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Fatal Attractions: Exploiting Olfactory Communication between Invasive Predators for Conservation

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Abstract : Competition is a widespread interaction and natural selection will encourage the development of mechanisms that recognise and respond to dominant competitors, if this information reduces the risk of a confrontation. As olfaction is the primary sense for most mammals, our research tested whether olfactory 'eavesdropping' mediates alien species interactions and whether we could exploit our understanding of this behaviour to create 'super-lures'. We used a combination of pen and field experiments to evaluate the importance of this behaviour. In pen trials, stoats (Mustela erminea) were exposed to the body odour of three dominant predators (cat / ferret / African wild dog) and these scents were found to be attractive. A subsequent field trial tested whether attraction displayed towards predator odour, particularly ferret (Mustela furo) pheromones, could be replicated with invasive predators in the wild. We found that ferret odour significantly improved detection and activity of stoats and hedgehogs (Erinaceus europaeus), while also improving detections of ship rats (Rattus rattus). Our current research aims to identify the key components of ferret odour, using chemical analysis and behavioural experiments, so that we can produce 'scent from a can'. A lure based on a competitors' odour would be beneficial in many circumstances including: (i) where individuals display variability in attraction to food lures, (ii) there are plentiful food resources available, (iii) new immigrants arrive into an area, (iv) long-life lures are required. Pest management can therefore benefit by exploiting behavioural responses to odours to achieve conservation goals.

Keywords : predator interactions, invasive species, eavesdropping, semiochemicals
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