



Newsletter - September 2010

Welcome to our first spring newsletter for 2010! I hope you're all enjoying the sun when it appears. We've been luckier here in Canterbury recently than most throughout the country during the big storm, but think we deserve it after all the shaking, rattling and rolling we've been having. I hope October is a better month for all.

SAMPLES

During September, a total of 590 samples were collected by staff from all 12 public health services, with 39 positive. Sampling numbers were up slightly on last month and about the same as last year. The specimens received were as follows:

Table with 3 columns: Species, Adults, Larvae. Rows include Aedes antipodeus, Ae. australis, Ae. notoscriptus, Ae. subalbirostris, Culex pervigilans, Cx. quinquefasciatus, Exotics, and TOTAL.

was represented by Mark Disbury MCS(NZ), Steve Hunn RNZAF and Bryn Gradwell SMS Ltd.

This conference is held every two years and is well attended by medical entomologists, state government health officials, university research and development fellows and academics, mosquito control operators from local authorities, pesticide product manufacturers and military personnel. Attendees are from throughout Australia, South East Asia, USA and New Zealand.

The official opening address of the conference was conducted by the Member of Queensland Parliament for Caloundra, Mr Mark McArdle. The programme began with four speakers delivering presentations on the Asian "Tiger" Mosquito Aedes albopictus the very competent vector of dengue fever. An invited speaker from USA, Dan Kline spoke about the introduction and spread of this species into the United States and the national management programme. The presentations that followed from University of Queensland, Western Australia Department of Health and the Queensland Health Cairns Public Health Unit covered the climatic variability influences on the potential spread of the species from the Torres Strait (Australian territory), the public health concerns and management recommendations for Ae. albopictus on Christmas Is and Cocos Keeling Is (Australian territories) and the continued invasion of this species from Papua New Guinea into the Torres Strait.

INCURSIONS/INTERCEPTIONS

There were no interceptions during September.

INTERCEPTION RESPONSES

Please remember to call 0800 MOZZIE (669943) when you are responding to a suspected exotic mosquito interception to be put through to the on-call entomologist. Your specimens may be identified at either Lower Hutt or Lincoln depending which entomologist is rostered on.

NEW WEBSITE

For those of you that haven't visited our new website, you can check it out at www.smsl.co.nz. Let us know what you think, we are always looking for ways to improve or expand the information presented.

MCAA CONFERENCE

The Mosquito Control Association of Australia 9th Biennial Conference 12-15 September 2010 was held at Pelican Waters, Caloundra, Queensland. NZ

Scott Ritchie the principal medical entomologist from the Tropical Public Health Unit, Queensland Health (QH) drew on experiences from the 2009 dengue outbreak in Cairns. This talk covered the key strategies used by QH staff that prevented the dengue virus from becoming endemic. The following three speakers also spoke on dengue. The senior medical entomologist from QH Brisbane Public Health Unit provided an operational perspective insight into the developed innovative surveillance and control methodology used in the 2009 outbreak in Cairns. This included web-based surveillance system in high risk areas, the "lure and kill" lethal



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ovitrapping and a customized "dengue management system" to provide a decision-support tool to coordinate vector control activities. A research student from the Centre for Epidemiology, Australian National University provided a case study of this 2009 dengue epidemic in Cairns to reveal the contribution of climatic factors, the intrinsic incubation period of the virus and mosquito control efforts. The final speaker for this session was Bill Pettit from the Northern Territory Department of Health's Medical Entomology Unit who presented a paper on building capacity in Timor Leste's dengue vector surveillance and control programme. He explained the progress made during this 3 year AusAid funded programme which finished in February this year and was implemented back in 2006 following the large dengue outbreak with more than 1000 dengue and DHF cases and 38 deaths.

The session on vector ecology and control began with a speaker from MAF BNZ talking about the successful "world first" eradication of the Southern Saltmarsh Mosquito (SSM) *Aedes camptoryhnchus* from New Zealand. *Ae. camptoryhnchus* was first found in NZ in 1998 and was declared successfully eradicated in 2010. This subject matter was of particular interest to Bryn and Mark who were involved with the management of this programme for most of this time. The paper that followed was on the study of SSM egg survivorship by the University of South Australia and the implications for eradication.

The final session on day one was to bring all up to date on papers presented at the last conference in 2008. This covered the Arbovirus and vector surveillance programme in Victoria with particular emphasis on the two endemic diseases Ross River Virus (RRV) and Barmah Forest Virus (BFV). There was also the development of a mosquito intelligence report for South Australia; this consisted of a mosquito abundance summary, a RRV risk forecast and the results of virus testing in mosquitoes. The Dept of Medical Entomology at Sydney University provided an update on the surveys for NSW and the update on incidence and management of vector-borne disease in Western Australia was provided by Michael Lindsay from WA Dept of Health.

The second day began with a series of presentations on Arbovirus disease epidemiology and ecology. The first by invited speaker Professor Stephen Higgs, University of Texas Medical Branch, USA; he spoke

on vector – virus – vertebrate interactions, a very enjoyable presentation. The next speaker from University of Queensland Virology Dept spoke on the research conducted to determine potential Australian vectors of the yellow fever virus (YFV). Three species resident in Australia were found in laboratory experiments to be vectors of YFV, and surprisingly one of these, *Aedes notoscriptus* is found throughout NZ's North Is and as far south as Christchurch. Peter Ryan from the Queensland Institute of Medical Research (QMIR) spoke on the development of on-line decision support tools for surveillance and control of mosquitoes. He talked about VEDS (Vector-borne disease early detection and surveillance) system; a Queensland wide web based data reporting for service.

The following session covered emerging technologies and the next session continued with vector ecology and control when Craig Williams from Sansom Institute of Health Research, discussed computer modelling research to determine whether *Aedes aegypti* once widespread throughout Australia and the competent vector of dengue fever, could inhabit their former range, as once found in temperate and drier parts of the country are now only found in the wet tropics. His paper entitled "the extinction of dengue through natural vulnerability of its vectors" concluded that *Ae. aegypti* often becomes extinct particularly when conditions are too cool for year-round egg laying activity and/or too dry for eggs to hatch and thus despite being a global pest and disease vector, *Ae. aegypti* are naturally vulnerable to extinction in certain conditions and this should be exploited in vector control programmes.

QMIR's Tim Hurst spoke about the problem associated with the move in Brisbane for householders to install water tanks and domestic storage facilities in the move to conserve water and the consequent increase in breeding habitat for container breeding mosquito species and the potential increase in receptivity of urban Brisbane to dengue vectors.

We are always interested in new control products and one new option for the control for backyard mosquitoes was a silicone based monomolecular film called Aquatain AMF that has shown to be effective against larvae and pupae of *Ae. aegypti*, *Ae. notoscriptus* and *Culex quinquefasciatus*. Findings



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from laboratory and field tests were presented for consideration.

On the final day the first session covered more aspects of vector control. The opening paper by invited speaker from US Centre for Medical, Agricultural and Veterinary Entomology, Ulrich Bernier, whose paper was about chemical attractants, inhibitors and repellents for use in surveillance and control of mosquitoes and other biting flies. Amongst other things, his talk covered the design and development of new repellents based on structural similarity to analogues of DEET. The next presentation was by Maj Stephen Francis from the Australian Army Malarial Institute; his paper covered personal protection provided by tropical repellents and impregnated clothing worn by the ADF. He discussed the studies to evaluate the protection from biting mosquitoes provided by Australian fabrics treated with two commercial factory treatments.

The presentation that followed, warned of the growing demand by the Australian public to move away from the tried and true successes of the synthetic range of insect repellents for the so-called natural products containing plant extracts. Efficacy studies have shown few botanical based repellents offer comparable levels of protection however some do provide a level of protection for short periods and may be suitable in certain circumstances. The final paper from this session covered the use of old tyres as lethal ovitraps against dengue vectors. The speaker Laurent Guillaumot was from Pasteur Institute, New Caledonia.

The final session on vector ecology and control included four presentations with quite different subject matter. The first from the QMIR team presented research on the use of isolates of entomopathogenic fungus, to control the *Ae. aegypti* mosquito, vector of DF and fast becoming resistant to insecticides. Stephen Fricker from the University of South Australia reported on the survey conducted since 1999 collecting data on the abundance of mosquito fauna along the shores of the River Murray and the affect water management strategies can have on population and species. An interesting paper by the Medical Entomology Unit of NT Dept of Health described the creation of distance buffer zones separating biting insect breeding habitat from urban development as a most useful control method for the Darwin region. The last presentation was

prepared by the University of Queensland and covered the issues for malaria elimination from the Temotu Province, Solomon Is. Treated bed-nets and indoor residual insecticide spraying are the recognized methods of malaria vector control but where the majority of the disease transmission occurs outside other control methods are under consideration such as zoophylaxis, repellents, environmental modification and larviciding.

In summary, there was a good balance of subject content featuring the current mosquito of international concern *Ae albopictus* and the topical arboviral disease, dengue fever. The case studies and research conducted derived from every Australian State, Torres Straight, Christmas and Cocos Is, Timor Leste, Solomon Is, Malaysia, USA and New Zealand. This conference provided material that was informative and relevant; the speakers were generally international experts in their field and first class orators.

I would recommend that any HPO or technical officer from the public health services who are actively involved in mosquito surveillance and response actions at the POE consider attending future MCAA conferences as they offer serious educational opportunities not available in NZ.

Bryn Gradwell
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Operations Manager

MOSQUITO-BORNE DISEASES

EASTERN EQUINE ENCEPHALITIS (EEE) – NEW YORK, USA

Source: Syracuse.com, The Post-Standard report [edited] 4 Sep 2010, reported on ProMed Mail 6 Sep 2010

An adult resident of Onondaga County has been diagnosed with eastern equine encephalitis, Onondaga County Health Commissioner Cynthia D Morrow said today. The Onondaga County Health Department was notified of the diagnosis by the state, the commissioner said in a press release. The release gave no information about the infected resident, except to say that the infected person is hospitalized and had spent significant time in an area previously known to have eastern equine encephalitis [virus] activity.



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Eastern equine encephalitis, or EEE, is a rare viral infection. There are only 5-10 cases of EEE reported a year nationwide, Murrow said.

The virus is transmitted by the bite of an infected mosquito. The virus can cause encephalitis, or inflammation of the brain.

The county health department said the initial symptoms, which begin 4 to 10 days after the mosquito bite, can include fever, headache, and vomiting. Untreated, the illness can progress to altered mental status, confusion, coma, and death.

"People need to use protection. They need to use insect repellent," Murrow said. The health department urges people to wear shoes, socks, long pants, and long-sleeve shirts when outside for a long period of time. People should avoid being outside during mosquito feeding times at dawn and sunset. The use of insect repellent is also encouraged.

The hotbeds of EEE [virus] bearing mosquitoes are in the Cicero, Toad Harbor, and South Bay swamps near Oneida Lake, Murrow said. 4 mosquito pools collected last week [week ending 27 Aug 2010] on Island Road tested positive for EEE [virus], according to the Onondaga County Health Department. Mosquitoes in 2 of the pools are human biters while mosquitoes in the other 2 pools are primarily bird biters.

EEE – MICHIGAN, USA

Source: The Oakland Press 13 Sep 2010 reported on ProMED Mail 15 Sep 2010 (excerpt)

Last month [August 2010], Michigan health officials reported that lab tests confirmed that 3 people contracted the disease.

WEST NILE VIRUS - EURASIA (GREECE, HUNGARY & ROMANIA)

Source: Medical News Today [edited] 6 Sep 2010, reported on ProMED Mail 7 Sep 2010

The Health Protection Agency is aware of a significant increase in reports of cases of West

Nile virus (WNV) in Northern Greece. To date, there have been 164 cases and 14 deaths reported in Greece, most of which have occurred in the last month.

There have also been 7 confirmed and 3 probable cases with 2 deaths seen in Romania and 3 cases in Hungary. Cases have been reported in these countries in previous years.



Map ex

<http://www.mlahanas.de/Greece/Regions/CentralMacedonia.html>

Cases of WNV [infection] are rare in people in Europe. The infection is spread through mosquito bites, and it is not transmitted directly from person-to-person. The majority (80 per cent) of people infected with WNV will have no symptoms at all, and the remainder may experience a mild influenza-like illness (fever, headache, body ache). A small proportion (less than one per cent) will have more severe disease and may develop inflammation of the brain (encephalitis) or inflammation of the membrane around the brain and spinal cord (meningitis). Most deaths have been reported in those over 50 years old, who generally suffer more severe disease. There is no human vaccine available against WNV.

The current outbreak in Greece does not involve any popular tourist destinations, and the risk of catching this virus during travel to Greece remains very low, as is also the case anywhere else in Europe. However, in the light



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of the current outbreak, travellers to Greece should take particular note of measures to avoid being bitten by mosquitoes. The advice to people travelling in Europe, particularly where WNV has been reported, is that they should take the usual appropriate anti-mosquito precautions.

These include: Wear loose fitting, lightweight clothing that covers up skin as much as possible; limit outdoor exposure during peak times of mosquito feeding, usually the hours from dusk to dawn. People are usually exposed in the early morning and evening times. The safest course is to use repellents when outdoors. Apply insect repellents to exposed skin and clothing. Always follow manufacturers' directions for use. Repellents that contain DEET are considered the most effective.

Indoors, mosquito bites can be reduced by air conditioning, insect-proof screens on windows and doors and spraying the room with insecticide. Bed nets and cot nets can be used if necessary. Mosquito coils can be burned or vaporizing mats used in enclosed areas if needed. Avoid areas where there are likely to be large concentrations of mosquitoes or other biting insects.

WEST NILE VIRUS - EURASIA (GREECE) UPDATE

Source: Norbert Nowotny ProMED Mail 15 Sep 2010
200 people were diagnosed with West Nile disease so far, and 20 of them died (Hellenic Centre for Disease Control and Prevention website).

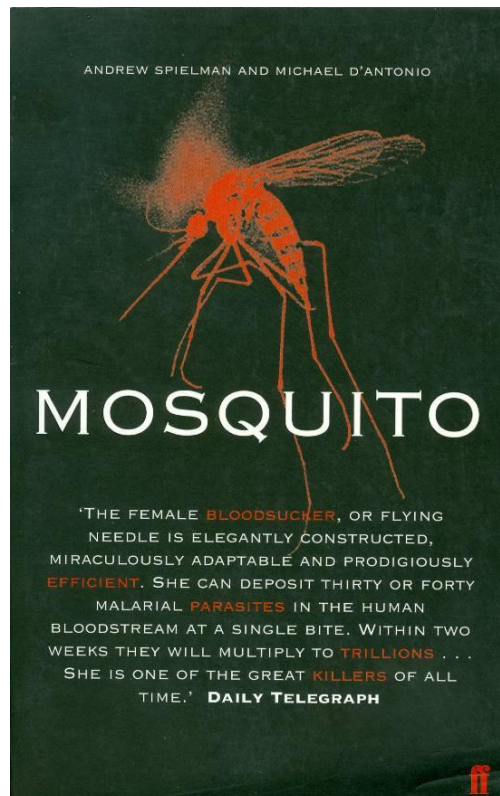
WEST NILE VIRUS - EURASIA (RUSSIA AND ROMANIA)

Source: ProMED Mail 23 Sep 2010 (excerpts)
There were 448 registered West Nile virus infection cases in Russia between 7 Jul-15 Sep [2010], 6 of which were fatal.

There are 3 new cases of West Nile [virus] infection in Bucharest and an additional 2 cases detected in Cluj, transmitted by mosquito bite, the

Ministry of Health (MOH) stated. Thus, in Romania, 41 cases of West Nile [virus] infection have been confirmed, 4 of them fatal.

Mozzie Photo of the Month



Mosquito: The Story of Mans Deadliest Foe

By Andrew Spielman and Michael D'Antonio
This book is a nice history of humans' relationship with mosquitoes. It's an easy read even for non-science people and is surprisingly insightful. The authors present tragic and often grotesque examples of how the mosquito has insinuated itself into human history, from the malaria that devastated invaders of ancient Rome to the current widespread West Nile fever panic. Filled with little-known facts and remarkable anecdotes that bring this tiny being into larger focus, Mosquito offers fascinating, alarming and convincing evidence that the sooner we get to know this pesky insect, the better off we'll be.