Urban Sprawl in New Jersey: Changes in Forest Cover for Selected Municipalities

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Abstract:

The objective of this project is to examine urban sprawl in New Jersey and to better understand how it is affecting the state. Sprawl affects our community environmentally, socially, and economically. This project found three hotspots of population growth in the state from 1980 to 2000. The change in forest cover between 1985 and 1995 for the selected municipalities was then examined. Growth comparisons were made for two South Jersey municipalities. The changes in forest coverage were compared for Hamilton and Galloway Townships. Galloway Township was found to have lost more forest when compared to Hamilton Township. The paper concluded that a reason for this difference might be a result of an increase in wetlands area.

Introduction:

There is a phenomenon in the United States that is taking over our open spaces, turning them into sterile, isolated residential areas far removed from the business areas where the residents spend much of their time traveling.

Urban sprawl is a major problem in the United States and there are many environmental, social and economic problems associated with it. Sprawl increases traffic, pollutes our air and water, worsens flood damage, destroys parks, farms and open space, wastes our tax money and crowds our children's schools.

Objective:

This project will examine sprawl in NJ by looking at particular hot spots of population increase and comparing these areas to changes in forest cover. It is hoped that the research will allow us to better understand how sprawl is affecting our communities so that we may find solutions to the problem.

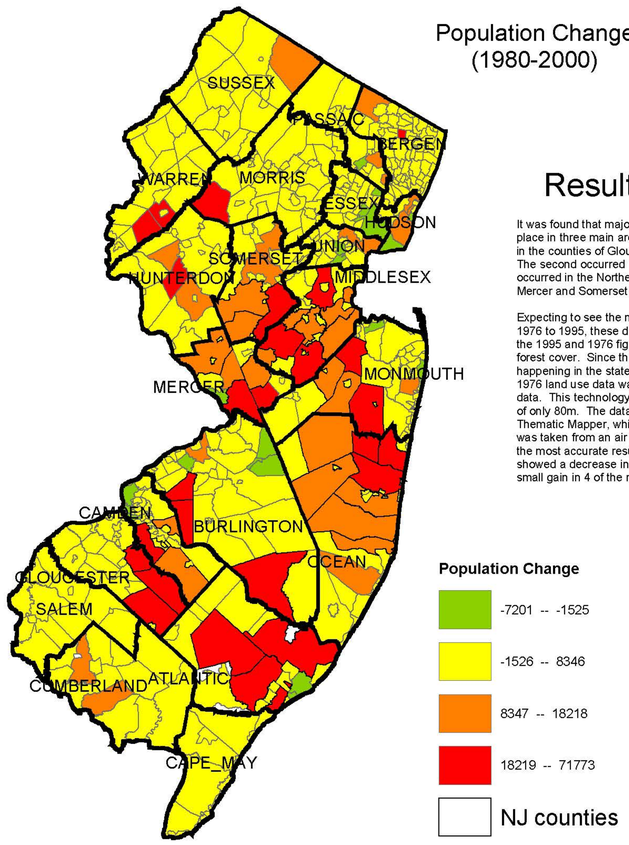
Methodology:

Most of the data needed for the project was gathered from Stockton College's database. This included the 1976, 1986 and 1995 land use data as well as the census data from 1980, 1990, and 2000. The air photos used were gathered from the Ocean County Planning Department and the Cape Atlantic Soil Conservation District.

For the first stage of the project, the 1980 and 2000 census data were combined. The change in municipality population over the 20 years was noted. Areas of major population growth were found. Those municipalities that showed a significant increase in population were selected.

For the second major part of the project, the change in forest cover for the municipalities from 1976 to 1995 was identified. After examining the data, patterns were noted and recommendations were made.

Population Change
(1980-2000)

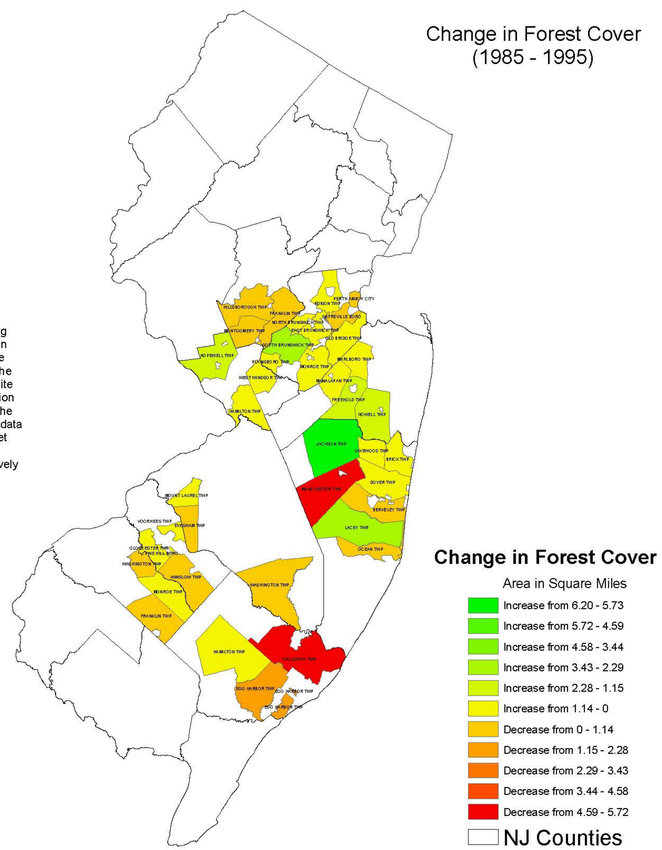


Results & Discussion:

It was found that major population growth in New Jersey took place in three main areas (see map to the left). The first occurred in the counties of Gloucester, Camden and parts or Burlington. The second occurred mainly in Atlantic County and finally the third occurred in the Northern part of Ocean, Monmouth, Middlesex, Mercer and Somerset counties.

Expecting to see the most dramatic loss in forest cover from 1976 to 1995, these data sets were used. However, after computing the 1995 and 1976 figures, every municipality showed an increase in forest cover. Since these results contradicted what is believed to be happening in the state, the reliability of the data was questioned. The 1976 land use data was compiled from Multispectral Scanner Satellite data. This technology, the most advanced of its time, has a resolution of only 80m. The data from 1985 used a more advanced satellite, the Thematic Mapper, which has a resolution of 30m. Finally the 1995 data was taken from an air photo and has a 1m resolution. In order to get the most accurate result, the 1985 and 1995 data was used. This showed a decrease in 15 of the 40 municipalities as well as a relatively small gain in 4 of the municipalities (see map on the right).

Change in Forest Cover
(1985 - 1995)



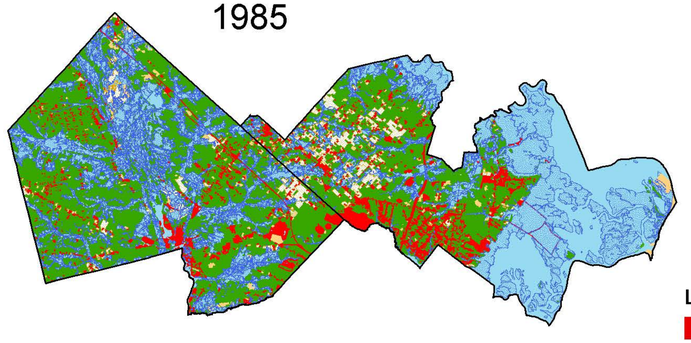
Jackson Twp (1986)

Galloway/Hamilton Twp (1983)

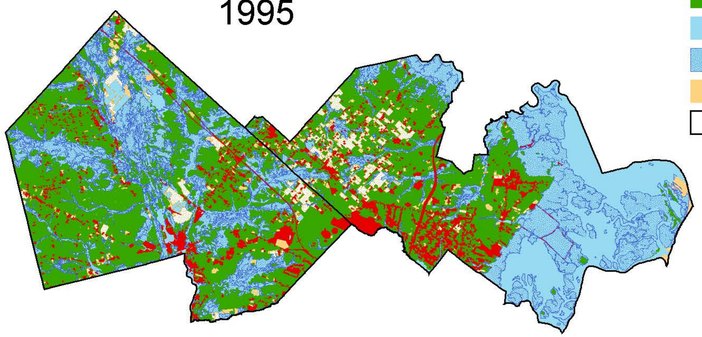
Only the municipalities in the northern part of the state have shown an increase in forest cover which leads to the idea that the type of forest (continuous vs. sporadic) may contribute to the misrepresentation of the data. If a parcel of land covered by forest in 1976 (and 1985 to a lesser degree) was under a certain size, it would not have been counted in the data. However the same parcel of land and even smaller would have been counted with the 1995 technologies. The forest cover in South Jersey is and was much more continuous as compared to its counter part in the Northern part of the state. As a result of this, the data is a bit more reliable for the southern municipalities.

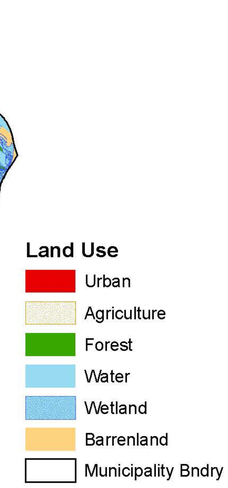
Hamilton Twp / Galloway Twp

1985



1995





Galloway and Hamilton Townships make perfect municipalities to study because both contain similar forest type but varied in their change in forest cover over the 10 years. It can be seen that Galloway has its land near the bay. The land use data shows that Galloway has had an increase in wetlands area by almost 6 square miles. This seems to be sufficient enough to account for the loss in forest cover for this area when you take into account the problem with the data reliability.