Identification of the wild diets of kiwi chicks using eDNA

Operation Nest Egg (ONE) saves kiwi chicks from stoat predation through raising chicks in captivity.

Eggs are collected from their parent's nesting burrows and transported across the country by quad, car and helicopter to captive rearing centres. The eggs are hatched, and the chicks are then raised by committed zookeepers who work tirelessly to get the chicks up to their 'stoat proof' weight of 1 kg – big enough for their release back into the wild.

Rowi (*Apteryx rowi*), Haast tokoeka (*A. australis* 'Haast') and brown kiwi/kiwi-nui (*A. mantelli*) are all raised using ONE, either in small numbers intermittently (rowi, Haast), or in large numbers across every breeding season (kiwi-nui). While in captivity, chicks of all ages are fed the same artificial diet based on raw beef mince and beef heart, vegies and commercial cat biscuits.

Lindsey and Claire Travers, spent the last few years reviewing this diet's suitability for optimising kiwi chick health. They found each species likely needs their own nutritionally tailored diet – and the current diet, being comprised largely of raw beef, is possibly too high is phosphorus, too soft, too salty, too sticky, and too high in protein for older chicks.

So what should we be feeding chicks instead? To find out, we are going 'back to nature'. No one really knows exactly what wild kiwi chicks eat. We are going to try and work this out, and then refine the foods fed in captivity to better match the wild diet's composition.

We are delighted to have received a Birds New Zealand research grant to begin pursuing this work. We will be working with the Department of Conservation, the Whakatane Kiwi Trust and Tamsin Ward-Smith to collect kiwi chick stools from across Aotearoa from wild chicks. These will be incidentally obtained during routine health checks. Thank you in advance to our sample collection team. We will then work with Maanaki Whenua and use environmental DNA analysis to determine exactly what the chicks eat, and whether their food item selection changes as they get older. We hope we can use this information to create better, tailored diets for all kiwi chicks kept in captivity – ensuring they get the best possible start to their future lives in the wild.

Lindsey Gray and
Megan Jolly