Robert G. Healy

How Much Urban Impact on the South's Farm and Forest lands?

Though the South's population is growing twice as fast as the national average, its productive land seems in little danger of being overrun by housing and other builtup uses by the year 2000. But that's not to say there are no problems. The most pressing are the possibility that urban uses are taking the better lands out of production and the potential conflicts between adjacent farm and nonfarm land users.

Commodity-producing rural lands are being converted to urban and other built-up uses at a seemingly rapid rate. One has only to drive into the countryside—or fly over it—to notice the sprawl of suburban housing, shopping centers, and of industrial plants in areas heretofore entirely rural. Concern has focused chiefly on crop-producing land, but foresters have also begun to worry about the forestland base. How serious is the urban threat in the light of projected growth in population?

This article looks at recent and prospective population changes in the 13 Southern States (from Virginia to Texas) and explores the effects on the region's rural land base. I chose the South for three reasons. First, its population grew at nearly twice the national rate (21.7 percent vs. 11.4 percent) between 1970 and 1980. This trend has slowed somewhat in the 1980's, although the South still shows healthy growth relative to the U.S. as a whole. The Census Bureau projects that between 1980 and the year 2000, the South's population will have grown by another 34 percent, again just short of twice the U.S. average.

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Second, according to the National Agricultural Lands Study (NALS), an interagency Federal study of land conversion published in 1981, the Southern States lost 12 million acres of agricultural land to "urban, built-up, transportation and water uses" between 1967 and 1975. This was more than was converted in the rest of the Nation combined.

Third, although the South presently contains only 25 percent of the Nation's cropland, its has 46 percent of the Nation's potential cropland, that is, land not now in crops but capable of being economically converted to crop use. The region also produces about half the Nation's softwood timber and is expected to increase its share of national production as the "old growth" forests of the Pacific Northwest become depleted. Thus, continued or accelerated urban land conversion in the South could have particularly grave implications for the national production of food and fiber.

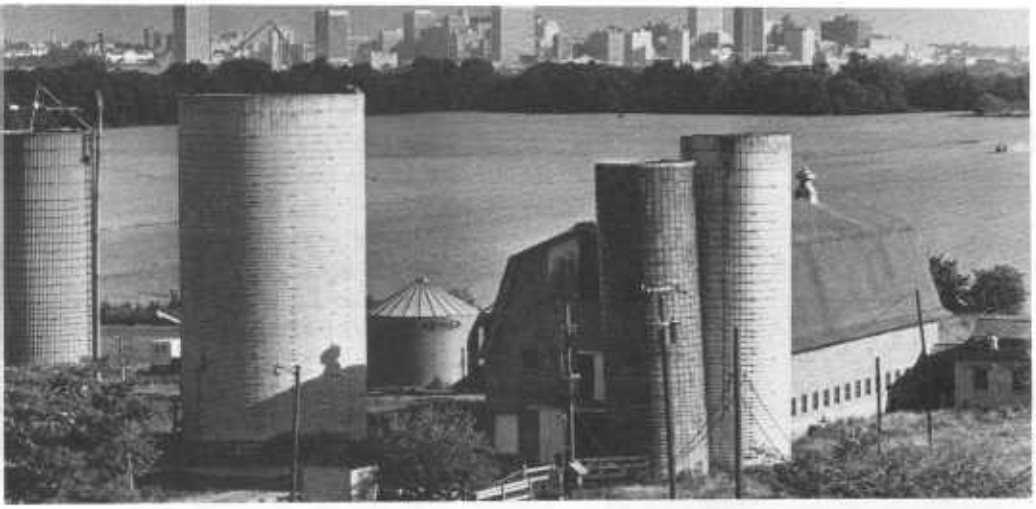
Urban Uses Occupy Relatively Little Land

The most obvious effect of population growth is the increased land devoted to housing, workplaces, and shopping areas. If one knew how much total land in all built-up uses was needed for each additional person, one could then convert population projections to land use projections. The process is more complicated than that, however, because built-up land per capita varies from place to place and also appears to be changing over time. A resident of an urban apartment occupies less land than a person in a suburban single-family home. Furthermore, per capita land consumption seems to be rising over time as people flock to suburbs and lightly populated areas outside the city proper.

The NALS tried to measure urban land conversion by comparing two U.S. Department of Agriculture surveys (one taken in 1967, the other in 1975) of the acreage in "urban, built-up, transportation and water uses." Many land use experts claim that methodological and statistical differences between the surveys invalidate such a comparison, probably overstating the rate at which land was being urbanized. Nevertheless, the NALS is a useful starting point, and its findings can be compared with other data that have become available only recently.

Of the NALS estimate of 12 million acres converted in the South, over 5 million were converted to water use. This category probably represents land inundated by the many reservoir projects undertaken by the Tennessee Valley Authority, Army Corps of Engineers, and other agencies. It may also include some significant measurement errors in the classification of certain wetlands in Florida. Tight government budgets and environmental objections make it unlikely that reservoir construction will take anything close to that amount of land in coming years.

The 6.8 million acres reported by NALS as converted to urban and built-up uses in the South can be compared with the region's total population growth over 1967-75, roughly 7.8 million persons. That means that for each additional person born in or moving to the South, 0.87



USDA photo

Towns and farms don't always mix well. When a farm becomes surrounded by nonfarm developments, the new neighbors will sometimes complain about normal farm noises and odors.

acre of land was urbanized. That figure appears somewhat high in the light of figures from two other Government data sources recently available.

USDA's Soil Conservation Service (SCS) surveyed nationwide land use in 1982, with particular attention to measuring built-up land. SCS estimates total built-up land (the categories "urban and built-up" plus "farmsteads and ranch headquarters" plus "small built-up areas" plus "rural transportation areas" plus "mines, pits and quarries") at 33.4 million acres in the South. Built-up land per capita was greater in the South (0.47 acre) than in the Nation as a whole (0.40 acre). The SCS figures for both the South and the rest of the Nation are considerably lower than the NALS estimate, and tend to support the conclusion that the NALS seriously overestimated the amount of built-up land.

However, the SCS data measure only the amount of built-up land at a single point in time; they do not tell us how land consumption per person may be changing over time. The only information helpful in answering that question comes from the U.S. Census Bureau. Every 10 years, the Census Bureau measures the amount of land in "urban areas," defined as places with population of 2,500 or more (as well as land in some smaller places contiguous to larger built-up areas.)

The Census figures tend to exaggerate urban land consumption somewhat because they count as urban the large amounts of vacant land within city boundaries. They also differ from the SCS figures in that they do not include land occupied by the rural population, nor land devoted to mining, not rural industrial plants and transportation areas.

According to the 1980 Census, the South's urban areas occupied 17.6 million acres, or 0.39 acre for each urban resident, considerably less dense than the national average of 0.28 acre per person. The figures also show that, over time, density in urban areas appears to be lessening, so that each *additional* resident will occupy more land than the average. The difference is also related to the fact that the number of separate households is rising more rapidly than the overall population. The Census Bureau's figures show that the South's 1970-80 urban population growth of 9.6 million persons was accompanied by an increase in urban land of 6 million acres. Each new urban southerner therefore required 0.63 acre, slightly less than the national average of 0.67 acre.

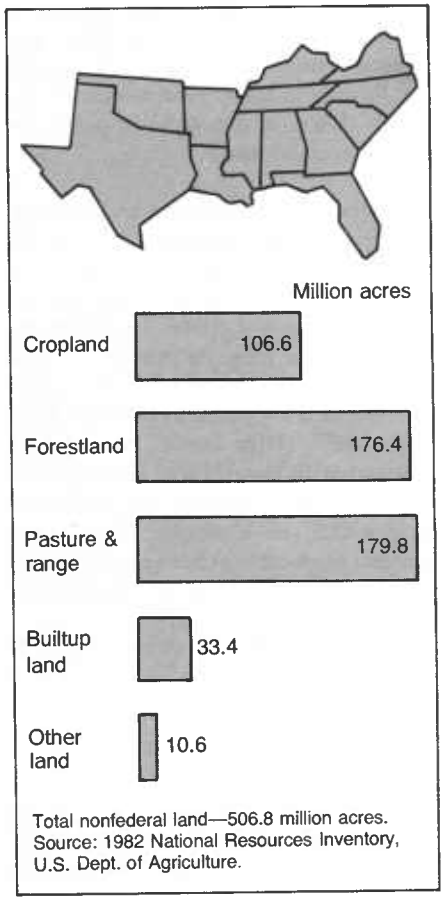
Considering these diverse sources of data on land consumption per person, what is the most likely future for built-up land as the South's population and economy grow? The amount of land needed for rural transportation (roads, railroads, airports) is unlikely to grow much because the area needed for new facilities will be offset by the continued abandonment of farm roads and rural rail lines. Land used for mining will likely increase, particularly in Florida (phosphate mines) and in Appalachia and Texas (coal). But the land in the South now devoted to mining is only 0.02 acre per capita, so that even a doubling would not seriously affect the overall land supply. For the other built-up uses, particularly housing sites for urban and rural residents, the most likely outlook appears to be that each additional southern resident will add between one-third acre and one acre to the urban and built-up land base. A figure in the lower end of this range (say half an acre per person) may be closest since a large proportion of the South's urban growth is expected in Florida and Texas, where urban areas are more densely settled than the regional average.

Urban Expansion Apparently Not a Major Threat. . .

How do the present and projected amounts of urban and built-up land in the South compare with the region's agricultural and forestland base? In 1982, the South had about 107 million acres of cropland, 180 million acres of pasture and rangeland, and 176 million acres of forest (fig. 1; these figures exclude Federal lands). So the region's current 33.4 million acres of built-up land is less than 7 percent of the total.

If we assume that each additional resident of the South will require half an

Figure 1
Land use in the South, 1982



Total nonfederal land—506.8 million acres.
Source: 1982 National Resources Inventory, U.S. Dept. of Agriculture.

acre, the 23 million additional persons projected in the region by the year 2000 will require fewer than 12 million acres of land, about a 35-percent increase in total built-up area, but still a small part of the South's overall land base. Under the extremely pessimistic assumption of land consumption of an acre per person, built-up land area would go up by two-thirds by the year 2000, but would still amount to only 11 percent of the total.

. . .But Is Prime Farmland Being Lost?

The effect of urbanization on the land base is magnified, however, if it chiefly displaces productive land. Land that is relatively flat, well-drained, and accessible by road is desirable not only for housing, but also for agricultural production, especially for crops. Some evidence suggests that better-than-average land is being urbanized in the South, but that evidence is far from conclusive. The NALS data indicate that 46 percent of all non-Federal land in the South is in USDA's top three land capability classes, the type of land most suitable for agricultural use. Of the land urbanized between 1967 and 1975, 54 percent was in those capability classes. (The small size of the sample, however, weakened the statistical significance of the conclusion.)

Two other studies also supported the hypothesis that the better land is being urbanized. A Louisiana study found that 107 of the State's 115 municipalities were located on prime agricultural land, although such land made up only 43 percent of the State's total land area. And a study of the Greenville, S.C., area found that past urban and industrial development had occurred disproportionately on prime agricultural land. The land quality issue clearly deserves more study.

Urban Effects on Nearby Rural Lands

Besides taking up the land itself, urbanization affects existing rural land uses, particularly those near or adjacent to newly urbanized tracts. These effects appear to be important in many areas of the South.

First, prospective urban demand for land affects the expectations of landowners and raises the price of land. This may make it difficult for farmers to buy additional land or for timber companies or tree farmers to add to their holdings. For example, southern forestland with no standing timber rarely sells for more than $300 per acre for forestry use. But the prevailing price for urban land almost anywhere in the South is far higher.

Urban expectations may also discourage existing forestland owners from reforesting their land or improving their timber stands. They know that an urban buyer will pay little or nothing for immature timber. Property taxes may also rise, although all Southern States now offer some form of differential ("use-value") assessment to farm and forest properties. (See *Rural Development Perspectives*, February 1985, p. 43, for discussion of effectiveness of use-valuation.) These effects are often referred to as the "impermanence syndrome."

A second problem with population growth is the division of rural land into parcels for present or future residential use. All over the South, nonfarm rural residences are found on parcels of between 1 and 20 acres. Only a small part of the parcel is typically used for a house, outbuildings, or lawn, but the entire unit is taken out of agricultural or forest production. As one Virginian observes, such parcels are "too big to mow, but too small to farm." Division of rural land into smaller parcels may be particularly significant for forestry in the South; not only are economies of scale lost, but buyers of such parcels for residential or recreational use may have little interest in crop or wood production regardless of its economic potential.

Third, extending urban and built-up uses into previously rural areas creates "problems of juxtaposition." New rural residents may object to a farmer's pesticides, to the smell of manure, and to early morning machinery operations. And they may object to clearcut harvest of timber, spraying, or to controlled burning of forestland near their property. "The people who live in rural areas now just aren't like the ones who lived there before," says E. H. Barron, head of the forest management department of the Texas State Forest Service. "They don't have any connection with agriculture or forestry. . . . We're going to have a lot more people conflicts in trying to manage the natural environment."

On the other hand, nonfarm rural residents present problems for the farmer: dogs that annoy livestock or children who vandalize crops.

To cope with these problems of juxtaposition, virtually all Scuthern States, starting with Louisiana (1978) and North Carolina (1981), have enacted "right-to-farm" laws protecting farmers from nuisance suits stemming from normal agricultural operations, even if development later encroaches upon them. The North Carolina law, which served as a model for right-to-farm laws in most other States, provides that "agricultural operations" (including livestock farms, but not forestry activities) that have been in place for more than a year, are not subject to nuisance suits because of

More on Land Use

USDA's Economic Research Service has itself published a number of studies on land use. All titles listed below are available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (telephone 202-783-3238). Please include the GPO number of your selections on your order and make check or money order payable to Superintendent of Documents.

Major Uses of Land in the United States, 1982. $1.25. GPO no. 001-019-00398-7. 36 pages. Issued June 1985.

Assessing Erosion on U.S. Cropland. $1.50. GPO no. 001-019-00341-3. 24 pages. Issued July 1984.

Improving U.S. Farmland. $1.00. GPO no. 001-019-00362-6. 12 pages. Issued November 1984.

U.S. Cropland, Urbanization, and Landownership Patterns. $1.50. GPO no. 001-019-00366-9. 24 pages. Issued December 1984.

"changed conditions" in or about the locality. The North Carolina law does not apply to farm-generated water pollution nor to problems that are the result of "negligent or improper operation" of a farm.

Such laws will likely prove more difficult to implement than to enact. They do not necessarily protect existing farms when they change production methods or adopt new technologies. For example, a Georgia court recently ruled that a chicken house built on a former pasture was not protected by the right-to-farm statute. Moreover, when nonfarm residents are the overwhelming majority in an area, their interests will probably prevail.

Growth of the South's urban and rural population up to the year 2000 will most likely only moderately affect the quantity of land available for agriculture and forestry. But effects of land consumption will be greater if land used for development is primarily prime productive lands. Moreover, subtle, yet potentially important, impacts on the region's land base may occur through the "impermanence syndrome," through land divisions, and though the juxtaposition of farm and nonfarm land uses.

Public policies to protect the land base therefore need not go so far as to prevent development of rural land. But they should try to steer development, where feasible, onto less productive land and encourage settlement arrangements that minimize conflicts with current rural land uses.

For Additional Reading. . .

Gordon A. Bradley, ed. *Land Use and Forest Resources in a Changing Environment: The Urban/Forest Interface.* Seattle: University of Washington Press, 1984.

H. Thomas Frey. *Expansion of Urban Area in the United States: 1960-1980,* ERS Staff Report No. AGES830615. U.S. Department of Agriculture, Economic Research Service, Natural Resource Economics Division, 1983.

David Brown, Michael Brewer, Robert Boxley, and Calvin Beale. "Assessing Prospects for the Adequacy of Agricultural Land in the U.S.," *International Regional Science Review,* 7, 3:273-84 (1982).

U.S. National Agricultural Lands Study. *Final Report.* U.S. Government Printing Office, 1981.

Maureen Godsey Valente

Volunteers Help Stretch Local Budgets

Local governments have always used volunteers, especially in fire and rescue departments. But today, many local government officials are looking for and finding new opportunities to use volunteers to increase their organizations' ability to provide services. This article shows how local officials can use volunteers, and gives suggestions and guidelines. But not even voluntarism is free of costs. Local officials need to consider training, insurance, equipment, and possibly adverse effects on paid personnel associated with volunteers.

Mention volunteer workers in local government and most people probably think of fire and rescue squads; even George Washington was a volunteer firefighter. But fire and rescue squads represent only part of the volunteer contributions made to local government today. And as local governments receive less Federal aid and try to meet ever higher expenses, many now turn to volunteers for lots of different jobs (see box). Local governments use volunteers for data processing, to develop guidelines for economic development plans, for switchboard operators, for museum guides, as paralegal aides, to help with the local jobs bank, and to help the elderly.

Harford County, Md., found itself appealing to volunteer workers to help it overcome cuts in services due to a $1.2 million budget deficit in 1982. Volunteers now work in the local library, in park and recreation programs, in county administrative offices, as well in the county's fire and rescue squad.

This article shows how towns and counties use volunteers for jobs like those and more. It also offers guides and suggestions to local officials in search of volunteers and summarizes the volunteer activities of Harford County and Snow Hill, two rural areas of Maryland. Snow Hill, too, faced budget problems recently, like Harford County. With a smaller population and fewer departments, though, Snow Hill's efforts to recruit volunteers were less ambitious. Nonetheless, volunteers now work with Snow Hill's police department, its recreation department, the local museum, and, of course, the fire department.

What is a volunteer? One who works but is not directly paid for the value of the time and service; and one who cannot be compelled by personal, financial, or other needs, or by other people, to provide the service. For example, an intern who receives minimum wage for working in a local government is not a volunteer, nor is a parent working in a municipal day care center to obtain reduced fees for his or her child.

Planning will help local officials determine the feasibility of a volunteer effort, and will help them target their efforts and anticipate problems.

Attitudes of Top Officials

Volunteer programs won't work without support from the top; that includes top administrators, department heads, and the elected board of supervisors or town council. The top administrators first need to formulate their own expectations about using volunteers. What are their fears about such a program? What do they hope to accomplish? How much of their own time are they willing to give to make sure it works?

In most local governments, if the top administrator obviously wants a program to succeed, the department heads will also make it their priority. Department heads, nonetheless, may have genuine

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