

Conducting a Wildland Visual Resources Inventory¹

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Abstract: This paper describes a procedure for systematically inventorying the visual resources of wildland environments. Visual attributes are recorded photographically using two separate sampling methods: one based on professional judgment and the other on random selection. The location and description of each inventoried scene are recorded on U.S. Geological Survey topographic maps and in field notes.

This procedure was applied to nearly 100 miles of the Appalachian Trail at an estimate cost of \$24 per mile, placing it well within a budgetary range of most wildland units.

The conclusion discusses some of the potential management uses for a visual resource inventory as a tool in understanding the user-public's perceptions of the resource base.

INTRODUCTION

Most managers responsible for wildland areas feel they need to know more about the attitudes and behaviors of the user-public for their decisions to be both more effective and valid. The management principles proposed by the National Park Service's Appalachian Trail Project Office (ATPO) typify this outlook. They recognize that the "Appalachian Trail experience is heavily influenced by what the hiker *perceives* in the surrounding environment." {Emphasis added.} The management principles also declare that "resource protection and quality of the user experience should receive primary concern in the design and management of the Trail and related facilities." In addition, "management decisions should be based on information of the Trail's natural and cultural resources" (U.S. Department of Interior 1978).

The Appalachian Trail presents a unique opportunity to study user perceptions because it is a fundamentally different type of resource from most designated wilderness areas. Although the Trail is more than two thousand miles in length, it is normally considered to be only a few hundred feet wide. "The Appalachian Trail is a way, continuous from Katahdin in Maine to Springer Mountain in Georgia, for travel on foot through the wild, scenic, woods, pastoral, and culturally significant lands of the Appalachian Mountains" (U.S. Department of Interior 1978). Even though it is thought of as a wilderness trail, it obviously leads hikers through a diversity of environments. Each of these environments contributes to the Trail's character; each provides a different setting for experience; each may elicit different hiking-related activities. Managing a recreation resource to provide users with both unity and diversity among the types of environments they experience is a challenging dilemma, one which the ATPO is confronting.

Studies of Appalachian Trail user attitudes and perceptions are relatively few in contrast to studies of Western wilderness users. Clark's (1977) extensive bibliography of Appalachian Trail related research identifies only two published studies of AT users (Bolduc 1973; Murray 1974). Bolduc criticizes

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his own procedures for investigating the appeal of hiking as too open ended and suggests that "had a more sensitive methodology been utilized, the schema may have been more useful" (Bolduc 1972). On the other hand, Murray's study utilized a questionnaire that focused on user attitudes toward specific management practices. However, neither of these studies sought to inventory first trail qualities which affect the user's experience. This paper reports a procedure for inventorying visible trail qualities which was developed for the ATPO and applied along the Appalachian Trail through Massachusetts.

PROCEDURE

Since there was no comprehensive a priori knowledge of the qualities important to hikers on the Appalachian Trail, a photographically recorded inventory was collected. Obviously, the total range of wildland qualities as well as much of a hiker's potential experience cannot be represented in a photographic record. However, it seems to be an efficacious procedure since an estimated "87 percent of man's perception is based on sight" (U.S. Department of Agriculture 1973).

Equipment

All photographs were taken using a high quality camera. A single lens reflex system was used to provide accuracy and ease in light metering and reliability in previewing elements within the camera's range. The wide-angle (35mm) lens employed has a coverage of 62 degrees which provides a good approximation of a hiker's field of view. Kodacolor film was used because it was sensitive to the warm tones which are frequently overwhelmed in an environment dominated by blues and greens. A sufficiently fast lens (F2.0) and film (ASA 100) were chosen for use under the low light conditions of wooded environments. When taking photographs, exposures were selected to create a maximum depth of field.

The time and location of each photograph were logged in a field notebook and on a U.S. Geological Survey topographic map. These field notes were also used to document features and characteristics significant in the author's hiking experience and to record conversations with people encountered along the Trail.

Sampling

Two distinct strategies were used to compile the inventory. The first strategy

produced a random sample of possible views. Photographs were taken systematically at half-hour intervals during actual hiking time. At each stopping point, two eye-level photographs were taken at random angles. These photographs were nonoverlapping in order to maximize the information in the inventory. This procedure provides a representative sample of the Trail's overall condition as experienced by a hiker.

The second strategy was essentially subjective. Photographs were taken of distinctive environments that the author thought represented important aspects of the Trail. This subjective record generally captured the occasional, "rare" conditions that otherwise were not well represented in the random inventory. Particular attention was paid to representing conditions referred to in conversations with other hikers as well as those which were significant in the author's experience.

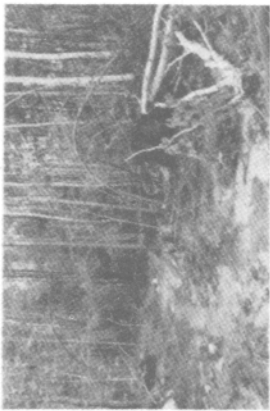
APPLICATION

The inventory was conducted by the author during July and August of 1977. The trail was experienced under a variety of conditions. Field work was done on days of 100°F heat as well as chilly, rainy weather. In addition, the length of hikes taken included weeklong and daylong journeys and were walked both alone and with companions. However, a conscious effort was made to maintain a relatively consistent photographic quality among the inventoried hiking environments. All photographs were taken to represent normal daylight conditions. The subjectively sampled scenes were photographed just as they were experienced by the author while hiking; the randomly sampled scenes were photographed without compositional adjustments. In all, 184 randomly selected and 186 subjectively selected Trail environments were inventoried. This amounts to approximately four inventoried scenes per mile.

Illustrative Example

An illustrative example is perhaps the clearest way to describe the contents of the trail inventory. Figure 1 shows the 22 scenes inventoried in and around Cheshire, Massachusetts. Each of these scenes is located on the accompanying USGS topographic map (fig. 2). The following description of this area is constructed from the author's field notes.

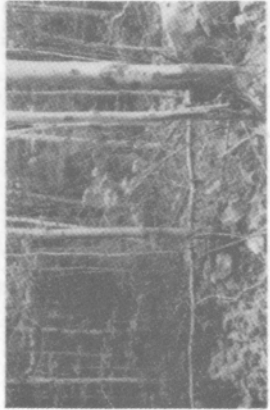
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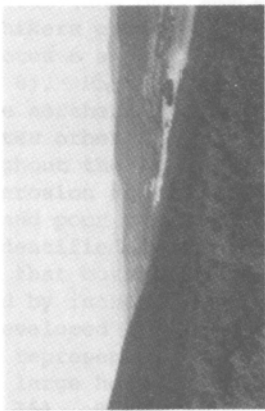
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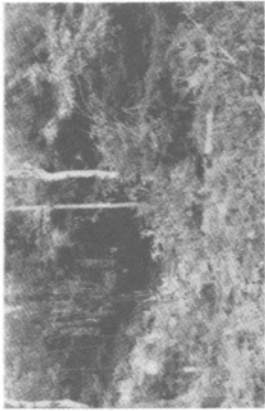
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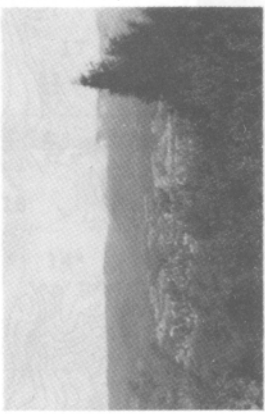
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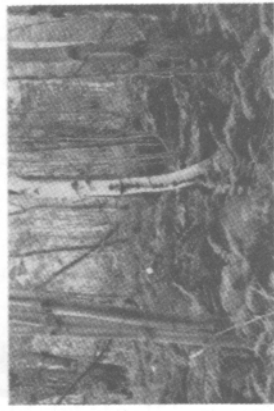
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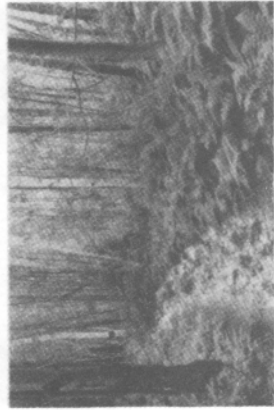
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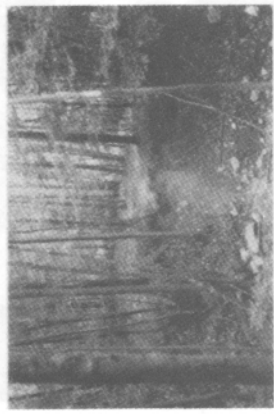
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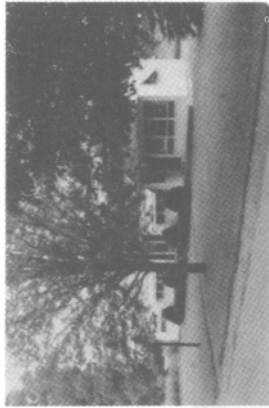
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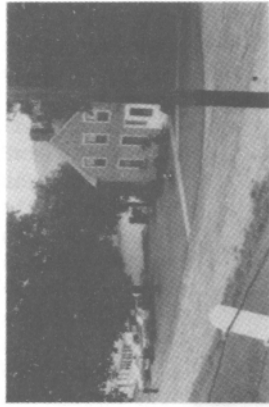
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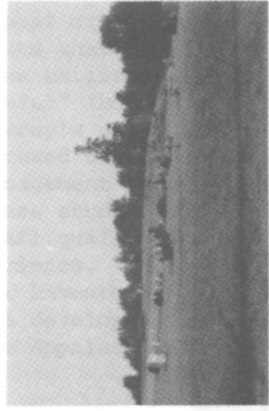
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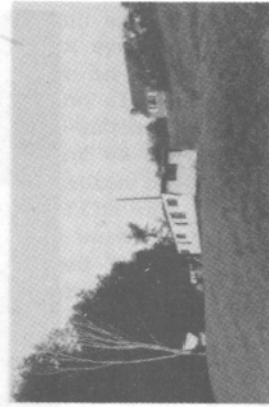
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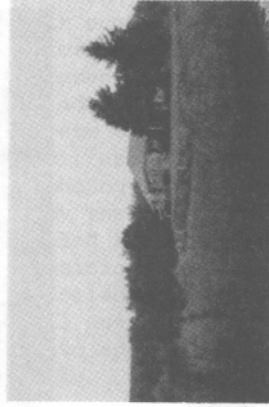
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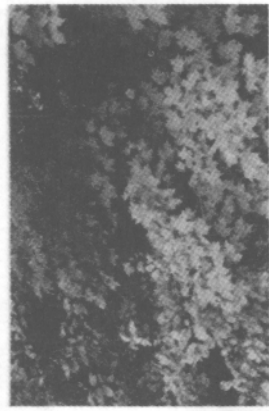
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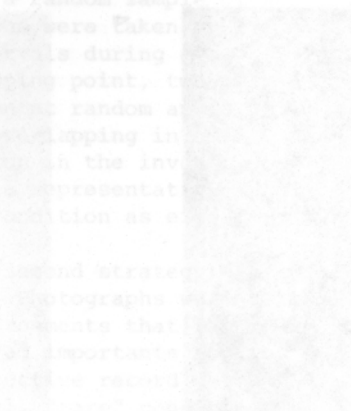
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Figure 1--Photographs of environments on the Appalachian Trail in and around Cheshire, Massachusetts

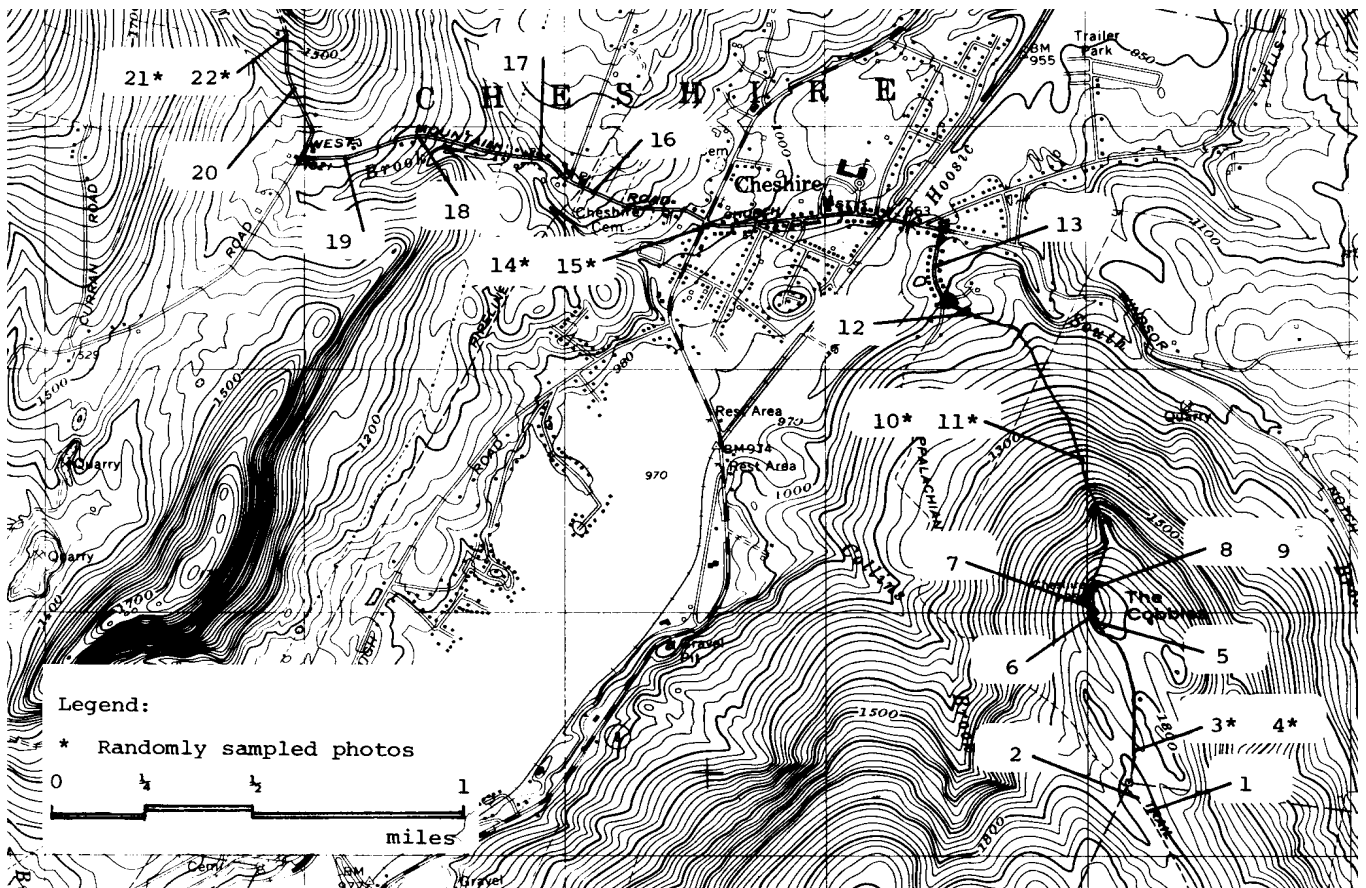


Figure 2 -- Sample field locating 22 inventoried scenes on the Appalachian Trail in and around Cheshire, Massachusetts.

actively logged. The uprooted trees in photos 1 and 2 were an obvious indication of disruption along the Trail. However, more subtle indications may also intrude into a hiker's experience, for instance the slash piles in photos 3 through 5. Distant views from The Cobbles and other highlands were normally obscured by enclosing vegetation (photo 7). However, there were two (and only two) specific spots from which hikers could view the Cheshire Reservoir (photos 6 and 9) and the town of Cheshire (photo 8). Photos 9 through 11 were typical of the northern hardwood forest which predominates other cover types and land uses throughout the study area. Areas with severe erosion due to inadequate drainage (photo 11) and poor trail design (photo 12) were easily identified from the inventory. It was possible that both these conditions were aggravated by increased usage due to the proximity to developed land uses. The town of Cheshire was represented by a small bungalow (photo 13), large house (photo 14), and rest home (photo 15). These

were typical scenes from the half mile of Trail passing through Cheshire center. In contrast to the wooded areas immediately south of Cheshire, the northern edge of town has a very rural character. The rural residences in photos 18, 19 and 21 were relatively isolated structures and in less manicured settings than the more urban scenes in photos 13 through 15. Rural qualities were also represented by colorful natural roadside verges and the absence of highway shoulders in photos 17 and 19. Open spaces such as a grave yard (photo 16) and abandoned field (photo 20) were also reminiscent of rural qualities. Approximately 1/ miles north of Cheshire center, the Trail was again enclosed by the northern hardwood forest (photo 22).

This particular section of the Trail was chosen because of its unusually diverse qualities which represent the potential range available in this geographic region. The inventoried environments for several miles both north and south of this area have a much more homogenous quality, being almost entirely represented by enclosed wooded scenes (id. photos 7, 10 and 22) with occasional interludes of muddy and difficult pathways (id. photo 11). It is clearly the intention of

the National Trails System Act (1968) that the Appalachian Trail represent the "scenic, historic, natural, or cultural qualities of the areas through which such trails may pass." This illustrative example has shown that the inventory process can be used effectively to describe these qualities. In addition, it provides a permanent record that may be used as base data for further trail evaluations and assessments.

Estimated Costs

In all, the author inventoried approximately 100 miles of the Appalachian Trail using these procedures. The following tabulation provides a breakdown of the estimated direct expenses encountered while conducting the inventory.

Salary

Fieldwork (14 days at \$40 per day)	\$ 560
Office work (28 days at \$40 per day)	<u>1120</u>
	1680

Supplies and Equipment

Food (14 days at \$7.50 per day)	105
Backpacking rental (includes tent, stove, sleeping bag, pack and frame at \$100 per week)	200

Supplies (maps, compass, notebooks and miscellaneous office supplies)	60
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Photographic supplies (camera rental, 12 roles of film, processing and 450 3'/-by-5 inch color proofs)	250
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Transportation (700 miles at 17¢ per mile)	<u>150</u>
	<u>\$ 720</u>

Total Costs	\$2400
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These figures reflect the author's actual experience and include such unexpected expenses as being caught in the field during rainy weather. However, they do not include typical overhead expenses such as personnel supervision. Perhaps more important, the quoted salary values do not include any additional compensation for living in the field nor for periods of forced inactivity, such as waiting for photographic processing,

How much would it cost if a wildland manager wanted to conduct a comprehensive visual resource inventory? The Appalachian Trail would come in at less than \$50,000 based on the above rate of \$24 per mile. When compared to comprehensive inventories of other major natural resources, this is a real bargain.

UTILITY

In and of itself, a visual resources inventory is only a descriptive record; a tool to be used by wildland managers like they would use a species list. While the purpose of this paper is to outline the procedures used to conduct a visual resource inventory, it may be helpful to discuss briefly its potential utility for further trail evaluation and assessment.

The primary purpose of creating a photographically recorded inventory is to document the visual resource's conditions for reasons relating to wildland management. This type of documentation is especially important if managers are going to come to grips with the visual effects of change over time and space. For instance, managers or hikers are able to make comparative judgements concerning sections of the Trail separated by hundreds of miles when evaluating the conditions documented in the inventory. Similarly, if suitable inventories exist evaluations could also be made between alternate routes or past and present conditions.

The Appalachian Trail visual resource inventory was used by the author to simulate trail conditions during a psychometric scaling procedure. The results established a generalized classification used by hikers when describing or thinking about trail environments.^{3/}

1. *Rural towns* are areas dominated by things built by people, such as paved roads, residential neighborhoods, shopping centers, and industrial areas.
2. *Countryside* environments are also heavily influenced by people, but this influence is potentially less permanent, Examples include pastures, abandoned

^{3/} Palmer, James F. In press. The conceptual typing of trail environments: a tool for recreation research management. In Assessment of amenity resource values. T. Daniel and E. H. Zube, eds. Rocky Mountain Forest and Range Exp. Stn., Fort Collins, Colorado

- country roads, agricultural fields, rustic structures, and powerline rights-of-way.
3. *Vistas* are prominent views over the landscape.
 4. *Backwoods* environments are wooded and without any particularly distinguishing feature, noticeable evidence of people, or an obvious presence of the trail.
 5. *Trailside features* are special objects of interest that occur within the backwoods and pathways environments. Examples include streams, a stand of birch trees, interesting rocks, and directional signs.
 6. *Pathway* environments are dominated by the obvious presence of the trail or hikers on the trail, but are otherwise very similar to backwoods environments.
 7. *Logging activity* occurs where trees have blown over the trail, where there is slash lying on the trail, or where timbering is taking place.

Analysis suggests the primary criterion of this classification is a perceptual sensitivity to cultural changes in the natural environment.

A significant benefit of the random sampling procedure is that it provides managers with sufficient data to assess the extent of the visual resource. Considering all 100 miles within the inventoried study area, rural towns and countrysides compose approximately 10 percent of the environments experienced by hikers. Though highly valued by hikers, vistas are found along less than 5 percent of the Trail. An overwhelming 80 percent of a hiker's experience is among backwoods with an additional 5 percent being divided among pathways and trailside features. There are no examples of logging activity in the random sample and it is estimated from the author's field notes that their occurrence was less than 1 percent. Such unbiased estimations are an unusual feature for a visual assessment and are unquestionably a strength of the procedures used in this study.

A complete analysis of research results utilizing this visual resource inventory (Palmer 1979) led to the following management and planning recommendations for the study area.

1. Vistas provide a unique opportunity to increase the diversity of environments perceived by hikers as well as providing a more desirable hiking experience. Management action should be considered to maintain and increase the quantity and quality of trailside vistas.
2. The central portion of the study area is notably lacking in the experiential variety that characterized the illustrative example of Cheshire. Management action should be taken to increase the diversity of perceived environments, recognizing that backwoods environments will still be the mainstay of that experience.
3. Even though the countryside environments are an important part of the Berkshire's perceived character, they are poorly represented along the Trail. Management action should be taken to increase the quantity and quality of countryside environments visible from the Trail.

Each of these recommendations is aimed at furthering the intentions of the National Trail System Act (1968) and the ATPO's management principles (U.S. Department of Interior 1978) along the Appalachian Trail within Massachusetts.

LITERATURE CITED

- Bolduc, Vincent
1973. Backpacking: a pilot study of hikers. Res. Rep. 42, 23 p. Storrs Agric. Exp. Stn., Storrs, Conn.
- Clark, Roger W. ed.
1977. The Appalachian Trail: an annotated bibliography. Yale School of Forestry and Environmental Studies, New Haven, Conn. 70 p.
- Murray, Judith B.
1974. Appalachian Trail users in the southern National Forests: their characteristics, attitudes and management preferences. USDA Forest Serv. Res. Pap. SE-116, 19 p. Southeast. For. Exp. Stn., Asheville, N.C.
- National Trails System Act
1968. 82 Stat. 919.

- Palmer, James F.
1979. Perceptual research as a recreation management tool: classifying and describing National Scenic Trail environments. Doctoral dissertation, University of Massachusetts, 1979. University Microfilms, Ann Arbor, Mich.
- U.S. Department of Agriculture, Forest Service
1973. National forest landscape management, vol. 1. U.S. Dep. Agric. Handb. 434, 76 p.
- U.S. Department of Interior, National Park Service
1978. Appalachian Trail management principles (draft). USDI, National Park Serv., Appalachian Trail Project Office, Harpers Ferry, W.V.