

PRESERVATION OF SELECTED UNRECLAIMED STRIP-MINED LANDS IN OHIO¹

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Abstract. Some of the unreclaimed strip-mined lands in Ohio and similar areas of Appalachia constitute a valuable resource for educational, research and recreational purposes. Preservation of natural resources has focused on unique biological and geological resources of the state for inclusion in scenic, interpretive, or scientific preserves. Some of the unreclaimed strip-mined areas constitute unique scenic, scientific, and interpretive resources that could be incorporated into a preserve system, which could be expanded to permit numerous types of recreation suitable for unreclaimed areas. Criteria should be developed for the preservation of some of these unreclaimed areas before the most unique relicts of the Pre-Environmental Age are lost to the numerous reclamation programs now available.

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The extraction of mineral resources is usually accompanied by production of waste rock, tailings, and a hole in the ground that may or may not be visible. For centuries these residuals of mining have been considered nuisances, but part of the "price to be paid" in utilizing some of our geological resources. In some cases, the waste material was recovered for another use such as fill or road ballast, but often it simply marked the entrance to underground or surface workings. Some of these residuals not only changed the natural appearance of the landscape and caused visual pollution, but they also caused air and water pollution, thus degrading vital resources. The change of landscape and loss of resources was recognized by opponents of the mining industry more than 400 years ago. Agricola (1556) noted that "... the strongest argument of the detractors is that the fields are devastated by mining operations, for which reason formerly Italians were warned by law that no one should dig the earth for metals and so injure their very fertile fields, their vineyards, and their olive groves . . .". He pointed out that when the ores are washed, the water released poisons into the brooks and streams and either de-

stroys the fish or drives them away. Therefore, "the inhabitants of these regions, on account of the devastation of their fields, woods, . . . and rivers, find great difficulty in procuring the necessaries of life . . ."

Strip mining has existed in the United States for more than 100 years and in Ohio since 1914 (Dickman 1964). The need for more coal at economically acceptable prices in combination with technological advances in earth-moving equipment produced significant increases in the amount of coal obtained by surface-mining techniques in Ohio during the 1940's (Collins 1976). As a result, larger areas than around the tipples of the underground mine were subject to landscape modifications. In the past, there was little incentive to reclaim mined land and almost all operators followed the same procedures. The frontier mentality of unlimited resources in America and the absence of strip-mine laws combined to produce the legacy of unreclaimed strip mines in Ohio.

In addition to the degradation of mined land, the effects of strip mining commonly extended beyond the mine itself. For example, valuable farmland and other resources in the drainage basin of the mine have often been ruined by acid-mine drainage and siltation of streams

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(Board on Unreclaimed Strip Mined Lands 1974, McKenzie and Studlick 1977). Recognizing the need to reduce the loss of resources and the environmental degradation caused by surface mining, the State of Ohio produced a series of regulations beginning in 1948 (Dickman 1964). The early laws generally required that the spoil-bank tops be graded to a minimum width of 4.5 m and that vegetation be planted where there was a chance for its survival, although there was no requirement for establishing vegetative cover. With the latest surface mine law of 1972, Ohio developed some of the strongest regulations in the United States for protecting the environment from the residuals of surface mining. In the long run, the law will protect the people of Ohio from careless operators and will insure care in utilizing Ohio's natural resources. At the national level, the problem of residuals management was addressed by the Surface Mining Control and Reclamation Act of 1977 for which regulations were introduced in 1978. This law brings the rest of the nation into line with Ohio's regulations for surface-mine reclamation.

In addition to the problem of active surface mines, the new state and national regulations address the problem of unreclaimed surface mines. Nationally, severance taxes on coal from surface and underground mines provide the funds to reclaim these lands. A similar program exists at the state level in Ohio and additional funds are available from the Appalachian Regional Commission. Thus, there are several programs in Ohio to remove the disturbed landscapes of a past era of mining. The task is a large one as there are over 700 km² of surface-mined lands in Ohio that need major reclamation effort (Board on Unreclaimed Strip Mined Lands 1974). Reclamation is expensive (Foreman *et al* 1975) and some lands may require more than \$10,000 per hectare (\$4000 per acre) for reclamation. Eventually the eyesores and unusual landscapes can be transformed into more typical Ohio scenes and put to productive use.

The proposed action of reclaiming the lands may occasionally produce a loss of resources for Ohioans because some of

these lands contain significant biological, geological, and historical features that may be worth preserving. Although the law clearly indicates that there will be no further production of unreclaimed lands and serious efforts must be made to reclaim those areas that do not meet the current standards, consideration should be given to selecting some significant strip-mined lands for preservation in a non-reclaimed state.

PRESERVATION OF RESOURCES

Programs for the preservation of resources have traditionally been directed to natural resources that are rare and closest to their natural or original condition. This does not mean that other resources have not been preserved; the many man-made historical structures that are part of our heritage provide one example. These historical structures are much younger than the "original" natural resources that are usually preserved, but have sometimes been incorporated in similar preservation programs. With this in mind, the question to be addressed is: should recent man-made landscapes be considered for some form of preservation? Before we dismiss the idea of preserving something that has been drastically disturbed and is definitely not in its "original" condition, it is worthwhile to consider some of the criteria established by the Ohio Natural Areas Council and used in selecting areas for preservation. The Council has developed a classification system for nature preserves based upon the unusual character of the area and the amount of use it can stand before its preservation is threatened. The areas include those used for scientific, interpretive and scenic purposes and the criteria include uniqueness and "wealth of natural diversity" represented. The areas selected are described as "living laboratories where plants and animals can be studied in their own environment." If we focus on uniqueness and interpret "natural resources" in its widest sense, not restricting ourselves to "original" since on a geologic time scale this is meaningless, then some of these drastically disturbed lands in Ohio might actually meet some of the criteria established for preserves in that some of them

could become scientific, interpretive, or even scenic preserves. These areas would be resources that would have unique biological, geological, and historical features that could be used for research, education, and recreation.

UTILIZATION OF UNRECLAIMED STRIP-MINED LANDS

The unreclaimed strip-mines of Ohio are not without many current and potential uses and constitute a very important resource in their present state. Basically, these uses include research, teaching, and recreation. The concept of utilizing the unreclaimed strip mines for recreation and other uses such as forestry is not new and in the past, most of these arguments have been presented as a defense against additional regulation of strip-mine reclamation. The idea suggested here is to preserve a few strip-mined areas, created before the strict regulations on reclamation, that are now threatened with reclamation under the new laws that cover unreclaimed lands. Justification for such action depends on the intrinsic value of these lands as outlined by McKenzie (1978).

Unreclaimed strip-mined land research has included gathering information on soils, faunas, and floras for the purpose of determining appropriate land uses and developing reclamation techniques (Riley 1960, Limstrom 1964, Honkala 1974, Lindsay *et al* 1978). Although strip-mined lands appear to be out-of-place in Ohio, they are not barren and contain wildlife with unique ecosystems (Czapowskyj 1976). Many of these areas may be sites that can be used for biological and ecological research. For the geologists, good exposures for stratigraphic and sedimentological studies and fossil collecting are provided. The unusual landscape also provides material for study of sediment-transport and hydrologic systems, hillslope evolution, and erosion and weathering processes (Collier *et al* 1970, Dyer and Curtis 1977, McKenzie and Utgard 1978). Other areas of research that could utilize the unusual environments of unreclaimed strip mines include agronomy, forestry, landscape architecture, and mining engineering.

For teaching purposes, various disciplines could focus on field trips to strip mines. Included within the realm of teaching would be interpretive programs by park managers.

Much effort has been devoted to developing recreation areas in reclaimed strip-mined regions. In some cases, the amount of reclamation has been minimal and the area has been designed for wildlife with the associated sport of hunting. In many instances, some form of reclamation and organized development of the areas has taken place to produce facilities for hiking, camping, swimming, fishing, picnicking, or horse and trail-bike riding (Consolidated Coal Company 1969, Rasor 1977).

Unreclaimed areas can support various types of recreation dependent on the type of mining, the degree of "natural" or "man-made" reclamation, and the availability of other recreational resources. The attractions of these areas often include lakes, unusual landscapes, scenery (California Division of Mines and Geology 1977), birds and other wildlife, and large open areas without fences and numerous regulations.

Some of the areas could be included in the interpretive and scenic programs of Ohio's Division of Natural Areas. For generations, Ohioans have trekked westward to see the Grand Canyon, Yosemite Valley and Bingham Canyon mine. These features all contain "high walls" of rock that have scenic value, in part because of their uniqueness and size. In the future, Ohioans and others might listen to naturalists describe the geologic features and scenery of a landscape characterized by high walls in some unreclaimed mines in southeastern Ohio. Here they would also learn of the intricacies of ecosystems in this unique landscape. If abandoned mining machinery and structures were also preserved on these sites a history lesson could be included. Although the areas preserved in such a program would probably never rival the historic sites of pioneer days, they could provide a suitable monument to the Pre-Environmental Age in this country.

SELECTION OF UNRECLAIMED
MINES FOR PRESERVATION

There are over 700 km² of unreclaimed strip-mined lands in Ohio that could benefit from the reclamation programs now available. Selection of mines for non-reclamation or minimal reclamation would depend on the intended use which might include research, education and interpretation, and recreation. Basic data on the unreclaimed strip mines should be available from the Department of Natural Resources, coal operators, and academics. These data would supplement information already accumulated for the purpose of reclaiming these strip-mined areas (Board on Unreclaimed Strip Mined Lands 1974). The final selection would require a multi-disciplinary team of scientists, educators, and recreation specialists. One of the most important factors to be considered in the reclamation or non-reclamation of a region would be the amount of off-site pollution occurring and ways in which it could be eliminated. The criteria for selecting those unreclaimed areas to be preserved should be developed before these unique relicts of the Pre-Environmental age are lost as a result of the reclamation programs now available.

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