



# Do We Need a North Carolina Environmental Index?

by Bill Finger

*How do we know what the state of North Carolina's environment is? And how do we know whether North Carolina's environment is getting better or getting worse?*

*The fact is, we don't know as much as we need to know about this most valuable natural resource. We know much more about such other issues as the state of the state's economy, or the condition of our corrections system, or the quality of our schools. And we now know much more about the condition of our children, with the creation by the N.C. Child Advocacy Institute of a North Carolina Children's Index. That index measures the quality of life for the state's youngsters and will report in some detail whether their circumstances in six categories are improving or declining.*

*Why not a similar measurement for the state of North Carolina's environment? Why not a regular measurement of the quality of the air we breathe, of the land we live and farm on, and of the water we drink? Could such a North Carolina Environmental Index be created? And what should it measure? How would it work? The N.C. Center for Public Policy Research has pondered these questions, and in the following pages North Carolina Insight presents some possible answers about creating a state Environmental Index.*

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*"Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed . . . if we pollute the last clean air and dirty the last clean streams and push our paved roads through the last of the silence."*

WALLACE STEGNER, NOVELIST

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Consider these terms: Total suspended particulates. Acres disturbed. Water use impairment. Sound familiar? Unless you're a scientist or environmentalist, chances are these terms will make your eyes glaze over. Now how about these: Average hourly manufacturing wage. The unemployment rate. Rate of inflation. If you're old enough to cash a paycheck, chances are you know something about what those numbers connote.

But this is more than a word game. Studying and reporting on the economy has received so much attention over the years that standard indicators like unemployment rates have taken on a familiar meaning to nearly everyone. Keeping tabs on the environment, on the other hand, requires a new set of knowledge. The data, the measurements, and even the vocabulary available to describe changes in the environment and to denote improvement or degradation are known only to a relative few, despite the growing interest in our environment.

Environmental measurements may never become as familiar terms as, say, the average hourly wage or the U.S. trade deficit. But even now, to people with severe respiratory problems in Los Angeles or Charlotte, the air quality index in those cities means as much as the hourly wage does. If water quality or water supplies in Greensboro or Winston-Salem became threatened as seriously as has the air in southern California, state officials likely would come up with some kind of water quality index that the general public would understand, too.

For years, the N.C. Employment Security Commission has published major economic indicators monthly, quarterly, and yearly. But the state has not chosen to publish regular indicators on North Carolina's most important environmental resources. Could the state develop such a series of indicators? How difficult would it be, and how expensive? What would those indicators be? What criteria could be used? What kind of format could present this data in an easy-to-understand fashion?

Such questions arise again and again to those in and out of government whose job it is to analyze

the complicated and fast-breaking news concerning water, air, land, and other natural resources in North Carolina. Is our water in better shape today than it was in 1973 when substantial federal dollars began coming into North Carolina to build new wastewater treatment plants under the federal Clean Water Act? Is the air in North Carolina cleaner or dirtier than it was 10 years ago? How much arable soil has the state lost as rural land has been transformed into shopping centers, residential subdivisions, roads, and commercial property—and what would that data tell us about our land resources?

To analyze environmental policies, policymakers need to know the stress points on the environment and the causes of those stresses. Daily news clippings *suggest the environment in North Carolina is getting worse*—algae blooms depleting oxygen in the Chowan River and in estuaries, dying trees on Mt. Mitchell linked to acid deposition, and stricter auto emission controls mandated in Raleigh and Charlotte because of air quality measurements. On the other hand, many of the reports filed by state offices with the federal Environmental Protection Agency *indicate that water and air quality in North Carolina are improving*.

Where does the truth lie? It might well lie in the regular *publication and analysis* of measurable data about North Carolina air, land, water, and other resources.

Publishing environmental indicators is hardly a new idea. In 1973, the Department of Natural and Economic Resources (the forerunner to the current Department of Natural Resources and Community Development, or NRCD) released a 16-page booklet called "North Carolina Environmental Indicators." It included brief descriptions of such resources as air, water, solid wastes, soil, forest land, coastal wetlands, shellfish waters, and wildlife.

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Eight years later, in 1981, NRCDC published a second such report, called "North Carolina's Environment." This 40-page analysis had four main sections, covering land, water, air, and wildlife species. These reports, produced under two different governors, were extremely helpful—as far as they went. But it was clear that more data were needed to paint a comprehensive picture of the state of North Carolina's environment.

In 1983, the Commission on the Future of North Carolina called for better environmental data reporting. "Beginning immediately, the state should establish an environmental indicators program that provides regular and systematic monitoring information on changes in the quantities and qualities of environmental conditions," the report recommended.<sup>1</sup> NRCDC did not respond to this recommendation in any formal way until the legislature forced the issue with a new state law.

In 1985, the General Assembly adopted a little-noticed special provision in a budget bill that required the Secretary of Natural Resources and Community Development to report "on the state of the environment to the General Assembly no later than January 1 of each odd-numbered year beginning on January 1, 1987."<sup>2</sup> The law included seven specific areas to be covered, including "trends in the quality and use of North Carolina's air and water resources." Unfortunately for NRCDC, the legislature did not appropriate special funds to pay for this special provision, and NRCDC was forced to find the money within its own budget to pay for producing the first report.<sup>3</sup>

NRCDC responded to the legislation by publishing a 60-page glossy booklet called *State of the Environment Report-1987*. It contains chapters on water resources, hazardous and radioactive waste manage-

ment, general environmental management issues, coastal and marine resources, air, forest land, agriculture, mining, and parks, natural areas, and wildlife. In many ways, the report does an excellent job of explaining the current state of the environment and linking management efforts with the data. "That's the best government report I've ever seen," said one long-time analyst of state government.

However, in two important ways, the report does not provide essential environmental indicators. First, the report emphasizes *managing* the environment rather than indicators on the quality or quantity of the environmental resources themselves. Such a management emphasis, which the legislature in fact *required*, results in a dense, complicated document, not an easy-to-remember set of indicators. Second, the report does not include some data that is needed because the data either are not collected, or are not readily available.

While useful for its description of management practices, such a report does not fulfill the goals set forth by the Southern Growth Policies Board in a recent report on "Education, Environment, and Culture." "By 1992, each southern state should have an integrated, computerized, geographically based environmental information system to track a wide range of water quality, air quality, wildlife, waste, and land use indicators," the report recommends. "The public sector has a strong comparative advantage over the private sector in collecting and disseminating information. This role should be greatly expanded to provide high quality environmental information to a broad array of public and private sector clients."<sup>4</sup>

An annual North Carolina Environmental Index—actually a series of indices collectively published—*continued on page 7*

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*"Too often in the past,  
environmentalists have pursued  
causes they believe in  
passionately with a certain  
arrogance and self-  
righteousness, which may  
actually have hurt their cause.*

*By the same token, many major  
economic players have tended to  
view environmentalists as wooly-  
headed tree-huggers.*

*Neither of these extreme  
positions is constructive and both  
ignore the deep interrelationship  
between our economic and  
environmental well-being. But  
fortunately, I believe we are  
seeing progress on both sides."*

DAVID ROCKEFELLER

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lished in an Index—is needed to complement the biennial report prescribed by the legislature. Such a review of indicators could begin with air, land, and water—the basic environmental resources—and could be expanded to such other areas as wildlife, parks and recreation, wastes (hazardous, radioactive, and solid waste materials), and other issues covered in several recent national studies (see sidebar on page 5 for more).

The index should have at least three components. First, it should contain *quantitative measurements* of the environmental resource itself. Second, the index should present *data over a span of years*, to indicate trends in environmental quality over time. Finally, for the data to make sense, the index should contain an *analysis of each indicator showing improvement or degradation* as well as a brief narrative discussion of major environmental management issues. For the index to have the most utility, it should be available on an *annual* basis, use reliable data sources, and be simple enough to understand. Several recent indices have examined closely the index concept and have come up with these and other elements as important parts of an index.<sup>5</sup>

Sound simple? It won't be—for a number of reasons. Establishing, operating, and maintaining a North Carolina Environmental Index would be difficult and costly. Monitoring the environment, measuring pollution, and analyzing the data to determine areas of improvement or degradation is an extremely difficult process. It will require expensive monitoring stations in many different areas, costly equipment to collect data in many of those areas, and scientific expertise to analyze that data and to determine whether environmental quality has improved or declined for each indicator. The department has a professional staff that does an excellent job of fulfilling its current responsibilities, but NRCD will need a *larger staff* to operate an Environmental Index.

All this requires money—money that NRCD does not have in its current budget. Such an Environmental Index will require substantial appropriations from the 1989 N.C. General Assembly to set up the Index operation and to keep it going each year.

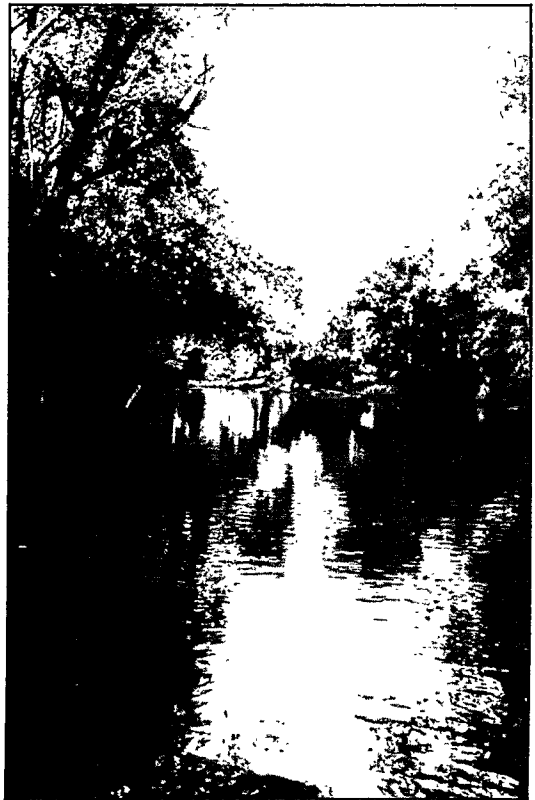
### Pitfalls to an Index

**T**his annual report should focus on the environmental resource itself—not on information about *managing* the environment. The 1987 NRCD report included a great deal of valuable

information on water quality permits, land-use plans, dredge and fill permits, sedimentation permits, and other environmental management efforts. This information on managing and regulating the environment is one step removed from measuring the progress or decline in the environmental resources themselves. Put another way, the *inputs* into managing a resource such as surface water do not necessarily affect the *outcome* on that resource. In some instances, the permit information—i.e., the management system—is the best available source on an environmental resource. But the Index should transpose the data on permits into an indicator for that resource. In the section that follows on land, for example, the sedimentation permits are used to calculate the amount of land developed. Reporting only the number of permits would give the general public an incomplete picture; interpreting the data to show the actual effect—the amount of land under development—would be more helpful. And careful analysis of that indicator is needed to interpret whether, for instance, development means environmental improvement or degradation.

Could such a data-reporting process lead to a

*Neuse River near Raleigh*



Jack Betts

single Environmental Index? On a scale of 1 to 10, for example, would the state be a 6 on the scale in 1989 but improve to an 8 by 1990, or perhaps slide to a 5? Given the range of complex variables in the environment, and the need for careful analysis of each indicator, no such single indicator should be developed.

"A single environmental quality index might mask some very important changes which we ought to be addressing," says David H. Moreau, director of the Water Resources Research Institute, part of the University of North Carolina system. "We might have a serious deterioration in one aspect of the water, for example, and if that gets lost in a general indicator that's not as responsive to that, you're losing important information. A single N.C. environmental quality index might be nice, but I'm not sure it would be very meaningful."

Douglas N. Rader, senior scientist with the N.C. Environmental Defense Fund and a former NRCD official, adds that an environmental indicator may tend to oversimplify a condition—and thus impart erroneous perceptions. "In using indices of the sort proposed," says Rader, "we face . . . a tremendous risk of oversimplifying complex prob-

lems. In the process, we may present a misleading picture of our state's environmental quality and provide support to those who would simply preserve the status quo."

The Department of Natural Resources and Community Development has expressed interest in such an Index but is concerned about its difficulty. "There is some merit in discussing the Environmental Index," says Edythe McKinney, director of Planning and Assessment. "However, . . . to be useful it is necessary to better define the problem. As a minimum, there should be a more detailed discussion as to the need, the limitations and experience with measuring the 'quality of the environment,' and the components and weights to be included in an index. There should be an examination of what we want to measure and the costs and trade-offs in establishing an Environmental Index. The reader should be exposed to the debate on 'what is a good environment' that will surround the development and adoption of a system to measure environmental progress."

Given the data that's available in North Carolina, publishing an annual Environmental Index—even one covering only air, land, water, and

## How Does North Carolina Rank — *continued from page 6*

lished, however, but with a new administration in 1989, this report could be renewed. Finally, on a global level, the Worldwatch Institute has recently begun publishing an annual book called *State of the World*, which summarizes environmental indicators worldwide.<sup>8</sup>

These indices, of course, examine national data. North Carolina's Environmental Index should be different in a number of respects: It should examine state data only; it should be published annually rather than periodically; and it should examine environmental problems unique to North Carolina.

—Bill Finger

### FOOTNOTES

<sup>1</sup>*The State of the States, 1987 and The State of the States, 1988*, Fund for Renewable Energy and the Environment, A Renew America Project, 1001 Connecticut Ave. NW, # 719, Washington, D.C. 20036, (202) 466-6880; \$15 for main report, \$6 for focus paper on one of the six areas examined, \$35 for report and all six focus papers (1988 report); prices are slightly less for 1987 report.

<sup>2</sup>For a full discussion of the permit backlog issue, see

Frank Tursi and Bill Finger, "Clean Water—A Threatened Resource?," *North Carolina Insight*, Vol. 10, No. 2-3 (March 1988), especially pp. 57-58.

<sup>3</sup>"The 20th Environmental Quality Index," *National Wildlife* magazine, Vol. 26, No. 2 (February-March 1988), pp. 38-47; most of the past years' indices have also appeared in the February issue of the magazine; one copy of the index is free from Books & Special Publications, National Wildlife Federation, 8925 Leesburg Pike, Vienna, VA 22184; additional reprints cost 50 cents each.

<sup>4</sup>"A Nation Troubled by Toxics," *National Wildlife*, Vol. 25, No. 2 (February 1987), pp. 33-40; cost information is the same as in footnote 3.

<sup>5</sup>*State of the Environment: A View Toward the Nineties*, The Conservation Foundation, 1250 24th St., N.W., Washington, D.C. 20037, (202) 778-9510; cost is \$19.95.

<sup>6</sup>*State Policy Reports* (Alexandria, Va.), Vol. 5, Issue 22 (Dec. 7, 1987), page 19. Also see Vol. 5, Issue 13.

<sup>7</sup>*Environmental Regulation of Industrial Plant Siting: How To Make It Work Better*, The Conservation Foundation, 1983, pp. 218-229 (see footnote 5 for address); cost is \$15.00.

<sup>8</sup>*State Of The World*, annual report by the Worldwatch Institute, 1776 Massachusetts Avenue NW, Washington, D.C. 20036, first edition February 1988, \$9.95 each (bulk order discounts available).

wastes—won't be easy. A central source of information on existing environmental information does not exist, and much of what does exist is technical. Currently, citizens, policymakers, news reporters, and lobbyists must gather data from many separate reports and offices. And once gathered, the pertinent information is often too technical to understand—or has severe gaps regarding important policy questions.

A beginning Index could be developed, however, even with existing data. And new types of data must be developed, refined, and consolidated to improve the Index in future years. As technology changes, so too will the values assigned to the indicators change—and analyzing those changes in future editions of the Environmental Index will also be difficult.

The question at the current juncture, then, is this: what could an Environmental Index contain if it were created now? And what actions could be taken to improve the collection of data in the future and the analysis of currently available data?

What follows is a discussion of what an Environmental Index might contain on air, land, and water. The professional staff at NRCDD no doubt will have numerous suggestions for other environmental indicators and for improvements in these suggestions. So may other environmental experts, including the N.C. Environmental Defense Fund, the Sierra Club, the Conservation Council of North Carolina, and the Southeastern Environmental Law Center. Those suggestions can contribute to the debate over the proposal advanced here, but the key point of this article is to encourage the state of North Carolina to make regular assessments of its environmental quality. *For these reasons, the N.C. Center for Public Policy Research recommends that the N.C. Department of Natural Resources and Community Development publish an annual North Carolina Environmental Index, beginning in 1991.*

#### FOOTNOTES

<sup>1</sup>The Future of North Carolina—Goals and Recommendations for the Year 2000, Report of the Commission on the Future of North Carolina, 1983, p. 192.

<sup>2</sup>N.C.G.S. 143B-278.1.

<sup>3</sup>See Chapter 479 (SB 1) of the 1985 Session Laws, Section 124. For more on the issue of special provisions, see *Special Provisions in Budget Bills: A Pandora's Box for North Carolina Citizens*, by Ran Coble, N.C. Center for Public Policy Research, June 1986 (pp. A-1 to A-3 list all the special provisions in the 1985 main budget bill; the environmental study requirement was one of 64 special provisions in the bill); see also, "N.C. Center Says 1986 Legislature Continued Abuse of Special Provisions in Budget Bills," released on March 2, 1987.

<sup>4</sup>"Education, Environment, and Culture: The Quality of Life in the South," 1986 Commission on the Future of the South, Cross-Cutting Issue Report No. 5, Southern Growth Policies Board, 1987, p. 12.

<sup>5</sup>The North Carolina Child Advocacy Institute unveiled on June 21, 1988, a "Children's Index: A Profile of Leading Indicators on the Health and Well-Being of North Carolina's Children." In developing its format, this group circulated a number of draft models to specialists in children's and policy issues. The final version of the Children's Index contains 30 indicators that meet most of the following criteria:

- *annual availability*—Typically, a state agency is the data source and collects the information each year, unless noted;

- *reliability*—The data are published and/or validated by their original source, and recognized professionally; and

- *simplicity*—The statistic is easily understood and commonly used, e.g., total number, percentage, or rate.

Another useful index to consult for various criteria was developed by the National Civic League and reported in *National Civic Review*, Vol. 76, No. 6, November-December 1987. This "national civic index" is put forward as a new way to approach community problem solving, and contains 10 components, including citizen participation, community leadership, intergroup relations, and others. These variables, in contrast to the criteria put forward by the child advocacy group, do not lend themselves to easy quantification, but represent another kind of use for an annual index.



*"And there's this constant rumbling  
from the backhoes moving boulders  
for the tennis court. Evidently  
they've had to do a lot of blasting."*

*"How can he get away with that, it's  
wetlands?"*

*"I don't know, sweet, but he has the  
permit tacked up right on a tree."*

*"The poor egrets."*

*"Oh Lexa, they have all the rest of  
Rhode Island to nest in. What's  
nature for if it's not adaptable?"*

*"It's adaptable to a point. Then it  
gets hurt feelings."*

FROM THE WITCHES OF EASTWICK

BY JOHN UPDIKE

