

Mosquito control in Iparpa Swamp – A Big Step Forward

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In the Northern Territory (NT) mosquito monitoring and control is vital to reduce the potential public health risk of mosquito borne disease such as Murray Valley Encephalitis (MVE) and Ross River Virus disease (RRV). In all major towns throughout the NT mosquito monitoring and control programs are established by the Medical Entomology Branch (MEB) in liaison with local Environmental Health officers, and local government or mining company environmental officers. To further reduce the potential risk of mosquito borne disease a major goal of the MEB program is the reduction and management of mosquito breeding habitat in the vicinity of residential areas.

The Iparpa Swamp, a 130 hectares area in Alice Springs has long been of public health concern as it provides extensive breeding habitat for the common banded mosquito *Culex annulirostris*. This mosquito species is a major vector for MVE as well as RRV. The MEB first identified extensive mosquito breeding in the swamp as early as 1974. The same year an adult mosquito monitoring program was set in place with occasional fogging of adult mosquitoes as a control measure. Since then the MEB has supported the ongoing surveillance and control program.

However, the extent of the swamp is not only determined by rainfall but also by effluent disposal into the swamp from the adjacent sewage ponds. This effluent discharge practice further enhances mosquito breeding by increasing mosquito numbers to pest levels during the dry months. Since 1974 the issue of effluent disposal into the swamp and its consequences regarding public health issues have been discussed regularly between the MEB, PAWA, the Alice Springs Town Council (ASTC) and the DHCS Alice Springs Environmental Health branch. This has resulted in many improvements in reducing the area of mosquito breeding, including the development of large evaporation ponds, the establishment of an irrigated tree plantation, a sprinkler irrigation system at Blatherskite Park, and the building of pipes to convey effluent to the centre and lower parts of the swamp.

A large milestone in long term measures to rectify the swamp problems were discussed at a community consultation workshop on an urban water management strategy in Alice Springs in August 2000. This was partly as a result of cases of Murray Valley encephalitis in central Australia in early 2000 and continuing mosquito pest problems and disease risks around the Iparpa area. Both long term and short term solutions to Iparpa effluent problems were among the discussion items. A presentation by DHCS warned of the increasing risks of MVE in Alice Springs. One outcome was the formation of the Iparpa Swamp Rehabilitation Committee (ISRC) in May 2001.

In early February 2001 there were cases of MVE in Alice Springs following heavy summer rain and effluent release which flooded Iparpa swamp. Extreme numbers of mosquitoes occurred around the swamp. Fogging operations were carried out regularly but it became clear that better solutions were required. After consultation with DHCS, ASTC, ISRC and native title holders, PAWA installed a temporary pumping operation to try to drain the swamp and plans were drawn up for a gravity drain to enable high volume drainage.

Through 2001 the swamp remained flooded despite the temporary pumping operation and it was clear to DHCS officers that the coming summer posed high risks of further outbreaks of MVE. In December 2001 discussions initiated by the DHCS lead to a major breakthrough in terms of short-term mosquito control in the Iparpa Swamp. In broad agreement between traditional owners, Peter Whelan of MEB, PAWA, the Alice Springs Town Council and the local Environmental Health Officer Philippe Porigneaux, it was decided to trial the newly approved mosquito control agent, methoprene pellets, an insect growth regulator. Compared to other chemicals, methoprene pellets have a label residual of 30

days. This would require less frequent mosquito control operations if found to work effectively under NT climatic conditions.

Following a swamp assessment for mosquito breeding in late December 2001 by MEB, local DHCS and Alice Springs council environmental health officers, methoprene pellets were applied by helicopter over the entire area. PAWA paid for the application costs and assisted with the operational aspects of the program. At the same time PAWA agreed to discontinue any further discharge from the sewage ponds into the swamp to allow for water levels to drop. Additional sprinkler dispersal was used to reduce effluent release levels. This was a crucial step, as the extensive gravity drainage works were to be commenced for swamp reduction. One potential delay for the drainage was native title approval, but after discussions initiated by a local Lands Department officer, Lands, DHCS officers and traditional owners agreed on the requirements and process, and speedy approval was given for the works. As a combined result of the drainage works carried out in late January and early February, reduced effluent release, and reduced summer rain, water levels dropped significantly and swamp margins receded drastically.

Since methoprene pellets were applied and water levels decreased, mosquito numbers dropped below pest level (600 per trap) in February 2002 compared to the same time the previous year, when mosquito numbers exceeding 17,000 per trap were recorded. By early March less than 50 common banded mosquitoes per trap were recorded around Ilparpa. The combination of mosquito control through the use of methoprene pellets, the reduction of sewage overflow into the swamp, and drainage works has successfully reduced the mosquito numbers and thus the potential risk for mosquito borne disease in the Ilparpa Swamp area. There are still issues to be overcome with the rehabilitation of the swamp and a long-term solution, but the light is at the end of the tunnel and groups are interacting. This outcome was a great example of cooperation between very diverse groups and all parties working to a common end. Well done everybody!