

Are We Doing Our Best To Restore Watersheds?

Lessons from a 10-Year Watershed Restoration Strategy

by **Todd Reeve and Robert Warren**



David Merwin

The Upper Deschutes River in Oregon. The Upper Deschutes Watershed Council, the Deschutes Basin Land Trust, and the Deschutes River Conservancy have partnered with BEF to restore healthy trout and salmon populations.

In Brief

For the past decade, the Bonneville Environmental Foundation (BEF) has explored ways to make community-based watershed restoration more effective. Through the application of an unconventional, 10-year funding strategy, BEF has identified important challenges and has also explored solutions that may increase the scale of impact produced by watershed restoration initiatives.

For more than 10 years, the Bonneville Environmental Foundation (BEF) has explored ways to make community-based watershed restoration more effective. During this time, we have seen many well-meaning nonprofit watershed organizations struggle to match ambitious restoration goals with needed actions on the ground. Many groups operate on a shoestring budget, endure year-to-year funding uncertainties, experience high staff turnover, and lack key areas of technical expertise.¹ However, the results of BEF's work demonstrate that the challenges are bigger than just limited capacity and financial resources, and our experience reveals that there are opportunities for funders, government agencies, and NGOs to overcome restoration challenges by refining the way they support watershed restoration.

It is counterintuitive to break ecosystem restoration into short-term, piecemeal projects and expect to achieve integrated, large-scale success on the ground. However, this is the model that pervades many watershed improvement efforts across the United States.² Individual projects are designed, funded, completed and, in many cases, forgotten.³ It is rare that anyone, especially funders, return annually to assess whether restoration actions are reinforcing large-scale strategies and achieving measurable social and environmental benefits. Funding commitments are short-lived, projects are often scattered throughout large watersheds without intentional focus, and site selection (by necessity) is often driven by opportunity rather than long-term and strategic approaches.⁴ Committed and expert nonprofit staff work to sustain project implementation and adhere to a plan of action, but seldom have vested long-term partners to help them see where they have come and assess where they may need to go.

Initially, BEF was part of this system. It made a series of

project-based grants with predictable results: little project evaluation or follow-up, projects that often stood alone without firm connections to a larger strategic plan, and no real idea about the overall impacts to the watershed.⁵

Key Concepts

- A short-term and project-focused funding model does not provide the institutional foundation necessary to maximize long-term restoration impact.
- Devoting resources to build and sustain social support will be necessary to achieve real and lasting watershed improvements.
- Long-term funding commitments can alter the relationship between grantee and grantor, creating more transparency, a greater willingness to recognize and embrace learning from project shortcomings, and a stronger incentive to plan for long-term, large-scale outcomes.
- There is often a gap between science and practice, but opportunities exist to engage scientists and practitioners as active partners in creative problem solving.
- There are significant challenges that prevent organizations from implementing monitoring programs that effectively inform restoration strategy and action. However, practical and sustainable monitoring approaches (that do not strive to achieve an unrealistic level of precision) can generate useful data for community groups.
- Funders, agencies, and other partners that support watershed restoration are often in a position to provide essential services that can significantly improve the effectiveness and scalability of restoration activity.

In 2003, BEF abandoned the project-based funding approach and established the Model Watershed program. Under this program, BEF offered a 10-year funding partnership that was built around a series of

one-year grants. We theorized that this long-term commitment would promote continuity and organizational stability, facilitate strategic implementation of priority actions, support effective monitoring and adaptation, and create a more open and transparent partnership between grantee and grantor.⁶⁻⁹

Our Partners

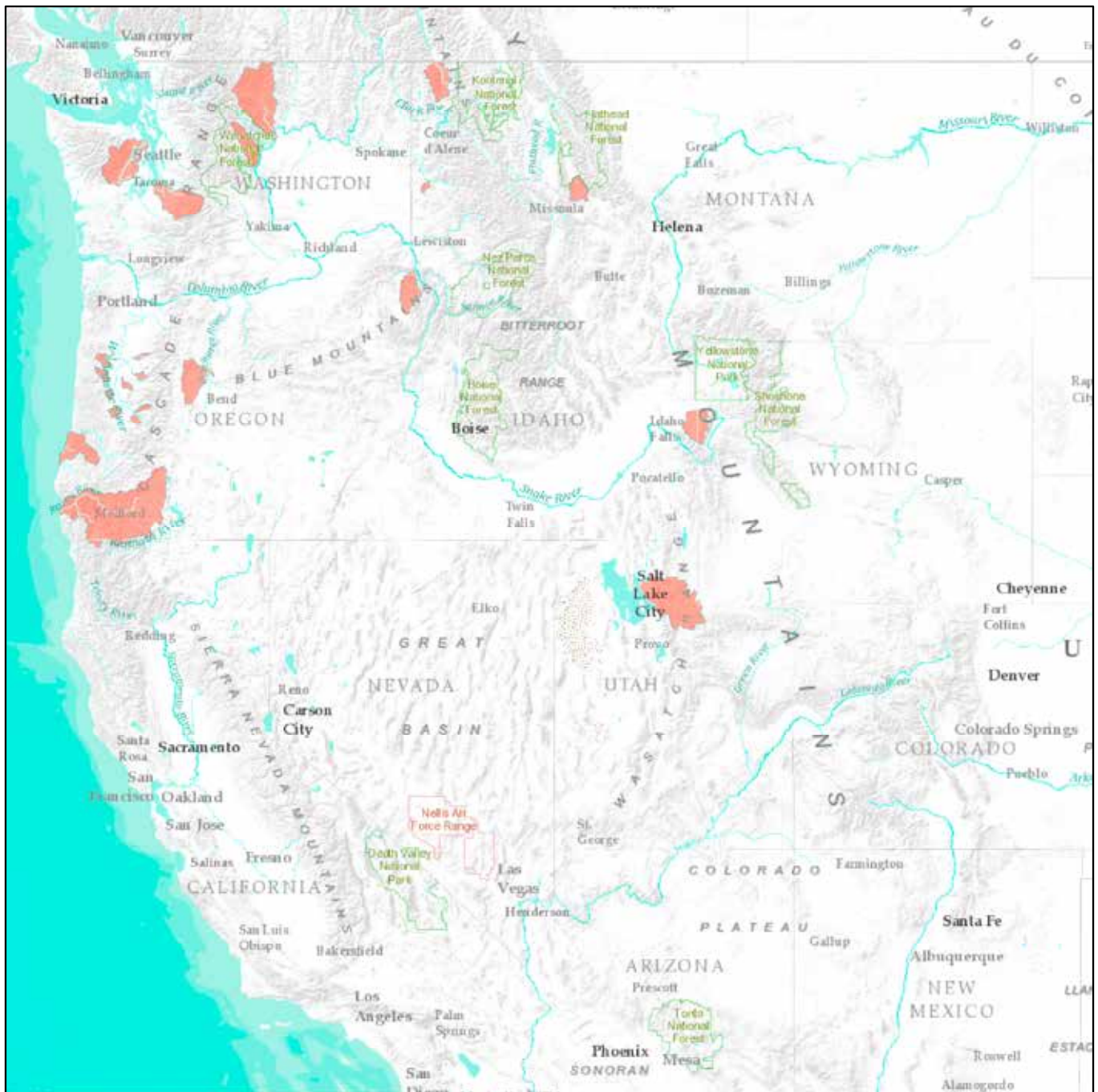
Since the program's inception, BEF has engaged with a diverse array of locally based nonprofit organizations across six western states and has committed support to a total of 15 Model Watersheds. Today BEF remains involved in 12 Model Watershed partnerships and also serves as an advisor, working with funders and agencies to support the design of restoration strategies in four additional watersheds.

In a few cases where circumstances with Model Watersheds partners have changed significantly, BEF has amicably parted ways with partners prior to the end of a full 10-year period.

How It Works

Each partnership is formalized with a 10-year Memorandum of Understanding (MOU). In close collaboration with BEF staff, partner groups develop a Model Watershed proposal that functions as a strategic restoration action plan. It includes an aspirational vision, long-term restoration goals, and a suite of strategies that partners commit to carry out. The plan also establishes a framework to track implementation actions and monitor progress towards achieving desired ecological outcomes.

Grants to local organizations are renewed annually, and progress is measured against annual work plans and the long-term expectations put forth by grantees. An underlying tenet of the initiative is to continually hold partners accountable for the long-term restoration goals they set for themselves.



BEF 2014

Watersheds in which BEF are actively engaged.

BEF does not ask for specifics regarding how grant funds will be used but rather expects partner organizations to report on the overall effort—including activities not directly supported by BEF and progress towards both near-term implementation objectives and long-term restoration goals. Funding is meant to help but not be the focus of

each partnership. This idea represents an attempt to move away from the project-focused funding paradigm and encourage a more holistic perspective and partnership by both grantee and grantor.

BEF provides a broad range of support services and partners with both philanthropic organizations and government agencies to fund this work.¹⁰

Annual grants to Model Watershed partners typically range from US \$25,000 to \$80,000 per year.

Solidifying Our Learning

At the core of BEF's Model Watershed approach is a desire to support an adaptive cycle of planning, doing, and recalibration. As the Model Watershed Program evolved over the past 10

years, BEF used the following methods to gather information and aggregate feedback about the strengths, shortcomings, and opportunities to improve the approach:

- In 2004, BEF surveyed the results of 19 funded projects and collected information from site visits and interviews with project partners.
- In 2009, BEF completed an online survey of 213 nonprofit watershed groups and conducted a formal series of in-person and phone interviews with project partners.
- In 2014, BEF conducted a quantitative analysis of restoration progress in a subset of seven model watersheds.

Lessons Learned

BEF's collective analysis of Model Watershed partnerships indicates that some initial assumptions were well founded. However, other assumptions were off-base, and several program goals remain elusive. With 10 years of experience emerging from BEF's Model Watershed experiment, we strive to share key components of our learning with the field and offer some solutions that promise to improve the efficacy of ongoing watershed restoration investments.

Long-term Commitments: Where It All Begins

Those who have contemplated the complexities of restoring a degraded ecosystem know that it is a long-term undertaking, yet funding commitments typically come in short increments. This promotes a project-by-project focus and provides practitioners with little breathing room or incentive to assess if ongoing strategies are producing the desired long-term impacts. Surveys and experience indicate that longer commitments fundamentally alter the relationship between grantee and grantor, creating more transparency,

a greater willingness to recognize (or even embrace) learning from project shortcomings, and a stronger incentive to plan for long-term, large-scale results. Once an honest relationship is established, feedback and examples from the field suggest that grantees and grantors can become empowered to initiate the earnest discussions about what works, what doesn't, and what it will really take to achieve ambitious restoration goals—or in many cases to discuss whether such goals are actually attainable.

Intentional Focus and Prioritization

Watersheds are vast, complex landscapes where the relatively limited resources of local groups pale in contrast to the immensity of restoration needs. As a result, organizations are faced with difficult decisions of where and how to focus their restoration investments.¹¹

point. The UDWC is charged with protecting and restoring a two-million acre watershed. Early in the group's history, restoration efforts were spread broadly across the landscape, with projects sometimes located as much as 30 miles apart. Through a collaborative process, UDWC staff and several key partner organizations determined that a scattered approach across such a large area was unlikely to produce measurable improvements. As a result, the UDWC formed a partnership with several key local NGOs and made two critical decisions: a) they committed to focus their collective efforts on a very specific and manageable geographic area, and b) they defined specific organizational niches and delineated partner roles to avoid duplicating efforts. There initially was push-back from some stakeholders concerned that limiting the geographic focus of restoration would neglect some areas of the

The long-term commitment enabled us to do what's right for the watershed instead of what keeps the door open for the watershed council.

—Liz Redon, North Santiam Watershed Council

As an example of this mismatch between scale and capacity, a BEF survey of restoration progress in select Model Watersheds located in Oregon and Washington found that during a 10-year period, some of the most well-funded watershed groups will address just two to eight percent of identified restoration needs. This suggests that even very successful, high-performing initiatives will need to operate consistently for well over a half century to achieve large-scale impact.

BEF's partnership with the Upper Deschutes Watershed Council (UDWC) provides a useful case in

watershed. However, by focusing on areas with strong social support and high ecological value, the UDWC and its partners built a regional reputation around demonstrating restoration success. This has served to attract new funders, motivate stakeholders, and facilitate cautious expansion into new areas of the watershed. Without this tight geographic focus and efficient management of scarce resources, there is a distinct possibility that restoration in the upper Deschutes would today remain opportunistic, with disparate projects, few measurable impacts, and inefficient duplication of NGO roles.

For the many ambitious and passionate individuals who support this work, it can seem counterintuitive to purposefully focus on one area only to ignore needs in another area. However, our experience suggests that this is a key solution necessary to avoid outstripping local organizational capacity. Funders, agencies, and others that support this work can encourage (or even insist on) such focus by empowering and supporting groups to prioritize and implement restoration actions in areas or ways where there is a chance of making and measuring a real impact.

strategic alignment among multiple organizations and broad expression of community appreciation for stewarding ecological values are useful indicators of potential. In several cases, BEF has become involved in watersheds where the prevailing interests of local stakeholders were not sufficiently aligned with the interests of our committed nonprofit partners. In such cases, we simply have not been successful—even with a 10-year approach.

Early on, BEF initiated a Model Watershed partnership with a young watershed group located in

a local group with limited resources and no regulatory authority can effect far-reaching improvements, it is clear that local buy-in, reasonable alignment of interests, and existing social infrastructure remain critical to achieving durable restoration results. Our experience suggests that vested funders, agencies, and restoration partners need to honestly scrutinize social conditions and assess alignment among key stakeholder groups. This level of assessment allows project partners to better understand social limitations and then make hard decisions around whether near-term project investments are likely to produce lasting change over many decades—or whether time and resources still need to be focused on building social infrastructure.

It is a dance...between knowing what needs to be done and then having the social capital to do it.

—Amy Verbeten, Friends of the Teton River

The Importance of Social Infrastructure

BEF initially theorized that the presence of a committed nonprofit watershed group with diverse board membership was adequate evidence of the community “buy-in” needed to advance restoration. However, it has become clear that the mere presence of an enthusiastic local watershed organization does not by itself assure that social conditions are adequate to advance real and sustained restoration progress. Through trial and error, BEF has learned that real and lasting watershed improvement has the highest probability of success in places where a broad range of community leaders embrace watershed restoration and social infrastructure is in place (or can be organized) to support and sustain restoration efforts over many decades.

We have not established criteria to specifically define or quantify social attributes conducive to successful restoration. However, in a number of cases we find that collaboration and

southwestern Washington State. The group possessed professional staff, exceptional technical capacity, and was on track to implement one of the largest estuary restoration projects in the Pacific Northwest. The positive impacts for salmon and water quality were expected to be significant, and as a result, many external partners (including BEF) were attracted to this initiative. Over time, however, it became clear that the passion that the organization held for ecological restoration was not shared by a majority of community members. Eventually a vocal minority from the community raised concerns and effectively undermined much of the proposed estuary restoration work along with the reputation of the organization. Because the larger community was not sufficiently “bought in” to the overall vision for the watershed—and what would be required to achieve this vision—there was no attempt to overcome minority opposition.

Given the complexity of watershed ecosystems and the improbability that

Institutionalizing Learning and Adaptation

In our experience, grantees ultimately become willing to own and examine successes and failures when they know a funder is a committed partner dedicated to learning, adapting, and achieving real change on the ground. Thus, we continue to theorize that one of the biggest benefits of a longer funding horizon should be improved institutional learning and adaptation.

Despite these expectations, frequent staff turnover in BEF’s Model Watersheds (and across the NGO sector in general) creates an ever-present challenge that often limits our partners’ ability to maximize institutional learning and adaptation.¹² A 2013 analysis conducted by BEF, for example, documented a sobering 84 percent rate of staff turnover among seven Model Watershed groups during a five-year period.

With this level of institutional change, it is mandatory that funders and other vested partners establish and support processes that can institutionalize knowledge of restoration history and make it a recurring requirement that partners collectively



Bureau of Land Management Oregon/ Washington

The Coos Bay watershed on the Oregon coast. The Coos Watershed Association has been highly successful as a BEF Model Watershed Program partner.

assess restoration progress and explore adaptations or course corrections. We have seen immense value result when institutional funding partners and stakeholders commit to make it a recurring priority to convene and document annual progress and lessons from the field. By routinely convening partners and comparing annual progress against longer-term restoration goals and theories for change, restoration organizations can be empowered to build on their rich history of experience and create a culture of learning, evaluation, and adaptation. External partners can play a key role in prioritizing and participating in this step and ensuring that adaptive management doesn't fall victim to the pressing day-to-day needs of local organizations.

Integrating Science and Practice

BEF initiated its watershed funding program with an underlying expectation that all aspects of the work should be “science-based.”¹³ To this end, BEF engages agency and academic scientists to review restoration strategies and provide periodic advice and recommendations to guide restoration and monitoring work undertaken by our partners.

In some cases, independent review of our partners' work has led to necessary adjustments of restoration goals and strategies. In one example, Model Watershed partners in Idaho were working hard to restore stream habitat with the belief that habitat improvements alone would increase abundance of native trout. Outside scientific reviewers, however, noted

that competition with—and predation from—non-native fish would likely negate any benefit generated by habitat restoration. Our partners, in turn, altered their approach and adapted restoration strategies to address (or at least begin to better understand) the role that non-native species play in the recovery of native trout.

Despite the importance of infusing science into watershed restoration, several factors have prevented BEF from maximizing the value of independent scientific review and input. We have found, for example, that scientists rarely possess a full appreciation for the practical and social realities on the ground—and that practitioners often fail to fully comprehend the magnitude and complexity of ecological factors that restrict their progress

Scientific Recommendation	On-the-Ground Challenge
Suppress non-native fish to benefit native species	Non-native fish are often prized by local communities and resource managers
Treat all restoration projects as experiments	Experimental inquiry is not a funder priority and thus resources needed to set up and adequately monitor restoration treatments are rare
Establish designated treatment and “control” areas to facilitate statistically valid monitoring	Permission to access control sites is unreliable, and landowners disdain using their land as a “control” because it can restrict desired restoration or recreation activities
Implement long-duration monitoring programs to assess and understand ecosystem scale responses over time	NGOs typically lack access to funding and resources needed to sustain effective monitoring programs over a sufficient period to detect ecosystem scale response
Eschew opportunistic restoration actions and instead focus on priority areas with the greatest ecological value for species of concern	Restoration priority areas often exist on private lands, and permission to implement projects on private property is often not obtainable

Table 1.

towards achieving aspirational goals.¹⁴ This disparity has made it difficult to immediately translate scientific wisdom into improved restoration practice. Table 1 draws on examples from BEF’s Model Watersheds to illustrate some of the gaps between science and practice.

Based on BEF’s experience bringing scientists together with watershed groups, it has become clear that funders, agencies and other vested partners can play a role in facilitating a two-way dialogue between the science and practice of watershed restoration. This dialogue can be used to engage scientists and practitioners as active partners in creative problem solving to identify a middle ground where practical and recommended courses of action will guide increasingly effective allocations of time and money.^{15,16}

Monitoring is Critical... but Difficult

BEF expected that its long-term funding commitment and focus on measured outcomes would solve many of the challenges around monitoring and accountability. However, monitoring continues to be a challenge.

Monitoring and evaluation programs that successfully contribute to adaptive management are rare among watershed restoration initiatives, and BEF’s own nation-wide survey of watershed restoration groups (n=213) confirmed that a majority of groups find it almost impossible to implement monitoring programs that detect the effects of their restoration work.^{17,18}

There are many reasons that monitoring remains a challenge. Monitoring efforts typically are not a high priority (partly because of the project-focused funding environment),

and funders rarely commit resources needed to sustain monitoring over sufficient time scales.¹⁹ However, through experimentation with our Model Watershed partners, we have found that the problem is bigger than just funding, expertise, or capacity.

Lack of staffing continuity and monitoring consistency over time, long-term ecological response cycles, the sporadic pace of restoration implementation, and lack of access to private lands all create challenges that limit the applicability of many conventional monitoring solutions. Furthermore, after consulting with scientists, statisticians, and monitoring experts, we find very little agreement on how best to structure a monitoring program when resources (both financial and human) are limited and frequently in flux. To be sure, there is a trove of publications and protocols



Ron Cooper

Overlooking the city of Salem in the Willamette River Basin. BEF worked with partners in the area to contract the direct supply of native trees to restore degraded streamside areas.

outlining how to monitor all manner of watershed conditions, but we have found little agreement on how best to structure a monitoring program that both reflects the practical realities of community-based watershed restoration and contributes concrete information that can clearly and decisively inform management decisions.

While effective adaptive management remains a goal of many institutions (including BEF), the challenges above have convinced us that a simpler approach is often better. Approaches, for example, that apply qualitative methods or employ the concept of an extensive post-treatment design rather than more complicated paired or “before-after” approaches appear better suited to the dynamic capacity and limited funding that drive many community-led watershed initiatives. To this end,

we have increasingly begun to test the utility of a “weight-of-evidence” approach where multiple sources of qualitative data can collectively be used to infer that environmental conditions are responding positively to restoration.

We do not possess any universal solutions at this point; however, in a number of cases, simpler and more qualitative approaches have provided more useful information to our nonprofit partners than statistically rigorous designs that require significant funding and many years to generate useful feedback. There is little doubt that statistically based monitoring plays an important role in ecological restoration. However, our experience suggests that these approaches work best when watershed groups partner with agencies, universities, or other entities that

have resources and capacity to ensure that such efforts can be appropriately designed and sustained.

We posit that funders, agencies, and other partners that support watershed restoration can and should encourage simple, practical, and sustainable monitoring approaches that are informed by science—but that do not strive to achieve a level of precision (or require implementation for a duration) that is unrealistic and unlikely to generate useful data for community groups.

Support Services: An Untapped Opportunity?

Funding is often considered the primary factor necessary to expand the scale and results of watershed restoration. Often overlooked, however, are key partner support services that can increase organizational effectiveness and expand restoration impact.



The Methow Restoration Council and Methow Salmon Recovery Foundation, in partnership with BEF, worked with federal, state, tribal, and local stakeholders to restore native fish populations and habitats along the Methow River in Washington.

In one example from Oregon's Willamette River basin, BEF worked with seven nonprofit watershed groups to identify priority tributaries in which to focus and scale up planting of native trees to restore degraded streamside areas. After several years of focused efforts, the scale of planting began to outstrip the ability of regional nurseries to supply trees. BEF and our partners were faced with either capping restoration activity or building a new service model to increase the pace

and scale of restoration. BEF worked directly with nurseries to create a contract grow operation where firm supply contracts were established and upfront funding was provided several years in advance of actual planting needs. This provided nursery operators with the financial assurance needed to collect native seed stock and significantly increase production of native plants.

In 2009 and 2010 (before the contract grow operation) Willamette Model Watershed partners planted an average

of just over 20 acres per year. By 2014, these groups collectively were planting over 251 acres of streamside lands annually and had restored native vegetation to over 66 miles of streamside habitat. Many factors contributed to the success of this work, however, the support services provided by the contract grow operation were fundamental to achieving this ramp up in restoration output.

This example showcases a type of solution not commonly considered (or undertaken) by funders or other



Eli Duke

monitoring implementation, group facilitation, peer-to-peer learning, and project design. And while needs vary from watershed to watershed, the provision of these services has demonstrated that external partners have more to offer than just funding.

Summary

Over the past 10 years, BEF has experimented with a range of unconventional strategies and support roles in an attempt to test how to increase the effectiveness of locally based watershed restoration initiatives and expand the impact of on the ground restoration investments. In spite of many remaining challenges, we are convinced that a long-term commitment should be the foundation of watershed restoration initiatives everywhere: transparency, accountability, community buy-in, and sustained levels of efficient restoration output all grow out of an approach that is not just project-based.

BEF is certainly not the only institution doing this work, and the presence and restoration activity of dozens of innovative funders and hundreds of community-based watershed groups across North America provide great promise that local solutions are poised to play a vital role in improving North America's watershed ecosystems. With this paper, we have sought to identify some readily implementable solutions that we believe are applicable across a majority of watersheds and also highlight a few areas where more exploration is needed to identify the best path forward. **S**

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supporting partners. With the inherent limited capacity of many nonprofit groups, it is critical that agencies, tribes, municipalities, and others that support this work begin to scrutinize how they might use their unique capacity, resources, or influence to provide services and support that can expand restoration potential for on-the-ground partners. BEF has experimented with providing services and support for communication and public relations, technical review,