Study suggests new method of identifying native species

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Homegrown animals like the bandicoot are helping our researchers to decide when an introduced species becomes native

(PhysOrg.com) -- A radically new way to determine whether an introduced species has become a native species - by observing the reactions of other local species - is outlined in research by the University of Sydney, using the dingo as a case study.

The findings are published in the journal PLoS One, published by the Public Library of Science in America, on 16 February.

Researchers Alex Carthey, a PhD student in the School of Biological Sciences at the University, and her supervisor Associate Professor Peter Banks, explain that introduced species cannot remain eternally 'new' in

an ecosystem, and therefore at some point must become 'locals' themselves.

"Determining whether species are native or not is a worldwide conundrum. Scientists, governments and legislators have struggled with the question of how long it is before you can consider a 'new' species to be native," said Associate Professor Banks.

It had been thought impossible to answer this question, but the authors propose a solution - the best way to determine whether or not a species is native is to 'ask' the local wildlife it interacts with.

"Native status is a big deal. It affects people's reaction to the species and where conservation dollars are spent," said Associate Professor Banks.

"Our study puts forward an objective criterion to determine the native status of a species - to 'ask' the local fauna it interacts with. If local fauna recognize and respond effectively to the new species, it has become very well integrated into that community."

To investigate this process, the team used the dingo Canis lupus dingo as a case study, as its native status in Australia remains disputed.

"Dingoes were introduced to Australia around 4000 years ago, but there is debate around whether they should be classified as a native species or not," said Alex. "The status of dingoes has implications for wild dog management and conservation."

"We wanted to see how a vulnerable native species, the bandicoot, Perameles nasuta, reacts to domestic dogs, Canis lupus familiaris, which are the same species as the dingo. So domestic dogs are in that sense standing in as a proxy for the dingo in this study."

"We compared how bandicoots forage in urban backyards in households that have dogs, compared to those that have cats, which were more recently introduced," explained Alex.

"We found that bandicoots recognise the danger and avoid foraging in backyards with dogs, but continue to visit yards of cat owners and petless households," said Alex.

"Our study suggests that bandicoots have come to fear dogs as predators after thousands of years of interaction with dingoes, and so avoid areas with dogs, while they are yet to recognise the threat cats pose as predators, as bandicoots haven't been in contact with cats for as long."

While dingoes have been present in Australia for around 4000 years, cats were introduced in Australia only about 150 years ago.

If bandicoots are responding to the danger that dogs pose as predators, it suggests that at least this local species reacts to dogs as they would to a native predator.

"This supports the argument for dingoes to be considered a native species. The lack of response to cats by bandicoots in our study suggests that hundreds of years of coexistence has not been enough time for bandicoots to start regarding cats as anything other than an introduced species and not yet native," said Alex Carthey.

"The best way we can determine whether a species that was introduced a long time ago has essentially become native really is to just ask the locals."

Provided by University of Sydney