Cost-effective management of invasive predator species

Predators, which have been introduced to an area intentionally or by accident, can threaten native prey-species with extinction. A recent study found that immediate eradication is the most successful strategy for controlling non-native predators. However, in cases where this is not possible, keeping predator numbers below a predetermined upper limit is the most cost-effective method of control.

Using a modelling approach, researchers compared the pros and cons of five different management strategies designed to eliminate or control introduced predators. The strategies were evaluated to explore their ability to reduce the threat to native species and to assess their cost-effectiveness. In addition, the success of each strategy was examined under ideal conditions (when removal targets are achieved) and also when management was only partially successful in meeting the intended removal targets.

The five strategies were:

- **immediate eradication** – this aims to completely remove the predators as soon as possible
- **fixed-number control** - this is the removal of a set number of predators, and is often chosen when finances are limited; it may eradicate predators if numbers are small
- **fixed-rate control** - this is the annual removal of a fixed percentage of predators which limits the growth in population
- **upper-trigger harvest** - occurs when the predator numbers rise above a certain level and is used to keep predator populations at an acceptable level
- **lower-trigger harvest** - occurs when the predator numbers fall below a predefined level and is used to eradicate small populations of predators

Overall, the researchers found that, with sufficient funding, the immediate eradication of predators was the most effective strategy for reducing the threat to prey-species, even if the predator was not completely eradicated.

In situations where complete removal of predators is not possible and there are limited funds available for conservation efforts, the research suggests that the upper-trigger harvest method is preferred from both a cost and efficacy point of view. This is because high density predator populations have the greatest impact on native species. At the same time, it is easiest to reduce predator numbers when the population is high because it is easier to find individuals than in low density situations. This suggests that targets for reduction in predator population size can be more easily met and that reductions in predator numbers will have a greater benefit for native species.


Contact: p.baxter@uq.edu.au

Theme(s): Biodiversity