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Science

FINDINGS

"Science affects the way we think together."

Lewis Thomas

Watershed Councils: It Takes a Community to Restore a Watershed



Dana Dedrick

The Long Tom Watershed Council credits its success to a social infrastructure that brings scientific knowledge to restoration projects while engaging all affected landowners and stakeholders in the process. Above, landowners and others tour oak woodlands, a threatened habitat type in the watershed.

"If we are together, nothing is impossible."

—Winston Churchill

As pressure on Earth's resources becomes increasingly strained, people from all walks of life are recognizing the need to change their way of interacting with lands and waters, and to urge others to do the same. Since the early 1990s, citizens all over the Pacific Northwest have been working together through volunteer, locally organized watershed councils to improve water quality and fish and wildlife habitat.

Nonregulatory watershed councils bring together foresters, farmers, ranchers, industrialists, city planners, scientists, and—well, anyone and everyone who is interested in how their watershed is managed. They have become invaluable working groups that plan and implement coordinated, science-based ecological restoration projects at the watershed scale.

Regulation is useful, but it cannot solve complex ecological issues that involve private lands managed for diverse purposes. The Oregon Legislature recognized this truth when it offered guidelines for establishing watershed councils in 1995 as an outcome of the Oregon Plan for Salmon and Watersheds championed by Gov. John Kitzhaber. At the federal level, the Environmental Protection Agency reported in 1997 that it was shifting to a watershed approach in water resource management and noted that such an approach required interagency cooperation and more involvement from local citizens and governments.

One of the councils enjoying dedicated, long-term community participation and good results is the Long Tom Watershed Council in Oregon's south Willamette Valley. After working with the Long Tom council as a technical advisor for many years, Pacific Northwest (PNW) Research Station scientist

IN SUMMARY

Regulation alone cannot solve complex ecological problems on private lands that are managed for diverse uses. Executing coordinated restoration projects at the watershed scale is only possible with the cooperation and commitment of all stakeholders. Locally organized, nonregulatory watershed councils have proven to be a powerful method of engaging citizens from all interest groups in planning and implementing solutions to improve water quality and fish and wildlife habitat. However, guidance on how to keep science at the forefront in these community-based decisionmaking councils has been largely unavailable until now.

Using the success of the Long Tom Watershed Council in Oregon's Willamette Valley as a research model, a PNW Research Station scientist defined the key elements of an effective social infrastructure that can facilitate integrated, science-based watershed management. Elements include using data collection as an education and outreach tool, developing neighborhood peer networks to engage private landowners, and initiating project implementation at the subwatershed scale. Sharing technical expertise with partner organizations and maintaining a transparent process in collecting, interpreting, and reporting data makes a watershed council a valuable regional resource that can inform land management practices and policy beyond the watershed.

Rebecca Flitcroft collaborated with the council's leadership team to identify key strategies for successfully developing a resilient social infrastructure that keeps science in the forefront in watershed-scale land management. Courtland Smith, professor in the Department of Anthropology at Oregon State University co-lead the project and provided a critical social science perspective.

ABOUT THE LONG TOM

The Long Tom watershed encompasses 10 major subwatersheds that feature primarily private land managed for a wide range of purposes, including a high-density urban area, a few small towns, rural residential settlements, industrial installations, recreational areas and parks, farmlands, ranches, and timberlands under various types of management. The watershed is home to only a few currently listed endangered species, which means state and federal grant funding is not as readily available as it might be in other areas with substantial endangered populations.

The Long Tom Watershed Council was chartered in July 1998 as an outcome of the Oregon Plan for Salmon and Watersheds. Within 11 years, it had generated baseline data, more than 50 restoration projects, and a conservation strategy to guide future action. By revealing the processes and methods that have made the Long Tom Watershed Council effective, Flitcroft's research provides valuable insights that can guide similar groups.

"Considering the relative lack of available grant funding and the diversity of land management objectives in the Long Tom watershed, if the process can be successful there, we should be confident that it can be successful in other places as well," says Flitcroft.

KEY FINDINGS

- It is possible to maintain science as the core foundation for ecological restoration activities on privately held lands. By establishing strategic relationship networks throughout a watershed, a watershed council was successful in implementing science-based, adaptive management practices.
- Data collection can serve the purpose of acquiring scientific information while simultaneously educating individual landowners. Positive interactions among the watershed council and local citizens laid the foundation for successful restoration activity.
- Individual landowners can relate to broader ecological issues when exposed to issues in the context of their local stream or subwatershed. A subwatershed enhancement program that invited small groups of landowners to learn about their shared watersheds led to coordinated restoration activities that increased effectiveness and minimized cost.

INCLUSIVE AND SCIENCE-BASED

A flexible social infrastructure that incorporates scientific knowledge and adapts to changing conditions seems to be the medium through which watershed-scale restoration can occur. A key element for success is bringing all stakeholder groups into the process.

By design, diverse land-use sectors are represented within the Long Tom Watershed Council's board of directors. Board members bring to discussions and decisionmaking the perspective of a wide range of land-use interests, but they are not tasked with representing others.

"I think we've avoided some problems that you see other groups run into because we don't place the burden on people that they have to represent their entire sector," says Dana Dedrick, executive director and

watershed coordinator for the Long Tom Watershed Council. "This was done in recognition that the power the council has is to influence and help—we don't have the power to direct or control."

Practicing inclusivity need not preclude the implementation of science-based ecological solutions. In fact, it creates a culture that strengthens the science and increases knowledge and awareness across the watershed.

In the Long Tom watershed, scientists are equal participants in the process rather than authority figures. They provide the technical backbone of the council by reviewing study designs and restoration projects, finding relevant scientific information, recommending prioritization, planning action, and making presentations to citizens and landowners.

Purpose of PNW Science Findings

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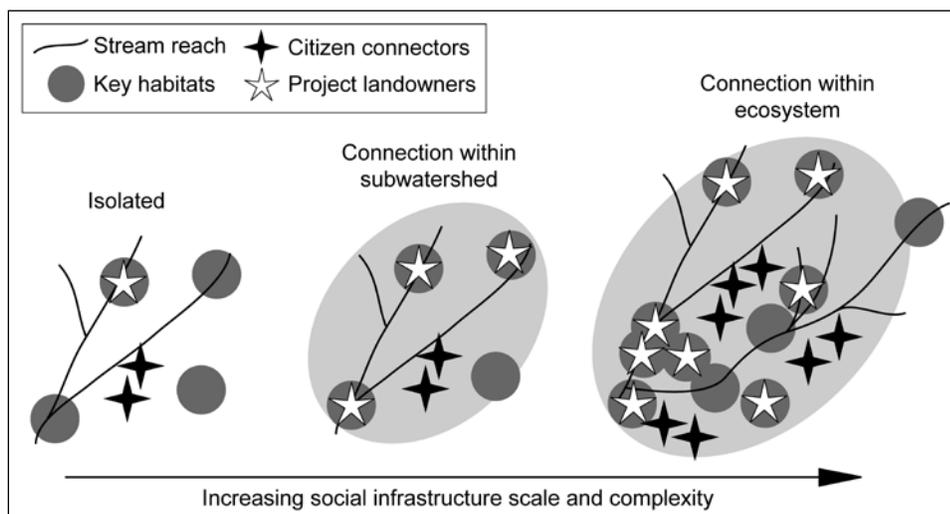
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As relationships among landowners and the watershed council develop, project focus shifts from a single location to coordinated efforts among multiple landowners, and on to large-scale projects that address whole ecosystems. Watershed residents become citizen connectors facilitating learning and projects among their neighbors, and the number of individual landowners willing to be involved in restoration projects increases.

“Members of our technical team are the experts on the science behind how to do the work and also advise us on what to do,” says Dedrick. “The scientists are welcomed and integrated into the decisionmaking.”

Currently, the council includes volunteer technical advisors from PNW Research Station, Oregon State University, University of Oregon, The Nature Conservancy, U.S. Fish

and Wildlife Service, Oregon Department of Fish and Wildlife, Army Corps of Engineers, Environmental Protection Agency, U.S. Geological Survey, and Bureau of Land Management.

The first step undertaken by the Long Tom Watershed Council upon its inception was to conduct a rigorous scientific assessment of the entire watershed. The assessment

encompasses water quality, quantity, and use; land use; fish and wildlife inventories; soils; geomorphology; and historical conditions. In addition, the council collected data for 7 years and produced a stream health and water quality report that included a robust macroinvertebrate assessment. To obtain the necessary data, council staffers faced the daunting task of enlisting hundreds of landowners who manage their land for a wide variety of purposes.

TRUST BRIDGES

One of the first obstacles council staffers and steering committee members had to overcome in working with landowners was a common misperception that the council represents the government or a specific viewpoint or interest group. The work of a watershed council is to help bridge ideological gaps, bring everyone into the conversation, move past the roadblocks, and get on with the work of restoring the watershed. For council staff, this means integrating input from all fronts, responding to the fears and concerns of local residents and landowners, and explaining the reasons for restoration projects. To this end, the Long Tom Watershed Council staff has worked hard to build what Dedrick calls “trust bridges.”

Establishing rapport with isolated landowners is not easy, says Dedrick, and requires patience and persistence. Courtland Smith’s previous research revealed that people tend to trust their neighbors more than they trust scientists. A farmer, forester, or urban business owner whose land management practices are affecting water quality downstream is more likely to heed advice about alternative management solutions from a peer who has successfully implemented solutions than from a report issued by a government agency. For this reason, building a network of peer leaders within the council has played a major role in establishing trust.

In the Long Tom watershed, the peer leadership network evolved from an original 11-member steering committee, which eventually became the organization’s board of

directors when it became an official nonprofit entity. In addition, contacts with staff and volunteers made during educational meetings and water quality data collection efforts have led landowners to implement restoration projects on their land, and the success of those projects has led them to actively support the work of



Cindy Thiesman

A volunteer collects macroinvertebrate samples as part of an effort to monitor stream health within the watershed. Involving landowners in data collection has helped build support for restoration projects.

the council. Some of these landowners subsequently served on the board of directors. More than 70 ex-board members are still involved in the council and have become peer leaders by educating other landowners and acting as liaisons with agencies and local governments.

“It’s all done from a bottom-up perspective,” says Flitcroft. The process is slow, but tends to foster greater cooperation and trust in scientific findings. “We can’t regulate everything, and translating regulations often loses the detail, but the peer network helps individuals to understand the science behind the council’s recommendations. It takes longer to get to an outcome and it requires iterative involvement by scientists as the councils work on different topics, but you gain greater investment from local stakeholders. Once you know who your community scientists are and develop a relationship with them, trust increases.”

Involving landowners in data collection has proven to be one of the most potent tools for increasing awareness and knowledge. When landowners learn what is happening in their immediate area and how it relates to their land management, they usually become the best advocates for implementing science-based restoration projects.

“Using data as an outreach tool has been invaluable,” says Flitcroft. “There’s something empowering about collecting water in your own stream and realizing that you can do something about its health. People become invested in the outcome and understand why they should do things differently. The way they steward the land changes.”

IMPLEMENTATION

After collecting data, the Long Tom council began implementing projects on individual sites. Later, in an attempt to increase the scope of the work, it established a subwatershed enhancement program, which brings together groups of people within a subwatershed to achieve restoration goals. The program enables the council to be more deliberate about resource allocation and to coordinate and integrate multisite projects.

“Much restoration is done in an opportunistic way, but through the subwatershed enhancement program, the Long Tom is able to be more targeted about the type of work they’re doing,” says Flitcroft.

The subwatershed enhancement program arose out of the recognition that bringing discussions about specific issues to a group of 75 people from all over the watershed would be too time-consuming, and had the potential

to embarrass individual landowners, says Dedrick. In addition, it is easier for landowners to grasp the concept of improving conditions on land that is familiar to them rather than thinking on a broader scale.

The Ferguson Creek subwatershed was the first system addressed through the subwatershed enhancement program. Through one landowner who had shown some interest in working with the council, a targeted group

of Ferguson Creek residents was invited to a meeting in a private home. The first order of business was to give attendees the opportunity to exhaustively air their concerns and ask questions—a process that revealed their open skepticism.

“They literally skewered us,” says Dedrick. But the discussion allowed council staffers to connect to landowners on a personal level, break through communication barriers, and stress shared values while answering questions. “We were on their turf and we were guests in their home, and that made a very significant difference. It took 2 hours just to answer the questions on water quality alone. But when they were done grilling us, they were willing to take the next step. It’s very rare to meet someone who is not supportive of clean water and fish and wildlife habitat.”

The next step was to invite the landowners on a tour to learn about their neighbors’ lands. “I used the trust built so far to ask the group to extend an invitation to an agency biologist, in order to bring science and experience into the mix right away,” says Dedrick. One by one, the community visited the properties while the biologist interpreted what he saw in the stream conditions. “In the company of trusted neighbors, they learned how data for their stream reach fit into a larger context and what they might do better from a habitat perspective.”

All the landowners were grateful for the knowledge they had gained and wanted to implement the recommended actions. Initially, however, they wanted to do it on their own rather than leverage the council’s multifaceted support system.

“It was interesting that science wasn’t enough. Sometimes we think that information is going to do it, and most of the time it doesn’t,” says Dedrick. It took 3 months for people to work through a variety of moral considerations, assess their level of knowledge about how to implement projects on their land, and think about resource and financial implications.

Eventually, all the Ferguson Creek landowners who had been approached joined with the council and became part of a grant application that allowed the council to participate with them in a set of science-based restoration projects. Project elements included removing culverts to improve cutthroat trout habitat, planting vegetation in riparian zones to improve water conditions, installing off-channel watering systems for livestock, and increasing flood-plain capacities.



Cindy Thieman

By replacing the culvert (above) with a bridge (below), cutthroat trout regained access to 45 miles of upstream habitat. This project later expanded to improve instream and riparian habitat conditions on a 400-acre ranch and is now a demonstration project for subwatershed enhancement.



Cindy Thieman

The council has so far repeated the process in each of 4 of the 10 Long Tom subwatersheds. Working together as part of a larger cooperative effort, landowners can achieve separate objectives while minimizing the expense and the need to go outside the subwatershed

for materials. For example, a landowner who needed to thin trees from a piece of land moved the logs a short distance to the property owned by a neighbor who needed to add large wood to a stream channel.

BEYOND THE WATERSHED

The Long Tom council practices transparency in data collection, reporting, and interpretation, making it a valuable partner for all entities working to improve water quality and habitat. “It’s taken a long time to get traction, but now the council is in a position where they can speak to a broader scale of management,” says Flitcroft. “It’s an exciting direction. We need substantial subwatershed engagement, but we also need to address certain issues at the regional scale.”

Although all data collected through the efforts of the council are rated at the highest level and can be used for policymaking purposes, the Long Tom council avoids engaging at the policy level. “Our goal is not to influence policy,” says Dedrick. “Our goal is to influence watershed health by engaging the community and educating stakeholders.”

On the other hand, by providing quality data from lands that might have otherwise been inaccessible to scientists, educating stakeholders, and generously providing technical expertise on governmental and nongovernmental agency panels, watershed councils are becoming a powerful force for keeping science in the loop as policies are discussed and decided upon.

“Negotiating change is best pursued at the level of groups and communities.”

—Professor Tim Jackson, University of Surrey

FOR FURTHER READING

Flitcroft, R.L.; Dedrick, D.C.; Smith, C.L.; Thieman, C.A.; Bolte, J.P. 2009. Social infrastructure to integrate science and practice: the experience of the Long Tom Watershed Council. *Ecology and Society*. 14(2): 36.

Flitcroft, R.L.; Dedrick, D.C.; Smith, C.L.; Thieman, C.A.; Bolte, J.P. 2010. Trust: the critical element for successful watershed management. *Ecology and Society*. 15(3): r3.



LAND MANAGEMENT IMPLICATIONS



- Developing a network of peer leaders increases the community’s awareness and breaks down barriers to project implementation. Landowners who have successfully changed management practices can become a watershed council’s best advocates.
- Private landowners who are involved from the beginning in developing goals and guidelines for restoration work and who continue their participation in ecological monitoring are most likely to become involved in coordinated restoration projects. Trusted working relationships can be established when council leaders integrate local knowledge, respond to the fears and concerns of residents, and explain the scientific basis for proposed projects.
- Generously sharing technical expertise with stakeholders and practicing transparency in long-term data collection, interpretation, and reporting can catalyze landscape-level change through regional policy initiatives.



Cindy Thieman

Sites with high ecological value and committed landowners were targets for restoration efforts along Ferguson Creek. Above, a landowner places large wood in the creek to improve fish habitat.

Smith, C.L.; Gilden, J.D.; Cone, J.S.; Steel, B.S. 1997. Contrasting views of coastal residents and coastal coho restoration planners. *Fisheries*. 22(8): 8–15.

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