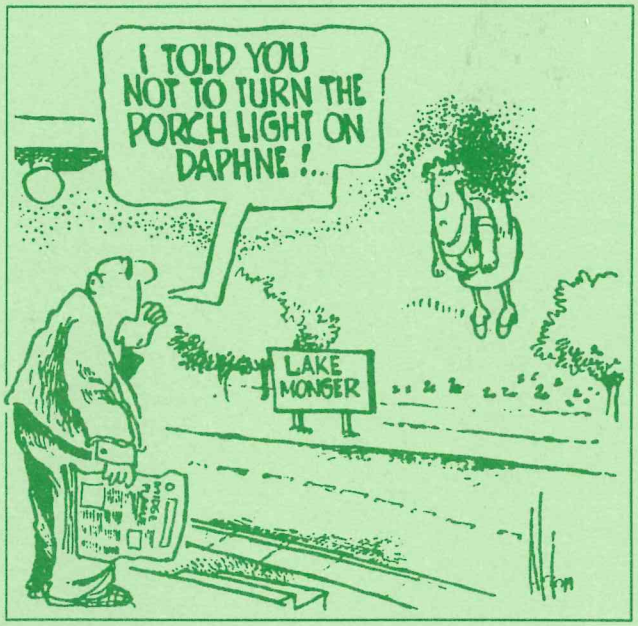
Midges are small, non-biting insects (there are more than 20 species) which inhabit Perth's wetlands. They have four main stages in their life cycle: egg, larva, pupa (all of which are found in the wetland), and flying adult.

Following mating and laying of eggs on the water surface 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 - which have no further role in the midge life cycle and die within a few days - do not bite. At times, however, they may occur in large numbers and cause discomfort to local residents.

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 larva or "wriggler" stage. Adulticides may also be used to "fog" residential areas, killing adult midges.

- Reduce the number and wattage of outside lights.
- Screen lights from sources of midges. Use hedges, shrubs and light shades outside the house and curtains inside.
- Keep windows and doors closed, or install fine-mesh insect screens to reduce the problem. Seal any gaps around doorways, windows and skylights.
- Replace large (100 watt) white incandescent bulbs around entry ways with small (25 or 40 watt) bulbs - preferably yellow. Where practicable, move these lights a few metres away from doorways and direct the light towards the entry way.
- Consider painting white surfaces around doorways with darker blue or green colours to reduce UV reflection.
- Where affordable (these are expensive), use high pressure sodium-vapour lamps rather than ordinary incandescent bulbs or fluorescent tubes. Sodium-vapour lamps produce minimal amounts of UV light and heat.



Courtesy of Dean Alston and "The West Australian".

Light Traps

Electrocuting light traps may also be of some use in reducing midge problems around houses. There are several makes and designs on the market. These units have a "black light" (mercury vapour, high UV) to attract the insects, and a high voltage electric grid to kill them. They retail for around $150 and will also help deal with mosquito and other flying insect problems. Light traps need to be kept clean of dead insects to prevent being rendered ineffective by "clogging".

Insecticides

Various products are available. Reports vary, however some residents have apparently found a pyrethroid insecticide marketed as "Coopex" useful. This may be purchased in 25g sachets, mixed with water, and sprayed on walls and under eaves with a garden sprayer (use a large jet to prevent blockage).

Midges apparently settle on the sprayed surfaces and die. A white residue is left, so test spray on a small area first and then decide if this is acceptable. "Coopex" is approved for use for this purpose by the Health Department.

Midges - A Longer Term Solution

Midges form a natural and important component of the food chain of lakes. They are a food supply for many species of animals including tortoises and waterbirds. They also have an important role in recycling organic debris.

While they have always been abundant, midges weren't a problem until we humans began living near lakes!

Since settling around lakes we have, in many cases:

- removed the native vegetation which would otherwise have screened the lakes and their midges from our houses, and

- added fertilizers and other nutrients to the surface-water and ground-water which flows into those lakes. These nutrients have fuelled aquatic plant and algal growth. This higher productivity has, in turn, produced an increase in midge numbers.

While, in the short term, pesticides may be used to control midge numbers, an alternative, long term solution is needed from an environmental and economic point of view.

This longer term solution is likely to involve reducing nutrient inputs to lakes, screening residential areas from lakes with buffers of vegetation, and minimising the use of midge-attracting lights around houses.

Tolerance of small numbers will also be needed. Short of draining the lakes midges will always be with us. They are a natural part of our environment.

Other sprays, e.g. "Sislin", are available and may also be of some use. Advice may be sought from Council health surveyors or pesticide suppliers.

Reduce Fertilizer Use and Nutrient Runoff

Midge production in metropolitan lakes is fuelled by high levels of nutrients washed in from surrounding catchment areas. In the long term, midge production may be reduced by lowering nutrient inputs. Householders can make a significant contribution by minimising fertilizer use (e.g. native gardens require little, if any, fertilizer) and by using slow-release brands.

Car-wash detergents contain phosphorus - a nutrient which fuels midge production. It is preferable to wash cars over lawn, so that the lawn can utilise the phosphorus - rather than over paved areas such as paths and roadways, which in many cases drain directly into wetlands.

Finally

None of the above measures is likely to provide the perfect answer, but in many cases they will help and- combined with Councils' efforts to reduce the frequency and severity of midge swarms- may possibly reduce midge numbers to tolerable levels.

FURTHER INFORMATION

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

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