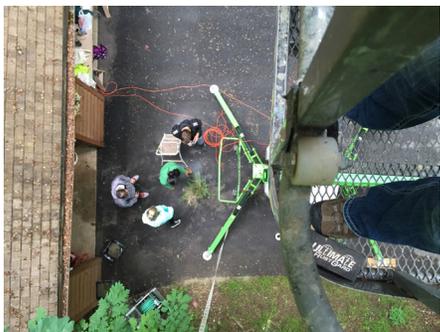


Patuxent Wildlife Research Center

Using Advanced Technology to Enhance Research at the Patuxent Wildlife Research Center (PWRC) - a Public-Private Partnership



The Challenge: Threats such as habitat loss, increased severity of storm events, and emerging diseases are affecting wildlife populations, with particular concern for threatened and migratory species. Surveys for measuring populations and breeding productivity for various species have been utilized for many years; however, they can be intrusive leading to aggressive behavior of adults or even abandonment of young or nests. We propose developing and testing local remote sensing technologies (primarily unmanned aerial vehicles (UAV), ie. drones) to increase efficiency and decrease disturbance in surveying breeding waterbird populations. This technology will allow us to scan for nests, count eggs, and search for chicks hidden in vegetation without physically entering nesting colonies. Some of the many benefits of using a remote sensing system include less disturbance to fragile habitats, a reduced risk to the scientists collecting data, a more timely and efficient way to collect data, and reduced overall project costs. These drones can also be equipped with advanced sensors to collect other types of data; something that PWRC plans on utilizing in the near future.



The Science: In 2015, the USGS began a pilot project to improve monitoring efforts of colonies of Maryland state "special concern" waterbird species. This work was conducted in partnership with UASBio LLC, the Army Corps of Engineers, and U.S. Fish and Wildlife Service. The drones were flown at different heights over the colonies and a live video feed was used to locate individual birds and nests. Behavioral response to presence of UAVs were recorded. Thermal infrared imaging (TIR) sensors were also tested for efficacy in detecting chicks under varying vegetation conditions. This was done under controlled conditions, using a lift to simulate UAV heights and vegetative cover conditions (0 to 100%), and a captive-raised chicken chick as biological surrogate.



The Future: Our country is in the early stages of utilizing drones outside of defense applications. The this ongoing research could be a model for how new technologies can be used safely and effectively by local, state, regional and federal agencies to monitor, research and protect our natural resources. Such approaches may also provide greater insight into the general biology and behavior of various waterbird species in the Chesapeake Bay.