

Monitoring Dance Fundamentals: No Partner, Can't Dance

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Biographical Sketch:

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Abstract:

Monitoring for the Millennium is the latest dance craze. This new dance has some new rules and an emphasis on uniform steps. In addition, monitors are encouraged to find partners to enhance their dance experience. In the future, individual monitors may have trouble shaking it on the dance floor because they are out of step.

What are the tangible benefits of partnering and institutional collaboration for water quality monitoring? What examples exist that demonstrate these benefits, and offer us ways to forge constructive relationships to address our monitoring needs? In this paper, I will explore these questions with analogies from unusual places.

One small example of partnering exists between the National Park Service and the U.S. Geological Survey. Initiated by the Clean Water Action Plan, this partnership strives to develop new steps (i.e. ways) to address on-the-ground problems, and break down barriers between agencies, scientists, and the public. The opening step is the exchange of ideas, or communication, between scientists and park resource managers. The next step involves collaboration regarding monitoring design, expectations, and products. Next, monitoring plans are implemented and information collected according to choreographed scripts for each project. The last step entails the production of tailored monitoring products, such as reports, databases, models, and other media. Talk is good, but action is better! This partnership is dedicated to producing results. The results so far have been encouraging; high quality information that is targeted to agency needs with cost savings to both partners.

Integrative science is another new dance step being whispered in bureaucratic circles, and it's obvious to most that one can't integrate with out a dance partner. Since to integrate means to unite or join together, this new dance is designed to be a rather close dance. I wouldn't want to call it dirty dancing, but I guess there are some similarities between the two. Integrative science involves compromises of personal interests and self expression to achieve a more complete artistic (or scientific) product. In addition, it may be necessary to hire a disk jockey (or broker) to facilitate integrative science on the dance floor. An opportunist may be able to make great progress in this area, but we may have to wait and see how this dance unfolds.

Prologue: Why Monitor Dancing?

How do I begin to describe monitoring dance fundamentals? Why did I choose this analogy in the first place? This is not a technical paper, but is an attempt to demonstrate how people working with people make progress in science like in other endeavors in life. Therefore, dancing is employed to capture the monitoring audience and illustrate the advantage of dance partnering. I have always wondered about those who dance by themselves because they can't find a partner. Maybe they're ok with solo dancing, maybe not. Maybe monitors are ok with solo monitoring also. Solo monitoring is reported to be beneficial in reducing stress, accountability, and hassles dealing with people. However, this does not appear to be an efficient use of brain power and dollars, nor does it sound very cordial. Monitoring is like dancing in other ways as well. Monitor dancing with or without partners involves multiple steps in design, implementation, and interpretation of results. Monitor dancing even has some basic "floor rules". Monitoring for the sake of monitoring is taboo in most contemporary circles. Also, for clarification here, monitor dancing in the context of this discussion does not involve any form of sexual partnering. In this paper, I will explore the subject of monitoring dance fundamentals, or monitoring dance 101 for those with college experience, and will present a step-by-step example of a tricky monitoring dance I helped to choreograph between the National Park Service (NPS) and the U.S. Geological Survey (USGS). To top it all off, I'll make the connection between monitor dancing and integrated science dogma, even if one does not exist yet.

Step I: Hypothetical Monitoring Dance Misstep

The NPS decides to inventory and monitor water quality in national parks by creating a national program. Then, NPS tries to figure out how to acquire funds and internal expertise to get it done. Next, NPS determines whether it is necessary to develop "special" NPS techniques to measure these park resources. Unfortunately, compatibility with existing scientific methods is not considered a high priority, and knowledge of what other people are doing is not on their radar screen. However, NPS proceeds to develop and implement the national program in a vacuum. Somehow NPS is able to acquire start-up funding from Congress for the program, possibly due to a "white hat" image. During the first few years of the program, NPS cruises along oblivious to current events happening in the world (e.g., Gulf War, Mad Cow disease, Pfiesteria, White House scandal, etc.). Eventually, NPS has to respond to a request from a state regulatory agency to provide proof that its resources are being degraded. The NPS responds by saying that NPS monitoring studies show serious resource degradation as evidenced by a 3.52 on its "naturalness index" in Pleasure Ground National Park. The state asks NPS what a value of 3.52 means and further inquires whether other agencies or entities concur with their results. The NPS replies, "What other agencies or entities, and what are they doing in or near my park?" Needless to say, this hypothetical first dance doesn't go well for NPS. A more rational alternative to this dilemma is presented in the next dance.

Step II: National Park Service – U.S. Geological Survey Monitoring Dance

The NPS-USGS monitoring dance began as a series of pilot moves or shuffles. Like in many dances, the shuffles materialized out of circumstance where opportunities presented themselves. The NPS had been thinking about ways to address park needs for water quality information for some time. During the process, NPS came to the realization that they could not acquire or develop the expertise internally to sufficiently accommodate park needs. Why reinvent the wheel of water quality monitoring expertise? Why not find a partner to provide this science expertise to NPS? What about asking their sister science agency USGS to help parks meet these monitoring needs? Isn't USGS currently in the middle of implementing the National Water Quality Monitoring (NAWQA) Program? What if NPS asks them to do a little monitoring beyond the scope of the NAWQA program in national parks? What incentives could NPS use to convince USGS to partner with them? Maybe NPS could provide their scientists with challenging topics to study and interesting study sites, and negotiate cost-share arrangements to fund the studies? One thing lead to another, and before you know it, a fledgling NPS-NAWQA dance took shape. Once NPS and NAWQA partners got to know one another a little better and gained sponsorship from the Clean Water Action Plan, the dance was expanded to ballrooms outside of designated NAWQA study basins. Amazingly, a new dance craze was born, "Monitoring for the Millennium with Gage and Ranger".

The goal of the NPS-USGS monitoring dance is to develop necessary information on the status and trends of park water quality to enable NPS to address its most critical water quality protection and management responsibilities. Timing, planning, and communication were crucial to the rise and success of the monitoring dance. The NPS and USGS drafted an interagency agreement and choreographed monitoring dance steps for each project prior to the approval of funding support. Relationships were established among participants that transcended established lines of communication. Discussions stimulated ideas and ideas formed questions. Questions demanded answers and problems required solutions. From the abyss, new dance steps formed from the seeds of collaboration. When Congress approved funding for the Clean Water Action Plan in 1999, the new dance was ready for the big time. During fiscal year 1999, approximately 2.5 million dollars was spent on 36 dance projects in 32 national parks.

One of the more challenging aspects of this monitoring dance is how it blends together administrative procedures of both agencies. Although the dance began with a script, the process is evolving in response to each agency's needs. Another neat aspect of the partnership is how it contributes to accountability. The NPS helps keep USGS relevant to actual management needs and works to insure that products meet those needs, while USGS provides scientific accountability and credibility that would be difficult for NPS to otherwise achieve. In this monitoring dance, cooperation with your partner is required for graduation. Therefore, no partner, can't dance! The narrative below demonstrates the complicated steps of this new dance so far. New steps are continually being developed for survival and artistic impression.

Basically, the NPS-USGS monitoring dance begins each year with a funding announcement titled the NPS Unified Program Call. This is because the language in the appropriation from Congress to USGS specifies that they coordinate with NPS to initiate new studies in national parks which address pertinent park needs. Therefore, the NPS program call mechanism is used to focus new projects toward water quality needs identified in park resource management plans. Soon after NPS distributes the program call to parks and Regional Offices, USGS distributes a national memorandum to all USGS District Offices. The USGS memorandum describes the process all Districts must use to participate in the dance and instructs them to coordinate with individual parks on each project proposal submitted. The USGS memorandum also contains the NPS-USGS partnership chapter of the NPS program call as an attachment. Both sets of guidance inform parks and USGS Districts of pertinent national due dates, and compel them to pay attention to NPS Regional and Cluster due dates as well. You didn't think this would be simple did you? The role of NPS Regions and Clusters is to screen project proposals prior to the interagency work group ranking procedure. The interagency work group ranking procedure is kind of like American Bandstand. However, the interagency work group uses the NPS process for prioritization and selection of project proposals. The process entails ranking proposals using a set of selection criteria which are listed in the program call. The only difference between the partnership process and other NPS programs is the addition of a "scientific merit" criterion. The interagency work group panel ranks the project proposals and selects projects for funding. Prior to the work group meeting, NPS consolidates the project proposals submitted by each NPS Region into a notebook. A list of project proposals and individual ranking sheets are also produced in digital format for each proposal. During the meeting, project rankings and comments from work group members are input into computer files, and summary tables are produced. Projects are selected for funding based on their ranking and the program funding available.

Following the project ranking and selection, much of the burden of implementing and tracking the projects falls with USGS. The USGS requires District scientists to follow specific procedures internal to their agency regarding proposal development and review, budgets, and project implementation. Parks do not receive project funds from the partnership, but they are encouraged to participate with USGS in the development of project study plans and the implementation of the projects. The USGS Districts are instructed to accept feedback from parks in the development of the study plans, and they continue to coordinate with parks during the life of the projects. Since parks receive the products from the projects, they influence USGS decisions in this area. The NPS Water Resources Division administers the partnership program on the NPS side. The USGS Headquarters in Reston, Virginia administers the program on the USGS side. The role of the national offices is to develop and maintain the partnership program, facilitate communication and coordination among parks and USGS District Offices at the field level, assure that program products (e.g., data, professional reports, etc.) are received in a timely manner, and assess whether information gained from the program meets local, regional, and national objectives. However, the dance is primarily a "bottoms-up" process, whereby steps are developed by field personnel at the local level.

Currently, NPS is having discussions with USGS regarding consolidating information and data from the partnership program. It is important to NPS that all data from the program be stored in the Environmental Protection Agency's STORET database. In addition, some thought is being given to applying a portion of the program to national or regional projects in the future. Sort of like big "line dances". However, new modifications of the NPS-USGS monitor dance may require expansion of the partnership program. Lastly, there is talk about sponsoring periodic water quality partnership conferences to acquaint partners with one another and introduce new opportunities for partnering. Sort of like "monitor parties". However, no leisure activities will be encouraged at these gatherings.

Step III: Monitoring Dance and Integrated Science Two-step

Integration among sciences presents a new challenge for dance partnering. Picture a fish in a stream or a bird in a tree and you open the door to a multitude of possibilities. What about an entire "natural ecosystem"? Let me see you track these dance steps. Those in the know define this dance as a continuum of chaos moving from simple, mundane disciplinary steps (like the water quality monitoring dance above), to multidisciplinary and ultimately interdisciplinary moves of pure brilliance on the floor. The problem is that nobody knows how to do it correctly. Those same knowledgeable folks go on to say the dance offers potential opportunities to exploit and capitalize, and go where no one has gone before. I've heard this before, but it was in reference to travel beyond our galaxy. Integrated science dancing is intended to achieve a better return by synthesizing the perspectives of individual disciplines while expending less dance energy. Therefore, this uniting of disciplines and partners is designed to be a rather close dance. However, since integrated science dancing may involve compromises of personal interests and self expression to achieve a more artistic (or scientific) product, it may be necessary to hire a broker or disk jockey to facilitate these interdisciplinary moves on the dance floor. Like in other endeavors, this dance may require "baby steps" to flush out these combination moves to avoid falling on one's can. Opportunists may be able to make great progress in guiding integrated science dance partners, but the dance has not yet been performed in front of national audiences on the larger dance floors. The USGS NAWQA program has taken a stab at it in the aquatic arena with some success, but few have ventured beyond their own area of expertise.

Finale: What Have We Learned and Where Do We Go Now?

The above phrase sounds like the words of a popular dance song, possibly sung by an Orlando teen-idol group. So, what have we learned in this discussion? We have learned that without partners in water quality monitoring, you'll never score a ten with monitoring dance judges, and there may come a day when solo monitors are banned from the dance floor altogether. This result may occur not because of monitoring prejudice or discrimination, but out of necessity because of the scarcity of resources and the interrelationships among natural ecosystem studies. Without collaboration, monitors will be out of step and will isolate themselves from other monitors. Isolation inhibits sharing of monitoring information and may result in duplication of efforts, gaps in information, and ignorance of emerging technologies. Relationships created in monitoring partnerships often add insight and perspective to one's problems and issues. Without this review and analysis from others, monitors may collect data and not know why or if it is important. Even if it is important to your cause, a reluctance to collaborate may reduce opportunities to gain assistance and support from others. Hopefully, we have learned, or are learning, that it is a good idea to know more about monitor dancing before we perform monitoring.

Where do we go now? Well, like they say in the "real world", let's assess our current thinking on the subject, evaluate our options, and get back out there! Monitoring is a tool that we use to measure something over time. The reasons for measuring things are because we want to know the status of these things, whether they change over time, and whether people and the environment have an influence on these changes. Ultimately, monitoring may lead to management actions, and then monitoring is used to evaluate the actions that were taken. You can see how this activity can lead to perpetual motion monitoring. Our challenge is to rein in the monitoring machine by making sure that everyone knows what we are doing, and at the same time answer the questions of the day. Monitor dancing is a way to accomplish this goal and have a good time along the way. So, grab your monitoring partner(s), and I hope to see you on the dance floor. The NPS-USGS monitoring dance, currently performing to sold-out crowds in its second year, is receiving favorable attention in federal circles. The results so far have been encouraging; high quality information that is targeted to agency needs with cost savings to both partners.