

Assessing the detectability rate of Motus towers using sUAS

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Abstract. The Motus Wildlife Tracking System (Motus) is used to track migratory animals, including birds, bats, and insects. It is an international collaborative research network that uses coordinated automated radio telemetry to assist in the research and education on the ecology and conservation of migratory flying animals. This study was conducted to examine the detectability rate of Motus towers using Unoccupied Aircraft Systems (UASs). Unoccupied Aircraft Systems are useful tools for collecting remote sensing data and have the potential to be used to test Motus tower capabilities. Different migratory flight paths were emulated using the UAS, pre-planned flights, and an attached LoTek NanoTag. There were a total of 20 successful flights with differing speeds, altitudes, and distances from the Motus tower. We chose a Motus tower located at the Mountain Retreat and Learning Center in Highlands, North Carolina due to its proximity and accessibility. The results show a significant negative correlation between signal strength and distance from the tower, but no significant differences in signal strength when comparing altitude or speed. Additionally, topography was not found to be a significant impacting factor in signal strength. While there were significant technological limitations, future studies should continue attempting the methodology from this study in the southern Appalachian mountains and other regions of the world.