

Best Practices for Avoiding Impacts to Natural, Cultural, and Historic Resources when Using Uncrewed Aircraft Systems

In compliance with National Park Service (NPS) [Reference Manual 60: Aviation Management](#), Chapter 12, limited use of uncrewed aircraft systems (UAS) is permitted in units of the National Park Service if the mission type is acceptable, required documents are filed, and necessary approvals are granted. The following best practices were developed to supplement the requirements in [RM-60: Aviation Management: Chapter 12](#) and [Appendix 8: Special Park Uses: Permitting for Uncrewed Aircraft](#). The best practices are intended to assist personnel developing and approving requests for UAS operations to avoid impacts to natural, cultural, and historic resources. Superintendents may adopt more protective measures to address park-specific concerns.

Because UAS technology and the state of knowledge are evolving rapidly, these best practices were developed to be flexible and may be updated as more information becomes available. They are consistent with Federal Aviation Administration, National Transportation Safety Board, Presidential Memoranda, the Department of Interior, and NPS requirements.

PRE-FLIGHT PLANNING

1. Become familiar with the presence of the following in the mission area: noise-sensitive species, habitat, or nesting areas; cultural areas or events; archaeological and paleontological sites; and caves. Assess potential impacts of the mission on resources such as air, archaeological, biological, cultural, geological, hydrological, lightscares, paleontological, soundscapes, viewsheds, and wilderness. Plan the mission to avoid direct and cumulative impacts by optimizing the route, speed, timing and frequency of flights, and employ technologies and operational parameters that help avoid impacts.
2. Complete a Minimum Requirements Analysis (MRA) in accordance with NPS Management Policies 6.3.5 and 6.3.6 if UAS operations occur within or over designated wilderness or areas managed as wilderness and may impact wilderness character and values. This MRA is a documented, two-step process that determines:
 - a. Whether the use is necessary for the administration of the area as wilderness and does not cause a significant impact to the wilderness character and values.
 - b. The activity (method or tool) to accomplish the action (project) with the least negative impact to the wilderness character and values.

If the proposed use is deemed necessary under the first step of the analysis, UAS may only be used to accomplish that action if the analysis shows that the use of UAS, as compared to other alternatives, is the least impactful management method or tool to wilderness character and values. When making this determination, the potential disruption of wilderness character and values will be considered before, and given significantly more weight than, economic efficiency and convenience gained by using UAS.

3. Consider information about impacts to resources found in general management plans, foundation documents, natural resource condition assessments, and other planning documents.

In addition to more traditional park resources, these resources may include an atmosphere of peace and tranquility, visual resources, and natural, historic, or commemorative locations within the park.

4. Consider impacts to resources that may occur from “lost link” situations or downed UAS, and utilize available technologies that allow the NPS to track and find UAS within the park to help avoid any such impacts.
5. Use the quietest UAS available that will accomplish the mission because noise from UAS can impact wildlife and other resources, especially when flown at low altitudes. Various models of UAS with different noise characteristics are available. For example, fixed-wing UAS tend to be quieter than rotary and tend to evoke less of a response in wildlife, and a canard configuration in a fixed-wing UAS is less likely to evoke an antipredator reaction than a conventional configuration.

DURING MISSION

6. Operate UAS in a manner that minimizes audible and visual impacts to resources, including wildlife. If wildlife or other resources are encountered during the mission that may be affected by the UAS, modify the route, altitude, airspeed, or other operating parameters to minimize potential impacts, if possible without compromising the safety of the mission.
7. Note any valuable resource information gathered from the UAS mission in any post flight communications, including wildlife sightings, identification or condition of natural, cultural, or historical, resources, and any impacts to resources (including changes in wildlife behavior) resulting from the UAS operation. Implement safeguards to ensure that locations of sensitive resource areas will not be made public in accordance with existing policies and laws. Sensitive areas may include archaeological sites, paleontological sites, caves, and sensitive wildlife habitat or nesting areas