Aircraft noise in national parks

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Visitors to the country's National Parks may be seeking tranquil communion with nature, but what they sometimes encounter is the noise of airplanes and helicopter tours.

In a study presented at the 167th meeting of the Acoustical Society of America, which is held May 5-9 in Providence, Rhode Island, researchers with the U.S. Department of Transportation's Volpe National Transportations Systems Center report on recent results of a joint Federal Aviation Administration (FAA) and National Park Service (NPS) study to assess potential effects of such flights on the experience of park visitors.

From April to August 2011, acoustical engineer Amanda Rapoza and co-researchers from the FAA; NPS; Harris Miller Miller and Hanson Inc.; and Resource Systems Group, Inc. collected data at seven backcountry sites—in Bryce Canyon, Glacier, Grand Canyon, and Zion National Parks—providing both day and overnight hiking and camping opportunities, with visits ranging from one hour to several days. At each site, visitors were asked to take a survey regarding their reactions to aircraft noise over the parks. The aircraft represented a mix of helicopter, general aviation and high-altitude commercial aviation aircraft. In the survey, visitors were asked, for example, if they were bothered, disturbed or annoyed by aircraft noise and if they found that it interfered with their appreciation of the natural quiet and sounds of nature at the site.

The aircraft noise was recorded using acoustical monitors placed at

various locations throughout the study areas. In addition, the precise locations of the surveyed visitors within the study areas were determined with Global Positioning System tracking devices. In all, 4,600 survey responses were collected and cross-referenced with their associated noise measurements, representing approximately 50 days of data.

In earlier research conducted during the 1990s, similar survey and acoustical data were collected at overlooks and along short hikes within heavily trafficked "frontcountry" areas of the parks. Analysis of this frontcountry data showed that differences exist between overlook and short-hike visitor responses to aircraft noise. For example, short-hike visitors and repeat visitors were more sensitive to noise than were visitors to overlooks and those who were first-time visitors to the site.

Researchers anticipated that these differences in response were due to one or more of the underlying differences between visits to these types of sites, primary visitor activities, the duration of the visits, and also motivations and expectations for the visit experience. For example, a visitor taking the effort to hike several miles into the wilderness may have different expectations for solitude and/or quietude than one who does not invest similar time and effort.

The recent research corroborated this evidence, finding that backcountry visitors who cite enjoyment of the natural quiet and sounds of nature as important to their visit are more sensitive to aircraft noise, as are those who are repeat visitors, those who have never taken an air tour, or those who participate in noise-sensitive activities such as bird-watching or listening to an interpretive talk.

The data were collected with the goal of understanding backcountry visitors' responses to aircraft noise and developing dose-response relationships for these visitors, which can be used as a tool to predict visitor response to specific air tour operational scenarios to inform

evaluations of air tour noise effects on visitors to National Parks and remote wilderness sites.

More information: Presentation #5aNS3, "Aircraft dose-response relations for day-use visitors to backcountry areas in National Parks" by Amanda Rapoza, Erika Sudderth, Kristin Lewis, Cynthia Lee and Aaron Hastings was held on Friday, May 9, 2014 in Room 557 of the Rhode Island Convention Center.

Provided by Acoustical Society of America