

Two articles dealing with monitoring and management of natural areas – one specific to Great Smoky Mountains NP (GRSM) and the other a generalized treatment of the subject – appear in Vol. 1, No. 2 (April 1981) of the new **Journal of the Natural Areas Association**.

Published quarterly by The Natural Areas Association, 320 S. Third St., Rockford, IL 61108, the *Journal* comes with membership (individual dues, \$10) and speaks for this national non-profit organization of "individuals actively involved in identification, preservation, protection and management of natural areas and elements of our natural diversity."

"Standardized Ecological Measurements in Natural Areas," by Thomas V. Armentano of the Institute of Ecology, Indianapolis, IN 46208, sets forth in precise tabular form the basic functions central to ecosystem activity (the capture, transfer and expenditure of energy, the interception, cycling and loss of nutrients, and the life cycle activities of the biota), and the set of "core" measurements that, if monitored, would provide a moving picture of the integrated response of biotic processes.

The latter table is, in effect, a blueprint for a stringently cost-effective monitoring system that would allow resource managers to detect even gradual, sub-visible deterioration effects. An example of such an effect is drawn from GRSM, where it was found that white pine in an apparently "clean" area was suffering growth reduction and increased mortality (from a 1980 study by J.M. Skelly of the Pacific Southwest Forest and Range Experiment Station, Gen. Tech. Rpt. PSW-43). The losses are attributed to air toxicities, especially ozone.

In addition to detailing the biotic data necessary for minimum monitoring, Armentano recommends sampling frequency intervals and considers methods and reasons for achieving standardization of sampling and analytical methods, documentation (for retrievability and management usefulness), sample archiving, and collection continuity over the years.

The companion article, "How Do We Insure Our Natural Area Parks Function to Provide Species and Natural Systems?", is by Peter S. White, stationed at the NPS Uplands Field Research Laboratory at GRSM. White describes briefly the major changes that have continued to occur "even after legal protection of habitat," and pinpoints "the single most important obstacle to assessing change: that baseline data is either lacking or ambiguous." Successional change and loss of rare species (in this case, loss of grassy balds and many rare plants) are cited as examples familiar to natural area managers everywhere.

White then takes his own cut at outlining a monitoring program, listing six stages applicable to any preserve and giving with these listings his assessment of the current state of the work within that item at GRSM.

White concludes with a paragraph on the future. "We cannot, of course, ever predict all the information needs of the future. We cannot afford to collect baseline data at every biological or physical parameter of interest. But clearly, good stewardship of conserved land requires more than passive guardianship. Data gathering, storage, and retrieval are essential to judge our effectiveness and the results of our decisions on management, whether active or passive, budget-limited or not."