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UNWANTED GUESTS: THE MISERIES, THE DANGERS AND THE GLORIOUS FUTURE OF BITING INSECTS AND VECTOR-BORNE DISEASES IN NEW SOUTH WALES

GUEST EDITORIAL

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Insects have an infinite talent to annoy, and as vectors of disease they have had a decisive effect on human affairs, determining the fates of cities and armies,¹² religions and nations. The outbreak of bubonic plague in Europe during the 14th century is considered an important contributor to the demise of feudalism. Convocations of the College of Cardinals in Rome were regularly disrupted by mortality from the *mal aria* (literally, the 'bad air') of the Pontine Marshes.³ Napoleon lured an English army into the malarial swamps of *Les Pays-Bas* (The Netherlands) to effect a famous victory.³ In history, vectorborne diseases have been the constant and unwanted companions of new settlers, the adventurous, the poor, and marching armies and pilgrims.

Among the greatest achievements of the revolutions in microbiology and entomology at the end of the 19th century were the identification of the life cycle and vectors of malaria, typhus, yellow fever, and bubonic plague. These efforts quickly led to effective measures of control and dramatic reductions in mortality from these dreaded diseases.

The first President of the Board of Health and Chief Medical Adviser of New South Wales, John Ashburton Thompson, played an important role in confirming the role of the rat flea in the transmission of bubonic plague. His careful synthesis of epidemiological, entomological and microbiological data from the outbreak of bubonic plague in Sydney in 1900 was presented to great acclaim at the 14th International Conference on Hygiene and Demography, which was held in Berlin in 1907.⁴

continued on page 192



- 191 Guest Editorial: Unwanted guests: The miseries, the dangers and the glorious future of biting insects and vector-borne diseases in New South Wales
- 193 Population health aspects of mosquito-borne disease in New South Wales
- 199 Recent increases in the notification of Barmah Forest virus infections in New South Wales
- 204 The increase in presentations of dengue fever in New South Wales
- 208 Nitbusters: Headlice in Schools program
- 208 Overview of the public health implications of cockroaches and their management
- 212 Review of public health advice about ticks
- 215 A survey of bedbugs in shortstay lodges
- 218 Fly larvae for wound management: A maggot makeover
- 220 Communicable Diseases Report, NSW, for September and October 2004

220 Trends

- 220 Influenza outbreaks in residential facilities
- 221 Update on avian influenza
- 221 Salmonellosis cluster
- 222 Unusual *Salmonella* serovar and exposure to cattle
- 223 Q Fever cluster in a shearing team
- 228 2004 Annual Index
- 228 2004 Index by subject
- 231 2004 Index by author

Since then, expertise in medical entomology has been a vital part of the public health infrastructure. Mosquitoborne illness remains an important public health issue in New South Wales. Over the last 8 years there have been 8,000 notified cases of disease caused by Ross River virus and Barmah Forest virus. The number of cases not diagnosed or not notified is likely to be much higher.

The contemporary relevance of insects to public health endeavours—both as vectors of disease and as purveyors of ordinary human misery—is well illustrated in this edition of the *NSW Public Health Bulletin*.

We begin with 3 articles on mosquito-borne disease. Doggett provides an overview of mosquito-borne viruses (arboviruses) in New South Wales, with a focus on Ross River virus and the newly emerging Barmah Forest virus. Harvey and Dwyer examine the recent increases in notifications of Barmah Forest virus; and Heuston reviews the epidemiology of dengue fever in New South Wales.

These are followed by a collection of articles on the irritating and infuriating problems of lice, cockroaches, bedbugs and ticks. These bugs often have a commercial and emotional impact that far outweighs their significance for physical health. Nowhere is this better illustrated than in the history of the Nitbusters program. This modest but popular public health program has provided desperate parents and school principals with an effective method of dealing with this scourge of our school population.

Miller and Peters follow with a summary of what is known about some other common houseguests: the cockroaches. Torres and Carey remind us of the lifecycle of the tick and of potential tick-borne illness, and discuss their experience in developing an evidence-based approach to the removal of ticks. Ryan, Peters and Miller give us a fascinating account of their investigations of bedbugs in short-stay accommodation in the City of Sydney.

And finally, in the article by Geary and Russell, the maggot sets out on its long march towards rehabilitation as a force for good in public health—and as a potential export industry.

Globally, mosquito-borne illnesses, particularly malaria and dengue, are major public health problems. Malaria kills more than 1 million people each year, most of them children. Since 1998, the World Health Organization has coordinated the Roll Back Malaria Campaign to combat this disease. Like the Australian population, mosquitoes and mosquito-borne viruses are good travellers. There is an ever-present and perhaps ever-increasing threat (for example, through global warming) that these or other vector-borne diseases will gain a major foothold in Australia. The ingress of the dengue vector *Aedes albopictus* and the West Nile virus into the continental United States is the most dramatic recent example of the need for vigilance and the maintenance of high levels of surveillance and expertise in vector-borne disease.

A number of key messages emerge from this collection of articles on contemporary insect pests and vectors:

- climate change, increases in population, international travel and the movement of goods all heighten the risk of importation of insects and insect-borne disease;
- we need to maintain the capacity for surveillance and response to insect vectors of public health significance, especially mosquito-borne illness;
- we need to increase the awareness of clinicians and the general public of the significance of insect-borne disease, and foster appropriate habits of protection from attacks by mosquitoes;
- we need to actively monitor the effectiveness and potentially toxic effects of chemicals used to control insect pests.

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