**Soundscapes**

Eels burrowing in the cool autumn air of Rocky Mountain National Park, birds calling in the Everglades, a cannon shot at Gettysburg National Military Park, the quiet reverie at the Vietnam Memorial... these are the sounds that make a trip to our national parks a unique and memorable experience. In many cases, visitors choose to recreate in national parks to escape the clamor of everyday life, to hear birds, streams, wind, and other natural sounds. Many parks also contain unique cultural resources: battlefields, historic cabins or homes, preserved evidence of a people or an early lifestyle. These are provided for the contemplation and appreciation of visitors, and it is important that the acoustic quality of these areas is as consistent with the preserved cultural environment as possible.

The term “soundscapes” refers to the total acoustic environment of an area and can include both natural and human-produced sounds. The soundscape of a national park is often taken for granted, but it represents an important part of the park environment. Like color, scenery, or wildlife, it is a valuable resource that can easily be degraded or destroyed. As a result, soundscapes require careful management if they are to remain unimpaired for future generations. Protecting and managing the soundscape resources in our national parks is the mission of the Natural Sounds Program Center.

Listen Up!

When you visit a park or wilderness, you enter a world of memorable sights.

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**Sounds and Wildlife**

Appropriate soundscapes are important for animal communication, territory establishment, courtship and mating, nurturing young, and effective size of habitat. Scientific studies have shown that wildlife can be adversely affected by high levels of noise. Although the severity of the impact varies depending on the species being studied and other conditions, research has found that wildlife can suffer adverse physiological and behavioral changes from noise and other human disturbances. Noise has been associated with suppression of the immune system and increased levels of stress-related hormones in animals. Studies have also shown that songbirds that live in noisy places have less songs per day than birds in quieter environments. Birds forced to sing at a higher volume have to expend increased levels of perceptual energy to attract a mate or warn of predators. Bighorn sheep are less efficient at foraging for food when they are exposed to aircraft noise, and mountain goats often flee from the sound of helicopters and airplanes. Still other research has demonstrated that noise can adversely affect reproductive success in birds and communication in whales. When these effects are combined with other stress factors experienced by wildlife such as winter weather, disease, insect harassment, and food shortages, noise can have important implications for the health and vitality of wildlife populations within a park.

**Program Overview**

Natural and culturally appropriate sounds are an important element of the national park experience. The National Park Service has determined that the soundscape is a resource and a value to be appreciated and protected under the Organic Act of such a way as to leave it unimpaired for enjoyment by future generations. The Natural Sounds Program Center was officially established in October 2000 to assist park and regional staff in identifying, selecting, managing, and monitoring the soundscape resource. An important element of this mission is working with the Federal Aviation Administration (FAA) to develop an airport management plan for the more than 100 parks experiencing commercial air traffic.

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**The Natural Sounds Program is based on the following principles:**

- Appropriate natural, cultural and historic soundscapes are integral to visitor experience.
- Appropriate soundscapes are determined based on the purposes and values for which a specific park was established and managed objectives and management plan.
- Soundscapes of a park unit are a resource necessary for the enjoyment of present and future visitors.
- Appropriate soundscapes are essential for the overall health of park ecosystems, including the health and vitality of specific wildlife communities.

As visitation to parks has increased (from 190 million in 1975 to 425 million in 2000), the effects of noise and the importance of an appropriate soundscape have become more apparent. Since its inception, the mission of the Natural Sounds Program has expanded to address a variety of noise issues affecting units of the National Park Service. The Natural Sounds Program serves parks to address noise issues by gathering baseline acoustic data to characterize park soundscapes; composing and implementing noise management plans; developing soundscapes goals, objectives, and standards; and identifying appropriate measures for mitigating noise impacts.

**Representative Sound Levels In Some Parks**

<table>
<thead>
<tr>
<th>Representative Sound Level</th>
<th>Acoustic Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold for human hearing</td>
<td>50 dBA</td>
</tr>
<tr>
<td>Nightingale song</td>
<td>62 dBA</td>
</tr>
<tr>
<td>Female bananas</td>
<td>75 dBA</td>
</tr>
<tr>
<td>Orca</td>
<td>80 dBA</td>
</tr>
<tr>
<td>Snow</td>
<td>85 dBA</td>
</tr>
<tr>
<td>Militaryjet (1000 ft)</td>
<td>120 dBA</td>
</tr>
</tbody>
</table>

**Current Issues**

- Air traffic management planning for national parks
- Relationship between park operations and baseline acoustic anthroprosopoeia
- Military overflights
- Effects of airport development on national park resources
- Potential impacts to cultural, natural, and historic resources from mariner recreation
- Identifying and prioritizing noise baselines to potential impacts to park resources caused by indirect noise sources (i.e., activities associated with the transportation system)
- Advocating on noise monitoring and model development to support park management goals and objectives

For more information about the Natural Sounds Program, visit the National Park Service Internet Website at: [http://www.nps.gov/natj/sounds/index.htm](http://www.nps.gov/natj/sounds/index.htm)