

# MINING RECLAMATION FOR WILDLIFE IN WEST VIRGINIA: A CONTINUING CHALLENGE<sup>1</sup>

Randall L. Kelley<sup>2</sup> and Roger J. Anderson

**Abstract:** West Virginia has historically been and continues to be one of the country's leading coal producing states. Surface disturbance associated with mining gives managers an opportunity to practice what may be the "ultimate" in early successional stage habitat management. Not only does mining remove the existing vegetation but it also creates a new soil horizon. Prior to the passage of the Surface Mining Reclamation Control Act (SMRCA) in 1977, very little reclamation took place. Since then, however, companies have been required to reclaim mine lands. It was in this required reclamation that the West Virginia Division of Natural Resources (WVDNR) saw an opportunity to involve itself in reclamation to benefit wildlife. The WVDNR Mining Coordination Program was thus created in 1981. This program would review mining preplans for their impact to wildlife and would provide technical assistance to the coal companies to aid in reclamation for wildlife. These reclamation plans were designed to provide food and cover for targeted species on what was often being left as large expanses of open grass land. Their primary goal was to speed succession using plant species that would provide food and cover for the targeted species. Although limited in part by mining reclamation practices, some of which were required by law, these wildlife reclamation plans were quite successful. However the size of the operations and the techniques used in modern mining has produced a new set of challenges to the Mining Coordination Program. Recent strides toward improving reclamation at the newer mining operations have been made, but the future presents new and greater challenges in keeping wildlife a focal point in reclamation.

---

<sup>1</sup> Paper was presented at the 2009 National Meeting of the American Society of Mining and Reclamation, Billings, MT, *Revitalizing the Environment: Proven Solutions and Innovative Approaches* May 30 – June 5, 2009. R.I. Barnhisel (Ed.) Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.

<sup>2</sup> Randall L. Kelley, Wildlife Biologist, West Virginia Division of Natural Resources, Wildlife Section, Logan, WV, and Roger J. Anderson, Program Manager, West Virginia Division of Natural Resources, Wildlife Section, Elkins, WV.

Proceedings America Society of Mining and Reclamation, 2009 pp 657-662

DOI: 10.21000/JASMR09010657

<http://dx.doi.org/10.21000/JASMR09010657>

## **Introduction**

Ecological succession “is the orderly progressive replacement of one community by another until a relatively stable community occupies the area.” (Smith, 1980). Smith’s definition is based on systematic progression of the vegetative community from primary to climax following the removal of the existing community by natural or man induced means. This re-growth and replacement occurs in stages. Surface coal mining may offer the “ultimate” in early stage succession as it not only removes the plant community but also completely alters the soil horizons. Following mining, the reclamation of both the soil and vegetative communities is required by state and federal law. It is this reclamation that offers managers the opportunity for early successional stage habitat management.

With the passage and implementation of the Surface Mine Reclamation Control Act of 1977, the West Virginia Division of Natural Resources (WVDNR) became aware of opportunities to provide technical assistance to the mining industry regarding fish and wildlife issues. The agency worked closely with the industry to facilitate our involvement in the reclamation process with regards to wildlife habitat during reclamation. Our goal was to increase wildlife populations, reduce impacts to our fishery resources and meet regulatory soil stabilization criteria.

## **Mining Coordination Program**

In 1981, the WVDNR implemented a Wildlife and Sport Fish Restoration Program entitled Mining Coordination. The Pittman Robertson/Dingle Johnson project had two objectives: 1) To provide technical assistance regarding the use of effective reclamation techniques that will benefit fish and wildlife on mined lands and 2) To coordinate with state and federal mining permit reviewing authorities so that recommendations regarding permit conditions are made. The program was staffed with five biologists located regionally within West Virginia’s coalfields. This service is provided at no cost to the company.

It is difficult to estimate the amount of surface disturbance and reclamation completed since SCMRA’s inception because of the fluidity of the mining reclamation process that is driven by coal market conditions. However, the WVDNR has prepared Fish and Wildlife Reclamation Plans (wildlife plans) for nearly 200,000 acres from the inception of our program in 1981 to present (Table 1). Unfortunately, this does not mean that all the acres have been planted for wildlife. It was common practice through the 1980s-90s for permitted wildlife plans to be

**Table 1. Revegetation Plans and Mine Preplans by Fiscal Year (July 1 To June 30)**

<b>Fiscal Year</b>	<b>Mine Preplans</b>	<b>Design Plan Acreage</b>
1981	80	17,244
1982	417	16,240
1983	383	16,548
1984	400	27,000
1985	285	11,000
1986	227	2,100
1987	276	no data*
1988	250	no data
1989	261	no data
1990	390	12,559
1991	375	13,600
1992	237	3,450
1993	308	3,000
1994	263	5,311
1995	241	5,894
1996	175	3,656
1997	196	8,150
1998	162	9,646
1999	151	2,657
2000	153	6,900
2001	145	2,652
2002	139	2,543
2003	119	2,223
2004	140	7,477
2005	144	6109
2006	159	3347
2007	178	6324
2008	243	2204
<b>Total</b>	<b>6497</b>	<b>197,834</b>

**\* no data = years DNR was not permitted to complete wildlife plans but permit applications were reviewed.**

modified to pasture or rangeland once reclamation was ongoing to avoid planting trees and shrubs.

To meet our second objective, we have provided reviews and comments on 6,497 mine preplans (land inquiries). These preplans are submitted for review as an indication of an initial intent to mine in an area. Our program biologists provide comments to the mining company regarding fish and wildlife issues of concern to help reduce negative impacts and recommend enhancements to benefit these resources.

#### Technical Assistance for Wildlife

The primary objective of the Fish and Wildlife Reclamation Plans is to speed development of early succession stage habitats that would benefit wildlife on what had previously been left as open, undeveloped grasslands by the mining companies. In order to obtain a plan from the WVDNR, companies are required to submit maps detailing the proposed mine complex. The wildlife biologist and the landowner select targeted wildlife species so that plant species selection and spacing can be determined. The plans are included in the mining permit application and become part of the permit if issued.

Prior to our program, most surface mines were contour mines with native plants left above and below the mined area. Initial changes had to be made in the grass mixtures for a more favorable wildlife beneficial ground cover (Table 2). However, strict ground cover requirements led to extremely heavy seeding rates and very dense ground cover. The tree and shrub plantings in the plans are designed using block and row plantings to break up the large open areas and provide travel corridors between the top and bottom slopes. Plant species were selected based on their food and cover values for the target species. Fast growing and productive soft mast shrubs and trees were the plants of choice in most cases in order to advance succession. These species are the typical invader species in early succession plant communities.

Mine site soil complexes are drastically different than original soils as they are a mixture of what was once subsoil. In addition they were excessively compacted to meet regulatory requirements. We experimented with a variety of plant species to find those that would grow on compacted altered mine soils, could compete with heavy ground cover, and could withstand altered soil moisture regimes. These plans were part of the mine permit and their implementation and success were critical to the mining companies. If the permitted species failed to survive through bond release, replanting would be required leaving the company less

likely to use wildlife plans on future permits. Native hardwoods were not often planted due to low success rates. However older mine site reviews indicate that hardwoods have been able to recolonize the contours through natural regeneration.

Table 2. Recommended wildlife seed mixture.

<b>Species</b>	<b>Rate for Flats<sup>a</sup></b>	<b>Rate for Steep Slopes</b>	<b>Seeding Time Variance</b>
Orchard Grass	5	12	
Birdsfoot Trefoil	10	10	
White Clover	10	10	
Bicolor Lespedeza	2	5	
Switchgrass	5	5	
Annual Rye Grass Or	5	5	Before May 15 <sup>th</sup>
Buckwheat	25	25	After May 15 <sup>th</sup>
Foxtail Millet	10	10	
Winter Wheat	40	40	Nov. 15 <sup>th</sup> –Feb 1 <sup>st</sup>

<sup>a</sup>Seeding rate suggested is for Pure Live Seed in pounds per acre.

As Mountain Top Removal (MTR) mining began to replace contour mining as the preferred surface mining technique, Wildlife Reclamation Plans were adapted to fit the larger disturbance areas. Larger blocks and longer rows are required. Unfortunately the same obstacles to plant growth on contour mining are also present on MTR sites. In addition, soil compaction is much greater and the absence of an up slope seed source greatly retards the natural invasion of the wildlife vital native hardwoods. Also of significant concern on the MTR sites is the pH of the topsoil substitutes that are being used. Regulations called for soils to be near a 7.0 pH or thus amended, further hindering native hardwoods which prefer more acidic soils.

The legality of the large valley fills that are needed for MTR mining has brought the reclamation of MTR sites into the public eye. Older wildlife plans have been often criticized due to a lack of understanding of the early successional stage process and the obstacles that had been placed on their development. The lack of native hardwood trees in the earlier plans was used to question their usefulness. This resulted in a drop in the participation in our program by mining companies in order to avoid controversy although; we have recently seen some renewed interest. The scrutiny caused by the lawsuits has led to changes in reclamation practices that will benefit the planting of more native species, particularly hardwoods. These changes have been aimed at

forestry related post-mining land uses but we have been able to incorporate them into wildlife plans. The changing reclamation practices and regulatory over-site have resulted in better wildlife plans. We must now overcome the negative connotations that were placed on the wildlife plans in the legal process to make them more attractive to landowners and operators.

### Permit Coordination

In order to facilitate early coordination between coal companies and the WVDNR a system was established that allowed the companies to notify the agency of the location of a pending SMRCA permit application. These mining preplans, now called Land Inquiries, allow the WVDNR to identify areas and/or known species of special concern that could be impacted by mining. We inform the company early in the permit process which reduces impacts and lessons permit delays. Mining Coordination Biologist also often attend mine permit application field and office pre-inspections and review mitigation packages for there potential impacts. There is a nominal fee to cover the Lands Inquiry program administration.

### Conclusion

The WVDNR Mining Coordination program has been successful in both reducing mining impacts and providing improvements in reclamation that benefit a variety of wildlife species. Although no direct correlation research has been completed, harvest figures show an increase in game species like the whitetail deer and wild turkey in the mining regions of the state. The ability of the mining companies to easily access free technical assistance for environmental issues is a significant benefit. The program has had to adapt to changes in mining methods, regulations, and perceptions and will continue to work to overcome the new challenges to make reclamation for wildlife a priority.

### Literature Cited

Smith, R. L. 1980. Ecology and Field Biology, 3<sup>rd</sup> ed. New York: Harper & Row, 1980.