Come hither... how imitating mating males could cut cane toad numbers

March 21 2018, by Lin Schwarzkopf

Cane toads have been found from Perth to Sydney. Credit: DEPARTMENT OF PARKS AND WILDLIFE/AAP

Cane toads are a real Aussie success story – for themselves, at least. But research has produced a new kind of trap that may help stop their

insidious march south.

The new traps imitate cane toads' mating calls and also use UV lights to attract insects, enticing both male and female toads to the trap.

There are too many toads in Australia to eradicate by simply removing individuals – some estimates put the number as high as 1.5 billion – but we hope that eliminating reproducing females could slow population growth.

Toad-ally awful

In 1935, 102 toads were shipped from Hawaii to Queensland to help control the cane beetle that were attacking sugar cane crops. They weren't particularly effective at that job, but they were certainly successful at spreading.

Although no one knows for sure exactly how many cane toads are in Australia now, we do know that they have spread from the tropical Top End, through Darwin to the Kimberley in Western Australia, west to Longreach in western Queensland, and even as far south as Sydney.

Cane toads reproduce rapidly, and are very adaptable and extremely mobile, covering up to a kilometre a night in the right conditions. They can also hitch rides on trucks, cars and even planes (hitching a ride is probably how a cane toad ended up in Mount Kosciuszko National Park last year).

As they spread they wreak havoc on the native environment. Toads are highly toxic, making native predators like quolls, goannas and snakes sicken or die.

And while the toads only eat about as many insects as native frogs of the

same size, their sheer population numbers mean they are likely to reduce the food availabile for other ground-dwelling insect-eaters, such as geckos, frogs, and some small mammals.

Our traps use audio recordings of male mating calls and insect-attracting UV lights to make the cage appealing to both male and female cane toads. Credit: Eric Nordberg, Author provided

Using cane toad calls to trap adult toads

In our laboratory we study frog calls. Male cane toads, like most frogs and toads, make a species-specific call to attract mates. About 15 years ago, we thought it might be possible to attract toads into traps using that

call – which is, after all, for attracting females.

To our surprise, we found that both males and females were attracted to this call, and that although males are attracted to anything that sounds even a bit like a toad, females prefer certain call types.

We also found that toads are attracted to insects that are attracted to lights, despite the paradoxical fact that toads don't like white lights very much.

We solved this problem by using UV lights to attract insects without bothering the toads. We then built traps that coupled UV lights to draw in insect food for the toads with the right call type, which were more successful than traps without both.

James Cook University has been working with our industry partner, Animal Control Technologies Australia, to develop a functional trap people can use to get rid of adult toads. Our trap captures adult (breeding age) males and females before they reproduce, targeting future generations as well as the individuals themselves.

Solving the ultimate problem

Although we have known cane toads threaten our native wildlife for some time, there are still no strategies available to control their numbers, apart from removing them by hand.

Our research has shown that trapping is less labour intensive than hand capture, and can be conducted for long periods. Trapping may be useful as part of general strategies to reduce toad numbers in sensitive areas, for example on islands. Traps for tadpoles are presently being trialled around Brisbane.

Trapping may also be a good way to collect individuals to apply any control methods invented in the future. This may be a genetically engineered disease, or ongoing efforts to genetically alter toads to make them non-toxic.

Other mitigation strategies currently being tested include training native species not to eat toads, either directly or using distasteful baits, and establishing natural dry barriers that slow toad spread.

We hope that traps for adults will become part of an arsenal of methods available to combat these pests, both at and behind the invasion front.

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