



Biosecurity

Australia and New Zealand's diverse flora and fauna bring a unique, natural beauty to this side of the world, which must be seen to be believed. It's because of this, that our biodiverse landscapes are visited by an increasing number of travellers who wish to experience all that our coastlines, mountains, oceans and deserts have to offer. With international travel and trade on the rise, and the ease in which we can move around the globe becoming ever greater never before has biosecurity played such an important role in protecting our health and economy. Luckily, Australia and New Zealand are largely free of the world's most severe invasive and disease carrying pests. However, where once our geographical isolation was key to preventing the introduction of biosecurity hazards, we now need to work together to play more of an active role in protecting our country's health and economy.

How can EnviroDNA help?

Using our eDNA technology, EnviroDNA helps management authorities detect exotic species before it's too late. Our Species Detection services can assist in the assessment and management of potential biosecurity threats at airports, seaports and other sensitive areas and can be customised to target any species or species assemblage required.

How we used eDNA to determine whether exotic mosquito incursions at airports could result in local populations

Incursions of exotic mosquitoes at major airports around Australia are detected periodically. These include recent detections of two major vectors of dengue and zika, at Perth, Melbourne and Brisbane airports.

Sometimes these detections occur at a frequency that may suggest local breeding for short periods of time, although no breeding sites have been detected using traditional sampling techniques. Local breeding of these mosquitoes is a major state and federal health risk, and there are ongoing monitoring programs undertaken by the Federal Department of Agriculture and Water Resources (DAWR) at all major international airports in Australia.

We have developed eDNA quantitative PCR test for the exotic mosquitoes *Aedes aegypti* and *Ae. albopictus*, which allows potential water breeding sites to be tested for the presence of DNA from both target species.

Partnering with WA Health and DAWR, we sampled a variety of different water receptacles at both Perth and Melbourne airports during the summer of 2016. Our study found no evidence of local breeding of exotic species, but did detect breeding of a local endemic species. While the news was good from the perspective of no local populations of these exotic mosquitoes, the study highlighted a need to reduce potential mosquito breeding sites at these airports to lower the chance of exotics breeding.

