

## Evaluating mate choice in Brown Kiwi and implications for conservation

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Mate choice is perhaps the most critical decision in an animal's life as it is crucial for reproductive success and fitness, and hence, population viability. While looking for potential mates, animals assess quality-indicator traits in candidate partners that might represent fitness advantages for themselves and/or their offspring. In some situations, these traits can represent direct benefits such as access to resources, protection from predators, and parental care, while in other cases, they confer indirect benefits that boost reproductive success and offspring genetic quality.

The major histocompatibility complex (MHC) genes play a pivotal role in the adaptive branch of the immune system. The type and extent of variability in these genes have been associated with health and fitness, thus offering a fascinating opportunity to study avian behavioural ecology, as they might reveal key targets of sexual selection. Mate selection by MHC genes might also influence certain phenotypical traits, offering a morphological fingerprint for assessing genetic characteristics in social partners. For example, the MHC genotype is associated with the production of distinctive odours used in individual discrimination; a mechanism thought to act in long-lived species with strong olfactory capabilities. The unique cryptic morphology of kiwi—lacking conspicuous morphological traits target for mate choice, and its nocturnal habit suggests these endemic birds should use senses other than a vision, for mate selection. Therefore, the MHC represents an interesting candidate mechanism for studying mating preferences and its implications for the conservation of these iconic birds.

This research project aims to characterise and study the genetic diversity of the MHC, and its implications for mate choice in north island brown kiwi (*Apteryx mantelli*). Here we will study a brown kiwi population in the North Island, New Zealand, using already collected blood samples along with additional data that will be collected in the field. The Birds New Zealand funding will be used to characterise the structure and diversity of the MHC genes using next-generation sequencing techniques. This characterization is essential for addressing the question of the role of MHC in mate choice in this species, which will be evaluated using different statistical modelling approaches. This research will provide vital information that might help conservation management decisions relating to translocation, biosecurity and breeding programs.



North island brown kiwi: female (top), male (center) and chick (bottom). Photos by E. Ramos and I. Castro