

EVALUATING EROSION ON FOOT TRAILS IN BRYCE NATIONAL PARK

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Problem

In many National Parks in the West, use of foot trails represents a major impact due to intense use over a short time. Trails are often situated in steep terrain and in a fragile, semi-arid environment. Particularly in the older Parks, trails were not located or designed with the idea of minimizing erosional loss. Maintenance funds for trails are often of low priority. As a result today, a number of old foot trails in National Parks and National Forests are worn out, badly rutted, and in great need of maintenance or replacement. These trails continue to be heavily used by large numbers of sight-seers who are unfamiliar with wildland terrain, thus presenting a potential problem of safety as well as of accelerated erosion. The situation is exemplified at Bryce National Park in southern Utah, where 64 miles of trails have been built along the highly erosion^{ve} face of the amphitheaters and require intensive maintenance. In summer 1977 two miles of the Bryce Poing trail had to be closed for three weeks due to extreme erosion caused by an intense thunderstorm. It was necessary to alter maintenance practices and to include the addition of water bars, retainer walls and trail outslipping.

Given these conditions, a need exists to develop a methodology for estimating relative severity of trail erosion which will evaluate existing alternative maintenance methods and provide a quantitative method for establishing priorities for maintenance expenditures.

Method

A number of erosion transect methods have been devised for uniform slopes on rangelands. These techniques are based primarily on the density of surface vegetative cover. They are not applicable to trails which usually have no vegetative cover, and which are produced using construction methods of cut and fill.

A transect technique for estimating present condition and future trends of erosion has been developed for foot trails in the Appalachian region. The method is easily used in the field and needs only simple surveying equipment; over two years, reliable trends can be forecast. In this study we would test and adapt the Appalachian technique to conditions in the semi-arid region. Research would cover the intensity of sampling points necessary to estimate soil loss at specified levels. Transects would be measured about four times from spring to fall and would be remeasured a second year. Work would be done in conjunction with Park personnel to train them in field technique and evaluative methods for estimating trail erosion.

Results

This project would result in an inventory of erosional losses on trails in Bryce National Park and the development of a systematic technique for appraising losses on trails in a semi-arid region. It will

provide information for developing more reliable trail maintenance practices and for evaluating the effectiveness of existing control methods.

Budget (1978-1979)

Graduate student	\$ 3,800.00
Equipment	200.00
Travel	1,900.00
Overhead (10%)	590.00
	\$ 6,490.00