Utilizing UAS to Support Wildlife Hazard Management Efforts by Airport Operators

Authors

Cole McNall
Raymond Ayres
Abigail Neff
Brendan Flood
Faculty Advisor

Flavio A. C. Mendonca, MBA; Ph.D.

Abstract

Wildlife strikes to aviation are a serious economic and safety concern. The Federal Aviation Administration requires Part 139 airport operators to conduct a wildlife hazard assessment (WHA) when certain wildlife strike events occur at or around the airport. A WHA provides the empirical framework for the development of an effective Wildlife Hazard Management Plan by Part 139 airport operators. The purpose of this ongoing study is to investigate the application of Small Unmanned Aerial Systems (sUAS) technologies into the airport environment as a tool to identify hazardous wildlife species, their behaviors, and their habitats during a WHA.
A qualified airport wildlife biologist has assisted our team during the development of new data collection methods, as well as the identification of wildlife species throughout the entire project. Data have been collected using a DJI Matrice 210 drone with a Zenmuse X5S camera and with a DJI Mavic 2 Enterprise Dual drone at Coe Field (8FA4), a privately used, general aviation airport located in Class G airspace. Different strategies to mitigate risks associated with manned air traffic and remote-controlled aircraft were implemented in our study, such as incorporating an automatic detection surveillance broadcast flight box and Foreflight technologies as well as numerous visual observers during data collection. Furthermore, all team members are properly rated to act as a Remote Pilot in Command of our sUAS under Title 14 Code of Federal Regulations Part 107 regulations. Our preliminary research findings have suggested that UAS could help with the effectiveness of the completion of the WHA by:

1. Reducing the labor, personnel, and time needed to accomplish most WHA tasks.

2. Identifying the location of wildlife activities as well as features that have attracted or have the potential to attract hazardous wildlife species to the airport jurisdiction.

3. Collecting data in areas that are inaccessible or difficult to access and/or observe by ground-based means.

4. Obtaining information of different habitats and wildlife species simultaneously.

5. Observing wildlife activities at a distance and or location that would be difficult to observe using the current WHA methods.