

# The Social Network: Mapping the Association Patterns of Short-Tailed Bats

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The New Zealand short-tailed bat, *Mystacina tuberculata*, is a lek species in which males display to females by singing from small crevices in trees. It was originally believed that each singing roost was defended by a solitary male, but recent research has shown that some roosts ("timeshares") are instead occupied sequentially by up to five different males throughout the night. Why males choose to engage in timesharing is currently unknown, but it is hypothesised that it is an alternative mating strategy utilised by males who are unable to hold a singing roost alone. As only limited relatedness has been found between timeshare males, this prompts the question of how males select roost-mates and whether they associate together outside of timeshare roosts. The social structure of *M. tuberculata* operates under a fission-fusion model, with the majority of the population gathering in communal roosts during the day before separating to forage at night. The population in Pureora Forest Park is estimated to number ~750 individuals. Of these, over 700 have been fitted with subcutaneous PIT-tags by which they can be individually identified. PIT-tag readers mounted above the entrances to communal roosts were used to log the arrivals and departures of tagged individuals between 11/09/13 and 12/11/15, generating a dataset of 15593 observations. This dataset was used to conduct a social network analysis of individual connectivity. The association patterns of timeshare males will be examined and compared to those of other lekking males and non-reproductive males to assess aspects of social connectivity such as time spent roosting together, length and frequency of association, and engagement in age-related cohorts. Link-node maps of social interactions will be presented, and the results used to examine whether the association patterns of timeshare males are notably different to those of other males.