

June 30, 1990

UPDATE

INTERAGENCY AIRCRAFT OVERFLIGHT SOUND PROJECT



USDA FOREST SERVICE
Recreation Management Staff



USD NATIONAL PARK SERVICE
Ranger Activities Staff



RECREATIONIST EXPERT JOINS CORE TEAM

Dr. Wes Henry has replaced Steve Hodapp as the National Park Service (NPS) technical coordinator on the study core team. Steve has taken an assignment as a professional staff member for the Subcommittee on National Parks and Public Lands for the U.S. House of Representatives. In mid-June, Dr. Henry moved into Steve's former position as Resource Management Specialist in the NPS Branch of Resource and Visitor Protection, Ranger Activities Division. In addition to aircraft overflights, his responsibilities include wilderness management and other resource-related matters.

Wes has a doctorate in Resource Planning and Recreation from Colorado State University and a masters in Resource Planning and Conservation from the University of Michigan. He comes to this position from the NPS Branch of Budget Formulation, Washington, DC, where he was responsible for cultural and natural resource programs and issues. Prior to joining the NPS 6 years ago, Wes worked in various resource management capacities with the Bureau of Land Management's Division of Recreation, Cultural and Wilderness Programs. He is also continuing his participation in an international assignment, working on carrying capacity and visitor impact studies for the Kenya Wildlife Services.

SECOND PRIME CONTRACTOR JOINS STUDY TEAM

BBN Systems and Technology, Inc., has been the prime contractor for this interagency project and has performed exceptionally well. However, a contractual funding ceiling was reached, and an additional contract was let. The second prime contractor; Harris, Miller, Miller, and Hansen (HMMH), Inc. of Lexington, Massachusetts; has now joined the study. The Forest Service and National Park Service feel fortunate to be able to utilize the resources and expertise of two such fine contractors.

SUMMER FIELD WORK

Three wildernesses have been selected for intensive study. Within these, acoustic instrumentation is to be placed at several areas along a couple of fairly heavily used wilderness trails where aircraft overflights are likely to occur. In addition to recording statistical and cumulative sound levels, tape recordings of the background sound and of aircraft sounds will also be made. For each identifiable aircraft overflight event, the acoustic data will be reduced to a variety of acoustic metrics—both conventional and specialized metrics proposed by our contractors.

Visitors are to be interviewed during their stay in the wilderness or when they leave. Other visitors will be interviewed by telephone a few days after they have left the wilderness. The standard community noise response metric (percent highly annoyed), as well as others commonly used in wilderness research, will be reduced from the questionnaire data. The most appropriate "dose-response" relationship between the measurement of acoustic intrusion and the measurement of visitor response will then be developed.

WHO TO CONTACT FOR FURTHER INFORMATION

Mr. Bill Makel, National Coordinator for Wilderness Aircraft Overflight Sound Study, Forest Service Technology & Development Center, 444 East Bonita Avenue, San Dimas, CA 91773 (phone 714/599-1267, FTS 793-8000) or **Dr. Wes Henry**, National Park Service, Ranger Activities Division (650), P.O. Box 37127, Washington, DC 20013-7127; (phone: 202/208-5211, FTS 268-5211).

Additional sites have been chosen for less intensive study. At the less intensively studied sites, a smaller amount of acoustic data are to be gathered. Interviews will be conducted by telephone a few days after visitors have left the wilderness.

INTRUSIVE SOUNDS

An intrusive sound may be considered to be any man-made sound that intrudes on the natural background sound of a wilderness. This seems like a pretty straightforward concept. Yet, upon further analysis, it becomes less clear as to how this concept should be applied in this study.

Recent measurements on the Selway-Bitterroot Wilderness in Idaho measured background sound levels as high as 55 dBA near running water, and as low as 30 dBA in clearings. Sound levels in the Grand Canyon National Park varied between 16 and 58 dBA. Sound levels at one spot in the Gila Wilderness were measured at 18 dBA in the morning and 28 dBA in the evening. Animal calls were found to increase momentary levels as much as 15 dBA. An aircraft clearly audible at a site with low background sound levels is inaudible at another site with higher background levels, even though the aircraft is producing the same amount of sound. In some cases a particular type of aircraft overflight is audible at one time of day and not another. These circumstances raise questions about how to determine intrusiveness. Should some overall average background sound level be used? Should it be site specific? How should temporal variations be considered?

Another component of the background sound to be considered is the "self noise" generated by the recreationist. The intrusive quality of an aircraft noise signal, as heard by a park or wilderness visitor, depends in some way upon the background sound at the listener's ear. The dominant source of noise at the listener's ear, under most recreation conditions, is the actual activity of the listener; we have called this "self noise." Should this self noise be considered in the determining intrusiveness?

If the sound of aircraft overflights adversely effect wilderness users only if it is heard, the "theory of signal detection" provides a basis for predicting whether or not such a signal—in this case an aircraft—can be detected. This theory has been successfully applied in research conducted for the military, where listeners are intently attempting to detect approaching aircraft. It has been shown that annoyance, under several different situations, is correlated with detectability. Thus, it seems logical to explore the use of this metric in the current study. Unlike the situation that arises around airports, in the wilderness the background sound level is critically important in determining detectability.

Although the question of how to consider variations in background and self noise sounds cannot be answered at this time, work is proceeding to develop the information needed to resolve these issues. How we consider these variations in background sounds and self noise will have significant influence on the answer to the question of whether or not aircraft overflights adversely affect park and wilderness visitors and, if so, to what extent.

GRAND CANYON NATIONAL PARK

The sound modeling study is continuing in Grand Canyon National Park, to determine if Special Federal Aviation Regulation (SFAR) 50-2 has been successful in achieving substantial restoration of the "natural quiet."

SAFETY STUDY

The safety study has started and will continue until this fall. Some wildernesses are being sampled on a monthly basis; the remaining wildernesses will be sampled twice during the study period. This study should provide substantial data for answering the question about the impact of aircraft overflights on the safety of wilderness users. It will also provide a good assessment of all types of accidents in wilderness.

OTHER ACTIVITIES

BBN Systems & Technology is gathering data to estimate military, commercial, and general aviation aircraft exposure over Forest Service wilderness and National Park Service lands. These data (along with recreation use figures, nature of developments, etc.) will be used to estimate the extent to which opportunities for natural quiet are currently available and what they will be like in future.