HOW TO MAKE RESEARCH AND RESEARCHERS WORK MORE EFFECTIVELY FOR YOU[1]

by John F. Dwyer

Annotation. Suggests that managers maintain a dialogue with researchers to make certain that researchers are aware of their information needs. Recommends ways to initiate and improve that dialogue, as well as to conduct cooperative research. Gives examples of successful manager-researcher cooperation.

Résumé. L'auteur suggère que les gestionnaires devraient maintenir un dialogue avec les chercheurs afin de s'assurer que les chercheurs sont au courant de leurs besoins d'information. Il recommande des façons d'initier et d'améliorer le dialogue et de réaliser des recherches coopératives. Il donne aussi des exemples positifs de recherches coopératives entre gestionnaires et chercheurs.

In this paper I suggest ways to make more effective use of the research resources available to you. This is important because without a sustained flow of research information for responding to tomorrow's challenges, urban forest management will not be as effective as it can be in enhancing the quality of urban life.

The Need for a Manager - Researcher Dialogue. At the last National Urban Forestry Conference, Don Willeke suggested that each of us "take a politician to lunch" to build the dialogue necessary for providing much-needed political support for urban forestry. Today I suggest that you "take a researcher to lunch" to build the dialogue necessary for providing much-needed technical support for urban forestry. That technical support will provide critical information to guide urban forest management decisions in the years ahead. A continuing dialogue that involves candid give-and-take discussions between managers and researchers will greatly improve the efforts of each group to enhance the urban forest and the benefits it provides. To be effective, the manager-researcher dialogue must be timely and high quality, but it need not be highly formal or time consuming.

I have been on both sides of the dialogue between managers and researchers over the past 22 years. In addition to helping get the job done, such exchanges are personally and professionally stimulating to both groups. In my present position as Project Leader for Urban Forest Recreation Research, I spend much of my time working with managers and researchers to solve problems. Many of my most enjoyable and educational experiences come from working with managers.

It takes special efforts by both managers and researchers to make the dialogue work; but because this audience is predominately managers, I will direct my comments to that side of the dialogue. Please do not interpret this to mean that I feel that researchers cannot improve their efforts to enhance the dialogue with managers. Quite frankly I have much to suggest to them on this matter. To help managers engage in a more effective dialogue with researchers, I will direct my comments to three major areas: getting started, building the dialogue, and making things happen. The last section includes several examples of manager-researchers cooperation.

Getting started. Managers can take the initiative in getting the manager-researcher dialogue started, perhaps with the aid of a number of "facilitators". You should take a broad view of information needs and ways of meeting them. Consider the full range of research that may be useful for solving urban forest management problems. Although most researchers are likely to be very receptive to the effort, be sure to select the appropriate time and place to contact them, find out what researchers are doing, and make effective use of meetings and other group activities. Above all, approach the dialogue with realistic expectations.

Managers Can Take the Initiative. Do not hesitate to contact researchers or follow-up on their contacts with you. I predict you will receive a warm reception. Most effective researchers are

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vitally interested in identifying critical management problems where research can be of help, and seeing research results used to solve those problems. They generally recognize you as the key to accomplishing these important objectives. The perception of researchers as "ivory tower dreamers who want to be left alone" is, in my experience, largely false. Most of the researchers with whom I work are actively involved with managers, seem to thrive on that association, and want more of it. I also think that many of you would be surprised if you knew how important the successful application of research results is in the reward system for researchers (i.e., salary, promotions, funds for research). I say this from firsthand experience working for universities and public agencies. My own agency has recently initiated steps to formalize the "user input" into the system for evaluating research scientists. Some researchers, of course, do not want to work with managers. This attitude is understandable for those who work in "basic research" where their clients are primarily other researchers. Basic research usually focuses on fundamental scientific knowledge and scientific theories that do not have immediate management applications. Still other researchers just prefer to work without the direct involvement of managers. However, the above groups are in a minority.

I have noted some reluctance among managers when it comes to approaching researchers, many of who are in academic positions. Perhaps some of that reluctance comes from our previous roles as students where we approached our professors with awe. We need to overcome that perspective and begin to view the researcher not only as someone who can help us, but also as someone who needs our help as well.

Many individuals can help initiate and facilitate manager-researcher dialogue. They include employees of the Cooperative Extension Service and State and Private Urban Forestry, plus Technology Transfer Specialists, State Foresters, State Urban Forestry Coordinators, and Consultants. These individuals usually have excellent connections in the research community and can be of a great deal of help. But I urge you not to rely entirely on these overworked people to handle your communication with researchers. Involve them when possible and update them on your efforts.

Keep a Broad Focus. Be certain to consider the wide range of research activity that may be helpful in solving your problems. Urban forestry encompasses a wide range of problems that require information from the physical, biological, managerial, and social sciences. Too many of us narrowly view research as something with a biological orientation that takes place in a lab full of test tubes or a field test planting of trees. Research carried out in such settings is critical to urban forestry, but so is research on how to more effectively carry out forestry operations, what benefits urban forests provide, and how the public perceives and what it prefers for alternative urban forest environments and forestry programs. We cannot afford "trial and error management" with questions concerning these areas any more than we can afford it with questions concerning the selection of trees or tree care practices. It seems to me that managers are at least as likely to get into trouble from not understanding public preferences, or being less efficient than they might be, as for making technical errors concerning tree care. Look to the entire research community for answers. Very few researchers devote all of their effort to urban forestry. Researchers generally focus on problem areas of science that apply to urban and ex-urban situations. As a forester, I continue to feel a deep sense of regret that we do not make more use of the broad spectrum of forestry research in solving urban forestry problems (Dwyer, 1985).

The Appropriate Time and Circumstances. While I predict that most good researchers wil be anxious to work with you, it is critical that you select an appropriate time and place for a contact. Like you, most researchers are very busy and at times totally consumed by their research, teaching, and related assignments. It may take some time for your schedules to mesh. Be prepared to take advantage of opportunities that present themselves. Professional meetings are sometimes good for an initial contact because the usual daily disruptions are absent. Poster sessions that are increasingly popular at professional meetings provide an excellent vehicle for initial dialogue. Although I think that a face-to-face

dialogue is particularly effective, correspondence may provide a useful beginning and will always supplement meetings. One way of initiating a dialogue with researchers is to write a candid letter commenting on the usefulness of a publication to your management program. This kind of feedback is scarce, and I assure you that it is appreciated. Do not be afraid to give criticism. Researchers routinely criticize the work of other researchers, and input will be a welcomed and highly valued addition to that process.

Find Out What Researchers Are Doing. Do not just look at researchers' publications and assume that they tell all about what the researchers are currently doing. They may have started work in a new area since the publication of their most recent paper. In addition, much of what most researchers have learned will never appear in a publication. But be certain that you keep up with the published literature. I cannot see how anyone working with urban trees and forests can operate without carefully reading each issue of the *Journal of Arboriculture* and other professional Journals. Such articles can be your best guide to the researchers that will be most useful to you.

Group Activities Can be Especially Effective. So far I've only dealt with what you can do as an individual. Everything must start with such action. However, group actions can be especially effective here. It has been my experience that the participation of researchers at meetings of traditionally management-oriented groups can enhance those meetings and provide good opportunities for research-management dialogue. Researchers are usually very receptive to inivitations to those meetings, and important dialogues can develop if opportunities are provided for them. I think that in many instance we provide too much structure and too little time at our meetings to permit good dialogue. These gatherings also present the opportunity for several managers and researchers to get together. Many problems are best approached with a team of several managers and researchers. Researchers are particularly interested in problems that concern a number of managers. When necessary, paying the travel or registration costs of researchers to such meetings can be a good investment.

Have Realistic Expectations. Have realistic expectations and do not expect a researcher to "do research" on your problem; but rather to provide useful information. That information may come from studies by others or by the individual researcher. It may also come from something that was "picked up" from another manager. Researchers may also be able to refer you to other managers or researchers who have solutions to your present problems. Researchers often travel more widely than managers (particularly outside the U.S.) and often read widely, both of which increase their access to possible solutions. I also think that many of us have the "mind set" that for research to be useful it must be done especially for us, using our forests or those nearby. However, often the needed information was developed by other scientists in other areas. We then must decide on its relevance to the problem.

Do not be surprised or offended when a researcher refers you to others Specialization is the "name of the game" in research, and I am suspicious of "general practitioners". I assure you that it will be counter-productive to try to get researchers to give advice or do work in areas where they do not have expertise. In addition, researchers generally have a good system of contacts in their field and organization. Use those contacts fully as they may be the most valuable resource that the researcher has. As an employee of the Research branch of the USDA Forest Service, I am often able to refer managers to other researchers throughout the U.S. Often it seems like making such referrals is my most valuable function. While on the faculty of the University of Illinois, I was sometimes able to help match people up with scientists throughout the university and beyond. The expertise that is only a phone call away is absolutely astounding. The key is finding someone who will help you tap into it.

Building the Dialogue

Developing an effective dialogue with researchers takes time. So does conducting a research project, so focus the dialogue on future needs. Candidly discuss your problems and recognize the relative strengths of managers and researchers when it comes to problem solving. Above all, have realistic expectations for what can happen.

Building An Effective Dialogue Takes Time. It

usually takes an extended period of time to develop an effective dialogue with researchers. My own experience with urban forest recreation resource managers in Chicago is that you measure progress over the years—not months or days. Do not be discouraged by initial difficulties. Some of my best dialogues with managers were the most difficult to get established. In the early years of my urban forestry research effort, I nearly gave up on some managers who are now the most helpful to me; and I suspect that they came close to giving up on me as well. Developing working relationships should never be rushed. The possible payoffs are large enough to justify continuing efforts. There will be "breakdowns" in all dialogues and working relationships, and we must constantly work to repair and strengthen them. At the same time, we should recognize that sometimes it is just not possible to establish meaningful communication between individuals or groups and we will fail. But those failures should not deter us from looking for opportunities for a "good match-up".

Look To The Future And Do Not Expect A Miracle. Have realistic expectations about the outcome of the dialogue and do not expect an immediate miracle or even a long-term one. Do not expect immediate results or for research to begin the next day. It takes time, dollars, expertise, and cooperation to get research underway. But you might be able to influence the course of future research by bringing critical information needs to the attention of researchers. But do expect steady progress in the amount of information that you have to guide your management efforts, and perhaps a few significant breakthroughs. With a viable dialogue you will have the opportunity to make steady improvements in your program and avoid major problems and abrupt changes. You should expect to learn a great deal about urban forestry and also impart significant knowledge to others. By working with researchers, you will enhance their ability to help others. Ultimately we all will gain.

Researchers must be future-oriented because it takes time to generate the information necessary for developing solutions. A manager-researcher dialogue should focus on the information needed to solve tomorrow's problems. Undertaking a research project is not usually the answer to a problem that must be solved immediately. A solution three years from now to a present problem may be useless. Consequently a researcher must work on tomorrow's problems, not today's. But a researcher may already have information available to solve a current problem. This is, of course, most likely if you or others have previously helped the researcher identify that problem.

While not downplaying the importance or the information available from researchers, we need to recognize that information only helps with decisions. Research often helps identify the alternatives available to the decision maker and clarifies their expected outcomes. It may make some decisions easier, but management will always require tough decisions, regardless of the information that is available.

Discuss Your Problems Candidly. Discuss your current and expected problems with researchers, do not just list or present them. The perspective of an individual not tied to your day-to-day operations may be very useful in talking through your problems and precisely defining them and the associated information needs. Be willing to discuss, answer questions about, and perhaps redefine your problems. There is a common saying in research that "a problem well defined is half solved", and I think that it applies equally well to resource management. A "problem analysis" is a part of the research process. Be candid, researchers are not interested in judging you or telling others about you problems. The information that you provide to the researcher, like you physician and mechanic, will largely determine their effectiveness in helping you.

Recognize Strengths of Managers and Researchers. In developing a dialogue and ultimately a working relationship, managers and researchers must recognize each other's strengths. It is not appropriate for managers to tell researchers "what to study and how to study it" any more than it is for researchers to tell managers how to make and carry out decisions. But there are key areas where each can help the other depending, in part, on the problem and their individual strengths. Sometimes we overlook the similarities between management and research. To the extent that they try different practices and evaluate the con-

sequences, managers function as researchers. What generally distinguishes research from management is the systematic approach and rigor of the tests and the publication of results.

Managers can often take the lead in identifying possible problems and information needs. Researchers can help further define the problems and information needs. Researchers can, with appropriate manager input, subsequently take the lead in designing ways to obtain that information. When it comes to designing studies to address well-defined information needs, I think that managers can help researchers in at least two critical areas: 1) providing feedback on the credibility of particular approaches to managers, and 2) helping devise strategies for getting useful information to other managers.

Managers must give researchers feedback on the usefulness of the information that they provide. This can help fine-tune the research process and provide much-needed encouragement to researchers. As a researcher, the only message that gets my attention more quickly than "your manuscript is accepted for publication" is "we used your information and it helped." This kind of feedback is appropriate even if you were not involved in the research effort. I know of no worse feeling than when you realize that your research is addressing an information need that may not be important in the years ahead, and if you had received some initial feedback from managers you could have targeted the effort on a more significant need.

Managers should not panic when they get information from different researchers that suggests conflicting management decisions. In these situations, widely discussed but not all that common, a number of "expert opinions" from the research community and innovative managers will point to the appropriate path.

Making Things Happen

In addition to providing much-needed guidance for research programs, managers also play a key role in getting research carried out.

You Can Facilitate Research Efforts. You might also be able to help in getting the research carried out. Many studies require a "working laboratory," and you might be able to make forest resources available for research. A brief loan of some equipment may make a big difference in a research project. Field measurements are expensive. Perhaps your staff could make some of the measurements when they are unable to do other work. This not only conserves research resources, but the effort also helps field personnel understand the research process. Hopefully, this will lead to quicker adoption of useful research results. Funding sources sometimes respond positively to promises of management cooperation and expressions of support. Letters from your organization may greatly help the researcher get funding.

Continue Dialogue. The dialogue between managers and researchers should continue throughout the research project. Preliminary results may lead you to reconsider the approach or the expected application of results. In some instances, important changes in the expected information needs will have implications for the research. The dialogue should, however, also continue when cooperative projects are not active.

Some Additional Benefits. Your participation in a research project might bring valuable benefits in public relations. Involvement in research can reaffirm that your program is innovative and looking to the future. I find that many of the best urban forest resource managers are also the most active cooperators in research. I do not, however, recommend that public resource managers get involved in high risk research that may result in the untimely loss of valuable public trees or otherwise degrade the environment. Such outcomes can be a significant setback to both management and research.

Some Examples. I know of several instances where manager-researcher cooperation played a key role in getting useful research carried out. The research on predicting urban forest use that I presented in the poster session at this meeting was initiated at the request of the Forest Preserve District of Cook County. I initially resisted undertaking the work because I was not certain that the results would be useful; but I finally agreed after the District indicated how important the information was to them and offered to obtain some of the equipment needed to carry out the project. It was a good move for all of us because it continues to

answer important management questions and still contributes to our understanding of urban forest recreation (1, 2).

The research that Herb Schroeder and Tom Green are reporting on at the poster session is also the direct result of cooperation with urban forest managers. The West Chicago Park District asked Tom Green from the Morton Arboretum for help in saving oak trees in a heavily forested municipal park. Tom determined that the oaks were succumbing to old age, and suggested a tree planting plan. This is a good example of redefining a problem. Tree planting raised the question of optimal tree density for the park. Herb Schroeder, an environmental psychologist with the Forest Service, was then brought into the study to evaluate public preferences for tree density in the park (3, 5). The density guidelines developed in the study can probably be applied throughout the Midwest, while the approaches can be used nationwide.

We recently carried out a study of bicycle trail use and user preferences in Chicago. It involved the Forest Preserve District of Cook County, Chicagoland Bicycle Federation, and the Forest Service. The Bicycle Federation initially approached the Forest Preserve District with an interest in conducting research on trails. The Forest Preserve District, which is actively engaged in a long-term dialogue with the Forest Service, brought our agency into the discussions as well. The group met on several occasions and jointly determined the critical information needs, as well as the relative strengths and capabilities of each group in carrying out the research. The Forest Service designed the study, and the Bicycle Federation collected data. The Forest Service analyzed the data and wrote the initial reports that were distributed by the Bicycle Federation and the Forest Preserve District.

Herb Schroeder worked with Paul Appelt, a village forester, in developing a scheme for evaluating public perceptions of the effectiveness of a street tree management program. Appelt took the lead in defining information needs and in designing the study. Schroeder took the lead in the data analysis using the Forest Service computer and wrote a publication describing the results (4).

Dave DeVoto and Jim Hermann from the Minneapolis Park and Recreation Board have been working closely with researchers at the University of Minnesota to solve problems associated with nectria cancer on honeylocust, as well as with the ash borer. The results have had significant implications for their management program, including the selection and pruning of honeylocust.

In the Chicago area, Sandy Forgacs, Forester for the Village of Mount Prospect, and Gary Watson, Palnt Physiologist at the Morton Arboretum, recently initiated a cooperative project dealing with girdling roots. Sandy is providing the dying trees, and Gary will be analyzing them. They recently advertised for additional cooperators in the Newsletter of the Illinois Chapter of the International Society of Arboriculture. A commercial arborist has agreed to help move the trees.

Summary and Conclusions

There will not be enough research resources to provide for all of the important information needs in the years ahead. However, you can significantly increase the prospects for meeting your critical information needs by establishing a viable long-term dialogue with the research community. Make your expected problems and associated information needs known to researchers, and discuss them thoroughly. When possible, provide researchers with the encouragement and other support necessary for them to do their job. Explore cooperative working arrangements with researchers. Give researchers candid feedback on the usefulness of their work. If you do not take one or more of these steps, you are just sitting back and hoping that someone will just happen to come up with the information that you will need in the years ahead at the moment when you most need it. That form of "passive management" will just not provide you with the technical information necessary to meet the challenges of the years ahead.

Literature Cited

1. Dwyer, John F. 1985. Research and management for leadership in urban forestry. **In:** Foresters' future: Leaders or followers: Proceedings, 1985 convention of the Society of American Foresters; 1985 July 28-31; Fort Collins CO. SAF Publ. 85-13. Bethesda, MD: Society of American Foresters; 404-408.
2. Dwyer, John F.; Schroeder, Herbert W. and Buck, Richard L. 1985. Patterns of use in an urban forest

recreation area. **In:** Proceedings 1985 National Outdoor Recreation Trends Symposium II. Department of Parks, Recreation, and Tourism Management. Clemson University, Clemson, South Carolina, 1985 February 24-27; Myrtle Beach, S.C., 81-89.
3. Schroeder, Herbert W. 1987. *Estimating park tree densities to maximize landscape esthetics.* Environmental Management 23: 325-333.
4. Schroeder, Herbert W. and Paul J. Appelt. 1985. *Public attitudes toward a municipal forestry program.* J. Arboric. 11(1):18-21.
5. Schroeder, Herbert W. and Thomas L. Green. 1985. *Public preferences for tree density in municipal parks.* J. Arboric. 11(9):272-277.

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Abstracts

BUCKINGHAM, FRANK. 1986. **Felling trees--safely**. Grounds Maintenance 21(9): 34, 36, 38.

Cutting trees can be a pleasant challenge or a dreaded chore. If you must remove trees whose limbs hang over buildings or power lines, or trees that are likely to damage other desirable trees or property when they fall, the task becomes critical. Unless you are an experienced tree cutter and are certain you can safely remove trees in tight situations, call in a professional arborist. Wear clothing that is snug but not too tight. Before starting to cut down any tree, decide which way you want it to fall--and which direction the tree is most likely to fall on its own. Clear an escape route (preferably two routes) so you can get away from the tree when it starts to fall. Make your first cut horizontally on the crown-lean side of the tree-the side to which you want the tree to fall. Now, make a second cut at the 35-degree angle to the first cut; remove the loosened wedge of wood. Make the final fell cut from the other side of the tree, parallel to the first cut in the bottom of the notch.

COLLMAN, SHARON J. 1986. **Winter Injury**. Grounds Maintenance 21(10): 10, 12, 14, 18, 20.

The symptoms of winter injury depend on the plant species, condition and factors that caused the injury. In diagnosing any plant injury, there are two areas to examine--symptoms and signs. Low-temperature injury is usually manifested by several symptoms. First, extreme cold will cause the leaves, twigs, stems and even roots to freeze. Symptoms of this kind of injury are severe wilting, complete blackening or browning of the leaves and stems, and general collapse of above-ground plant parts. Occasionally, only the flower buds of certain plants (like some rhododendrons) are killed. Freezing temperature in spring after the buds have begun to swell will often result in abnormally twisted and curled new leaves. Some winter injury is actually drought injury. On sunny days with drying winds, water is lost from the leaf surface. Because the soil is frozen, the plant cannot replace the lost water. The foliage of certain conifers, such as some arborvitaes, cryptomerias and junipers, will change their normal green color to brown or purple. Once a period of extremely low temperatures has occurred, wait until spring before attempting remedial measures.