

Kennesaw Mountain National Battlefield Park

National Park Service
U.S. Department of the Interior

Inventory & Monitoring Program
Southeast Coast Network



Potential Impacts of Adjacent Land Use on Local Ecosystems

Vital Sign Overview

The goal of this study was to investigate and quantify the changes in land use over a three decade period between 1986, 1996, and 2006 in the areas surrounding Kennesaw Mountain National Battlefield Park (KEMO) through the use of satellite imagery and remote sensing. Additionally, this study provides examples of how land use changes beyond the borders the Park have the potential to cause problems for the local ecosystem in KEMO by identifying surrounding areas that exhibit evidence of ecological disruption. Predictions can then be made about the vulnerability of both the surrounding areas and those within the local ecosystem. With this knowledge, informed decisions can then be applied to mitigate losses of ecological integrity.

Significant Findings

Urbanization in the areas surrounding KEMO has dramatically increased in recent years (Figure 1).

In 1986, urban land use comprised 5.4% of the landscape within a 1 km area surrounding KEMO, but increased to 11.8% in 2006 (Figure 2).

For the total area examined in this study (Figure 1), the amount of landcover classified as forest, decreased from 54.7% in 1986 to 38.5% in 2006.

Conversely, the total amount of landcover classified as urban increased from 27.9% to 47.5%.

Agricultural land use remained much more constant, decreasing only slightly from 15.4% to 12.5% across the same time period.

An analysis of KEMO and the surrounding landscape as a hypothetical ecosystem revealed that connectivity to the surrounding forest patches has decreased and fragmentation has increased dramatically.

Additionally, the size of this ecosystem has decreased from 103.94 km² in 1986, to just 17.49 km² in 2006. The number of corridors connecting KEMO to the surrounding landscape also decreased from 18 to just 1 during the same time period.

Given that the areas surrounding KEMO are projected to continue to urbanize, it is probable that the Park will become a forested island situated within a completely urbanized landscape.

Land use Classification

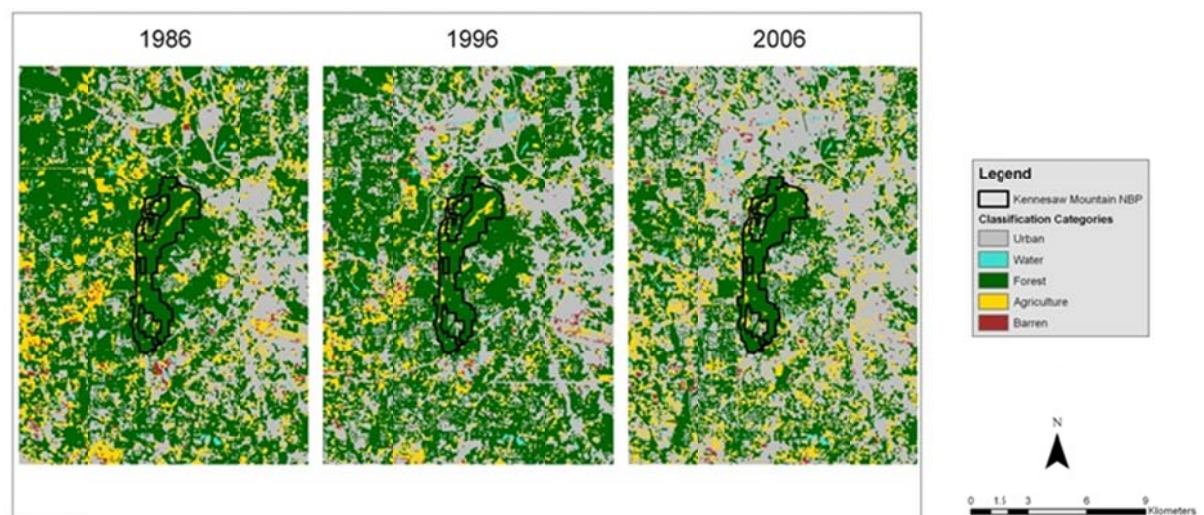


Figure 1. Land use classification of Kennesaw Mountain National Battlefield Park and surrounding landscape 1986–2006. Gray represents urban land use, blue represents water, green represents forest cover, yellow represents agriculture, and red is barren.

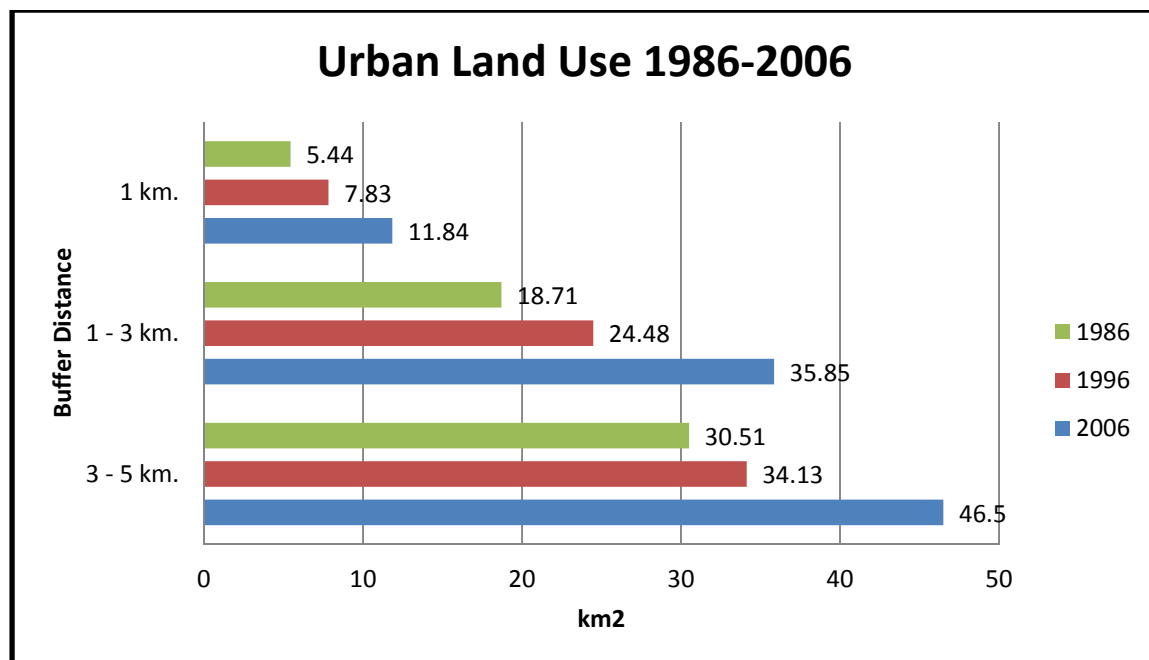


Figure 2. Change in amount of urban land use found within three distance ranges of the Kennesaw Mountain National Battlefield Park boundary from 1986–2006.

About the Southeast Coast Network

The Southeast Coast Network (SECN) includes twenty parks, seventeen of which contain significant and diverse natural resources. In total, SECN parks encompass more than 184,000 acres of federally-managed land across North Carolina, South Carolina, Georgia, Alabama, and Florida. The parks span a wide diversity of cultural missions also, including four national seashores, two national historic sites,

two national memorials, seven national monuments, two national military parks, as well as a national recreation area, national battlefield and an ecological and historic preserve. The parks range in size from slightly more than 20 to nearly 60,000 acres, and when considered with non-federal lands jointly managed with NPS, the Network encompasses more than 253,000 acres.

About the Inventory & Monitoring Program

In 1999, the National Park Service initiated a long-term ecological monitoring program, known as “Vital Signs Monitoring”, to provide the minimum infrastructure to allow more than 270 national park system units to identify and implement long-term monitoring of their highest-priority measurements of resource condition. The overarching purpose of natural resource monitoring in parks is to develop scientifically sound information on the current status and long-term trends in the composition, structure, and function of park ecosystems, and to determine how well current management practices are sustaining those ecosystems.

The NPS Vital Signs Monitoring Program addresses

five goals for all parks with significant natural resources:

- Determine the status and trends in selected indicators of the condition of park ecosystem,
- Provide early warning of abnormal conditions,
- Provide data to better understand the dynamic nature and condition of park ecosystems,
- Provide data to meet certain legal and Congressional mandates, and
- Provide a means of measuring progress towards performance goals.

For More Information

SECN Home Page: <http://science.nature.nps.gov/im/units/secn/index.cfm>

SECN Reports & Publications: <http://science.nature.nps.gov/im/units/SECN/reports.cfm>

Inventory & Monitoring Program: <http://science.nature.nps.gov/im/index.cfm>

Data Downloads via the Natural Resource Information Portal: <http://nrinfo.nps.gov/Home.mvc>

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