Sprawl and the Destruction of Georgia’s Archaeological Resources

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Today, widespread development, or sprawl, is destroying archaeological sites, both prehistoric and historic, at an unprecedented rate. Sprawl is taking a drastic toll on the archaeological record and the critical information it contains. If archaeological preservation efforts are not intensified, Georgians risk losing precious resources forever.

Sprawl is one threat among many to Georgia’s hidden heritage, including looting and land-altering activities such as reservoir construction, agriculture, and logging. Here we focus on sprawl because of its two most disturbing aspects: the dramatic rate of current urban expansion, and little evidence that the expansion will end soon.

Legal protection for most archaeological resources on private land are minimal. While federal agencies and federal projects are required to mitigate the negative impact that their activities have on archaeological resources, most land in the United States is held privately and falls outside that jurisdiction (see “Archaeological Resource Protection in Georgia,” this issue). Making a bad situation even worse, the United States Department of Agriculture (1997) reports the average number of acres of private land developed in Georgia is rising dramatically.

Although some of the information included in this article may seem cumbersome, we do not intend to aimlessly bombard you with numbers and statistics. We illustrate the impact of increasing population and landscape development by looking both at Atlanta (the state’s largest metropolitan area), and at a small area that remained rural until recently. Although these two areas are not statistical samples of the state, they do show that Georgia’s demographic expansion has disturbed or destroyed thousands of archaeological sites.

Many human activities have the potential to alter, disturb, or destroy archaeological sites. This has been true, in fact, throughout history and prehistory—wherever humans have stopped, settled and earned their living, they likely disturbed the archaeological record of those who came before. This preliminary study shows that sprawl has affected thousands of sites in Georgia.

In this article we examine Georgia’s rich archaeological heritage, and archaeological site density in Piedmont Georgia. Then, we look at development in urban and rural Georgia, using Atlanta’s metropolitan area and a 4661 acre area near Suwanee as case studies. Finally, we discuss the implications of these two case studies for archaeological preservation.

Georgia’s Archaeological Record

To realize the impact development and sprawl can have on archaeological resources, one must first understand the distribution of those resources across the landscape. Humans have roamed what is now Georgia for thousands of years. Over those long years, people have left considerable evidence...
of their occupation and use of the landscape. Each place with that evidence is called an archaeological site, of which thousands are recorded in the Georgia Archaeological Site File (GASF).

**Land Use Trends in the Georgia Piedmont**

Prehistoric occupation of Georgia’s rolling Piedmont, technically the area between the sandy, flat, Coastal Plain and the more rugged Appalachian mountains, began at least 12,000 years ago, with sparse occupation and use of the landscape (see Jones, this issue). Over the last several thousand years before Europeans arrived, villages and individual households were scattered across the Piedmont. Villages tended to cluster near creeks and rivers that were bordered by good agricultural lands. Thus, Georgia’s landscape was never evenly occupied. Access to important resources, such as good hunting areas, fertile agricultural lands, and other features of the natural landscape, influenced people’s preferences for places to visit and live, as did where other people lived (they either wanted to be near them, or they preferred to avoid having neighbors—just as people do today).

Euroamericans began to enter the Piedmont Southeast in large numbers late in the eighteenth century, and tended to settle along rivers and overland transportation routes. Later settlements dotted the landscape as farming predominated. By the early 1900s, much of Georgia’s Piedmont was cleared and planted in cotton. Then, the boll weevil struck, devastating cotton production, along with the economy of much of the rural South.

Today this pattern is reversed and formerly rural areas (except for parts of South Georgia) are now being more intensively occupied. Many new inhabitants are not farmers, and much of what had been open farmland in the 1920s, and become woodlands by the 1970s, is once again being cleared. Much of this new wave of rural development is residences and small businesses that tend to cluster along roads or in new housing developments.

**The GASF Database**

The GASF is a facility maintained in Athens to record archaeological data from around the state. It is supported in part by funds from the Department of Natural Resources. If you report a new site, this is where that information is stored.

As of January 2001, the GASF included approximately 35,000 identified archaeological sites (Williams personal communication 2001). Since sites often contain evidence of more than one period of occupation, the GASF has data on 48,000 components. While “site” refers to a definable area that has archaeological materials, “component” refers to a particular time period a site was used. Site counts, then, are the total number of places with archaeological resources, while component counts suggest the changing intensity of human settlement over time. Thus, both counts are important.

**Archaeological Site Density in the Piedmont**

The GASF data do not directly measure site density in Georgia. As Williams (2000:10) points out, most of the reported site locations reflect only areas where archaeologists have surveyed (or looked for sites). Those areas, in turn, often parallel

As of 1 April 2001, the GASF lists over 35,000 archaeological sites. (Map courtesy Mark Williams)
large government-funded projects (e.g., reservoirs) and federally owned properties, on which archaeological inventory and evaluation are required by law. Williams’ map (page 66) shows very dense site distributions, for instance, at Fort Benning and Fort Stewart. Nevertheless, from intensive studies of specific areas, archaeologists feel they can create estimates of site densities to be expected on similar lands. Indeed, some archaeologists specialize in constructing models for projecting site densities.

The site densities used in this article are based on two estimates. One is derived from three surveyed areas near Athens (Elliott 1981; Freer 1989; Pluckhan 1994). These three areas had an average site density of 1 site per 14 acres (Elliott 2000). The second site density is from a small tract partly within the Suwanee case study area discussed below. The site density in that tract, which is along a broad ridge crest, is 1 site per 28 acres. Thus, these two site densities are drawn from actual archaeological surveys. The variation, with one area having twice as many sites as the other, is not surprising. We already know that previous human use of the Georgia Piedmont, and thus site densities, are variable.

Keeping in mind these land use patterns and how archaeological sites are distributed across them, the next two sections present case studies of recent development in the Georgia Piedmont. First, we examine growth and land use changes around metro Atlanta. Then, we examine a small area in rural Georgia. Together they indicate the magnitude of development and land use changes occurring in Georgia today, and the accompanying impact on Georgia’s hidden heritage.

Metro Atlanta and Out-of-Control Growth

Although metro Atlanta is consuming the surrounding land at a record pace, the challenge of smart growth is not exclusive to Georgia’s capital. Sprawl is a national issue, and recently ranked as

What is Sprawl?—Not Even the Professionals Can Decide

There is no universally accepted definition of sprawl; however, here are two descriptive definitions:

1. …Sprawl is growth that makes automobile access the first priority. It requires a car for every move we make—to work, to shop, even to cross the street. (Bennett and Renfro 1997)
2. Suburban sprawl, now the standard North American pattern of growth, ignores historical precedent and human experience. It is an invention, conceived by architects, engineers, and planners, and promoted by developers in the great sweeping aside of the old that occurred after the Second World War. Unlike the traditional neighborhood model, which evolved organically as a response to human needs, the suburban sprawl is an idealized artificial system… Unfortunately, this system is already showing itself to be unsustainable. Unlike the traditional neighborhood, sprawl is not healthy growth; it is essentially self-destructive. (Duany, Plater-Zyberk, and Speck 2000:4)

Policy analyst Anthony Downs (1998), identifies ten “traits” associated with sprawl:

1. unlimited outward extension
2. low-density settlements
3. leapfrog development
4. fragmentation of powers over land use among many small localities
5. dominance of transportation by private automotive vehicles
6. no centralized planning or control of land-uses
7. widespread strip commercial development
8. great fiscal disparities among localities
9. segregation of types of land uses in different zones
10. reliance mainly on the trickle-down or filtering process to provide housing to low-income households

Direction of growth in metro Atlanta (data from ARC 2000). Bold figures are population counts.
high as crime and violence in importance among American voters (Conley 2000). Politicians are beginning to react, and 11 states have passed controlled-growth legislation over the past few years, including Georgia. In addition, the legislature has established both the Georgia Regional Transportation Authority, aimed at reducing pollution and other traffic problems, and Governor Barnes’ Greenspace Program, to help curb some of the destructive impact of expansion.

Atlanta is one of the most rapidly expanding urban areas in the nation. Urban analyst Christopher Leinberger concludes that each 1% in population growth around Atlanta results in 10–20% growth in land consumption (cited in Turner 1997). Although it is certainly the largest urban area in Georgia, and indeed in the US Southeast, Atlanta is not the only city in Georgia that is expanding. Remember as you read this that this same phenomenon is occurring in Athens, Augusta, Columbus, Macon, and Savannah—and it is not just the larger urban areas that are expanding. Growth is also evident in many of Georgia’s smaller towns, such as Clayton, Danielsville, and Shiloh, and across rural areas.

**Population**
There is no doubt that Atlanta is growing rapidly. During the 1990s, metro Atlanta added enough people to create a city the size of Birmingham, Alabama. In fact, metro Atlanta’s population grew faster in the 1990s than any other US city except Los Angeles (McCosh 2000). And urban expansion is not limited to Atlanta. An astounding growth rate has been characteristic of most of Georgia’s demographic pat-
tern. Gilmer county’s population growth is up 75%, Dawson county 70%. Bryan and Camden counties, along the coast, were up 52% and 45% respectively (Chapman 2001).

According to the Atlanta Regional Commission (2000), the population increase in metro Atlanta from 1970 to 1990 was up 84%. Population density, however, decreased from 2690 to 1883 persons per square mile (a 30% decrease), evidence of the trend to consume more land for each individual. In April of 1999, the population in the ten-county region reached 3.2 million, a near record increase in a one-year period. The Atlanta Regional Commission (ARC) projects Atlanta will gain over one million new residents by 2025. In simpler terms, Fayette county now has over seven times the number of people it did in 1970, and Gwinnett county has six times the population over the same period. The infrastructure necessary for this influx is enormous (e.g., housing, roads, schools, commercial centers, water and sewer lines, etc.), and so is the impact on archaeological resources.

Land Consumption and Construction Patterns

Uncontrolled growth is catastrophically changing the environment. Many areas in Georgia, like others across the US (and indeed around the globe) are experiencing substantial population increases. For the most part, zoning and other controls do not focus residential development in Georgia in already occupied areas. Therefore, Georgia’s rural landscape is being engulfed by suburban development, commercial areas, strip development along transportation corridors, etc. Here are some statistics about growth in Georgia, and in Atlanta.

- America’s rural landscape is disappearing at the rate of 3 million acres a year, according to the USDA’s (1997) National Resources Inventory. Nearly 16 million acres were altered nationwide through development between 1992 and 1997. Georgia is no exception. During that period, it ranked second among all US states in the average annual rate of land development (see figure below).

- According to a recent report by a US environmental advocacy group, Georgia ranks fourth in the nation for states at the greatest risk of losing rural and natural areas. Noss and Peters (1995) estimate that in 90 years Georgia may be completely developed.2

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2 States ranked by average annual rate of land development, 1992–1997. Georgia ranks second, after Texas. The vertical scale is in thousands of acres per year (data and chart from the USDA’s 1997 National Resources Inventory; Alaska data not reported). The NRI’s definition of developed land includes urban and built-up areas, and rural transportation land.
Georgia ranks third in the nation among states converting farms and forest into suburban sprawl, according to a national study released last year (Smith 1999).

The ARC (2000) figures show Atlanta’s urbanized area has increased 163% between 1970 and 1990. In the five years from 1990 to 1995, 132,920 acres were developed and 324,700 people moved into the region. That land consumption rate equals an area the size of Douglas county. The ARC predicts that between 1995 and 2020, 526,464 more acres will undergo development, with 1,287,200 more people added to the metro area. The amount of land altered during this period, assuming the rate doesn’t increase, will equal the area of DeKalb, Gwinnett, and Rockdale counties combined (see map below).

Part of Atlanta’s dramatic expansion is due to large-scale projects, both residential and commercial developments. Such developments not only involve vast land areas, but they require upgraded infrastructure, including roads, sewage and storm drains, electrical service, etc. Often other businesses open nearby, too. Thus, large projects often instigate a cascade of development.

In addition, Atlanta’s building patterns are dominated by low-density residential and commercial development—for example, over 67% of Atlanta’s existing housing is single-family homes (ARC 2001). Another housing trend involves the jump families make to move away from the city center and past existing suburbs in order to afford suitable housing or obtain large lots. This is one reason metro Atlanta’s size (area) is growing so rapidly and explains huge construction increases in Cherokee, Forsyth, and Henry counties.

We have only touched on a few of the consequences of unrestrained growth in Atlanta. Other results of this hyper-growth are equally important, including unbalanced growth, increasing division along racial and economic lines, traffic congestion and pollution, and quality of life issues. In this discussion, the focus is on the impact urban and suburban growth has on our archaeological record.

Once-Rural Georgia: A Case Study

Sprawl is engulfing parts of rural Georgia. In this section, we examine a 4661 acre (18.86 square kilometers or 7.28 square miles) area near Suwanee (next page) to see land use change over the last century in a specific situation. This area, located on the northeast edge of Atlanta’s development today, would have been considered rural Georgia until the last decade or so. Indeed, Suwanee is on the edge of the 1990 sprawl zone shown on page 68. The purpose of this case study is to examine the transformation of rural Georgia into sprawl, using a simple measure of intensification of land use: changing building counts.

By looking at a series of maps and aerial photographs, archaeologists, historians, and demographers, can chart changes in the physical and human landscape. For this study, we present data from four years: 1894, 1938, 1968/72, and 1992. For the building counts presented below, we do not

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**Declines in Quality of Life**

Growth in metropolitan Atlanta has taken a toll on natural and human resources that may never be fully understood. Some aspects of the impact of growth can be quantified. We can count the number of lost trees and open space acres and the miles of impaired streams. We cannot, however, count the personal loss residents face as the state's natural and historic landscape changes beyond recognition and their quality of life is diminished.

—Susan Rutherford (2001:1)
Increased density of buildings and roads just west of Suwanee, north of Atlanta. Dots on the top three maps represent buildings, including houses, barns, churches, chicken houses, and possibly some rural stores. The thin lines are roads (as well as the railroad through Suwanee), many of them unpaved; some are driveways or well-used field roads. The thick line in the center is the Chattahoochee River. The 1894 map does not show buildings, except schematically in the town of Suwanee. Note that in 1894 travelers crossed the Chattahoochee by ferry, and that the ferry crossing was south of the later bridge. The area shown in the upper two maps, and the area for which buildings are shown in the top three maps, is 4661 acres, or 7.28 square miles (1886 hectares).
include Suwanee proper. Building counts, like population, are an indicator of intensification of land use, and increasing building counts suggest an increase in land-disturbing activities that may have destroyed archaeological sites. Of course, many kinds of land use do not result in building construction, such as farming (including plowing), logging, road building, etc., but do have the potential for disturbing archaeological resources.

An 1894 map shows buildings only in Suwanee; this is probably a generalization, as some houses and other buildings undoubtedly were outside the established towns. We can assume some, if not most, of the land was under cultivation at that time. By 1938, aerial photographs show 94 buildings and extensive open fields, representing intensified activity in the study area. By 1968/1972, the area had 169 buildings, and fewer open fields. By 1992, the maps show 264 buildings, as well as evidence of more changes in roads and land use. For instance, an new highway passes through the area, between Suwanee and the Chattahoochee River, but bypassing Suwanee.

In general, the Suwanee case study area matches the pattern of land use change described above for the rural Georgia Piedmont. Fields on upland ridges that were in use early in the twentieth century were abandoned, and returned to woodlands by mid-century. By the end of that century, those forested areas began to be opened once again, mostly for single-family homes. This pattern did not occur along the Chattahoochee, where all of the fields evident in the 1938 aerial photos were still unvegetated in 1992. This is probably because of the high agricultural productivity of those lands. Overall, this pattern shows an intensification of land use by the end of the century that likely impacted, or disturbed, archaeological resources.

Populations increased in this area, as they have in most rural Piedmont towns. Suwanee census figures show an increase of 261% from 1990 to 2000:

<table>
<thead>
<tr>
<th>year</th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>population</td>
<td>1026</td>
<td>2412</td>
<td>8725</td>
</tr>
</tbody>
</table>

Although Suwanee's population is centralized, nevertheless, the community's area is increasing. This is another characteristic of sprawl.

Archaeological Sites Destroyed by Atlanta's Growth

Now that we have discussed archaeological site density and the dramatic land use changes that accompany sprawl, we can turn to the impact those changes have on the archaeological record. In following calculations, we assume that archaeological sites on any land encompassed by Atlanta's sprawl were totally destroyed. Although we realize this is probably not, strictly speaking, true, we do believe that development disturbs or destroys a high percentage of the archaeological resources it encompasses.

According to the ARC (2000), 26,584 acres were developed around Metro Atlanta each year, on average, from 1990 to 1995. Thus, if the average site density in the Piedmont uplands surrounding Atlanta is 1 site per 14 acres, that means each year during that period, on average, 1899 sites were destroyed. If that rate continues to the present, and the development obliterates any archaeological sites within the developed area, over the twelve-year period from January 1, 1990 to December 31, 2001, an estimated 22,786 sites will have been destroyed. This is approximately 65% of the 35,000 sites reported in the GASF.

On the other hand, if the average site density was 1 site per 28 acres, as was found near Suwanee, Atlanta's develop-
ment, if it averaged 26,584 acres each year for twelve years and destroyed all archaeological sites within the developed area, suggests 11,393 sites were destroyed, or approximately 33% of site count in the GASF.4

Because of the variability in site density we know occurs in the Southeastern Piedmont, we present a graph of estimated sites disturbed over the twelve-year period discussed above, based on archaeological site densities that are both more and less dense than those derived from the two situations reported above. Even using some of the lower density estimates presented here, we believe thousands of archaeological sites have disappeared over the twelve-year period from 1990 to 2001 (inclusively) as Atlanta has expanded.

Of course, these estimates are only for a twelve-year period. If we were to consider the area already within metro Atlanta at the start of that period (in 1990), the number of sites estimated to have been destroyed might double. If we then added the sites destroyed by Georgia’s other cities, towns, and communities, the number of sites destroyed by modern development might triple.

**Sprawl and Archaeological Resources**

Archaeologists and environmentalists accept that sprawl is a fact of life today. Sprawl and land-disturbing activities do, without a doubt, disturb and destroy archaeological sites. The report above argues that the development Georgia has already experienced has destroyed thousands of archaeological sites, and the development predicted for the next few decades will destroy thousands more.

What does that loss of archaeological resources mean to the both the general and archaeological community? On the most basic level, information from the past is no longer available. Once a site is destroyed we can never discover the important basic building blocks of archaeological data it contained can never be known: the time of occupation, the size of the site, and its location. Further, interpretation and analysis regarding the relationship among sites during any given period is diminished, if not destroyed completely. That interrelationship of human settlements, along with their relationship to features in the natural environment, provide a qualitatively different set of data than the material remains and their context alone, which are also very important. There is also such a thing as a unique site—one that represents a particular activity or role in past society.

Sadly, the special knowledge contained in Georgia’s archaeological resources, which represent thousands of years of human endeavor, can be wiped away by land-disturbing activities as easily as a spider’s web by the swipe of a cat’s paw.
Notes

1 In this article, “metro Atlanta” refers to ten counties—Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry, and Rockdale—covering nearly 3000 square miles.

2 “In this projection we assumed that the rate of increase in developed land from 1982 to 1992 would continue into the future, compounding the amount of developed land every ten years. We expect compounding because as a region develops it attracts more people who in turn cause more development. We used a simple exponential growth formula where the finite rate of increase is the number of acres developed in 1992 divided by the number of acres developed in 1982. The amount of land developed at time $t$ is

$$A_{1992}(\lambda t)$$

where $A_{1992}$ is the developed area in 1992 and $t$ is the number of 10-year intervals from 1992. … We recognize that in reality land protection and other countervailing forces will slow development before all presently undeveloped land in developed. Nonetheless, our estimate of time until complete development gives a good indication of the extent of development threat in a state and shows that present development rates are unsustainable over the long term. Data is from the US Bureau of Census.” (Noss and Peters 1995)

3 $(26,584 \times 12) / 14 = 22,786$

4 Now that we have proposed estimates of site density and loss in two areas of Georgia, we must emphasize the strengths and weaknesses of those results and the process we used to obtain them. We cannot stress enough that these calculations do not provide an exact measurement, but are used as a rough estimate of the magnitude of destruction of our archaeological resources. First, in discussing site density, we include only data from the Piedmont. That means we did not examine the results from archaeological survey in river bottoms, the Coastal Plain, or the mountain regions of Georgia. All have different site densities than the Piedmont. Also, we examined relatively small areas of land. If we had the survey results to calculate site density from a larger area, the site density numbers could be higher or lower. Still, we do have confidence that our estimates reflect the actual site density across the Piedmont. Finally, the figures that we propose in this article can not be extrapolated across the state, as we know different parts of Georgia were occupied with more or less intensity throughout the prehistoric and historic past.

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Growth in Numbers

- The Atlanta region is home to four of the nation’s ten fastest-growing counties—Forsyth, Gwinnett, Henry and Paulding.
- Average number acres of privately held land in Georgia developed each year over the period indicated:
  - 1982-1992: 76,630
  - Percent developed by 1997: 12.3
- An average of 50 acres of trees are cleared daily for development in metro Atlanta.
- Atlantans drive 33.4 miles per capita daily (fourth among major cities).
- Thirteen Atlanta metro counties are violating federal air pollution standards.
- Seventeen metro counties have no public transportation.
- Temperatures reach 12 degrees higher in most paved areas of Atlanta—a result of the so-called “heat-island” effect.
- 1,000,000 metro Atlantans use septic tanks—the highest of any major US city. There are no new sewer hookups allowed in parts of the fast-growing north Fulton County.

Sources: Auchmuyey 2001, Center on Urban and Metropolitan Policy 2000, USDA 1997


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