

PRACTITIONER PERSPECTIVES:

The Workforce for Low-Tech, Process-
Based Riverscape Restoration

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BIOPHILIA
FOUNDATION



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List of Acronyms

BDA	Beaver dam analog, a type of in-stream structure
BIL	Bipartisan Infrastructure Law
IRA	Inflation Reduction Act
LTPBR	Low-tech, process-based restoration
NGO	Non-governmental organization (i.e., nonprofit organization)
PALS	Post-assisted log structure, a type of in-stream structure



PRACTITIONER PERSPECTIVES: The Workforce for Low-Tech, Process-Based Riverscape Restoration

Introduction and Purpose

Restoration practitioners, nonprofit organizations, private landowners, and government agencies have become increasingly interested in restoring riverscapes. Riverscape restoration includes many different activities intended to address the causes of degradation and rectify degraded conditions. In recent years, much attention has been given to low-tech, process-based restoration (LTPBR) techniques, which focuses on mimicking, quickly promoting, and eventually sustaining natural riverscape processes. LTPBR includes a variety of techniques intended to prompt natural processes in riverscapes. Among the best-known are beaver dam analogs (BDAs), logjams, post-assisted log structures (PALS), and sod plugs, as well as related practices like grazing management and beaver coexistence.

In recent years, many riverscape restoration efforts have focused on streams, watersheds, erosion control, and forest management now incorporate some type of low-tech practice. This is especially true in uplands, where low-tech practices are usually most suitable. When implemented at a density and scale that matches the conditions of the problem, these practices can transform degraded ecosystems into functional, healthy natural areas.

With the infusion of funds from the Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA), there was a significant increase in federal funding available to increase ecosystem resilience. Stakeholders across the West are increasingly learning about and implementing riverscape restoration techniques. Restoration practitioners are working hard to meet the moment by partnering with stakeholders to thoughtfully scale riverscape restoration while funding is available. Yet, because this sudden increase in funding and interest was unexpected, practitioners have identified organizational capacity and systemic capacity as barriers to take advantage of the monies and scale work up quickly. A lack of a workforce with riverscape restoration skills is commonly said to be one of the biggest barriers to taking advantage of the funding available.

DEFINITIONS

Process-based restoration seeks to restore the natural physical and biological processes that sustain rivers and their associated floodplains.¹

Riverscapes are streams, rivers, or wet meadows and their associated floodplains, wetlands, and riparian vegetation.

Low-tech, process-based restoration (LTPBR), as popularly used, refers to a set of practices primarily intended to increase the structural complexity of riverscapes and therefore trigger a host of natural restorative processes.² The approach is often-associated with in-stream structures, such as beaver dam analogs (BDAs), post-assisted log structures (PALS), and logjams.

¹ Based on Beechie, T. J., Sear, D. A., Olden, J. D., Pess, G. R., Buffington, J. M., Moir, H., ... & Pollock, M. M. 2010. Process-based principles for restoring river ecosystems. *BioScience*, 60(3), 209-222.

² For more information on this definition of LTPBR, see Wheaton J.M., Bennett S.N., Bouwes, N., Maestas J.D. and Shahverdian S.M. 2019. (Eds). Low-Tech Process-Based Restoration of Riverscapes: Design Manual. Version 1.0. Utah State University Restoration Consortium. Logan, UT. 286 pp. DOI: [10.13140/RG.2.2.19590.63049/2](https://doi.org/10.13140/RG.2.2.19590.63049/2).

For a deeper discussion of the LTPBR definition, see Beardsley, Mark. (2024). A Perspective on the LTPBR Phenomenon.

https://www.researchgate.net/publication/377967162_A_Perspective_on_the_LTPBR_Phenomenon

About This Report

To help understand the opportunities and challenges facing riverscape restoration workforce development, the Biophilia Foundation and American Rivers hosted two focus groups and multiple follow-up interviews with practitioners, funders, and project managers. The purpose of these focus groups was to learn about workforce needs and identify areas where increased resources or attention are needed.

Focus groups and interviews were conducted in 2023 and 2024. Ten individuals from federal agencies, nonprofit organizations, and independent firms participated. Their collective experience included the full range of LTPBR design and implementation. Participants were selected by staff from American Rivers and the Biophilia Foundation for their experience with LTPBR in the western US. Additional information was drawn from conferences and other gatherings, along with a peer-to-peer learning session with the Riverscape Restoration Network on LTPBR workforce capacity challenges in spring 2025.

Based on numerous conversations and experience in the field, we believe these findings broadly represent the views of riverscape restoration / LTPBR practitioners. We present the results in the spirit of sharing the information we collected. However, we note that the political, policy, and funding context of riverscape restoration is changing rapidly. We also caution that our information-collecting process was neither scientific nor comprehensive and recommend that readers verify the relevance of the opinions presented here with their constituents and stakeholders before making decisions based on the findings.

Findings

Finding 1. Structure of the riverscape restoration/LTPBR workforce

Participants identified four main components of the LTPBR workforce (Figure 1):

- *Project developers* identify partnerships and funding to enable the work to happen.
- *Project planners* (a.k.a. project designers) identify goals for the restoration project and create a plan to achieve the goals. This usually involves using GIS to make an assessment based on current and historical conditions. This role also handles permitting for the project.
- *Field supervisors* (a.k.a. foremen) lead the construction process in the field. A field supervisor could lead a team of staff or volunteers. Expertise includes knowing the best practices for different structure types and an ability match structures with the needs of the landscape. In a professional environment, a field supervisor might lead a crew of 5-8. Volunteer managers may lead groups of 30 or more.
- *Laborers* carry out the construction project, which involves moving and installing a variety of materials, such as rocks, posts, branches, straw bales, grass plugs, and soil. It may involve staging materials at the site. LTPBR labor is often done by hand, but it can also involve machinery like chainsaws and post pounders.

There are different ways to engage and bring on laborers in the riverscape restoration space, from volunteer to paid laborers. Additionally, laborers come from diverse backgrounds. Many project managers rely on volunteers such as community groups or youth groups, others engage youth/young adults through programs like the Conservation Corps or AmeriCorps, and some project managers – when sufficient funds are available – hire contractors or private companies to support their labor force. Practitioners have said that a combination of paid and volunteer labor force results in the most well-made and efficient structures, as volunteers often need additional oversight and training to ensure successful implementation.

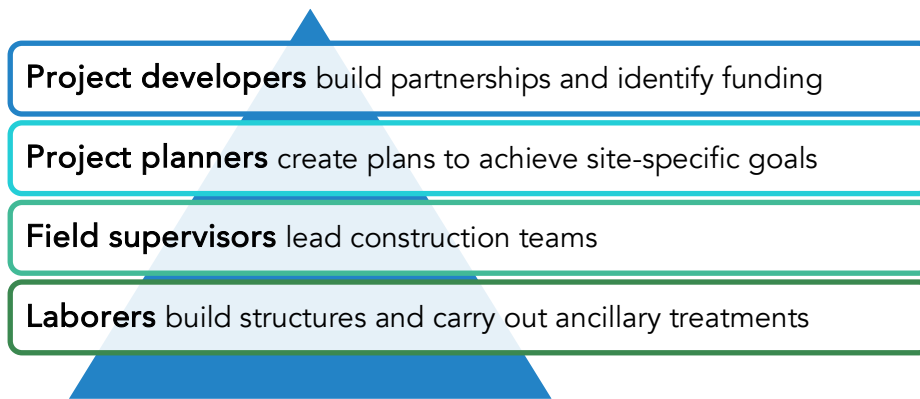


Figure 1. Components of the core LTPBR workforce

People in these four roles, who directly implement riverscape restoration projects, can be thought of as the core workforce. The core workforce is primarily employed by federal and state government agencies, nonprofit organizations, and independent firms. In nonprofit organizations, some of the workforce is made up of volunteers working at the laborer level and occasionally at the field supervisor level, who are typically supervised by staff members. In larger agencies and organizations, the roles may be filled by different personnel. In smaller organizations, individuals may perform tasks from multiple roles.

Surrounding the core workforce are additional roles that provide support or expertise. These include, for example, administration; water rights experts; legal support; engineers; researchers who further the ecological science and social science, including monitoring and evaluation; and the watershed groups and community liaisons who facilitate community support.

All agreed that scaling up the workforce is necessary to keep pace with funding opportunities and address ecological needs. The causes of worker shortages, however, are more an issue of systemic problems than a lack of interest by workers. There is reportedly strong interest in entry-level laborer positions and a general sense that there would be plenty of people to fill positions if employers could offer steady, reliable work.

See [FINDING 7. OTHER BARRIERS TO SCALING UP LTPBR](#) (page 18) for further discussion of systemic issues that keep employers from hiring more LTPBR staff.

Focus group participants had differing opinions of where in the workforce the biggest gaps were. The most common response was at the field supervisor level, but the need for project planners is also high.

Finding 2. Skills needed by riverscape restoration practitioners

While our purpose did not include itemizing the skills necessary to do low-tech riverscape restoration, focus group conversations highlighted important skills that we are able to report here.

Soft skills and hard skills

Soft skills are required to develop a strategy and manage the process – i.e., to take projects from vision through approval to completion. Examples include understanding the resources and time required, project planning, budgeting, hiring, and supervising. Soft skills also include understanding the regulatory environment and having sophisticated knowledge of how things get done (for example, one participant referred to “the games that need to be played to work on public lands”).

Perhaps the most important soft skills are people skills. Developing relationships with private landowners, agricultural land managers, and agency partners requires different skills and the taking of different roles. Focus group participants advocated for going beyond “mere approval” to gaining trust and true buy-in from landowners, grazers, downstream water users, and other invested parties.

Hard skills can be categorized into desk skills and skills used in the field. Desk skills begin with learning and understanding processes: the science, the principles, the ecological and hydrological effects of different types of structures, and how to match projects to site-specific issues. They also include paperwork, such as applying for permits, risk assessment, and technical skills, like GIS and conservation prioritization.

Field skills are many and can be broadly classified into assessment (‘reading’ the stream and landscape), project design (structure locations and the processes one is trying to evoke), construction, maintenance, monitoring/evaluation, and adaptive management. These skills take time to develop, and often mentorship and time in the field is a critical piece for workforce development.



Skilled and unskilled labor

For some, the appeal of LTPBR is that techniques can be taught in the field and require few prerequisites to learn. Yet focus group participants expressed concern over LTPBR being considered unskilled labor. The perception of unskilled labor means that agencies, organizations, and firms are not necessarily investing sufficiently in the workforce. Jobs might be contracted, for example, to a youth corps and paid poorly with little to no opportunity for advancement. Consequently, the skills developed by crews are lost when they inevitably move on. One way to help avoid knowledge loss is through permanent crew leads. This allows knowledge to be maintained and passed on, and crew leads can help train new labor force workers.

A related issue is that some employers are concerned about staff retention. New, unskilled workers are hired and trained in LTPBR. Once they have the skills and experience, they are less interested in labor-intensive jobs, especially if jobs are seasonal. (See [FINDING 5. SOLUTIONS TO SEASONAL EMPLOYMENT](#) (page 15) for further discussion of seasonal work.) Increasing staff pay or offering more consistency in guaranteed seasons of work can help improve retention.

The perception of LTPBR as unskilled labor means many laborers are underpaid relative to their impact on the land. As an illustration, one participant reported that

their LTPBR crews could, in practice, get certified to operate heavy equipment and work on form-based riparian restoration. Doing so would reportedly increase employee salaries several-fold, and they would no longer have to do manual labor. Currently, dedicated staff are remaining in LTPBR jobs because they believe in LTPBR's efficacy in restoring riparian health and functionality. However, the sustainability of this situation is uncertain.

Finally, focus group participants noted that there is a pay discrepancy across the workforce, with project developers and project planners earning far more than field supervisors and laborers. This has ripple effects throughout the system as trained laborers leave the field.

Participants also reported that agencies, organizations, and firms have varying levels of experience and skill with LTPBR. Some specialist firms have a staff that is experienced with every stage of a project, from development to construction and maintenance. At the other end of the spectrum, LTPBR can also be suitable for volunteers and conservation corps, many of whom have no prior experience. All can be productive, but less experienced workers require more oversight. Creating labor forces that include a mixed labor model – both volunteer and professional crews – can lead to higher efficiency for projects.

Finding 3. Where practitioners learn LTPBR techniques

For the most part, participants were satisfied with the content and quality of existing training programs. Elements of LTPBR that are covered particularly well include the science, the use case, risk assessment, construction, and maintenance.

Training resources for riverscape restoration are broadly known among restoration practitioners. The largest and most utilized source of training is the Utah State University Restoration Consortium (<https://lowtechpbr.restoration.usu.edu>). The USU team, led by Dr. Joseph Wheaton, also published the most frequently used reference guide:

Wheaton, J. M., Bennett, S. N., Bouwes, N. W., Maestas, J. D., & Shahveredian, S. M. (Eds.). 2019. *Low-techProcess-based Restoration of Riverscapes: Design Manual*. Utah State University Restoration Consortium. (A free PDF of the book is available at <https://lowtechpbr.restoration.usu.edu/manual/>).

Many were also familiar with or trained by Bill Zeedyk (www.partnersinthesage.com), who offers courses and is a co-author of another frequently-cited reference:

Zeedyk, B., & Clothier, V. 2009. *Let the Water Do the Work: Induced Meandering, an Evolving Method for Restoring Incised Channels*. Chelsea Green Publishing.³

The most common training path for experienced practitioners who participated in the focus group began with self-education using one of these books, supplemented by additional reading and YouTube videos. They then found a knowledgeable person who served as a mentor and provided in-field instruction. After gaining some experience, they attended a training workshop. However, not all had training before beginning. One explained that, in the nonprofit sector, staff members are sometimes “just tossed into it.”

Given the increase in riverscape restoration projects with a particular focus on LTPBR practices, federal agencies including the BLM, USFS, and NRCS are working individually and together to scale up training opportunities. In 2024, USU partnered with the BLM to host six training sessions with a focus on federal agency staff and partners, including four on data/software resources and two implementation workshops.

For people newly entering the workforce today, there is a greater expectation that they will be familiar with LTPBR, given the increased availability of training resources.

³ Participants flagged that the techniques in this book are commonly labeled process-based, though some are form-based and are not necessarily intended to reconnect floodplains or re-create braided streams.



Finding 4. Gaps in and barriers to training

While participants thought the quality of existing training options was high, they identified some gaps.

A major gap is support for transitioning to the field after attending a workshop. Some workshops include a field component, which is valuable but not always fully translatable to other project geographies. Most felt strongly that mentorship in the field is needed, that availability of mentors is one of the biggest gaps in the workforce system, and that mentorship is a key component to training effective riverscape restoration practitioners. A small number of experts is currently relied upon for mentorship, and these few individuals are also leaned on heavily for other services, including training, consulting, and implementation. There is a strong need to broaden the available mentors to help a new generation of practitioners succeed in the field.

There was also broad agreement that monitoring, evaluation, and adaptive management have been 'punted.' There are not yet consistent frameworks for addressing these components, but they are currently being worked on, and there is hope that practitioners will soon have principles of monitoring similar to the existing principles of restoration.

Other gaps in existing training include:

- Permitting and working with government agencies in locations outside Utah and Idaho

- Prioritization of projects based on data (practitioners observed that it is common for planners to return to favorite locations rather than formally analyzing suitability)
- Pre-implementation assessment and planning
- Using equipment that requires specialized skills, such as chainsaws, post pounders, and drones
- Ways to optimize implementation, such as using nearby materials and coordinating with other efforts



Participants said that soft skills are not covered in LTPBR training, although relevant knowledge is available in other venues not specific to LTPBR. For example, social science research on trust-building can provide a foundation for those who are interested in developing community-led approaches to riverscape restoration.

Participants identified several barriers to attending existing training offerings. Many people feel a need to travel to Logan, Utah, for week-long workshops offered by the Utah State University Restoration Consortium. The workshops are offered only a few times a year, and they reportedly fill up quickly with attendees from federal agencies. For nonprofit organizations, the costs and time required for registration and travel are a burden.

Online options exist and are utilized, but participants found it invaluable, even essential, to work alongside an instructor and other participants in the field. Among the elements that require field experience are 'reading the landscape,' aesthetics and finishing touches, siting, and construction. Focus group participants also commented that it is hard to learn online to be dynamic and to change approaches as the science and best practices evolve.

Participants generally thought that formal studies in hydrology or fluvial geomorphology were not necessary and therefore not considered a significant gap. Most graduate programs in those fields do not include curriculum on LTPBR, beaver-based restoration, or stages of stream evolution. Moreover, the knowledge necessary to do riverscape restoration can be learned through workshops, mentorship, time in the field, and reference materials. However, some have found that interdisciplinary teams of ecologists, biologists, hydrologists, hydraulic engineers, and others can be useful to ensure that LTPBR work is an appropriate intervention to achieve the goals of the site, especially in complex environments. Some practitioners and experts in the field said that offering certificates alongside 2- or 4-year degrees could help to increase education and awareness. Another suggestion was to engage high school students in projects and then offer courses in nearby colleges to train the science skills necessary for project management and project design. This could create a pipeline of interested future practitioners.

Finding 5. Solutions to seasonal employment

Most riverscape restoration projects in the West are constructed in spring, summer, and fall. In high elevation areas of the Rockies, the restoration season can be as short as a few months in summer. Consequently, the work is seasonal and therefore less attractive for prospective employees.

Several solutions to seasonal employment were identified. For agencies and organizations that do riverscape restoration at a large scale, work can be available



nearly year-round. These organizations can do other work in the shoulder season, such as planting, seeding, or invasive species removal. For example, harvesting for low-elevation planting projects might be done in January, planting February through May, and LTPBR projects in the summer. The off-season can also be used for training, development (i.e., fundraising, building relationships), planning, and permitting. Some people who work as field supervisors and laborers during field season can take on additional roles in the off-season. However, fewer project developers and planners are needed than laborers, so this does not serve as a year-round solution for all riverscape restoration laborers.

Staff can be utilized more efficiently when an organization has at least some multi-year projects with flexible implementation dates. Then, when short-term projects are delayed, crews can be diverted temporarily to longer-term projects, increasing staff utilization. This also leads to more job security and more reliable income for staff. River Science is piloting a new model, RiverCorps (<https://www.river.science>), to match members at organizations and agencies throughout Colorado to learn about river health and assist with river data, restoration, and management. This model could help create a more consistent workforce, plus train up the next generation of river restoration practitioners.

Some LTPBR firms are run by university faculty. These companies can hire students during the summer, another solution to seasonal employment. This provides

students with income and experience in restoration when they are not taking classes.

Finally, some participants had success finding workers in trades that use similar skills in other seasons. For example, one agency hired a tree-trimming company to help with BDA construction. The company did not normally work in the fall, and workers had skills that were directly relevant to constructing BDAs and other wood-based LTPBR structures. Training workers to build LTPBR structures gave the company a way to extend the work year and increase profit. This model can also work well in areas where forests are being thinned for fuels reduction, providing opportunity for forestry contractors to partner with restoration practitioners by providing wood for structures and learning on the job.

Finding 6. Staff training in agencies and organizations

In response to the funding that has been available, agencies and nonprofit organizations have had to rapidly increase their capacity. In addition to, or instead of, hiring internally, agencies and organizations are relying on contracted firms to fill gaps in expertise and staff. However, overreliance on independent firms may have unintended consequences.

Participants felt that, when many agencies and organizations rely on outside firms, it creates a bottleneck, with organizations competing for contractor time during restoration season. Overreliance on independent firms is also less likely to enable LTPBR techniques to be fully integrated as a tool in the restoration toolbox. For change to be systemic, staff from leadership to laborers need to know about the impacts of LTPBR techniques. This should ideally be the case across the many domains to which LTPBR is relevant: not only stream restoration, but also forest fire mitigation, erosion control, wildlife habitat, groundwater management, sustainable ranching, and more. There is concern that outsourcing projects means that agency staff will remain uninformed about LTPBR and therefore less likely to integrate it into other restoration projects in the future.

While contracted firms are and will remain an important part of the workforce, it is also important that teams, agencies, and partners with workloads related to restoration have the capacity to design projects themselves. This will help ensure projects are aligned with overall restoration objectives more cohesively.

Finding 7. Other barriers to scaling up LTPBR

For years, lack of funding has been the primary barrier to scaling up riverscape restoration. Due to the significant federal funding that became available in recent years, participants agreed that funding for implementation has not recently been the main bottleneck but noted that could change. One challenge with current funding is that many sources are time limited or have a one- to two-year cycle. This makes it challenging for employers to retain trained workers if they cannot guarantee a job beyond one or two seasons. Additionally, funding for project planning and prioritization remains a hindrance. The current sources of funding available for project planning, such as philanthropic grants and the Bureau of Reclamation's WaterSMART capacity grants, are important resources but are not proportionate to the amount of implementation funding available. There is also a funding gap for long-term monitoring and adaptive management.

Beyond funding, permitting and approvals are reported to be the primary barrier. Frustration with this process was pervasive. Participants said that one cause of delays is that, within federal agencies, restoration approvals can be slow because office staffing and workloads are not designed around restoration. Workflows focus on avoiding and minimizing impacts from authorized land uses (e.g., energy development, grazing, or recreation). Restoration is an additional workload, and agencies often lack staff to oversee the work. Recent staffing changes at federal agencies are also affecting workflows.



Delays to permitting and approvals cause problems that ripple through the system. To cite an example provided in an interview, a nonprofit organization is encountering logistical difficulties due to unpredictability of permitting. The federal agency with which they work may require a year to approve a project. Yet because outside firms, to which the nonprofit contracts the work, are busy, contracts must be in place six months prior to the project start date. This means that the nonprofit must sign a contract with a firm before receiving approval from the federal agency. Any delay in agency approval then requires modification of the contract, which is difficult for both the nonprofit and the contractor.

There are further ramifications of this scenario. Impacts on the contracted firm can be severe if the firm has hired staff for the project and is unable to deploy them elsewhere. Salaried staff are then being paid while not working, or working under capacity, thereby creating a financial hardship for the firm.

A common cause of delays is the requirements of the National Environmental Policy Act (NEPA), which are applicable to projects on public lands and/or when federal funding is used. Participants were satisfied with the law but felt it was intended to mitigate negative impacts on the land and not necessarily the right fit for assessing restoration projects. Several states have completed programmatic environmental assessments (PEAs) to streamline the NEPA process across lands managed by a particular federal agency. For example, the Bureau of Land Management in Colorado completed a PEA for “Low-Tech, Process-Based Lotic and Lentic Restoration for Colorado BLM” in 2023, with a finding of no significant impact. This will streamline restoration projects on Colorado’s BLM land in the future. Other states with PEAs for LTPBR include Montana, Wyoming, North Dakota, and South Dakota.

Finally, on private land, participants reported that some landowners and land managers do not trust what is seen as a new set of restoration techniques, and they are consequently unwilling to participate. This poses a challenge as stream restoration projects often cross multiple parcels of land and buy-in from land managers along the entire treatment corridor is necessary.



Recommendations for Increasing LTPBR Workforce Capacity

Participants recommended several systemic improvements that could facilitate riparian restoration workforce development. While these recommendations address problems that multiple practitioners experienced, we reiterate our suggestion (page 6) to verify relevance to particular situations before using this information as a basis for decision-making or policy change.

Recommendation 1: Increase mentorship opportunities

Focus group participants emphasized the importance of mentorship and the difficulty of finding available mentors. At the system level, an ideal situation would be a career ladder that offered a predictable trajectory for those newly trained, starting as laborers and progressing into field supervisor and project planner roles. Participants offered the Creeks and Communities Strategy produced by the National Riparian Service Team and the Beaver Institute's BeaverCorps training program as examples.

Currently, without a sufficient workforce in place, one strategy would be to train the workforce in the opposite direction; that is, to provide field experience to project planners and developers. We recommend that additional effort be directed toward solving this problem.

Until a systemic solution is in place, individuals may want to consult the LTPBR Explorer (<https://bda-explorer.herokuapp.com>) to find projects in their geographic area. The website is not comprehensive, but it lists many process-based restoration projects across the western United States. These sites can provide examples of completed restoration projects and potentially offer field experience to newly trained individuals.

Recommendation 2. Increase field training opportunities

Utah State University's online courses for LTPBR are readily available, and the fundamentals are available online for free. These courses provide a solid overview of LTPBR concepts, especially if combined with Wheaton et al.'s *Low Tech Process Based Restoration of Riverscapes: Design Manual* (see page 11). However, participants were adamant that online training, alone, is insufficient to learn to implement LTPBR in practice. Field training is essential.

One way to rapidly increase the number of trained laborers would be the develop numerous field training sites throughout the West. Each could offer field training predicated upon participants having completed the online USU course. This would enable new practitioners to get field experience while reducing the time and money required for travel. This approach would also increase efficiency by allowing existing trainers to reach more trainees.

Recommendation 3: Create avenues for interagency training

Currently BLM, USFS, NPS, and other agencies have their own processes for training staff on LTPBR and riverscape restoration. Yet streams and riverscapes cross jurisdictional boundaries, creating a need for a cohesive training program that enables federal agencies to work together and with private landowners. Developing avenues for interagency training, including field trips for federal employees, would create a framework for agencies to work together.

Additionally, federal agencies should reconvene the Federal Interagency Stream Restoration Working Group and update the "Stream Corridor Restoration: Principles, Processes, and Practices" interagency handbook to incorporate the latest science and knowledge on LTPBR.



Recommendation 4: Develop best practices for contracting and grantmaking

Decisions made by funders and other project initiators sometimes have unintended consequences that affect the workforce. A list of best practices, developed and circulated to project initiators, could nudge decisions that create better conditions for employers and the workforce. Examples of practices that could have a positive impact include:

- *Offer multi-year contracts:* Organizations and firms said they could operate better with contracts of at least three years and, ideally, five to ten years. When funders require work to go out to bid every year, it makes it more difficult for contractors to maintain a skilled workforce.
- *Offer flexible timelines:* It should be assumed that there will be delays in project timelines, especially if permitting is involved.
- *Pool projects:* Project initiators can collaborate with others to pool multiple projects into one contract. Having multiple projects allows flexibility when permitting delays or logistical challenges make working on a particular project impossible.
- *Offer funding for continued management of LTPBR work:* Without monitoring and maintenance, the structures may be ineffective, which reduces the perception of efficacy and hurts the prospects for future work.
- *Don't over-specify:* Being prescriptive about, for example, the number or type of instream structures ties the hands of practitioners, limiting their ability to adapt to on-site conditions. In addition, requiring engineering involvement can lead to delays and increased costs if specified where it is not necessitated by laws, regulations, or the specific context of the project.

Conclusion

While the workforce and capacity barriers for riverscape restoration are significant, there are near-term opportunities that can be implemented to assist in increasing the workforce engaged in this space. Developing strong partnerships between federal agencies, practitioners, volunteer/youth corps, and educational entities can help to create training and mentorship programs as well as access to additional virtual and in-person trainings. These same entities, along with NGOs, can distribute information about trainings and educational opportunities. Finally, there is an opportunity to partner with other seasonal service providers to identify potential new workforce partners and participants in the riverscape restoration space.



BIOPHILIA FOUNDATION

The Biophilia Foundation is a private foundation with a mission to advance biodiversity conservation on private lands by fostering systemic change through people, their communities, and direct action. Grants awarded through the foundation's Riverscape Restoration Initiative fund low-tech, process-based watershed restoration and beaver-inspired restoration in the arid regions of the southwestern US and northern Mexico.



American Rivers is championing a national effort to protect and restore all rivers, from remote mountain streams to urban waterways. Healthy rivers provide people and nature with clean, abundant water and natural habitat. For 50 years, American Rivers staff, supporters, and partners have shared a common belief: Life Depends on Rivers. For more information, please visit www.AmericanRivers.org.

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