

## Cane Toad Project Archive

The first phase biological control of cane toads in Australia began around the early 1980s. Funding was provided by the Commonwealth Government through Council of Native Conservation Ministers (CONCOM) in 1987. At that stage little was known about the diseases of cane toads. Funding was provided to James Cook University at the School of Tropical Veterinary Science to look at cane toad diseases in Australia. The aim was to discover any diseases that could be used for biological control. The initial objectives were to identify some agents and some very basic pathology of cane toads resulting in the type of the diseases that were present in the Australian population of cane toads. The end result of that project, (from 1987 to 1989), was the identification of a number of pathogens, but none of them appeared to be particularly useful as a control agent (see below for more information).

This Archive contains an unpublished report on the CONCOM funded Cane Toad Project at James Cook University 1986 to 1990 (edited by Professor Rick Speare)

***Archive Location: 138R***

### Detailed Listing

CTP/1 Report to CONCOM and sundry other documents

This following section is taken from the Workshop Report for the Australian Government Department of the Environment and Heritage, *Biological Control of Cane Toads*, February 26-27th, 2004, Brisbane. (Accessed 15/01/2014 from <http://www.environment.gov.au/archive/biodiversity/invasive/publications/cane-toad-2004/pubs/cane-toad-2004.pdf>)

### History of biological control in relation to cane toads

*Dr Rick Speare, Associate Professor, James Cook University*

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the type of the diseases that were present in the Australian population of cane toads. The end result of that project, (from 1987 to 1989), was the identification of a number of pathogens, but none of them appeared to be particularly useful as a control agent. At the same time, a ranavirus was identified in frogs, which was called the Bohle iridovirus. Experimentally that was then put back into cane toads and it killed them. However, subsequent work discovered it also affected three classes of vertebrates, namely amphibia, pisces and reptilia. The interesting thing about the ranavirus group is that they also infect mammalian cells and in culture, keeping the cells at a lower temperature, ranaviruses will kill mammalian cells quite effectively. The factor that may protect mammals in the natural situation is that ranaviruses have a temperature limit and will not grow above 34°C. Presumably if that temperature barrier is broken it may also cross to mammals and homeotherms.

During this project, a visit was made to Costa Rica and some apparently normal cane toads sent to the University. Pathology found another iridovirus, one of the large iridoviruses. This was the only work done outside Australia in that particular project. By the end of this stage the project leaders decided nothing existed in Australia to control cane toads, so the next step was to search outside Australia.

The next project was funded by the Commonwealth Government through CSIRO Wildlife and Ecology (now CSIRO Sustainable Ecosystems). Again this looked at disease aspects as well as biological aspects. Disease work was carried out in Venezuela. The next project started in 1990 and would have continued until about 1994. Unfortunately, it concentrated on surveying normal cane toads and some ill cane toads to find mainly another group of ranaviruses. No work was done on diseases of sympatric Bufo species or on pathogens in Brazil where the ecological work was being done as local political processes prevented the collection of toads from this area. The ranaviruses were then taken from Venezuela and brought back to AAHL. Experimental work was done on these ranaviruses to look at host range. The next stage looked at taking ranaviruses, which are DNA viruses, potentially a lot more stable than RNA-based viruses and that is where the subsequent project emerged.