

## **Is host source location a factor in the presence of chewing lice on birds introduced to New Zealand?**

Phillip Cochrane <sup>\*1</sup>, Adrian Paterson <sup>1</sup>, Richard Duncan <sup>1</sup>, Catriona Macleod <sup>2</sup>

<sup>1</sup> Lincoln University, PO Box 84, Lincoln 7647, New Zealand

<sup>2</sup> Landcare Research, Private Bag 1930 Dunedin 9054, New Zealand

Many United Kingdom (UK) bird species were introduced to New Zealand in the mid-to-late 1800's. In the UK, these species host chewing-lice parasites (Insecta; Phthiraptera); however, some of these parasite species failed to establish in New Zealand (NZ) while their host species succeeded. Two explanations have been offered for this phenomenon: (1) the source hosts lacked infestation (missed the boat); (2) parasite taxa failed to survive on host taxa that established in NZ (lost overboard). To determine whether host source location is an explanation for why some parasite species missed the boat, this research focuses on UK geographic distributions of host (Passeriformes) and parasite (chewing-lice) species. New UK louse data were collected from an area where previous sampling is sparse, and combined with historic parasite records. Bayesian regression was used to analyse whether the probability of the number of parasitised hosts differed between six geographic regions. Hosts in northern UK regions were less likely to be infested than in other regions. Therefore, if hosts were sourced from regions with low louse prevalence, lice might have missed the boat and failed to establish in NZ. Furthermore, hosts were less likely to be infested with ischnoceran lice than amblyceran lice. These results highlight the need to account for variations in louse prevalence at source host locations and louse phylogeny when modelling the probability of louse presence on an exotic host population.

