

Recreational Trails of the Wissahickon Valley: An Evaluation to
the Friends of the Wissahickon Board of Directors

January 30, 2004

Raymond M. Hajewski
Trails Coordinator
Wisconsin Department of Natural Resources
Kettle Moraine State Forest Southern Unit
Eagle, Wisconsin

Alan W. Bjorkman Ph. D.
Associate Professor of Biology
North Park University
Chicago, Illinois

Introduction

The 1,800 plus acres that make up the Wissahickon Valley (WV) have a long history of intense human involvement. During the early history of the United States, the valley was the site of more than 25 industrial applications. Early entrepreneurs were attracted to the water resources as a form of energy, with reductions in water quality and deforestation as the result of this industrialization. The environmental damage, combined with an awareness of the need for intact, quality watersheds, forced the City of Philadelphia to begin the process of acquiring land for public purposes. Once a true wilderness setting that was unfortunately captured by industry and then devastated, the valley today has recovered a great deal of its beauty and peace.

Urban housing development near and adjacent to the valley has created a complex mix of human recreational interactions that have changed over time, along with the culture. Today, the valley is the site of a wide range of uses that include general nature study, birding, wildlife viewing, jogging, environmental education, hiking, trout fishing, photography, dog walking, ecological restoration, horseback riding, and both on and off-road mountain biking. Naturally, each use has its own stakeholder group, and sometimes the groups' goals conflict. These conflicting goals, increasingly vocal voices for preservation, years of neglect, and recent changes in the efforts and energy of the Friends of the Wissahickon (FOW) and even in the organization of the Fairmont Park Commission, created a window of opportunity to review the WV recreational trail status and future.

As part of a wider study of trails usage in the Wissahickon, David Pope, of the FOW, traveled to southeast Wisconsin's Kettle Moraine State Forest Southern Unit (KM) during the summer of 2003. KM has one of the most attractive off-road mountain bicycle trails systems in the central United States. KM had just completed a 10-year study and evaluation regarding the off-road bicycle trail system and has a great deal of data, experience, and history on multi-user recreational trail systems. Dr. Pope visited the KM trail system with Raymond Hajewski, KM trails coordinator and Alan Bjorkman, former researcher with the forest and presently associate professor of biology at North Park University in Chicago.

The result of this visit was an invitation for Hajewski and Bjorkman (the consultants) to travel to the WV and act as consultants, analyze the WV's future, and recommend to the FOW board best practice advice on recreational trail systems. On the weekend of January 17-18, 2004 they traveled to Philadelphia, met with a wide variety of stakeholders, local WV experts, extensively hiked and examined numerous sections of the trail system, and subsequently developed this report to the FOW board.

It must be noted that a great many of the ideas, thoughts, and recommendations of this report are based on the experiences at KM in Wisconsin. The consultants expect that the FOW will adapt this report to local history, politics, economics, and ecology. Working with others to implement a future for the WV based on sustainable, long-term

stewardship of this gem in the middle of Philadelphia is a worthy, attainable goal for the board.

The Resource Base

While the consultants had been told about the natural features of the WV, they were not prepared for the life teeming within this gem in the middle of a highly urbanized area. Steep rough topography, rushing waters, waterfalls and rapids, snow falling, huge trees towering to the sky, a covered bridge, and a historic inn create an impression that is not soon forgotten. The WV is truly a rare piece of nature, made more precious because it is so close and so accessible to so many. The natural life is a key asset of this place, and offers users a truly unique and rare experience in an urban setting.

The second part of the resource base is people. The intimate connection people have with nature, especially in this unusual setting, is irrefutable. Major residential street access, homes surrounding and overlooking every side, and a myriad of ways people can encounter the WV are an important part of the pulse of the setting. So many people using the WV in so many ways creates a wide range of interest levels and passions which, to some, may seem overwhelming but which actually are a powerful asset.

Time and time again the consultants heard about lifelong people connections, growing up with, and around, the WV. Others spoke of more recent discovery. The KM experience in Wisconsin also breeds passion but not to the intensity and concentration unique to an urban park. There is something about having nature literally in your backyard that forces people to act, that forces people to protect what they hold dear.

While some see these conflicting passions as an inconvenience, the very depth and concentration of these passions can be harnessed in several important ways. While realizing that people cherish their very different uses of the WV, most care deeply about its future. Focusing on that large, common goal can produce huge benefits. It requires that people work together, rather than assume that a different user is an enemy.

At KM, the largest threats to the forest's existence were not horseback riders, mountain bikers, hunters, hikers, campers, or those who fish. The biggest pressures were hidden and far more threatening forces. Yet the impact of the widest, busiest, and most eroded trails pales in comparison to the huge threats of urban sprawl, watershed degradation, and exotic species such as the WV is experiencing. While users may honestly disagree, only through cooperative action involving all the stakeholders will the very real threats of loss of exotic species, years of trail surface degradation, neglected maintenance, 30 years of park staff reductions, watershed health, and the lack of focused financial resources be addressed. The problems are too big to be tackled in isolation, by segmented users. Everyone who cares about the WV's future simply must work for the common good. At KM the only group that raises and donates significant private money is the mountain bikers. They are the only highly focused, motivated, private group capable of raising financial resources. In contrast, the WV can claim support from groups like the FOW, who is just now beginning to create a development office to support capital projects in

the WV. Even the Fairmont Park Commission is looking at creating a new development program. There are already numerous people of financial means in the WV network, and likely many, many more yet untapped. The financial demographics of many stakeholders, the intense passion of users, and an expanding volunteer work program, can be combined to create the human and financial resources very few parks could ever hope to have. These important human resources, guided by an effective master plan for park development and re-development, can maximize the WV's tremendous natural resource base to provide for a strong future, brightened by the very best land stewardship.

Primary Recommendations

The consultants make the following primary recommendations for the WV:

- The WV should maintain, in general, the current multi-user trail access with detailed modifications as found in the following sections. Based on our experience at KM, we believe that banning off-road bicycles from the WV is not politically feasible, and such a ban would be counter productive. We were asked to evaluate this option and we believe that this is an untenable idea. A ban could come only at great political cost, enforcement costs would be very high, and an important user group, who are ready and willing to support the FOW efforts, would be lost. Stakeholders should be seen as assets, not the enemy.
- All sections of trail in use shall be built and brought up to sustainable IMBA standards.
- All abandoned sections of trails should be remediated and restored as closely as possible to original conditions.
- New sustainable trail standards, permitted user access, and formal enforcement policies should be initiated and communicated to assure understanding and compliance.

These primary recommendations are driven by the simple fact that the landscape of the WV is, in many cases, highly degraded. It is time for WV users, local residents, and the Fairmont Park Commission to significantly increase organized, responsible efforts at sustainable land stewardship. This challenge can best be met by the cooperative, sustained efforts of all the stakeholders.

Coordination of Trail Information

Trailhead

A trailhead is the doorway to any park's trail system. Visitors expect at least a place to park and a trail map. Trailheads can also serve as a means to educate users about local laws, rules, and ethics. They can supply many other amenities such as toilets, water, shelter, and picnic areas. The parking area can be used to regulate the number of users

that can use a specific trail by limiting the parking spaces. It should be readily accessible from a paved road and identified with a large entrance sign.

The Wissahickon would be well served by such a trailhead. A well-defined trailhead with a limited parking area would control most access points on the west and east park boundaries, since they could be closed (but could also post directions to the trailhead). This reconfiguration would reduce damaged trails, and give opportunity to recover damaged areas with narrower single track trails.

A good example of such a reconfiguration would be in the area of E8 on the WV map (see map). If the yellow trail was rerouted along the contour, just east of the yellow trail from just north of the Wigard Ave. house to just south of the District #3 Office, all the yellow and brown colored sections of trail could be closed and remediated. This would result in fewer total miles of trail, reduced access points, and less overall impact on the Wissahickon.

At minimum, each remote access trail on the west and east boundaries should feature directions for locating maps and a list of park rules.

NOTE: The consultants noticed that when the rules are posted, they are vague and confusing. For example, one sign said that those 16 years and older needed to register to be on the trails, except for hikers. Another sign seemed to indicate that everyone needed to register, including hikers. The signs were not at any focal point and were hardly noticeable.

Kettle Moraine has a self-registration system that works very well. A ranger simply empties the box daily. Local vendors are also authorized to issue trails permits and collect fees.

We would recommend that the WV not run bike access trails through areas that should be protected from bikes, e.g. the Meadow on the Roxborough side.

Maps

During our discussions, it seemed clear to us that many maps indicate that a trail is open to bikes, when in reality it is not. This confuses the trail user and ultimately promotes bike riding in restricted areas. Such misinformation teaches the public to distrust or dismiss rules.

Before a map is finalized in the KM, it goes through several draft printings and is passed from one group to another until all corrections have been made. The Wissahickon needs to adopt a similar process and take all other maps out of distribution.

Trailhead maps and maps for distribution can be as detailed as needed. “You Are Here” maps placed on trails should show only what is absolutely necessary: the colored trail the user is on, all intersecting trails, and roads. Users only want to know where they’ve been and where they are going (See map of Nordic trail, Appendix A).

We noticed on current WV maps an orange colored trail that apparently permits bikes, but also prohibits bikes. This contradictory information confuses the trail user. Similarly, the color blue is used to indicate where horses and bikes are allowed on trails. Colored trail indicators should show only the color of trail a person is on, and not what rules apply. Again, incongruous information is confusing visitors. A new color-coded system, agreeable to all, needs to be developed (See KM color-coding system, Appendix B). We also realize that we were given several versions of maps, hopefully this information is clear in the current, final version, if not this must be corrected.

We urge you to consider a looped trail coloring system where feasible. Most park visitors want to end where they started. Having to observe a trail's color changes several times without the aid of a hand-held map is impossible for the first time visitor, and simply invites bikers to ride all the colored trails.

Signage

Many years ago, the KM adopted a sign reduction program that included proactive signing. Signs were not to be used to prohibit a particular behavior, but to promote an alternative behavior. For example, instead of posting a sign that said, "Bikes Prohibited," the park posted a sign that informed visitors where bikes were allowed.

This effort failed miserably as compliance dropped significantly. In addition, the rangers enforcing the laws and rules of the park had to show judges what had been done to prevent the user from accidentally making a mistake.

Signs prohibiting certain uses must be displayed prominently. The Wissahickon needs to consider a sign program that can be defended in a court of law, but that will also not detract from the natural beauty of the area.

As we walked the trails in the Wissahickon, we noticed some very well constructed routed signs, but the intersections needed additional signage. These intersections, with their existing routed signs, are confusing at best (See Three Point Intersection, Appendix C).

Trail Design and Access

Design

Trails that allow off road biking should conform to the International Mountain Biking Association's specifications (See Appendix D, Building Better Trails).

Trails designed in such a way are narrow, out sloped, and follow the contours. A better understanding of trail flow can reduce damage and user conflicts. For example, the flow can be constructed to keep bikers from achieving a speed not much faster than a jogger. This is very important if trails are to be shared by other users. There is absolutely no question that sustainable trails can be designed for the WV that will withstand terrific levels of use and stand in pleasant contrast to the highly degraded, unsustainable trail corridors that are now so common.

The WV needs to complete a detailed trail system analysis done by a professional who is experienced in working on recreational trail corridors. We highly recommend that the Wissahickon contact the IMBA Trails Solution Team coordinator, Rich Edwards at 540-421-6067. We have personally worked with Rich and he is well-informed, competent, and capable of maximizing the utility of all trails in the WV for all users. His specialty is off-road bicycle trails, but he is also extremely knowledgeable regarding trails for all users, and is the best single source for advice. We recommend that the WV at least hire him to consult on the most difficult trail sections. (You may learn enough to do future trail reroutes on your own—this was our experience in the Southern Kettle Moraine). Rich has traveled the country and has rerouted trails in every situation. He is probably familiar with the WV's soil types and knows exactly what grades they can sustain and advise accordingly. He can also advise on trail flow and other compatible uses.

The cost of these services varies, and needs to be negotiated directly with Rich. To provide comparison, the Wisconsin Off-Road Biking Association paid several thousand dollars, and received approximately 6 miles of very difficult trail marked for rerouting. Rich stayed with a fellow mountain biker, ate meals with his family, and was given use of a personal car during his stay in Wisconsin. It is our opinion that laying out new trails in the Wissahickon will be much easier than in the Southern Kettle Moraine.

Access

Those who are most knowledgeable about user habits at peak times should determine trail access. During our discussions with the WV, we were told of the Tsali Trail system in North Carolina that uses multiple use trails but limits use to specific days of the week (See <http://www.main.nc.us/graham/hiking/tsali.html> for more information).

We are not comfortable giving advice based on this information, from a source we know nothing about. Our comments reflect only our experiences in the KM.

There are a number of factors that influence who may access specific trails in the KM. For example, there are more horses in Waukesha County than in any other county in Wisconsin (the Southern Kettle Moraine is in Waukesha County.). The park has a large campground that allows only campers with horses. Two riding stables and three boarding stables adjoin the trails. Biking is also very popular. The park has a total of 150 parking spaces for off-road bikers. All are likely to be full most weekends from spring through fall. It is not unusual to go past the John Muir trail parking lot on a weekday afternoon and see 30 to 50 cars in the lot. Last, but not least, the bike flow in the forest is faster than the pace of a normal walker.

These factors make multiple use trails between bikers and horses impossible and dangerous. Most hikers have been displaced from the biking trails, yet new visitors find that hiking the bike trails in the opposite direction of bike traffic greatly reduces the element of surprise. All off-road bicycle trails in the forest are one-way or are being changed to one-way single track.

It has been our experience in the KM that all single-track mountain bike trails must be one-way and must be separated from horses. We know of no Wisconsin state forest or park that allows bikers and horses on the same trail. Most Wisconsin horse trails are multiple-use with snowmobiles. Snowmobile trails are 16 feet wide on two-way trails and 8 feet wide on one-way trails. Horse only trails are 6 feet wide. We include this information here in case the number of riders in the WV ever increases over its current low levels.

Rich Edwards can better advise on trail access issues. He may be able to reduce flow to such a degree that WV can have not only two-way trails, but also trails that allow horses.

Compliance

With any significant change in trail use, rules, and access, WV must assure compliance. The three primary means of ensuring compliance are communication, peer pressure, and formal enforcement. Effective and clear communication involving trailhead information, clarity of trail signage, and effective use of websites and newsletters is the important first step. This should be followed by helping affinity groups take responsibility for informing their members as to what is expected of them, coupled with peer-to-peer observation, encouragement, and even pressure to follow the general rules. A final step is the use of law enforcement personnel. Their presence on the trails at critical times can be used as a final “hammer” on those for whom communication and peer pressure have failed. Law enforcement must be authorized to issue meaningful citations, i.e., citations that carry enough of a financial hit to get violators’ attention. At KM, the standard citation is \$160.00, and is enforced by the courts in much the same way they enforce traffic and fish and game violations. Monitoring violators is actually quite easy as linear trails are loaded with pinch points where user compliance can be easily monitored and enforced.

It is the consultants’ observation that users who highly dislike the presence of certain other user groups are quite sensitive to trail use and access violations. Aggressive efforts to assure that a hiker, for example, can travel all day and enjoy her own particular trail experience without encountering a horse or bike will go a long way toward diffusing some of the perceived conflict on the trail.

The difficulty of formal enforcement at WV will be the lack of past enforcement and the tendency to want to selectively enforce new trail and access regulations. During the consultants’ January 2004 visit, for example, we noted numerous dogs off-leash, and in one incident a dog ran into a consultant, causing severe knee pain. If the incident had involved a small child instead of a man, there would have been serious injury. We trust the FOW and other groups will assure equal compliance and promote enforcement among all user groups.

Based on our experience in KM, we believe that enforcement efforts should be introduced in several steps:

1. A PR campaign to all users that all the rules will be actively enforced for all users.

2. An initial period of warnings by enforcement officials.
3. A period of relatively heavy enforcement by an initially large number of enforcement officials.
4. An ongoing steady state of periodic patrol at low levels.

For example, during the relatively heavy enforcement period we used 20 hours per week for 20 miles of trails for 25 weeks from mid May to the end of October on weekends only. Two ten hour shifts, 10 hours on Saturday and 10 hours on Sunday. Another 100 hours is distributed unevenly during weekdays and off-season days for a total of 600 hours per year for 20 miles of trail.

This roughly translates into 10 to 25 hours per week in the WV for the same peak season of 25 weeks. Then, after the initial period we now have an ongoing enforcement effort of roughly 20 hours per week. This suggests that you will require 5 to 25 hours per week over the long term.

Note that the days and times of enforcement are important. It is even more important that all regulations be enforced - not just those related to bikers.

Total off-road bicycle use at KM is approximately 98,000 users per year. 90% of this use occurs between mid-May and the end of October.

Further Study and Research

As a new day dawns for the land stewardship and human participation at the WV, it is important that data be gathered beyond the anecdotal and user group biases. At KM, the first effort to deal with the off-road mountain bicycle issue was an extensive trail user survey to evaluate crowding, user experience, perceived conflict, and trail type preference. The extensive data collected from the survey allowed the Wisconsin DNR to provide a more accurate picture of the trail experience. Results indicated that the vast majority of off-road bikers were having a good to excellent trail experience, that conflict was a very rare event, and that virtually no one ever felt crowded. Similar survey research should be done at the WV. The data will be an important basis for focusing resources where they are needed.

Baseline physical trail measures should also be implemented on a sample of all newly constructed trails to monitor change over time. In addition, a sample should be made of all remediated sections to monitor compliance with closed trail regulations and to monitor landscape recovery. However, trail work can start immediately. It need not wait for the completion of these studies.

Summary of Conclusions

- Maintain the current system of multi-user access to the WV trail system, with modifications.
- Rebuild all off-road bike trails to sustainable IMBA standards.

- Rebuild all other trails to applicable sustainable standards.
- Remediate all abandoned sections of trail.
- Clearly communicate, and formally enforce, new and existing trails' access and use standards.
- Develop a major off-road bicycle trailhead.
- Limit trail access points and provide information pointing to new trailhead(s).
- Assure signage is both accurate and clear in its intent and direction.
- Eliminate confusing and inaccurate trail maps.
- Develop a new trail color-coding system.
- Assure that signs prohibiting certain uses are prominently displayed.
- Consult with IMBA "Trail Solution Team" to develop a coherent, off-road bike trail system that is both safe and sustainable.
- Consider making off-road bicycle trails one way, and, if kept narrow and single track, separated from use by horses.
- Initiate baseline social science and trail physical/biological research.
- Hire a third party to review the progress of your efforts, both in terms of user satisfaction and landscape impact. This should be done approximately three years after the new system is in place, and should be repeated about three years later.

Conclusion

The consultants are very grateful for having been given the opportunity to see one of the gems of our country's eastern urban park systems. Our gracious hosts, David and Myrna Pope, the numerous local experts and users, park workers, volunteers, and most of all, the wonders of nature, have left a deep and lasting positive impact. It is our fervent hope that this report, combined with the capable and committed human resources that surround the Wissahickon Valley with their deep interest, protection, and care, will make this wonderful setting an even more significant place to experience the wonders of nature and all she has to teach.