Sensory Preferences and Personality Traits of Captive Red Crowned Kakariki (*Cyanoramphus novaezelandiae*) and Antipodes Island Parakeets (*C. unicolor*).

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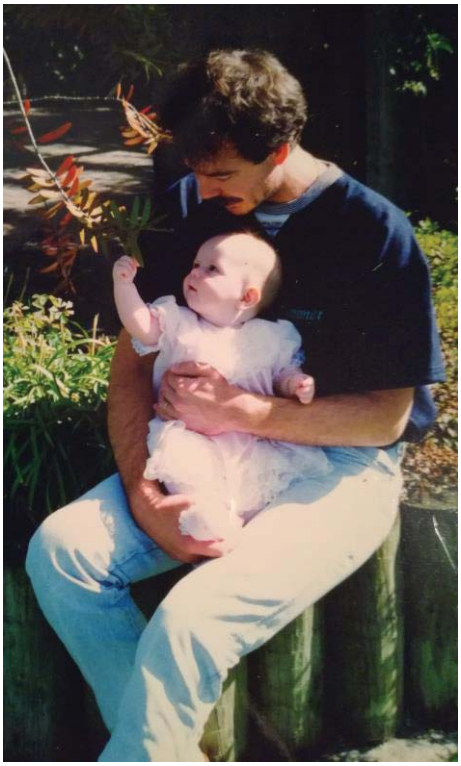
“Life isn’t measured by the years that you spent but by the things that you did and the love that you gave.”

Scott Ingram 15.11.1963 – 03.02.1999



Abstract

The way in which most animals sense and interpret the environment around them differs from species to species. Even two closely related species such as the red-crowned parakeet (*Cyanoramphus novaezelandiae*) and the Antipodes Island parakeet (*C. unicolor*) may respond to the same stimulus in very different ways. Individual birds can also show different personality traits or temperament phenotypes when presented with a novel environment.

Despite being closely related, the two species used in this study have evolved in different natural habitats and use different foraging strategies. The Antipodes Island parakeets are naturally found on a group of sub-Antarctic islands known as the Antipodes Islands where they live in the tussock and sledge fields that cover the large islands and feed on the grasses and other vegetation. The red-crowned parakeets can be found on the small remnants of podocarp forests around New Zealand where they can be seen living in the canopy and on the forest floor, where they feed on mostly fruits, flowers and berries with a small proportion of invertebrates. I postulated that the evolutionary selection pressures on these two species will have resulted in differing behaviour and sensory physiology that could be measured in an experimental setting.

Five individuals from each species was presented with four options in four different sensory experiments (sound, taste, colour and smell). The four different options were presented on top of a metal pole that was placed in each corner within a $1m^3$ perspex box. The behaviours shown by the birds over each 20-minute testing period was recorded and analysed in terms of both sensory preferences and personality traits. Each sensory experiment was repeated four times with each of the 10 birds. This mean that each bird was tested a total of 16 times (four repeats for each of the four sensory tests).

The Antipodes Island parakeets showed interest in all four sensory experiments and spent time investigating all of the options presented to them, but showed the clearest preference for the olfactory stimulus of carrion. They were overall more active and showed a lower level of neophobia towards the novel environment of the testing apparatus. The red-crowned parakeets showed the opposite reaction to the novel environment of the testing apparatus by being less active and preferring to stay in one place rather than investigating more of the testing box. The red-crowned parakeets also only showed interest in the colour sensory test spending more time investigating the four colour options more than any other sensory option.

Both the Antipodes Island parakeet and the red-crowned parakeets were captive bred and raised in the same captive facility. This meant that all the birds were exposed to the same captive environment and may have a low level of genetic diversity. The results of this study showed that

even though all the birds were raised in the same conditions there were still measurable differences between the two species in behaviour and sensory choices. This suggests that in each species, some innate behaviours driven by evolutionary selection on their ancestor's life history have persisted despite their common early learning environment in captivity.

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