Innovative behaviours and personality traits in captive kea (*Nestor notabilis*) as a model for the emergence of kea strike in wild populations

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Abstract

The personality traits of seven captive kea (*Nestor notabilis*) were investigated in terms of neophobia, problem solving ability, and innovation. The first objective was to compare the personalities of the birds and assess these in relation to demographic factors including age and sex, as well as looking at the effect of isolated versus group housing. Kea are known to require high standards of enrichment and sociality, so this information can be used to determine the effect their captive housing may have on important wild traits. The second objective was to observe whether particular personalities or demographic factors made a kea more innovative, or in this case more likely to attack a sheep. Kea strike is a phenomenon whereby kea attack sheep, which often die as a result. This conflict has led to approximately 100,000 kea being shot by farmers in retaliation, and as a consequence there has been a dramatic decline in the wild kea population.

In order to assess each individual's relative neophobia or neophilia, novel objects were presented to the kea and their reactions observed. Problem solving ability was measured by using a Multi-Access Box, which required the birds to use one of four different access routes to retrieve a food reward. To observe levels of innovation and the likelihood of kea strike emerging, a mechanical sheep analogue was used. This was made to resemble a sheep, and contained a food reward for the kea to find. The juveniles in this study were much more neophilic and adept at problem solving than the adults, and this is thought to be because juveniles are still learning about their environment and these traits are therefore highly beneficial to them. Only one juvenile successfully completed the sheep analogue task, and she was the most neophilic and adept at problem solving. This suggests that highly neophilic and explorative kea are more likely to develop innovative behaviours such as kea strike. Understanding the drivers behind kea strike is important if tools are to be developed to minimise the conflict in the future.

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Table of Contents

List of Figures and Tables