# Bug Breakfast in the Bulletin: Ross River virus

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Ross River virus (RRV) is the most common mosquitoborne disease notified within Australia and is a significant public health issue for NSW. There have been more than 7500 notifications of RRV in NSW over the past 10 years. Peak seasons occurred in 1996–97 (1547 notified cases) and 2005–06 (1268 notified cases), with an average of 683 notifications for the 11 seasons before this.<sup>1</sup> The November 2006 Bug Breakfast topic focussed on RRV and outlined a joint regional approach to mosquito management called 'Living with Mosquitoes'.

### **Ross River virus**

RRV causes RRV disease, which is a non-fatal but debilitating illness. Symptoms include myalgia, arthralgia, fatigue, fever, headache, rash (which is present only in approximately 50% of cases) and arthritis occurring in multiple joints.<sup>2</sup> Symptoms can present anywhere from 3 to 21 days after being bitten by an infected mosquito. Whilst the disease can vary in severity and duration, lasting anywhere from 3 to 6 months, many people who acquire the virus will be asymptomatic. There is no specific treatment for RRV disease, highlighting the importance of prevention of infection through vector surveillance, management and control and raising awareness in the community.

#### Vectors

RRV has been isolated from many species of mosquitoes in varying regions and environments throughout Australia. The most important vector associated with RRV for inland NSW is *Culex annulirostris*, and *Aedes vigilax* and *Aedes camptorhynchus* are the major coastal vectors. Transmitted to humans through the bite of an infected mosquito, RRV is thought to circulate in reservoir marsupial populations such as kangaroos and wallabies, which, if viraemic, can infect mosquitoes taking a blood meal. Once ingested, the virus multiplies in the salivary glands of the mosquito and is subsequently transmitted to other animals or humans when the mosquito feeds.

## **Ross River virus in NSW**

Although RRV is notified from all areas within NSW,

there are concentrated areas of virus activity such as coastal and rural irrigation regions. These areas have consistently high rates of RRV and account for the majority of notifications in NSW. There have also been outbreaks of RRV occurring in urban areas in close proximity to natural habitats, indicating locally acquired infection.<sup>3, 4</sup> An example of this was noted in the Sutherland shire, Sydney, where an investigation identified a cluster of seven locally acquired cases in 2006.<sup>5</sup>

Rates of RRV notifications have fluctuated within NSW over the past 10 years with significant variation from season to season. Fluctuations in the number of notifications between seasons are generally associated with a combination of environmental, ecological, climatic and societal factors such as:

- mosquito population increases following heavy rainfall, flooding and high tides inundating coastal wetlands
- mosquito longevity associated with rainfall and humidity levels
- climate variability (including temperature and rainfall) influencing seasonal mosquito activity
- regional changes in virus activity
- urban developments around wetlands and coastal regions providing close contact between vertebrate reservoirs, vectors and human populations.

For these reasons a coordinated approach to mosquito management is required and should involve a range of stakeholders, including public health, environment health, local council, state government and interested local agencies.

#### **Mosquito management**

An example of a coordinated response to mosquito populations and arbovirus activity in NSW, is the region-wide approach in the Lower Hunter and Mid-North coast region developed by five local councils and stakeholders and coordinated by the Premier's Department. The mosquito management strategy 'Living with Mosquitoes' was developed as a result of this collaboration with an aim to minimise the impact of mosquitoes and the incidence of mosquito-borne disease by raising awareness of mosquitoes in the local area.<sup>6</sup>

Recommendations of the strategy included:

- the formation of a regional mosquito focus group
- the establishment of coordinated mosquito population monitoring
- · targeted mosquito control strategies

- a regional mosquito awareness program
- the establishment of a mosquito awareness officer position
- the incorporation of mosquito awareness in urban design
- further research into mosquito ecology, arbovirus activity and the role of mosquitoes in the regional ecosystem.

A working group coordinated by the NSW Premier's Department was formed to manage resource allocation and implement the recommendations of the strategy. Members included the five local councils, Hunter New England Health, Department of Environment and Conservation, Department of Primary Industries, Australian Quarantine and Inspection Service, Hunter Central Rivers Catchment Management Authority and medical entomologists within the department of Medical Entomology at Westmead Hospital.

'Living with Mosquitoes' was officially launched in 2006. It marks an important step towards a coordinated regional approach to mosquitoes and mosquito-borne disease management in NSW.

#### References

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