

Determining daily foraging patterns of overwintering Chestnut-backed Chickadees (*Poecile rufescens*) using radio frequency identification (RFID) technology

By: Sarah Chalmers

VIU Faculty Advisor: Dr. Eric Demers

The study of passerine behaviour has become increasingly important in recent years due to an overall decline in many passerine populations across North America. Actively monitoring passerine behaviour may help explain causes of their population decline and facilitate the development of passerine conservation strategies. Radio frequency identification (RFID) technology serves as an affordable tool for the study of passerine behaviour. To determine the daily feeding dynamics of locally common free-living birds, I built bird feeders with RFID readers and banded Chestnut-backed Chickadees (*Poecile rufescens*) with passive integrated transponder (PIT) tags. Over the course of 27 days, the reader logged over 8,245 unique visits by eleven tagged individuals ($n = 11$). From this data, I found that tagged chickadees generally began visiting the RFID feeder shortly after sunrise and the mean visitation rate steadily increased throughout the morning, peaking between 11:00 and 15:00. Visitation rate dropped sharply approximately one hour before sunset. Total daily visits to the feeder decreased significantly ($P < 0.001$) as mean daily temperature increased. Similarly, total daily visits generally decreased with increasing total daily precipitation, although this relationship was not significant ($P = 0.190$). These data suggest that the birds' daily energy reserves were being met before sunset and may have been maintained throughout the morning by relying on cached seeds from the previous day.