

Using Drones and Radio Telemetry to Monitor Wildlife in Montana

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We summarize work evaluating the potential use of radio telemetry equipment mounted on a small Unoccupied Aerial System (sUAS), a DJI Matrice 600 Pro drone, to support locating wolf radio collar signals and aerial photography. A Communications Specialist R1000 receiver and Advanced Telemetry Systems 3 element yagi antenna were used to listen for signals from radio collared wolves from the ground. The Matrice 600 landing gear was modified to provide a platform for mounting the receiver electronics, the three element Yagi antenna, and a wireless transmitter/receiver system. A DJI Zenmuse Z30 30x zoom camera was mounted under the drone. Radio frequency noise from the drone controller and motor electronics initially masked weak signals from the collars. Mounting the antenna 1-2 feet above the drone significantly reduced the noise interference. Using the drone to lift the antenna 100 feet up into the air and getting above the treeline resulted in a 20 dB signal improvement over the signal strength from the ground. We plan further testing using a spectrum analyzer in place of the receiver, and a higher gain 5 element antenna to improve direction finding. Additionally, we review how drones have been used to facilitate data collection for wolves and other wildlife in Montana and beyond, and the potential for drones to facilitate more efficient, effective, and precise monitoring and management of wildlife.