Progress Report SP 2006-004

Impact of cane toads on biodiversity in the Kimberley

Animal Science

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Project Team	granted
Program Leader	granted
Directorate	granted

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Context

The invasion of cane toads is impacting on the biodiversity of the Kimberley and no technique has been developed to prevent their spread across the landscape. Earlier research in this project has identified that predators, such as northern quolls (*Dasyurus hallucatus*) and goannas, are especially vulnerable to poisoning by toads and we have identified that it is possible to train some native predators to avoid eating cane toads. A taste aversion bait to prevent quolls eating toads has been developed and is being trialled during this project. Monitoring of northern quoll and reptile populations on Adolphus Island is required to understand how these species are likely to respond to the arrival of toads on islands.

Aims

- Test of taste aversion baits and the use of ‘teacher toads’ (metamorphs too small to be lethal) to induce an effective conditioned taste aversion (CTA) response from native species threatened by toads.
- Develop operational techniques to roll out taste aversion training across Kimberley landscapes.
- Research techniques for taxa not currently believed to be able to benefit from taste aversion training such as elapid snakes.
- Monitor populations of susceptible species behind the toad front, including those where taste aversion training took place and control sites.
- Investigate where and how toads survive in seasonally dry habitats to better understand their colonisation of islands and their potential to spread into the Pilbara region.

Progress

- Camera and trapping data for a taste aversion trial with northern quolls on Theda Station was analysed and prepared for publication.
- Three-monthly surveys of Adolphus Island were undertaken to assess faunal responses to toads that have rafted onto the island and established a population. Foot searches and trail cameras indicate continued persistence of quolls and a number of toad-sensitive goanna species.
- Camera arrays were established at three additional sites in the north Kimberley to assess the success of a 2018 taste aversion bait drop at Faraway Bay.
- Trials of aerial CTA bait drops were conducted in Mitchell River NP and Prince Regent River NP.
- The ’waterless barrier’ concept to prevent the spread of toads out of the Kimberley was examined by literature review, some field inspections and discussions with local land-holders and researchers familiar with the hydrology and wetland vegetation in the area. A discussion paper was prepared to canvas the issues involved in its implementation and the likelihood of success.

Management implications

- A CTA bait been trialled in the field and is known to cause northern quolls to avoid toads, but the length of this learnt behaviour is still under investigation. CTA provides the only known technique to reduce the impact of cane toads on quolls.
- The use of ‘teacher toads’ improves the survival of floodplain goannas in small scale trials and work is continuing to develop techniques to scale up the area that can be treated.
- The continued survival of quolls and other toad-susceptible species on Adolphus Island indicates that toad invasion of seasonally dry islands may not cause the extinction of their populations. Toads survive on Adolphus Island by selecting particular microhabitats and this confounds contemporary belief that survival is only possible for a few days without surface water.

Future directions

- Complete conditioned taste aversion (CTA) bait development for quolls and prepare publication.
- Complete experimental CTA baiting in areas being invaded by cane toads.
- Write up the survival strategies of cane toads during the late dry season on Adolphus Island.