MAR BREAKDOWN

May 1996

Spring arives and with it another MAR Breakdown. Please forgive the cluttered format of this issue. Things have been busy in Nittany territory, and computer time has been hard to lay hands on.

The main focus of this issue is the MAR-PGC proposal. We now await the Commissions responce to our Schofer Cave proposal. Strangford's plan should be done and submitted by the end of the month. Our cards and good intentions are on the table.

Next issue: Volenteer with the USGS field inspecting topos, minutes of the business meet, Fall MAR@Woodward info, Cave protection, land-owner liability, NSS reward program details, Raccoon roundworm and you, how to make aquatic invertabrate traps, and much more!

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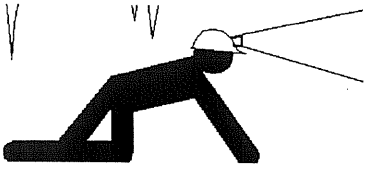

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CAVES OF WESTMORELAND COUNTY, PENNSYLVANIA

Bulletin 20 of the Mid-Appalachian Region
of the National Speleological Society
Edited by Kim Opatka-Metzgar
Contributing Editors: Bob Eppley, Walt Hamm, Tom Metzgar

Six years in the making, this hefty, 8.5" by 11" format, soft-bound book will total more than 300 information-packed pages, and features a color cover, front and back.

The editors took great pains to thoroughly check all known, reported, and likely cave-bearing portions of this sprawling county, cataloging over 300 caves and rockshelters.

Large 18" by 25" maps of Bear Cave, Lemon Hole, Coon Cave, Copperhead Cave, Sandeppley, Con Cave, the Packsaddle Cave Area, the Long Bridge (Darlington Quarry) Cave Area, and others fill a map packet included with each copy of the book.

Bound into the book are 189 maps depicting 259 caves, including thirteen 11 " by 17" fold-outs.

At least six of the maps won ribbons in the National Speleological Society's annual cartographic salon, with the potential for more Walt Hamm winners this year!

Over 150 black-and-white photos.

Many cave descriptions include obscure history and folklore featuring hermits, moonshiners, thieves, and other assorted characters.

At least 50 cavers helped with the field work - are you one of them?

The cave science section includes overviews of archaeology, biology, geology, hydrology, and mineralogy. A special chart tallies more woodrat locations than any other Pennsylvania county.

The final price has not been set, but ... the

The final price has been set at $29.50 plus shipping and handling. Copies will be available from Bette White, MAR Treasurer, upon publication.

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1257 Lehigh Parkway
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(610) 797-3981 4 April 1996

Cal Butchkoski, Wildlife Technician
Bureau of Wildlife Management
Pennsylvania Game Commission
R.D. #1, Box 172 Petersburg, PA 16669

Dear Cal,

I am pleased enclose proposals from the Mid-Appalachian Region (MAR) of the National Speleological Society (NSS) regarding Pennsylvania Game Commission (PGC) -managed caves. Please accept my apologies for taking so long to write this letter.

During the past year, MAR has concluded that we must work together with PGC to conserve the Commonwealth's caves. Like any large organization (MAR has 1100 NSS members and about the same number of non-NSS members), MAR is not always easy to bring into agreement, and I cannot deny that there are some skeptical cavers. However, even these skeptics agree with our approach. Your positive letter of 20 February was very helpful in this regard, because some of our members did not realize that PGC had any interest in working with cavers.

Our proposals are based on two principles. The first may be called "responsible use." To the extent caves and their fauna can tolerate it, MAR believes that caves should be available for education and recreation. However, MAR recognizes that some caves cannot tolerate unlimited visitation, and "responsible use" means that access to or use of these caves must be limited in some way. Because each cave is different, the type of limits must be tailored to the circumstances.

The second principle may be termed "responsible policy." If a publicly-managed cave warrants limited access or limited use, good government demands that the limits be spelled out and justified in writing. "Responsible policy" does not mean that access to all publicly-managed caves should be unrestricted, but it does mean that the public should be told why any restrictions are imposed.

MAR believes these two principles invariably lead to the idea of cave management plans. Cave management plans are used by federal government agencies, state government agencies, and many non-profit cave owners. These land managers have all recognized written cave management plans are needed to satisfy the principles of "responsible use" and "responsible policy."

A written cave management plan offers a number of benefits for public land managers:

1) It defines what is important about the cave.
2) By defining the resource, it gives a way to determine what kind of protection the cave needs.
3) It reassures the public that any decision to restrict access to publicly-owned land is legitimate and is not arbitrary nor discriminatory.
4) It encourages similar management of caves with similar problems.
5) It encourages consistent policies towards individual caves when managers change. New land managers can quickly understand why and how their predecessors conserved a cave.
6) It spells out rules for access to and use of a cave so that misunderstandings among land managers and the public are avoided.

Ideally, a cave management plan begins by describing the cave and outlining its history and background. That ideal plan contains a list of what is important about the cave, including any outstanding biological, hydrological, scenic, palaeontological, and archaeological features. The cave's potential uses for education, recreation, and scientific studies are be noted. Key features of any management plan are an access policy and a use policy. Finally, the plan must outline what steps will be taken to implement the access and use policies, which might include scientific studies, public education, publicity (or the lack thereof), signs, gates, rules for visitors, surface management, etc.

Of course, MAR is disappointed that PGC does not have management plans for its caves. Therefore, MAR is offering its knowledge and experience to PGC to help create management plans for PGC-managed caves in

accordance with the principles of "responsible use" and "responsible policy." Furthermore, we realize that creating a plan is not enough. We are also offering to help PGC administer the plans and to encourage voluntary compliance with them.

We also would like assist PGC with the field work for its cave-related projects, and in the process perhaps learn more about what PGC does and why. In short, we see an ongoing, more complete relationship between MAR and PGC as a win-win-win situation for PGC, MAR, and the caves themselves. With that in mind, we are proposing an agreement between MAR and PGC to formalize our relationship. We have taken the idea for such a plan from a successful agreement between the Texas Parks and Wildlife Department and the Texas Region of the NSS.

I have enclosed a lot of paperwork with this letter. I hope you will distribute it all to the appropriate people within PGC:

Our proposed agreement between PGC and MAR.

A copy of the agreement between the Texas Parks and Wildlife Department and the Texas Region of the NSS (called the Texas Speleological Association), which has been successfully implemented in Texas.

A short paper entitled "Discussion of Selected Issues Regarding Cave Access and Use, with Real-Life Examples" which we have prepared for PGC's information.

A very complete cave management plan from Leigh Cave, New Jersey, which includes a cooperative agreement between NSS cavers and the New Jersey Water Supply Authority, an agency of the State of New Jersey.

Our proposed cave management plan for Schofer Cave.

A copy of a brief portion of a book published by the NSS titled Caving Basics, which we cite in the proposed Schofer Cave management plan.

A copy of Pennsylvania's Cave Protection Act, which cavers were instrumental in having enacted into law, and which we cite in the proposed management plan for Schofer Cave.

Information about the NSS's cave vandalism deterrence reward program, which we also cite in the plan.

We are continuing to work on plans for other PGC-managed caves, several of which are nearly ready. However, we would like to see PGC's reaction the tenor of our Schofer Cave plan before we submit the others. Because of the expiration of the moratorium at Schofer Cave in May, we assume that PGC will want to focus on that cave first.

We are eager to discuss the Schofer Cave plan with you. While I do not expect PGC will agree with absolutely everything MAR is proposing, I do hope PCG will be receptive to the two principles behind our proposals. Our common interests far outweigh any differences we may have, and if the Commission is willing to work with the cavers, I believe it will find the cavers to be staunch allies for cave conservation.

Sincerely,

Bert Ashbrook, Committee Chairman

Proposed Agreement between the Pennsylvania Game Commission (PGC) and the Mid-Appalachian Region (MAR) of the National Speleological Society (NSS)

4 April 1996

PURPOSE:

Caves are unique, non-renewable, natural resources. Caves and their ecosystems, fauna, mineral formations, hydrology, and paleontological and historical artifacts are easily destroyed or permanently damaged. Caves have legitimate educational, recreational, and scientific uses. PGC and MAR seek to protect caves and their contents and to allow their responsible use. PGC and MAR wish to cooperate toward these mutual goals.

This agreement covers both caves and natural cave passages without natural entrances but which are intercepted by mines or quarries.

AUTHORITY:

(A paragraph should be included explaining PGC's authority to enter into such an agreement.)

MAR enters into this agreement as the representative of the Pennsylvania, Maryland, and southern New Jersey grottos of the NSS and of the NSS members from the region. The NSS is the largest cave-related organization

in the world, and both the NSS and MAR are keenly interested in cave conservation and responsible use of caves.

RESPONSIBILITIES OF MAR:

1. MAR will offer its knowledge and experience to PGC in the development of cave management plans, including examples of plans implemented by the NSS, by state and federal government agencies, and by private landowners.

2. MAR will assist in the implementation of PGC's cave management plans. MAR will and encourage compliance with all cave management plans adopted by PGC.

3. MAR will provide PGC with all available information regarding the existence, location, and resources of caves owned by PGC and of other caves managed by PGC. This will include information about fauna, geology, hydrology, palaeontology, archaeology, history, as well as cave maps.

4.MAR will assist PGC with cave-related projects such as construction of cave gates, biological inventories, surveys, cave "clean-up" or restoration projects, and educational programs.

RESPONSIBILITIES OF PGC:

1. PGC will not publish nor make available to the public the information provided by MAR about the existence, location, and resources of caves, unless MAR gives its specific written permission. PGC may make the information available to legitimate scientific researchers who also agree to this condition in writing.

2. PGC will develop an individual written management plan for each cave owned by PGC to which access or use is limited by legal or non-natural means (like a gate). These management plans will state the resources specific to each cave and state why these resources require limited access to and/or limited use of the cave. PGC will consult with MAR before developing management plans, but PGC need not follow MAR's advice. PGC will endeavor to adopt these management plans before access or use is limited, unless the cave resources would be significantly harmed by waiting for a management plan to be developed.

3. If PGC manages caves for other cave owners (public or private), then PGC will propose similar individual written management plans to those owners.

DURATION OF THIS AGREEMENT:

This agreement will remain in force for a period of two years, after which the parties may agree to extend and/or modify it. However, PGC's agreement not to publish nor make available to the public information received from MAR will remain in effect indefinitely.

Discussion of Selected Issues Regarding Cave Access and Use, with Real-Life Examples

Prepared by the Mid-Appalachian Region of the NSS for the Pennsylvania Game Commission, 4 April 1996

LIABILITY

Although PGC may have less liability exposure than a private cave owner, liability may be a consideration in access and use policy. What follows is paraphrased from Joel B. Stevenson (23-26 October 1991). "Revised System for Management of Civil Liability for Cave Related Injury," Proceedings of the National Cave Management Symposium (Bowling Green Kentucky: American Cave Conservation Association), pp. 371-378.

Basically, civil liability may be increased by making "improvements" to the cave, by allowing visitors (especially children), by charging admission, by judging the capabilities of a visitor, and by knowledge of dangerous conditions. Civil liability may be decreased by limiting access, by informing visitors of known dangers, by establishing general screening criteria (ie, minimum experience or equipment), and by requiring signed liability releases. It is not unreasonable to require a strongly-worded liability waiver to be signed by anyone entering its caves, and by parents of children who enter. The release should inform the visitor of the dangers involved. It also seems prudent to require basic equipment (ie, a helmet, a helmet-mounted light source, and two other sources of light) for anyone entering. Experience requirements might be appropriate for some caves, but certainly not for most.

A liability waiver is required by the State of New Jersey to visit Leigh Cave in Hunterdon County, and there is also a minimum equipment requirement. The New York Department of Environmental Conservation requires a liability waiver to enter Surprise Cave in Sullivan County. The Western Pennsylvania Conservancy requires a liability waiver to enter Tytoona Cave in Mifflin County. The NSS requires liability waivers to enter many of its caves. There are countless examples of private cave owners who require liability waivers before allowing visitors in their caves. Following a lobbying campaign by cavers, Pennsylvania recently amended its Landowner Liability Act to protect cave owners from lawsuits arising from injuries in their caves. Although the act

has been successfully used to protect landowners, a case of someone injured underground has yet to be decided.

CAVE SIGNS

Three nearby states (Virginia, West Virginia, and Pennsylvania) all have cave sign programs which seek to place painted metal signs within publicly- and privately-owned caves in those states. In Virginia, the program is sponsored by an agency of the state government, the Virginia Cave Board. The signs typically explain the sensitive nature of the cave environment and note that vandalism and harming cave life is a violation of state law. The signs are generally donated to private landowners and bolted to the walls inside the entrances of more publicly-known caves. The signs look out-of-place in the cave environment, and for that reason they certainly attract attention. It is difficult to evaluate the effectiveness of such programs, although it seems reasonable to assume that they raise awareness among "spelunkers."

Information kiosks / message boards outside cave entrances have been successfully implemented at privately-owned Cleversburg Sink Cave in Cumberland County and at the NSS's John Guilday Cave Preserve in Pendleton Co., West Virginia. Following a groups' having become lost for several days inside one of the caves at the Guilday Preserve, a register was placed there. The kiosks have generally been free from serious vandalism. At Cleversburg Sink, the information is believed to be partially responsible for the lack of vandalism at the newly-installed cave gate. At the Guilday Preserve, the kiosk has helped make the public aware of a large population of bats which hibernate in one of the caves. Since establishment of the preserve and installation of the kiosk, the population has increased dramatically.

REWARDS

The NSS has a reward program (up to $1000) for information leading to a conviction of cave laws. Since the passage of Pennsylvania's Cave Protection Act, the program has given two rewards in Pennsylvania. The money is available, but there are few requests for the rewards. The program's value is as a deterrent to cave vandals. Obviously, it is most effective at heavily-visited caves, but to have an effect it must be publicized.

ACCESS POLICY

Access policies can vary widely. What follows is a discussion of a spectrum of access options, from most liberal to most restrictive. Obviously, in real life access policies often combine parts of different options.

Access Option 1. No limit on visitation. For many of the caves in Pennsylvania, this is the de facto management policy. Where the caves are small, difficult to locate, or relatively unknown, this is generally not a problem.

Hartman Cave (Monroe County), Coon Cave (Westmoreland County), and Askon Hollow Cave (Fayette County) illustrate this. Hartman is a small cave in Monroe County which is important archaeologically, paleontologically, and biologically. Despite the fact that there is no control on access, there has been little or no visitation because it is virtually unknown to the public. Coon Cave has been well-publicized for half a century but is about three miles from the closest paved road. There is no gate and no limit on access, but because it is difficult to locate, Coon Cave receives relatively little traffic. Askon Hollow has been kept a closely-guarded secret by MAR cavers for 40 years, and the well-decorated cave is in virtually pristine condition as a result.

However, no limit on visitation is a problem at large, well-known, easily accessible caves. Schofer Cave (Berks County) has been seriously degraded by thousands upon thousands to visitors. J-4 Cave (Centre County) is another cave in this category. J-4 has not only been vandalized, but also has been the site of a number of serious injuries because this particular cave also has some very dangerous conditions inside.

Access Option 2. Voluntary limits on visitation, or posted limits which are unenforced. This option does not include a gate, but a sign might be needed to educate the public at publicly-known caves. At lesser-known caves, the caving community would have to be informed of the restrictions.

At well known caves, voluntary limits have had mixed results. For example, at PGC-owned Strangford Cave in Indiana County, no trespassing signs kept more conscientious cavers away while more irresponsible, casual "spelunkers" were not deterred, and problems with vandalism and litter continued. At the NSS-owned John Guilday Cave Preserve in Pendleton Co. West Virginia, a policy banning visits to three caves during the winter because of hibernating bats initially brought strong protests and violations. An information kiosk outside the caves eventually educated many of the visitors, and voluntary compliance greatly improved while bat populations have steadily increased.

At lesser-known caves, where NSS members are almost the only visitors and where they police themselves, voluntary limits on visitation work well. Coon Cave in Westmoreland County, which is a remote and difficult-to-find

cave on surplus state land, has been known as a hibernaculum since 1946. NSS members have imposed upon themselves a winter ban on trips to this cave. Hartman Cave in Monroe County is a similar case.

Access Option 3. Close the cave to visitation only at certain times. This option might be used seasonally at bat hibernacula. Alternatively, it might simply mean closing a "party" cave on Saturday nights. Other options might be to have open hours only on designated weekends or designated days of the week.

A gate may be required for enforcement of this option. Cave gates are difficult to design and construct. Some designs will not allow bats to enter and exit, which may make the cave useless to them. The NSS itself learned this the hard way in the 1960's at Shelta Cave in Madison County, Alabama. Through ignorance, the NSS installed a bat-unfriendly gate in a cave it owned, and the fauna of the cave were significantly affected. Other gates are designed to allow free air movement or, like the gate on Lechuguilla Cave in Carlsbad Caverns National Park, New Mexico, to restrict air and moisture flow. Today, the NSS publishes a cave gating manual which explains the details of how to design and build a cave gate properly.

Any plan which requires a visitor to get a cave gate key will cut down on visitation to some extent. Some visitors will simply not go to the effort of getting a key. Plans which allow visitors to enter a gated cave need some method of distributing a key. In the past, a number of private landowners in the Commonwealth have given keys to their caves to MAR member clubs. Examples include Cleversburg Sink (Cumberland Co.), Dreibelbis Cave (Berks Co.), Hosterman's Pit (Centre Co.), Womer's Cave (Perry Co.), Ruth Cave (Huntingdon Co.), and Alexander Caverns (Mifflin Co.). In each case, the MAR cavers have taken this trust very seriously and have observed the owners' wishes to the letter. At state-owned Leigh Cave in New Jersey, visitors must pick the key up from and return it back to a state facility about five miles away which is open 24 hours. At Surprise Cave in New York, the NY Department of Environmental Conservation mails out a copy of the key, which visitors must also return by mail. Of course, PGC employees might personally visit the cave to lock and unlock it for each trip, but that would take a lot of effort, time, and money. (especially on weekends, holidays, evenings, etc.)

Whenever a cave gate is locked, it must be verified that there is no one left inside. For this reason, a head count of those exiting is mandatory, and some cave owners prefer visitors to lock the gate behind them on the way in (so strangers may not sneak into the cave unknown and later become locked inside). If the cave is to be locked seasonally, weekly or nightly, someone must verify that there is no one inside before locking the gate.

Conversely, if a gate is to be left open, it should be either locked open or disabled. Otherwise, it is just a matter of time until someone decides to put their own lock on the cave, with or without others inside. Such a situation has occurred in the past at Ruth Cave (Huntington County).

Access Option 4. Use a permit system for cave visitation. A gate usually is required for enforcement of this option. A system for issuing permits and making the key available would also have to be devised.

Any plan which requires a permit to visit a cave will drastically cut down on visitation, even if the only requirement for a permit is to give a name and address. Spur-of-the-moment trips will not be possible, so visitors tend to be fewer and better prepared. Illegitimate users would be discouraged since they would have to identify themselves. An added benefit of the permit process is that any damage or vandalism can be traced to previous permittees, whose names are recorded. In addition, the number of permits issued could be limited to further decrease visitation, although this would rarely be necessary. The permit process could be used as an opportunity to educate visitors, either personally or through the distribution of literature along with the permit.

Of course, outlawing spur-of-the-moment trips is a burden on the public. The permitting process also requires an administrator. If permits are to be limited (which is not necessarily required, since many visitors will be discouraged), some method of fairly distributing permits must be devised. Invariably, leaders of for-profit adventure programs will apply for permits, and a policy will have to be established for such groups.

At Aitkin Cave in Mifflin County, The Nature Conservancy has been able to allow virtually unlimited visits into an important Pennsylvania bat cave simply because the permit process (which is not complicated) discourages most visitors. A permit program is also used successfully by the State of New York at Surprise Cave in Sullivan Co. Most of the caves which require a qualified leader also require a permit.

Access Option 5. Allow only visitation only with a qualified leader. A gate is usually required for enforcement of this option. A system for qualifying leaders and making the key available must also be devised.

This is, in a way, the type of management policy used by commercial caves who use guides, like the nine privately-owned commercial caves in Pennsylvania. Of course, "wild" caves and a tourist caves are very different and the analogy should not

be taken too far.

Requiring a qualified leader to accompany visitors into a cave has one additional advantage over requiring permits: visitors get direct supervision inside the cave. Of course, some caves are relatively safe and immune to human damage inherently. Qualified leaders offer little additional advantage over permits in these caves.

There are also disadvantages to using leaders. Paid leaders are impractical except where admission is to be charged. As a result, groups wishing to visit have to accommodate the schedule of the volunteer leader. Although many MAR cavers would be willing to serve as unpaid leaders, public access would certainly be much more difficult to obtain than in a permit system.

At state-owned Leigh Cave in New Jersey, a group of NSS cavers administer a management plan for the state. These cavers must present to the state a list of designated trip leaders, one of whom must accompany each trip. Inquiries about access are referred to these leaders. Some cavers are reticent to take people they do not know into the cave for fear of a lawsuit if there would be an injury. There are generally more groups wanting to visit the cave than there are leaders to take them.

At Crabtree Cave in Garrett County, Maryland, The Nature Conservancy also requires designated trip leaders. Leaders must first go on a trip into the cave during which TNC explains its safety rules and how to navigate in the cave. The National Speleological Society requires trip leaders in McFails Cave (Schoharie County, New York) to have made previous trips using two different entrances to the cave. McFails Cave can flood, and leaders must know how exit by a second route.

Access Option 6. Close the cave to all visitation, except for trips for scientific or management purposes. A gate is required for enforcement of this option. This option does not allow public access. There must be a compelling reason to deny all the public use of property entrusted to the state. While French caves containing Neanderthal cave paintings might qualify, we do not believe any caves in Pennsylvania qualify for this option.

Having a gate also requires effort in maintaining the gate. Vandalism may range from spray painting, to jamming the locks, to actual breaches of the gate. It must be expected that any gate will eventually be breached, because experience around the country has shown that some people will take a gate as a personal challenge.

At PGC-managed Schofer Cave (Berks County), vandals have jammed the lock and prevented even PGC personnel from entering the cave. At Dreibelbis Cave (Berks County), the lock has been cut off. At J-4 Cave (Centre County), the gate was breached so many times that it was eventually abandoned. At Mammoth Cave National Park, the National Park Service has learned that closed, gated caves must be monitored closely; vandals stole and did irreparable damage to world-renown mineral crystals in Floyd Collins Crystal Cave over a period of many months by digging around an NPS gate and concealing their excavation after each illicit visit.

Access Option 7. Close the cave to all visitation by physically closing the entrance. Wildlife will be harmed, scientists cannot gain any knowledge from the cave, and the public cannot enjoy the use of their resource. Obviously, this option is counterproductive and will not be considered. One unfortunate example of this option is Red Church Cave (Schuylkill Co.), the entrance of which was bulldozed shut c. 1988.

Management Plan Proposal for Schofer Cave (Berks County)

Draft copy, 4 April 1996

BACKGROUND:

Schofer Cave is located on Game Lands #182 in Berks County. Several adjacent entrances to the cave were opened in the late 19th century by a small limestone quarry in Umbrella Hill (Snyder 1992). The cave is the largest known in Berks County. A fine description and geological discussion of the cave were written by Bernard Smeltzer (1979), and the most current map accompanies his articles.

Owing to its easy access and large size, the cave has been the scene of a number of scientific studies in the past 65 years, many by members of the National Speleological Society. Ibberson (1979) used the cave to illustrate the evolution of cave survey technique.

Gaum (1952) reported upon a detailed study of the hydrology and meteorology of the cave conducted over a two-year period. The extensive study including barometric pressures and air movement, air and water temperatures, and relative humidity. Water levels were measured over time relative to precipitation, to nearby Saucony Creek, and to nearby wells.

Information on invertebrates in Schofer Cave has come from a number of sources. Dearolf (1941) included the cave in his study of Pennsylvania cave invertebrates from 1935 to 1939. He found isopods, springtails, moths, three species of beetles, and two species of flies in Schofer Cave. Barton (1995) has identified amphipods and aquatic

isopods from the cave. Holsinger (1995) has identified three different families of springtails form the cave.

Some of the first bat banding in the country was done here on 15 August 1931 and 21 May 1932 by Charles Mohr, then of the Reading Public Museum and later president of the National Speleological Society. On one evening in July 1931, Mohr mist-netted 149 bats at the cave's entrance (Reading Eagle 1931 and Mohr 1932).

Science has not been alone in its use of Schofer Cave. The cave has been a positive educational experience for countless youth and church groups from eastern Pennsylvania and surrounding states. The cave has been used by at least two area colleges as a natural classroom. MAR member clubs have used the cave to train their members in safe, responsible techniques of cave exploration.

However, by far the most common use of Schofer Cave for the past 35 years has been for recreation. In 1952, Gaum noted that the cave was "relatively [inaccessible] to visitation," and evidence in his study indicates that the cave was visited by tourists about every other week. However, by the 1960s the cave was being heavily visited. Zimmerman (1963) recorded 300 visitors between 26 August and 1 December 1962, an average of 20 per week. Although no objective numbers have been recorded since then, it is evident from many published descriptions that recreational visits to Schofer Cave have even exceeded those numbers in the intervening years. In the last 20 years, the closure of other area caves has increased usage of Schofer Cave by recreational cavers. MAR estimates that up to 150 people per week used the cave before 1994. As noted by Smeltzer (1979), Snyder (1992), and many other authors, it is the most heavily used recreational cave in Pennsylvania.

Heavy use by recreational spelunkers certainly had a negative impact on the cave. Litter became ubiquitous. The odor of beer and urine were sometimes present. Some graffiti remains visible. A number of rescues of stuck or out-of-light spelunkers have occurred (Snyder 1992), but no one has been seriously injured in the cave. One serious injury did occur outside the cave when a boy fell from the abandoned quarry face (Kehs and Kehs 1993). Recent invertebrate studies and observations (Barton 1995, Holsinger 1995, Ashbrook 1995 & 1996) indicate that they continue to be abundant inside the cave despite heavy human use for several decades. There is no evidence that heavy visitation has affected bats at Schofer Cave.

Cavers have tried to mitigate the impact of heavy visitation. Frequent clean-up trips have removed much of the litter, and the extraordinary efforts of one caver in conservation and education were recognized with a community service award (Brady 1993).

Throughout this period of heavy use, PGC took a "hands off" approach to management of the cave. In 1977, when irresponsible use of the cave got "out of hand," PGC said, "It would be foolish of us to close the cave, and we have absolutely no intentions of doing anything of the sort. . . If it came to a real bad situation, we could control it rather than close it" (Fegley 1977). In May 1994, concern for bats and invertebrates prompted PGC to change that policy (Hart and Hassinger 1994), and bat-friendly gates were installed by PGC. A two-year moratorium on non-essential entry into the cave was imposed to protect two species of invertebrates and to allow the cave "to serve as a hibernaculum for bats." Unfortunately, this policy change occurred abruptly without any public comment whatsoever. Rather than reducing caving traffic in the area, there is evidence that the traffic has simply been displaced to other area caves (Sira 1996).

Two trips into the cave since the moratorium have indicated a continuing healthy invertebrate population, but very few hibernating bats (three pipistrelles on 8 March 1995 and one pipestrelle and possibly a little brown myotis on 21 February 1996) (Ashbrook 1995 and 1996). There has been some vandalism at the gates, but they have not been breached.

RESOURCES:

Biological: The cave is home to a healthy invertebrate population, including the Allegheny Cave amphipod (Stygobromus allegheniensis), Price's Cave isopod (Caecidotea pricei), and springtails (families Entomobryidae, Onychiuridae, and Isotomidae). The entrance area is evidently good swarming habitat for bats, but there are no historical accounts of a significant hibernating bat population in Schofer Cave. The cave is currently of virtually no use to hibernating bats.

Scenic/Formations: Flowstone is common but not remarkable. Ice formations exist near the entrance in winter. Although Schofer cave is not decorated in the classic sense of most commercial caves, cave passages in and of themselves can be considered to be fine scenery.

Hydrological: The cave has permanent pools of standing water at the water table and drip pools. There is no flowing water in the cave.

Paleontological/Archaeological: None known. Since the cave had no natural entrance, archaeology needs not be considered.

Historical: None.

Educational: The cave has been used by several colleges for classes. It offers an opportunity to observe

many aspects of geology, including cave passage formation by different methods (solution under vadose and phreatic conditions, breakdown, etc.), dip and strike of the strata, jointing, secondary deposition of calcite, passage termination by different methods (silting, breakdown, sumping), and more. The cave's potential as a biological classroom is great. The cave also offers a fine opportunity to educate spelunkers and the general public about safe methods of exploration and about cave conservation. The cave has been used by the National Cave Rescue Commission to train cave rescuers. In brief, Schofer Cave is an exceptional educational cave.

Recreational: There is a long tradition of the use of Schofer Cave for recreation. The cave offers easy access, passages which can be traversed without undue effort or extraordinary equipment, and passages and rooms which are large enough to accommodate even the mildly claustrophobic. The cave is extensive enough to allow for exploration, but is small enough that it is not possible to become lost. There are few areas where even inexperienced explorers could be hurt seriously. Until its gating, the cave was very heavily used by organized cavers, youth groups, and less-responsible "spelunkers" from Pennsylvania, New Jersey, southern New York, Delaware, and eastern Maryland. Schofer Cave is an exceptional recreational cave.

Scientific: The cave was been used for a bat and invertebrate studies and meteorological and hydrological studies. It would provide a fine location for the continued study of cave invertebrates and of bat swarming behavior. The meteorological and hydrological studies are quite detailed and further study would probably not yield significantly more information.

DISCUSSION OF ACCESS AND USE ISSUES:

Schofer Cave is an educational and recreational treasure. In the Mid-Atlantic region of the United States, there is no other wild cave which can provide as fine an experience as Schofer Cave. It would be a huge mistake to deny this experience to the students and citizens of the Commonwealth and of the surrounding states. Furthermore, MAR believes the closure of Schofer Cave to all recreational caving has increased human pressure on other area caves, some of which are unprotected and undocumented bat hibernacula.

What reasons are there to limit access and use? Regarding land management and law enforcement, the recent past is a good test. Even while the cave was being heavily used, there were relatively few problems with illegal activity, parking, or public disturbances. MAR believes these issues are not be a reason to limit visitation.

Aquatic invertebrates in Schofer Cave are numerous, despite decades of heavy visitation. Although it can be argued that humans have changed the population of invertebrates within the cave, until this is studied that argument is mere supposition. The work of Dearolf (1941) may serve as a baseline with which to compare contemporary observations, but until such a study demonstrates a change due to human activity, we do not consider invertebrates a reason to restrict access. However, MAR believes the invertebrate population does warrant some restrictions on what visitors may do while in the cave; specifically, that they leave the water undisturbed (Barton 1996). In practice, this also means that the Hidden Room area of the cave should not be entered, since that area requires one to crawl through water for access.

During the two-year moratorium on access to Schofer Cave imposed by PGC from May 1994 to the present, there has been no increase in the cave's use as a bat hibernaculum. The two-year moratorium has failed to bring hibernating bats to Schofer Cave. Furthermore, there is no evidence that there were ever significant numbers of hibernating bats in this cave, either before or after it became popular. The swarming activity described below does not necessarily indicate a large hibernating population (Fenton 1969, p. 602). For these reasons, MAR believes any effort to establish Schofer Cave as a hibernaculum has little prospect for success. MAR believes that hibernating bats are not a legitimate reason to limit access to Schofer Cave.

However, there is historical evidence of bats swarming at the entrance in late spring and summer evenings. It seems reasonable to assume this type of activity also occurred throughout the night. Since PGC did no warm-weather bat counts within Schofer Cave during the moratorium, it is unknown if bats alight in the cave at these times. Although there is no documented evidence of swarming bats being disturbed by humans (Tuttle 1996), the potential for large numbers of bats to be present in the cave or outside the entrance at nighttime may warrant caution regarding use of the cave and the entrance area after dark during spring, summer, and autumn.

The cave's history of vandalism and litter has demonstrated that PGC's previous policy of unlimited access is not a viable option. MAR believes that protection of the cave from vandalism and litter is a legitimate reason to limit access to the cave. Nevertheless, the vast majority of this problem is probably due to only a small fraction of the visitors. In our opinion, nighttime visitors are more likely to be troublemakers, are more likely to consume alcohol in the cave, and are more likely to litter and vandalize the cave. Together with exposing visitors to a strong education, conservation and law enforcement message, we believe that restrictions on nighttime visitation may virtually eliminate litter and vandalism in the cave.

Hence, there are two independent reasons why access to Schofer Cave might be restricted at nighttime.

Conversely, MAR sees no compelling reason why access should be limited during the day. Therefore, we shift our discussion to how a policy of restricting access at night might be implemented.

It is impractical to expect that merely placing a sign at the cave explaining such a policy would discourage the type of conduct we seek to prevent. It is equally impractical to suggest locking the gate each evening and unlocking it each morning, especially considering that the entire cave would need to be searched each evening lest someone be trapped inside. For such a popular cave, issuing a key to visitors who obtained a permit would be cumbersome because there is no convenient place for keys to be issued from and returned to. Furthermore, issuing enough permits to satisfy public demand to visit the most popular wild cave in the region would be cumbersome not only for PGC or MAR personnel, but also for the public. Another method of enforcing a nighttime restriction is preferable.

One solution is to limit the number of permits issued or to require designated leaders (ie, MAR cavers) to accompany each trip. However, MAR believes these schemes unnecessarily limit the numbers of visitors, when it is only the time of day which needs to be limited. We believe that the cave can tolerate a large number of responsible visitors, provided that they do not visit at night. For this reason, we wish to avoid such a policy if possible.

MAR suggests that parking be prohibited along the road at night as the most practical method of enforcing nighttime restrictions on visitation. Not only would a walk of a half-mile from the closest legal parking spot discourage most visitors, but also enforcement officers would not be required to enter the cave to enforce the policy. Violators would be conspicuous. The only house near the cave has off-street parking, so that parking restrictions along the road would not pose an undue burden upon local residents. While the operators of the campground nearby might conceivably thwart a parking restriction by allowing parking on its property, it seems more likely that they would agree to cooperate once the intentions of such a policy were explained.

A similar policy has been used by the state at the High Rocks Vista at Ralph Shovtr State Park in Bucks County. A problem with nighttime use of the High Rocks Vista was virtually eliminated by restricting parking along the closest road and by stringent enforcement of the policy for several months until "the word got out." After a few parking tickets, compliance became nearly 100%. At Schofer Cave, such a policy may be even more effective, since no one is currently visiting or parking near the cave at night.

If MAR's recommendations for an information kiosk, access and use restrictions, and parking restrictions are implemented, we believe that the plan will work. However, if it becomes apparent that people are violating the rules, then MAR would support a more restrictive access policy. However, we are confident that the more liberal policy outlined below can and will be effective, and we suggest it be tried first.

MANAGEMENT RECOMMENDATION:

Before Access Is Permitted: PGC will approve plans for and MAR will construct a permanent information kiosk approximately 50 feet from the entrances. PGC will reimburse MAR for direct expenses (not labor) up to $1,000 for the construction of the kiosk. MAR and PGC will provide the following information at the kiosk: Rules for access to and use of the cave, information regarding cave conservation, information about cave fauna, safe caving equipment and techniques, emergency phone numbers, provisions of Pennsylvania's Cave Protection Act, information about the NSS's cave vandalism reward program, and information about PGC and MAR. MAR will maintain the kiosk. PGC will reimburse MAR for direct expenses (not labor) for repairs to the kiosk. MAR will complete construction of the kiosk and remove all trash from inside the cave before the Access and Use Policies outlined below take effect. PGC will attempt to have parking prohibited on the public road right-of-way within one-half mile of the cave entrances.

Access Policy: The gate will be locked open. However, except for trips specifically endorsed by PGC, no one may be inside Schofer Cave from sunset to sunrise, be within 50 feet of the entrance from sunset to sunrise, or park on PGC property within 1/2 mile of the entrances from sunset until sunrise.

Use Policy: Except for trips specifically endorsed by PGC, no one may enter the water or the "Hidden Room." Except for trips specifically endorsed by PGC, no one may disturb any bats present in the cave or near the entrance. All activities prohibited on the surface of Game Lands 182 are also prohibited in the cave. No one may litter or vandalize the cave or the gate. No one may bring alcoholic beverages into the cave or enter the cave under the influence of alcohol. No trips which are conducted for profit are permitted in the cave. No fires are permitted in the cave or within 50 feet of the entrances. Anyone entering the cave must carry the basic equipment recommended by the National Speleological Society (Rea, G. Thomas, ed. Caving Basics 3rd ed. [Huntsville, Alabama: National Speleological Society, 1992], pp. 45-6.).

MAR's ongoing duties: MAR will monitor use of the cave at least monthly and report any violations of these rules promptly to the PGC land manager. MAR will remove any litter which accumulates in the cave or within 50 feet of the entrances and will inform the PGC land manager as to the amount of trash removed. MAR will maintain a visitors' register within the cave. MAR will assist with the fieldwork for studies and inventories of cave fauna. If asked, MAR will respond to assist with any rescue or accident. MAR will do all the above without expectation of payment. PGC's ongoing duties: PGC will enforce parking restrictions. PGC will enforce the Access and Use Policies and the provisions of Pennsylvania's Cave Protection Act. PGC will facilitate an inventory of the aquatic invertebrates within the cave. PGC will monitor the cave for hibernating and swarming bats. PGC may change the provisions of this management plan at any time; however, PGC will inform MAR in writing of any changes.

THE MAR REVIEW

Highlights of Grotto Newsletters in the Mid-Appalachian Region

by Bert Ashbrook
04/09/96

Note: If your newsletter is not reviewed in this column, send a copy to:
Bert Ashbrook,
1257 Lehigh Parkway South, Allentown, PA 18103-3875.

Boone's Shower Cave (Clinton County, Penna.) is featured in the December 1995 issue of the Nittany Grotto News. The cave was discovered as part of the Grotto's CCLUM Project in Clinton, Columbia, Lycoming, Union, and Montour Counties. The discovery trip got even more exciting when an unstable rock temporarily trapped several cavers inside. The water in the cave appears to resurge 12 miles away, so there's a lot of potential. A clean-up a Spider Sink (Clinton County, Penna.) is also described in the same issue. Over five tons of trash were removed. *(EDITORS NOTE: The final tally was nearly fifteen tons removed.)* The cave in the sink has been pushed to 600 feet, and is 124 feet deep! Finally, the issue contains Jim Kennedy's map of Twin Hills Caves in Lycoming County, Penna. The two caves are 330 and 100 feet long.

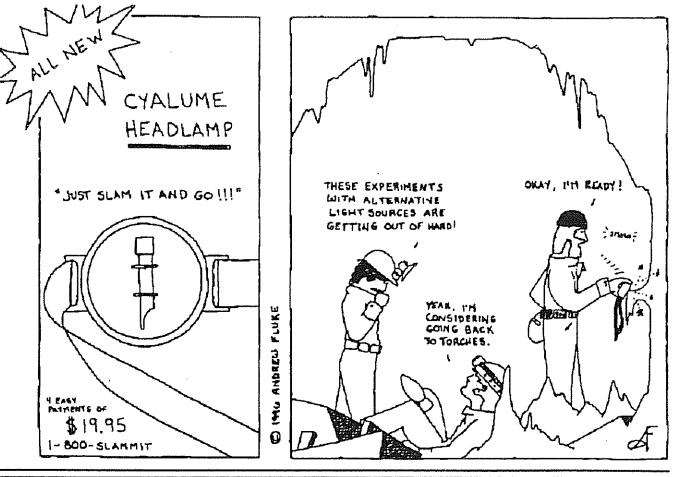
The Cave Hunter, published by the Huntingdon County Cave Hunters, contains a fine article on Tytoona Cave and Arch Springs (Blair County, Penna.) by Garrett Czmor in the December 1995 issue. Tytoona is a former commercial cave with 3,700 feet of passage and 17-foot long soda straws, the second longest in the world! The catch is that you cave to be a cave diver to see them. Garrett gives the definitive history of the cave and its exploration, including several unsuccessful attempts to connect the cave and the springs. Contact the current owner, the Western Pennsylvania Conservancy, for access. The same issue contains some data on 1995 visitors to many central Pennsylvania caves with registers. It is not surprising that the most popular was Tytoona, which also had the lowest percentage of NSS members as visitors.

A trip report in the February 1996 issue of the South Jersey Grotto News describes a visit to Carnegie and Hershey Caves (Cumberland County, Penna.). Along on the trip were a reporter and a photographer from the Philadelphia Inquirer. The article was featured in the Weekend section of the paper on 15 March and included large color photos and some responsible reporting.

Amid a lot of trip reports, the February 1996 issue of the Cumberland Valley Caver (Franklin County Grotto) had an interesting tidbit from Shawn Schaeffer and Ken Jones. It seems the two moved some rocks, found virgin cave, and connected another entrance into Weikert Pit (Franklin County, Penna.).

The Winter 1996 issue of the Greater Allentown Grotto's Pack Rat Scat features Pinnacle Cave (Berks County, Penna.). Included are Mike Kistler's description of the 240-foot long tectonic cave, Bert Ashbrook's map and geology, and Dean Snyder's history of the cave. As usual, Dean's ratio of interesting history to cave passage is very high. The Spring 1996 Pack Rat Scat has Dean Snyder's story of the last days of the Leather Man, an itinerant wanderer who lived in New York and Connecticut caves and rockshelters in the last century. Also included in that issue is Bert Ashbrook's map of Chia Pit, a new 125-foot long cave discovered by John Rosenfeld in Northampton County, Penna.

People thought the York Grotto News was out of publication, but new editor Karen Bange has proved them wrong. The April 1996 issue includes a 1990 interview with Bernie Smeltzer and Barry Hivner, two long-time Pennsylvania cavers. Smetlzer (who passed away in 1992) and Hivner both discuss their contributions to NSS Bulletin 15, Caves of Pennsylvania, which was published in 1953. The August 1995 issue, distributed along with the latest reincarnation of the YGN, contains a play list and lyrics of ten cave-related, danceable tunes from the 1950's through the 1990's compiled by Dave Brison.



M.A.R. BULLETINS

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Make checks payable to MAR:
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All checks must be payable in U.S. dollars on U.S. bank or U.S. money order

Other Karst Publications

One of the finest karst publications that I have ever run into is "Geomorphy and Hydrology of Karst Terrains" by Will White. It covers a wide range of topics from karst hydrology to the formation and origin of caves.

If you really want to understand what is going on in your cave bearing carbonates, I cannot think of a better place to start learning. It is a scientific text book written in a well organized easy to follow format, most of the hard core science is written in a way that most high school graduates could follow.

The information in this book can arm the cave seeker with ways to differentiate between conduit and diffuse flow springs, predict passage character, and is incredibly easy to understand.

-=Foom

MAR BREAKDOWN

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