Managing Conflicts between Birds and Unmanned Aerial Systems (UAS)
National Audubon Society, Science Division
Best Practices Brief (12 June 2015)

Unmanned Aerial Systems (UAS), commonly known as drones, have recently come into commonplace usage worldwide. They vary in size from handheld units to full-sized aircraft, and their applications range widely from toys and photography to surveillance and security. UAS may have great value as research tools for conservation science; however, the exponential increase in UAS have raised concerns about their effects on sensitive wildlife populations such as birds. Recently, rules have been proposed by the Federal Aviation Administration (FAA) to manage use of UAS in the United States. These include restriction on areas where use is allowed, but the restrictions do not specifically address concerns about harassment of wildlife including birds.

Birds may be harassed, injured, or killed in collisions with UAS. There is no statistical information on these effects, but internet images or videos confirm collisions of UAS with birds. Bird aircraft strike hazards (BASH) are a common concern for aircraft near airports, as bird strikes regularly result in damage and even crashes. Several federal management agencies have already established policies about UAS use on their lands, including moratoriums by the National Park Service in 2014 (unless under research permits) and by Fish and Wildlife Service National Wildlife Refuges. Some state wildlife agencies (*e.g.* WI, CO, AK, MT) have placed restrictions on use of UAS on state lands as well, and other states are starting to consider regulating the use of UAS (NM).

However, UAS may be valuable conservation tools for accomplishing tasks including habitat assessment through aerial photography or surveys of birds or their nests. UAS could be an effective and efficient way to conduct research on birds if they are approached under carefully monitored conditions. At the same time, use of UAS may be considered detrimental and banned in participatory volunteer programs such as the Christmas Bird Count.

Best Practices: Increased bird-UAS interactions may occur with rapidly increasing UAS use. Thus, we propose initial, common-sense, best practices for UAS operators to reduce bird-UAS conflicts.

1. Know laws protecting wildlife: be aware that there are laws protecting migratory birds and endangered species from negative effects of human activities such as flying UAS in areas where wildlife are present.
2. Respect rules on public lands: observe federal, state, local and tribal policies regarding UAS use.
3. Check current notices: check posted signs and information webpages to be aware of sensitive areas with extensive bird numbers that should be considered no-fly zones.
4. Recognize seasonal activities: avoid activity over nesting or flightless birds or habitats used by birds for those activities during sensitive periods such as breeding or molting.
5. Conduct a pre-flight check: perform a pre-flight check for birds in the flight area immediately before take-off. UAS and birds often share the same airspace up to 400' from the ground (Lambertucci et al 2015), and if birds are detected in that airspace, it should be avoided.
6. Provide a buffer: leave a 50-100' buffer from areas where birds are present flying, in trees, or on the ground. A recent quadcopter study indicated little response by waterbirds beyond 12' (Vas et al. 2015), but other types of UAS, or different bird species, may elicit a response at greater distances.

Literature Cited:

Lambertucci, S.A., E.L.C. Shepard, and R.P. Wilson. 2015. Human-wildlife conflicts in a crowded airspace. Science 348:502-504.

Vas, E., A. Lescroel, O. Duriez, G. Boguszewski, and D. Gremillet. 2015. Approaching birds with drones: first experiments and ethical guidelines. Biological Letters 11: 20140754.