



Carol Majors

Part 2:

How Do We Gauge Progress or Decline in Land Resources?

by Bill Finger

*"The goodliest soile vnder the cope of heauen."**

This immortal phrase captures the image that remains in the minds of many North Carolinians more than 400 years later. Threats to this goodliest land have gradually increased over the years. Very little of the state's original natural habitat remains, and few of us know what North Carolina looked like four centuries ago, before

pinus began to forest the state as a cover to replace the virgin timber that had been harvested by the first settlers.

*Letter from Ralph Lane to Richart Hakluyt the Elder, September 3, 1585, describing what would later be named North Carolina.



Common Fleabane

As late as 1980, 52 percent of the population lived in rural areas, making North Carolina one of the most rural of the 50 states. But in the wake of the modern Sunbelt boom, the rural lands have come under increased pressure from urban development. Clearly, rural lands are being converted to urban uses. The question is, how fast and at what cost? Answering such questions is difficult, even for the experts.

Determining clear measurements of the land resource that are comparable over time is essential for understanding how the use of land is changing. Making such measurements of land use clear to the public is the purpose of this section on the Environmental Index. But gathering data on the land resource—the first step in this land Index—is a challenging enterprise. For example, measuring non-point source pollution such as farm fertilizer runoff is particularly difficult to evaluate, manage, or correct.

“There’s just an absence of data there. We get four or five requests a week for data about the land resource, and it’s just not there,” says Karen Siderelis, director of the Land Resources Information Service in the Department of Natural Resources and Community Development. “We need an overall land-use and land-cover inventory—all the urban areas, all the agricultural areas, etc.,” she explains. “We need an inventory on a statewide basis and [need to] do it in a way that it could be updated. Then we could start to get at all those trends. Starting the process would take several hundred thousand dollars each year.”

It’s not that such an inventory is difficult to create. The technology for such mapping for land use and land cover has been vastly improved. But it would require a considerable sum of money to complete such an inventory for the entire state—and to keep updating it to remain current.

Even without undertaking a major new land inventory, an annual reporting of currently available data would be helpful. For example, from 1981 to 1983, the number of acres approved for new development *declined* by 9 per-

cent, from 11,600 in 1981 to 10,500 acres in 1983. There were probably many reasons for the decline, but simple statistics explain the main one: The state was going through a recession, with the statewide unemployment rate up to 9 percent. In 1986 and 1987, in contrast, the state’s economy boomed (the unemployment rate in 1988 has been below 4 percent), and the number of acres under development shot up 55 percent, from 20,000 in 1986 to 31,000 acres in 1987 (see Table 1). These figures, by the way, do *not* include land under development for state highways. Perhaps Department of Transportation figures should also be reflected in such an index. The figures also do not include small land developments of less than an acre, which the state does not monitor. The state does keep data on the number of acres of land disturbed for mining, however.

The tension is obvious in the numbers. Using such figures for a land index, of course, would require careful analysis. Simply because a certain amount of land is being developed does not alone mean either environmental improvement or environmental degradation. But it nonetheless could serve as an indicator of a very general trend of development, and could aid policymakers in determining the total amount of North Carolina land developed in relation to the amount undeveloped. Doug Lewis of NRC’s Division of Soil and Water Conservation puts it this way: “Development for commercial/urban purposes often adversely affects surrounding land for agricultural purposes, prematurely idling it from farming uses. Given the devel-

Table 1. Number of Acres Developed in North Carolina, 1980-87

| Year ¹ | Acres Disturbed by All Projects, Except Agriculture or Forestry, of More Than One Acre ² | Acres Disturbed by All Projects Requiring a Major Permit in the 20 Counties Covered by the Coastal Area Management Act ³ |
|-------------------|---|---|
| 1980 | 13,600 | NA |
| 1981 | 11,634 | NA |
| 1982 | 10,678 | NA |
| 1983 | 10,466 | NA |
| 1984 | 14,251 | 1,670 |
| 1985 | 17,518 | 414 |
| 1986 | 19,709 | 275 |
| 1987 | 30,600 | 3,332 |

FOOTNOTES

¹For the first column of data, the year is the state fiscal year, July 1 through June 30. The second column of data is on a calendar year basis.

²These numbers are based on the number of permits filed with NRCD and local governments, multiplied by 8.5 acres as the estimated average size of each project requiring a permit. Source: Land Quality Section, Division of Land Resources, Department of Natural Resources and Community Development.

³These numbers are acreage shown for major permits issued through the "major permit" process required by the N.C. Coastal Area Management Act. A major permit is required, in general terms, for a project being undertaken in an area that has been certified under a formal rulemaking process as an "area of environmental concern" (AEC). In the 20-county area covered by CAMA, only about 3 percent of the total land area is classified as an AEC. Source: Division of Coastal Management, Department of Natural Resources and Community Development.

opment of vacation properties on the coast and in the mountains, and the boom in industrial, commercial, and housing uses across the Piedmont, I argue that these estimates grossly understate the level of land development in the state."

How do state land-use regulations balance development opportunities and environmental protections? The answer to that question lies in land-use plans and zoning ordinances, regulating fragile coastal and mountain areas, and other policy issues.¹ North Carolina has no statewide land-use planning or zoning, though most urban coun-

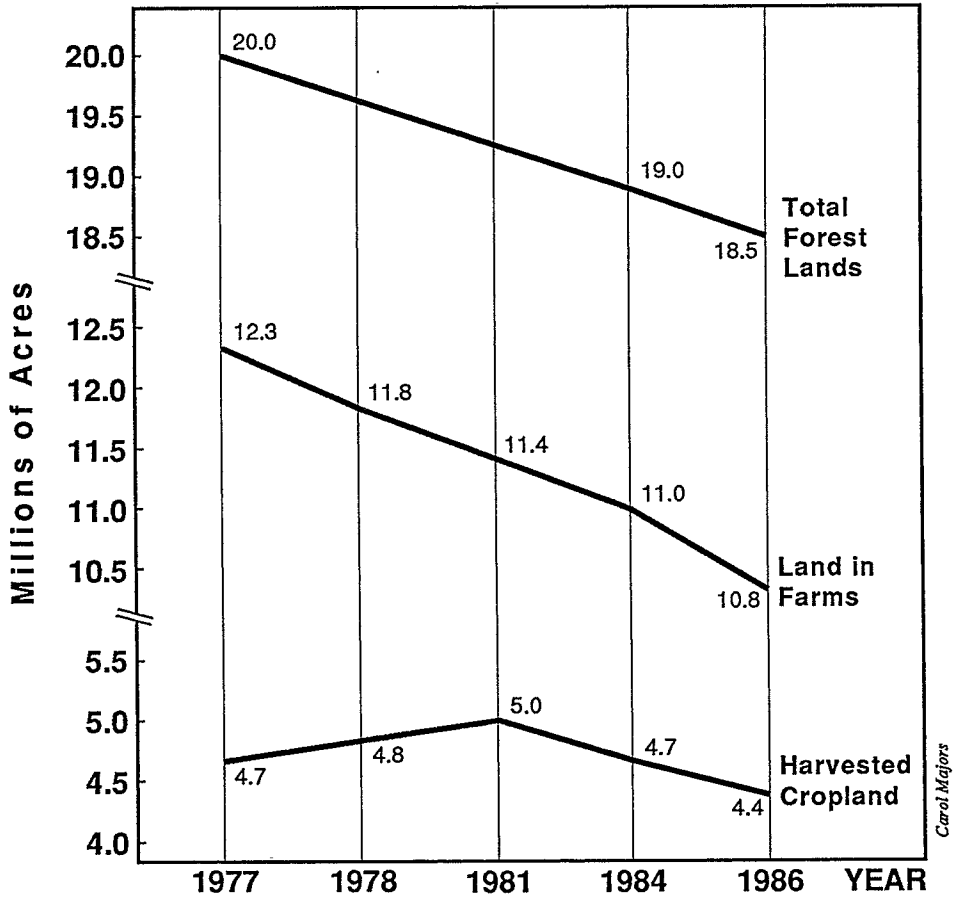
ties do have some form of zoning or land-use plans. The state's Coastal Area Management Act does work well in regulating development along the coast, but in much of North Carolina there is little land-use planning and regulation. To know which policy questions to ask, policymakers and the public need as much data about the land resource as

possible. An Index of the land—how it is changing over time—is fundamental to any policy discussions about land use.

Some useful data are *already available* on an annual basis and could be built into an Index of the land. These data include:

*“The earth is the Lord’s,
and the fulness thereof;”*
 PSALMS 24:1

Figure 2. N.C. Acreage in Forests, Farms, and Harvested Cropland, 1975-1986



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Sources: N.C. Department of Natural Resources and Community Development (for forestland) and N.C. Department of Agriculture (for land in farms and harvested cropland).

Note: The baseline time scale used here illustrates the problem with state data collection: Data are not collected for each of these resources each year, and in only three years out of the last 11—1977, 1984, and 1986—were data collected and reported for all three resources.

1) the number of acres developed for all uses other than agriculture or forestry in projects of more than one acre in size (Table 1);

2) the number of acres developed in fragile coastal areas (Table 1); and

3) the number of acres of land in forestland, farmland, and in harvested cropland (Figure 2).

Even these data sometimes are compiled using indirect methods, and therefore are only approximate numbers. As Rader puts it, "All of this data is

suspect or incomplete," especially when it comes to silviculture and agriculture. The best estimate of the number of acres being developed comes from field workers in the Department of Natural Resources and Community Development's Division of Land Resources. Under the N.C. Sedimentation Pollution Control Act, every project that will "disturb"—as the law puts it—more than one acre for any use other than forestry, mining, or agriculture must have approved sedimentation control plans.²

During the 1986-87 fiscal year, more than 2,300 permits moved through the state office and about 1,300 through local government offices. (State law allows local governments to establish their own sedimentation control programs, including issuing the permit.)

The NRC field workers estimate that the average project size for these 3,600 permits was 8.5 acres. "While this is a rough estimate, it is remarkable that several of our field people came up with the same number independently," says Charles Gardner, chief of the Land Quality Section, which has responsibility for administering the sedimentation permit system. Applying the 8.5-acre estimate to the sedimentation permit records yields the data shown in Table 1. "This is a very rough estimate," admits Gardner, "probably plus or minus 20 percent. But it is comparable over the years and shows the trends." Other analysts point out that the numbers may not be so constant. Large planned unit developments are becoming the norm, many with large tracts such as golf courses.

The point needs to be emphasized. Data on the number of rural acres developed for urban uses are currently *not* gathered, though they may be available through county tax assessment offices. But by applying thoughtful estimates to the readily available permit data, an estimate of the number of acres of rural land being developed into urban land can be made. Determining the number of acres of land being developed in coastal areas also must be estimated, by using the "major" permit system re-

❦
"Look at Mother Nature on the
run in the 1970s."

NEIL YOUNG, SONGWRITER
❦

quired under the Coastal Area Management Act (see Table 1, footnote 3). Researchers at the Division of Coastal Management readily admit that the current estimates are rough. They say that linking the permit records to the actual acreage being developed would be desirable but would require improved computer record-keeping.

The data in Table 1 and Figure 2, viewed together, *suggest* that rural land is being converted to urban uses at a rapid pace. Although there is still roughly 16 times more rural than urban land in North Carolina, the portion of land used for urban purposes is increasing rapidly. Table 1 shows the number of acres being developed for urban uses. Figure 2 indicates the decline in acreage for both forest land and farmland.

A more traditional and comprehensive set of data exists from a series of federal studies, but those data have even more severe limitations. The U.S. Soil Conservation Service conducted comprehensive national land inventories in 1958, 1967, 1977, 1982, and 1988 (in progress). Unfortunately, the data collection method has changed significantly from year to year, particularly in 1982. For example, total urban acres in North Carolina, according to these reports are:

1958 - 800,000 acres
1967 - 1,462,000 acres
1977 - 1,844,000 acres
1982 - 1,600,000 acres

These data indicate that the number of acres in urban uses declined by 244,000 acres from 1977 to 1982, but all analysts agree that acres in urban use increased during that five-year period. So what happened? The definition of

Painted Trillium



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"urban" changed substantially in the two studies, making comparisons difficult if not misleading.³ Nor do the data indicate exactly where the land has changed. For instance, the decline in farmland has not occurred in the coastal plain region. In fact, agriculture, particularly livestock operations, is enjoying a boom in the area.

Other kinds of data which are important to understand but even more difficult to measure include: soil loss and soil regeneration, loss of wetland acres (help is on the way with completion of a National Wetland Inventory due soon), and the number of acres of formally protected lands (publicly and privately held). In each case, a number of policy questions and government programs are involved. With the soil loss question, for example, a system of "best management practices" is being implemented on agricultural lands.⁴ Reliable data are essential in gauging the importance of such programs. Overall estimates are possible, but real data are difficult to develop, especially since agriculture projects are exempt from the sedimentation permit system.

"Estimated erosion in the state is in the range of 75 million tons annually," writes Doug Lewis, research specialist in the NCRD Division of Soil and Water Conservation. "Assuming 25 percent of total erosion becomes sediment, then enough is produced in North Carolina each year to fill 1.9 million dump trucks."

While data on the land resource are difficult to report, an Environmental Index could show the public the pace of several major trends: 1) how fast the portion of N.C. land in rural acres is declining; 2) how much soil is being lost despite efforts to combat this. The Index could document these

trends with existing management reporting permit data, if used to estimate the changes in the land resource itself. The Index should also examine loss of natural habitat and of wetlands.

Still, these are very rough estimates. The state needs a more direct data collection system. An overall, comprehensive land-use inventory would allow the data in the tables shown here to be gathered in a more coherent and reliable way. The inventory would also provide a means for gathering other less accessible data, such as the total acreage of land in protected status, which now must be compiled from at least four different state and federal agencies. That protected status could include not only habitats, forests, wildernesses and the like, but also those under land-use plans or under zoning plans.

The land component of the Index, then, can measure the loss of rural land and of soil itself with a series of estimates using permit records. For this Index to be more reliable in the long haul, a better data collection system is necessary. A comprehensive land-use inventory should be created over the next five years, and it should be regularly updated.

FOOTNOTES

¹See Larry Spohn, "Protecting the Land and Developing the Land—How Can We Do Both?" *North Carolina Insight*, Vol. 10, No. 2-3, March 1988, pp. 94ff.

²G.S. 113A, Article 4, particularly 113A-57 (standards for permit) and 113A-60 and 113A-61 (local erosion control programs).

³For a good review of the problems involved with the federal data, see "Land Use and Soil Loss: A 1982 Update" by Linda K. Lee, *Journal of Soil and Water Conservation*, Vol. 9, No. 4, July-August 1984, pp. 226-228.

⁴See Frank Tursi and Bill Finger, "Clean Water—A Threatened Resource?" *North Carolina Insight*, Vol. 10, No. 2-3, March 1988, pp. 58-61.

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"The downside of Feliciana is that its pine forests have been mostly cut down, its bayous befouled, Lake Pontchartrain polluted, the Mississippi River turned into a sewer. It has too many malls, banks, hospitals, chiropractors, politicians, lawyers, realtors, and condos with names like Château Charmant.

Still and all, I wouldn't live anywhere else."

FROM THE THANATOS SYNDROME BY WALKER PERCY

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