

Let's Bet the Ranch and Learn the Game

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**A condensed version of this
paper was presented as the
Superintendent's Corner
in the Spring 1989 issue of
*Park Science***

Winston Churchill once said, 'Play for more than you can afford to lose and you will learn the game.' He wasn't talking about park management at the time, but he certainly could have been.

We in the National Park Service have learned much about protecting and preserving our Nation's natural and cultural heritage since being entrusted with it almost 74 years ago. It seems that too often, however, it's been 'learn as you go.' I don't mean that as an indictment, as some recent authors suggest, but we cannot 'afford to lose' those precious national resources in our trust as we continue to learn the rules of the 'game.' I am concerned as a park manager, however, that it appears we sometimes focus on trying to fix blame rather than learn from past mistakes. Or else, it seems once we learn from experience, instead of applying our newfound knowledge, we try to change the rules. It sometimes makes me wonder.....do we even know what 'the rules' are?

Let me offer an example by asking a question: what do Yellowstone, Everglades, and Mammoth Cave have in common? Like all national parks, they are artificially found within ecosystems that surround them, but what resource is it on which all three are absolutely dependent? Give yourself a gold star if you said 'water.' And give yourself bonus points if you said 'ground water.'

The relationship is pretty apparent at Everglades. Its ecological health is absolutely dependent on the aquifer that saturates the limestone sponge so that water flows on **top** of the

ground. That sheet of water is what creates that 'river of grass' we call the Everglades. The understanding of the relationship of water and Mammoth Cave was longer in coming, but no less important. The formation of the 330-plus miles of the cave system was through the action of **underground** water — literally subsurface rivers—that still flow and slowly create new cave as well as provide a nutrient source for cave life. And Yellowstone? Well, the groundwater there is a lot hotter and the 'caves'—that underground 'plumbing' that drives the steam engine of geysers—are a lot smaller, but the relationship is similar.

But the resource issues that drive the superintendents of all three of those parks are essentially the same: 'competition' by others for the use of water external to park boundaries. It may be tomato growers and increasing urban encroachment outside of Everglades, or energy-hungry developers looking at the geothermal resource at Yellowstone, or at Mammoth Cave the proponents of industrial expansion wanting to use the groundwater system as a cheap and 'efficient' means of effluent disposal. That groundwater becomes the Echo River at Mammoth Cave, is loaded with pesticides and fertilizers if it even gets to the Everglades, or is siphoned off for other uses at Yellowstone. But the result—and potential disaster—for each park is the same.

At Mammoth Cave we find ourselves in probably no different straits than most national parks of 50,000-plus acres. We have no complete baseline inventory. Our exotic vegetation

program is hampered by the reforestation practices of the CCCs in the 1930s which stressed timber cover rather than native species. We have endangered species, some found only here and nowhere else, that probably are inadequately protected. We have visitors who seem to come all at once and who we know have 'an effect' on the natural and cultural resource (but we're not always sure what or how much). We're a Class 1 airshed which seems meaningless while we monitor ever-thickening 'haze.' In short, we—like **you**—have more problems than answers.

But we have made one major discovery: the quantity and quality of our groundwater is absolutely integral to the ecological health of the park. And we came to that conclusion through research. We found that we have subsurface drainage basins that bear little resemblance to surface basins. We found the old saying that the 'solution to pollution is *dilution*' is far from true, for when many small sources find their way to underground watercourses, the opposite effect occurs. Eventually the sewage is carried away by water, which may initially disperse, but then coalesces as various sources combine underground in bigger and bigger streams until the pollutants become concentrated in the large underground rivers typical of karst terrain. And that fact seems pretty simple, until you stop to consider that the whole theory behind 'percolation tests' that we do for septic tanks and drain fields, is that those pollutants will **disperse**. But the 'rules' do not always equally apply.....

Good, solid research gave us that critical information. As a result, Mammoth Cave has become involved in an unprecedented partnership with three other communities to build and operate a regional sewage treatment system. Unprecedented because the Service is part of an "interlocal agreement," has contributed a major portion of the funding, and sits on the board of directors to build, operate, and manage a *regional* system. Once complete, it will go a long way toward protecting the underground water on which the park and surrounding communities are all dependent. The partnership has led to working with the local area development district; active involvement in the location of solid waste disposal sites in surrounding counties; cooperation with agricultural programs to study the effects of fertilizer and chemical applications on water quality; and an enhanced awareness on the part of staff that the park is not an island.

Further, it will allow sustainable economic development to occur, but development that is compatible with and cognizant of those park values that are water dependent. It's the *Man and the Biosphere Program* in fact, not theory. Sure, it will allow more water-slides, too! We already have one of those, but more importantly, we can help insure that the development that does occur will not be that which will pollute the groundwater and pose a threat to the subsurface values for which this park was established.

We are not looking beyond park boundaries because a law requires us to, or because of

some sort of 'good neighbor' policy from Washington, but because good, solid research gave us the right information to make proper decisions in managing park resources.

I don't believe we're being pollyanna-ish. There is already one nearby commercial cave that has been closed since the 1940s due to pollution from raw sewage and improper waste disposal. The odor is especially prevalent anywhere near the cave entrance on a hot August day....and the cave is located on a downtown street in a community of over 2000 people. They are believers. And in a fifty square mile area of northern Arkansas, hundreds of wells and springs have been destroyed by the disposal of sewage effluent and municipal wastes including those from a poultry processing plant in the small community of Green Forest. The multi-million-dollar costs to rebuild a basic water system we all take for granted are making them believers too.

We know the addition of the Sewer infrastructure may allow development to occur to which we may object in the future. But in terms of basic resource **preservation**, the tradeoff of the disastrous against the potential for increased, but environmentally compatible development, is worth our current efforts. Besides, we now have a 'seat at the table' of a basic resource regulating agency of the local power structure that helps allocate resource use. Whatever that future development may be, we will at least have input. We're learning the rules.

How did this all come about? Through good management, good

research, or good luck? The basis is good research. Research done by the park's hydrogeologist, Jim Quinlan. 'Applied' research in the sense that Dr. Quinlan had the foresight to realize implications long before park management realized the potential ramifications. But "basic" in the sense that it began long before the problem became apparent. Basic research that was done in spite of and, even Dr. Quinlan will occasionally admit, because of the broad view of park management. Basic research that doesn't even have a basic charge in our Service's enabling legislation. Basic research that *had* to occur outside park boundaries—"had to" because that is (like Everglades, Yellowstone, and probably *your* park too) where the *need* was to answer the research question. Basic research for which we only recently have found the application....but that's not the point. It seems most research we do is begun after the problem has become acute, and therefore visible and viable. But that didn't happen in this instance. What occurred is how research in the Service *should* be: the potential is recognized; dollars are budgeted; top minds are put to work; results are achieved.

But there's more: management decisions must be made. You see, management at the park, region and Washington levels had to see that research only pointed out the problem, the potential for disaster, and potential solutions. What also had to happen is what Everglades' Assistant Superintendent Rob Arnberger calls "community resource management." Management also had to

work with three surrounding communities, the state, and other federal agencies. But even here at Mammoth Cave what happened was serendipitous. It wasn't until the local communities realized the potential for economic loss the national park represents—on which they are dependent—that it all came together. As much as I'd like to say it was as a result of good research and good management, that is not the case. But that's another *rule*.

Against all odds the park became partners with those communities to work together (for many different reasons, some economic and some environmental) to solve what everyone has come to realize is a common problem. It didn't come cheap. So far \$2 million has been expended in our share of a regional system whose cost projections now exceed \$13 million, and construction is not even halfway complete. We can bet the ante will increase in this game.

The point is that research is not the **end**...it's the means. We can't just say 'spend X percent of the budget on research' and expect park management problems to disappear. Oh, sure, we'll solve problems as yet unknown as we were able to show here at Mammoth Cave. And, in a perfect world, I believe that is how we should manage parks. Any smart industry will put a percentage of its budget into "research and development." That's known as an *investment* in the *future*. But what about our existing problems, the ones we already have more of than answers? Given our current budgetary constraints, 5, 10 or 15 percent of our budget for research is not likely to occur

when a similar case could be stated for all our other programs.

Those are the current rules. But we can solve a myriad of existing resource problems if we just play by those rules. But please don't misunderstand: at the same time there's nothing that says we can't work to change the rules. And the rule change needed right now is one giving the National Park Service a basic research mandate. Because we can always point to the obvious—the water at Everglades, or the water at Old Faithful.... Or, we can always appeal to that which *has* appeal—the wolf, bear, or bison.. But in doing so, we will always insure the survival of the 'mega-charismatic' to the detriment of whatever it is that isn't.

We need a basic research mandate. But when we go after it, let's go for the research dollar needs as well. That's where we can use the mega-charismatic to justify the need! The fact is, we don't have enough money to study the problems we have now. My fear is that we may get what we want, without the wherewithal to accomplish what we need. Otherwise, a research mandate will be just one more charge to our growing list of responsibilities and we'll end up doing even *more* with less.

As a superintendent perhaps its easier for me to see the backlog in maintenance, the Interpretive Challenge's charge to 'double the budget,' the crumbling fabric of historic resources and lost artifacts, and the plea for just 'X' percent of the budget. But the latter—the '(5, 10, or 15) percent'—could apply equally to any of the former. What that really tells me is that the

Service, and the resources in its charge, are all in the same boat....and its leaking.

Each of us, regardless of specialty, whether in research or maintenance, interpretation or protection, could use 'just 15 percent.' But we won't get it on principle. All our resources need more attention, and none are getting the attention they deserve. But if we can just *learn the rules*....and play the game—with new rules, or old, we can all win, and be winners.

What's the difference between Everglades, Yellowstone and Mammoth Cave? The water of the first two is *seen*. The underground water of Mammoth Cave is out of sight....and out of mind. Were it not for basic research, park managers' finally realizing the potential for disaster, the support of park neighbors, money to contribute to the solution, and a lot of luck, we might have a whole different story to tell. But is there that much difference between us and you? Isn't our experience just an example of what could happen in similar situations Servicewide?

It seems to me we could follow a similar scenario on a national level to identify park problems, point out the potential, garner support, and change the rules. After all, we have a leaky boat, we're loaded to the gunwales, and the wind's picking up..... We seem to be arguing over whose leak gets fixed first. Maybe we need a bigger boat.

Let's appeal for that which has appeal. 'Mega-charismatic..' hey, what's the most charismatic federal agency *you* know?

