# Chapter 2 Developing a Data Presentation Plan

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The concept of completing a data presentation plan is simple. There are five straightforward factors to consider when drafting a plan including influencing how people communicate and make decisions:

1. Focusing the message.
2. Deciding on your target audience:
   - Who are they? Not everyone can be reached with one format or presentation so it's important to determine who most needs the information.
   - Sometimes information alone is enough; sometimes you need to add content that educates or persuades.
3. Where should the message be delivered? Find the right places and media that will put the audience in a data-receptive mood.
4. How will the message be delivered? Technical report presentations or dinner talks? Which information products and delivery strategies will best deliver the message?
5. Timing. Develop and stick to reasonable timelines when planning outreach strategies.

This chapter covers items 1, 2, and 5. Formats for presenting your message are detailed in Chapters 3-7.

## Focus your message

Most volunteer monitoring programs serve the broader environmental goals of their sponsoring organization: protecting a watershed, lake, or river reach; a specific resource like a shellfish bed; or recreational opportunities like canoeing or angling. The chief product of monitoring programs is information that guides human decisions affecting these resources. The successful program focuses on two basic activities: *obtaining* information and *sharing* it. Information is *obtained* with each study or survey your program conducts. Information provided helps determine if a lake is swimmable, if a construction project is sending too much silt into the river, or if exotic plants are spreading.

Information is *shared* through data presentation efforts. Data presentation follows, and is dependent upon the scientific inquiry and policy work that was completed when your group started monitoring. That process helped you decide what to focus on, how to do it, and (later) what the results meant. Data presentations must remain consistent with these goals and decisions. It is important to recognize the place of data presentation in the pecking order of policy, decision-making, discovery, and communication. Failure to do so can result in a mixed or diluted message–and missed opportunities.

## A mixed message?

**How might our goal or message become inconsistent with our results?**
You knew what you wanted to say in advance, but your data doesn't support it or is inconclusive. To retain credibility, recommendations must be changed when the results aren't what you expected. For example, a treatment plant was monitored to demonstrate the need for upgrading it to tertiary treatment to remove nutrients. Findings show that there are other pollution sources coming from upstream, and that the plant's contribution is relatively minor. In this case, the message should be changed from "upgrade system" to "reduce upstream contributions," or perhaps "do more monitoring upstream to locate source(s)."

**This can also happen when:**

1. A monitoring program is a collaborative venture involving partners outside your organization, or:
2. When someone in the monitoring program becomes a spokesperson without clearing messages with your board, staff, or others. This often results in statements being made that are scientifically incorrect such as "excessive plants are killing the lake" (when in fact they have always grown there), or recommendations that are inappropriate like "dredge the lake" (when your organization has a policy against dredging).

**How can we avoid the problem?**
Establish clear lines of communication using these strategies:

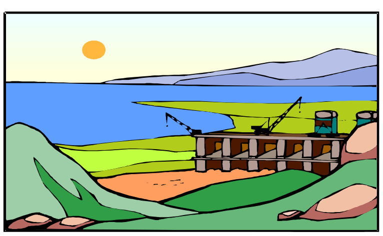
1. Set up a "check-off" system that routes draft public statements through the board, monitoring committee, or technical committee. Statements shouldn't go out unless all parties have signed off on them.
2. Designate someone as spokesperson for the program and have public statements go only through that person.

3. If there *are* different people producing public talks, press releases, etc., draft written outreach ground rules for everyone to follow. Require that they read and sign the statement before they go to the public.

Research and follow the "Data to Action" process step-by-step (Chapter 1). Review your study design and results, and have a good technical advisory committee review the data and try to answer the questions. Get consensus on the conclusions and recommendations, and stick to them as your general message is formed. This preparation will enable you to create written reports, slide shows, and more. Remember: a study only tests a hypothesis. There's nothing wrong when a hypothesis is not supported by data–as long as you say so!

## Opportunities

**What about additional uses for data?**
Groups frequently get requests for "any data you have" or suddenly, a new issue crops up. Nutrient data has been collected and analyzed to see if the treatment plant is meeting standards, and a development is suddenly proposed upstream of the plant. Can your data help measure impacts of the development? Maybe. This involves using an existing data set and making it apply to a different study question. A quick study design/data interpretation process is necessary to properly apply existing data to answer the new question. Consider what parameters, sites, sampling frequency, etc., would be needed to answer the question. If the fit is good, go forward with the presentation. If it isn't, you may be trying to play golf with a tennis racquet (with damage to your reputation in both sports). It may still be OK to release the data, but do so with very clear caveats such as "We collected this information to ask a specific question. We stand behind the numbers, but make no conclusions or recommendations pertaining to a different study question."



**Pause before you present**
It pays to create a draft, or outline of your data story and use it for talking points. Circulate it within the organization and to its technical advisors. Make sure that all relevant parties in the organization have an opportunity to provide feedback. Then, circulate a revised version to those who will be making your organization's presentations. Discuss it with them and make sure that they understand what they should and should not say. You now have a focused message. Now it's time to figure out the best way to spread it.

The next step is to decide who you want to reach. There should already be an idea based on the work performed in the study design and data interpretation phase of your program. Now's a good time to review those initial choices.

## Targeting audiences

This is the media age, where everything is splashed across newspapers and the evening news. Perhaps that's the reason why a first instinct in any outreach effort is to tell the world about its findings. This isn't necessarily the best choice–some situations can be handled by quiet communications between a small number of parties. For example, a broken sewer line or a fallen silt fence may get an immediate fix by bringing evidence directly to the responsible party without a lot of publicity. In other cases, the whole world *should* know, such as when your organization is trying to build community-wide understanding of nonpoint source pollution. This is also a good backup strategy if no action is being taken on your silt fence and sewer information. Before you start spreading the word, think about how wide a communication net should be cast and whenever possible, take the direct route as a first option. The whole world can hear about the success story later.

Many monitoring groups tend to rely heavily on sending data to state and federal agencies while ignoring important local audiences including their own volunteers, developers, and town officials. The best chance of making a direct, immediate impact on human activities may be closer to home. Larger government agencies, when they accept volunteer data, may only add it to the mix with other data and use it as a small piece in assessing trends or in composing a big picture of overall water quality. The direct impact on the watershed may be a small one. While this is a valuable use of volunteer data, it is not the only, and not necessarily the most rewarding one.

Unless your budget is a lot larger than most small or volunteer monitoring programs, you won't be able to reach everyone. On whom should you concentrate? Here are some questions that may help provide answers:

- How important are these people to the issue? Are they the "movers and shakers," or less-involved characters? This can depend on the issue as well as those involved, also known as "stakeholders." Sometimes, the chain of authority is clear and direct. For instance, a Conservation Commission reviews an application for a near-shore development. In others, the impact is less direct or immediate such as when you attempt to influence landowners' lawn-care practices. Each landowner may only have a small impact, but in the aggregate, the effect on the watershed is large. There are many situations in between: you may target business groups such as auto repair shops that may or may not dump oil and grease down drains. There are also "backup" decision-makers: those to whom you turn if your primary audience is recalcitrant, (e.g. you get the state agency to overrule a bad Conservation Commission decision).

- Do they need your information? Will it change their minds? Maybe they already have enough data on a situation or are already doing the right thing. If so, try redirecting your outreach efforts to other decision-makers who still need convincing.
- What do they need besides information? Efforts sometimes have to be focused on education or persuading people to take the right course. Generally, you decide *who* to target first, then decide *how* to approach them. Consider the *how* a bit now though, to get an idea of how much effort you should devote to a potential data user.
- How can they be reached? Is your relationship with them friendly, or adversarial? This is another strategy consideration once a target audience is selected, but it's also a consideration in whether to go after them at all. *Tip:* If an audience *is* hard to reach, consider working through an intermediary. For example, farmers and Conservation Districts (CDs) work together a lot. Try approaching the CD to arrange a meeting with the local farmers to discuss their fertilization practices.

### Make a list, check it twice

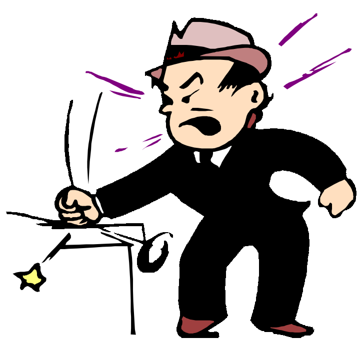
Consider the prospective audiences from several different angles and then decide if they should be targeted. A list of different types of audiences is found in the Appendix. See if these might be part of your target audience. Draft your own list of potential data users. Initially, concentrate on two categories: the *audience* and *why they may be important on an issue.* As you build your list, be specific: identify agencies, businesses, and organizations in the watershed who might need attention. The next step is to prioritize the list. Familiarity with the players is the most important part of this step. Often, the key individuals within an organization or business make the difference on whether you approach them–and how! Their knowledge and interest in the issues may have a major influence on how their organization relates to yours or to the issue you're dealing with.

This process is more than a simple numeric ordering of the first, second, and third most important audiences, and then going after each one until the desired response is achieved. Other factors, like degree of difficulty and similarities among audiences must also be considered. If your primary audience is intractable, try bypassing them for the moment and focus on less influential, but more approachable data users. Or, you may find that your first and fourth priorities have much in common. In this case, devise an outreach campaign for the first audience that includes material for the fourth with little extra effort. This way, you give them attention that you might not otherwise afford.

## "Show me the data!"

Now that you've decided with whom you want to share your data, think about the audience and finding the best way to communicate with them. Before people can make good decisions that protect or restore a watershed, they must pass six checkpoints of knowledge. Those making decisions must know:

1. A little *watershed ecology:* how a watershed or water body functions;
2. The *condition* of the subject water body or watershed;
3. What *causes* current conditions;
4. The *sources* of any pollution or related problems;
5. The *consequences:* how conditions affect things that people care about: the economy, fishing or swimming, etc.;
6. *Solutions:* steps that can be taken to improve or maintain conditions.



**Case study illustrating an example of the six checkpoints of knowledge:**

***Problem:*** Urban runoff is polluting the Green River resulting in high bacteria and turbidity levels.
***Knowledge needed*** to stimulate action:

1. Watershed ecology: most precipitation ends up in the river through direct runoff in natural and artificial channels, overland flow, or groundwater.
2. Condition of the river: bacteria and turbidity levels above Greenfield are quite low, but conditions worsen downstream of town.
3. Cause: urban runoff is discharged directly into river. The only current treatment is via storm drains, which are not sufficient to remove pollution.
4. Sources: sidewalks, roads, and parking lots throughout Greenfield that contribute dirt and pet waste.

5. Effects: poor aesthetics and loss of recreation activities deter tourism–something the town has been trying to promote. Residents and tourists encounter a brown river and ″no swimming″ signs.
6. What can be done: either install large detention basins, or sweep streets, sidewalks and parking lots weekly.

Knowledge alone is not enough. The target audience must *want* to make good decisions enough to overcome obstacles of cost, inertia, self interest, etc. If you want your data to be the catalyst for good decisions, you first have to get their attention. Then, you have to tell a story that emphasizes your significant findings, is easily understood, and puts them in a frame of mind to act positively.

## The "IEP" package

**Inform Educate Persuade**

The purpose of your data is to **inform** people of conditions. The same data can be spiced up in ways that **educate** them on how conditions occurred and the consequent effect on our enjoyment of the resource. If they're still unmoved, employ a few more strategies to **persuade** them to do something about it. Not all conversations have to be infused with all three elements, but a good understanding of when to emphasize each type of communication can enhance your effectiveness.

**To better inform**

- Focus on the most significant data (the highest and lowest values, those that violate standards or disrupt the ecosystem) in talks and reports.
- Present these early in the report.
- Isolate the extreme values in graphical or other comparisons: against a state standard (pH violates Mass. water quality standards at every site in April), or vs. control sites or dates (downstream of the farm, coliforms were 100 times higher than above).

**Inform:** There is a subtle but significant difference between data and information. *Webster's Dictionary* defines data as "factual information (as measurements or statistics) used as a basis for reasoning, discussion, or calculation." Information is "the communication or reception of knowledge or intelligence." If you want people to act intelligently, you must give them information. Data are just numbers, but when presented, it is necessary to add *context* to convey information and get to knowledge. For instance, 2 parts per million dissolved oxygen has been found in the stream. That number itself will not raise the collective eyebrows of the watershed. Tell people that this level can't support fish life, and that a mile upstream of the pollution source, dissolved oxygen values were 8 parts per million. Now they have something to think about and work on.

**Educate:** What if the target audience doesn't recognize the significance of 10,000 fecal coliform colonies in a 100ml sample of water? Suppose the lake association is unaware of how Eurasian milfoil spreads, or its impact on lake health? In cases like these, the basic facts won't be enough. An educational component will need to be added.

**To better educate**

- Cover basic watershed ecology principles by using slides of the hydrologic cycle in your talks or distribute brochures on fish habitat, posters on riparian zones, etc.
- Offer background information on physical characteristics of your watershed. Circulate a copy of the Massachusetts River Atlas (Bickford et al, 1990). At the presentation, hang GIS (Geographic Information System) maps showing forest cover, population density, etc.
- Present data and distribute fact sheets that describe the indicators and how they are important in a healthy ecosystem. Circulate pamphlets that describe the effects of nonpoint source and other types of pollution.

Here are some examples of when education is important:

- When the *audience* is not knowledgeable on the subject: examples include non-scientists such as Chamber of Commerce, reporters, etc., or "experts" whose specialty lies elsewhere (e.g., a biologist looking at chemical data).
- When the *issue* is not well-known: in the early days of acid rain, this was generally the case. A current example is the percentage of impervious surfaces in a watershed. Not many people know that the more impervious surfaces in a drainage area, the less biological diversity is found in its receiving waters. Even fewer know that the threshold for significant damage is as low as 12% of a watershed. What percentage of your watershed is impervious?
- When the situation is complex: for instance, as in the interaction between parameters, e.g. how temperature affects dissolved oxygen, or in gauging synergistic effects of multiple sources of nonpoint pollution.
- Any time the results are not dramatic: this may be the biggest challenge. People are galvanized by a crisis. If there isn't a large, clear threat, there often isn't any interest. This is a particular problem with nonpoint source pollution, because it's often difficult to document problems from one operation or one site. A complementary education campaign that shows the link between individual and cumulative impacts can be invaluable.

**Persuade** people to do the right thing. Even when people are aware of a pollution problem and its cause, the response may be "So what?" There are many reasons why people understand but don't act. They might be weary from previous fights over the resource, the task may seem too daunting, they have other priorities, or it's going to cost them money. See box on next page for motivation strategies.

Find out what motivates your audience, and focus efforts in those directions. It may be more than one issue and it will vary from audience to audience.

## Data strategy

When an audience is in need of persuasion, there are other motivators besides intellectual and scientific arguments. Disgust, fear, greed, pride, enthusiasm–all of these emotions are catalysts that transform comprehension into action. Many important decisions are made on an emotional level. Action-oriented monitoring programs should fully put to work for them the power of these emotions. Try:

- Going for visceral impact with the local Trout Unlimited

## Motivation strategies

What moves people from neutral to overdrive? While it's different for everyone, there are some common strategies that work well with a number of audiences and issues. Take time to consider how each of these match your situation–you'll probably get a lot more mileage out of your data.

- Crisis: This negative form of motivation is commonly considered to be a sure-fire tool. When you uncover something seriously wrong, you can expect a packed house with a well-timed press conference. When appropriate, appeal to people's fears, anger, or horror. Sound the alarm over Milfoil overrunning the pond and eliminating swimming as we know it.
- Enthusiasm: Good news and grand visions also get results with many people. People get excited when they find something is good. They want to hold on to it, and make it even better. Enthusiasm will pull people together–from planting salmon fry in a recovering river to securing funds for conservation easements on shoreline properties.
- Guilt/Public image: Everyone wants to be loved. You can use the specter of both positive and negative publicity to persuade folks to do the right thing. While you're in a meeting with a polluter, point out that they will become heroes by voluntarily leading the cleanup. Help them by including in news accounts the problem *and* their role in the solution. By giving them good press, you increase the chances that they'll stick with the project.
- Self interest: The bottom line. This is the best of all, because it gives you the strongest, most enduring allies. If you can show how your recommendations will make life more economical for businesses, increase fishing opportunities for angling groups, and boost tourism for towns, you may raise action to a new level.

chapter by showing slides of dead fish alongside low dissolved oxygen data, suggesting the ghost of fishing yet to come.

- Announcing, in a press release, high bacteria levels (include a snapshot of kids swimming or have a few kids testify at a public meeting about their swimming experiences–and skin rashes).
- Talking "dollars and sense" to a Chamber of Commerce by distributing data on tourism and its relation to clean water. In some areas, it may be difficult to generate data like this. A simpler alternative is to use existing economic studies–even those that cover other areas. In Minnesota, for example, the real estate industry is always interested in the release of the annual report on water transparency because they know that lakes with the clearest water command the highest lakefront property prices. A study in Maine revealed that for every additional meter of water clarity, lakefront property values increase by several thousand dollars. Neither of these reports contain "your" information, but they can help your Secchi data to inspire people to work on improving water clarity.
- Using contrasts–such as good and bad, ugly and beautiful. Show the tragic dead fish picture next to an idyllic one of an angler playing a fish. Follow the swimming photo with one of visible pollution. Shots of wastewater or sediment plumes entering a clear stream are always powerful. Display before and after, upstream and downstream graphs that show marked changes in pollution levels.

### Audience preferences

When trying to connect with audiences, consider their comfort with different *styles* of communication. How much time are you going to have with them? Are they willing to read technical reports? Do they love maps or fear them? Can their interest be better captured with pictures? Are your charts easy to understand? Chapters 3-7 illustrate how different media, such as videos, slides, publications, and flyers, fit with different audiences and situations. There is also an audience matrix in the Appendix that offers further information. If you put together a "data presentation toolkit" with different versions of your findings such as a report, a poster exhibit, and a slide show, it should be easy to meet varying audience expectations.

## Don't keep it a secret

There are many ways to identify your target interest and capture their attention. One simple strategy to get your data to more willing listeners is *advertise it!* Compile a list of available data, annotated with information on what years you monitored, your study questions, parameters monitored, quality control measures taken, etc. Mail the list to local Conservation Commissions, Planning Commissions, other relevant agencies, and newspapers. You may find there's a market for your data that you didn't know existed. This strategy also helps organize data. Many groups that have conducted multiple studies under different leaderships do not even know what they have–let alone know where to find it!

## Timing is everything!

When's a good time to plan for data presentation? Many groups wait until the sampling season is over before they start thinking about how they want to share their results. At virtually every phase of a program or sampling season, there are some actions that can be taken that prepare you to present. Here are some opportunities and tasks to consider:

**1. Start at the very beginning:** in the program planning phase. At this point, issues are articulated, questions are raised and explored, audiences with whom you will address issues are considered. Assume that you will make some recommendations, even though you can't know what they'll be yet. The point is, plan early. Program elements that will affect data presentation include:

- *Survey type:* for some surveys, it's best to wait until the data have been interpreted before you report. Other surveys, such as weekly monitoring of a swimming hole, might benefit from regular reports appearing in the local paper or on a sign at the swimming beach. If it's the latter, organize your reporting system and test it before monitoring begins.
- *Deadlines:* are there any specific *events* (a town meeting, an environmental fair, a permit renewal hearing) where decisions are made about the issue, or which provide good outreach opportunities? When will they take place? Think backwards to determine a realistic timeline for getting everything (and everybody) coordinated such as data graphs, photos, data interpretation sessions, volunteers' schedules, press deadlines, etc.
- *Budget:* what kinds of products will be created? Report? Slide show? Poster? Decide which are appropriate and then estimate the costs associated with each, including staff time. Compare this with the schedule for events at

**Cast your audience net!** Have you reached out to commercial fishermen, riverfront restaurants and other latent allies? They should be high on your list.

which you plan to present. Are there enough hours in the week? Sufficient funding?

- *Expertise:* what kind of expertise is necessary to pull off an event or make a product? Does someone in the organization have this skill? If not, is there time to learn it? Should assistance be recruited? It's often most efficient to find members of your organization or community who might be willing to contribute their skills and experience. Attracting new blood also helps circumvent the problem of burnout. Many groups have three or four people doing everything from bottle washing and bug sorting to cutting and pasting data graphs. Meanwhile, there are probably dozens of people in your watershed with interests and skills in photography, video, graphics, computer software, and other communication technologies. They can't help until they're asked. While others are sampling, these new volunteers could be taking photographs of runoff and other photogenic pollution or developing and testing spreadsheets. All of this work will help avoid disastrous delays. Remember, old news isn't news. If it takes until March to alert the public of the damage caused by the August drought, a golden opportunity is missed.
- *The audience within:* consider how your monitoring program interacts with other parts of the organization such as fundraising, member development, greenway program, and newsletters. If yours is more than a one- or two-person organization, consult with others involved in the other work of the group. What activities are they planning that might benefit from your data? What deadlines do they have? Can they help you develop a product? There may be some talent right in the organization that is being ignored. Discuss with your organization's board and staff ways to make sure everyone who ought to be in the loop is involved in preparing the presentation.

2. **During the course of a survey or sampling season:** there isn't as much planning required at this stage if background work has been completed. Make sure the preparations are going on schedule. Take photos of sites and samplers and have the software purchased and tested. Be on the alert for unexpected results such as fish kills and extreme levels of coliforms that need immediate attention or are newsworthy. If this happens, be prepared to move fast with press releases and email alerts.

3. **After the sampling season:** Now is the time to review earlier presentation plans and sharpen their focus. Identify the *messages* such as "the river's really unhealthy–don't go near the water" or "the lake has a healthy fish population which must be protected" or "plants are choking the lake, action is needed now!" Will you recommend any specific actions you want taken (e.g. post signs, pass a bill)? Do your newly refined messages still match your targeted audiences? Do your planned delivery strategies (slide shows, newspaper stories, etc.) still make sense? If there are any changes from your earlier plans, be sure to adjust the schedule and strategy accordingly.

### Plant a seed or close the sale?

The whole preparation–from honing a message to selecting target audiences and figuring out what makes them tick to choosing the right communication media–leads to the point of delivery: presenting a report, mailing an article, giving a talk, or running an exhibit. Each of these separate audience interfaces should have a clear objective. Before sending out a newsletter or a press release or presenting testimony before a board of health: ask yourself, "What do I want to accomplish with this particular effort? Am I trying to *plant a seed* to raise initial concern about the problem we've been monitoring? Am I trying to *close the sale* such as attempting to get a bylaw passed, a permit amended, a violation addressed immediately?" It's easy to make mistakes in either direction: by expecting too much of a particular pitch, or by not asking enough of your audience. Try to figure out where decision makers stand and tailor the presentation strategy accordingly.

When an issue is new or poorly understood, proceed slowly–start by getting people to think about it. One-way broadcast media, like a newspaper story or a short monitoring report delivered through the mail, are good for planting seeds, but they probably won't have enough staying power to change opinions overnight. Don't rely on them as the sole means of stimulating action. Build upon them with additional and diverse outreach efforts. Follow-up news stories and mailings are good–repetition will help the message seep into the public's consciousness. Other, more interactive delivery strategies that impart background educational and persuasive content can help the transition from sowing seeds to stimulating action.

When a firm decision is the desired outcome, the best choice is often person-to-person communication such as public testimony before an agency or a face-to-face meeting with a company that is discharging pollutants. People need a chance to dissect the facts, ask questions and weigh options before they are willing to commit to a course of action. Direct meetings are a good way to give them that opportunity and let them challenge your data or debate the question of what it all means. On the other hand, a public or private meeting is not always the best first option. If aggressive action is recommended on a problem that they first heard about 15 minutes ago in your talk, you are likely to get turned down. Sometimes it is best to move slowly with decision-makers by providing them with information over time and letting them digest it so that they are familiar with a problem. They will then be ready to discuss solutions and perhaps take action.

## In conclusion

It pays to put some variety into data presentations. Just as you blended information, education, and persuasion in your message, be strategic with the timing, format, and venue of your presentations. Give people a chance to get up to speed on an issue and to approach it from different directions. Clearly state the recommendations that were developed in the data interpretation process or offer them as draft suggestions and use interactive sessions to let watershed residents and decision-makers add their own. This helps people acquire ownership in their good ideas. Once recommendations have been discussed, challenge the audience to act on them immediately. Be prepared with supplementary information about grant opportunities or agency programs that can help move recommendations from ideas to implementation–without excessive delay. Anything you can do to remove or reduce impediments to action–eliminating a research step or knowing the price tag of a solution–will make an action more likely to be implemented.

Spend a little time planning before a presentation. Connect the dots between what you want to say, who you want to talk to, how to reach them, and what media to use to stimulate them.

The following chapters contain information on which media are suited for different purposes. They include examples of print, graphics, and other communication tools.