

Bridging boundaries: scientists, creative writers, and the long view of the forest

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The Long-Term Ecological Reflections program brings together ecologists, creative writers, and philosophers at sites of long-term ecological research to advance understanding of ecological change and of our evolving relationship with the natural world. Developed as an analog to the Long-Term Ecological Research (LTER) program sponsored by the National Science Foundation, the Reflections program attempts to bridge the sciences and humanities in places like the HJ Andrews Experimental Forest LTER site (Oregon) and Mount St Helens (Washington State), where participants reflect, share ideas, and write. Records of these reflections are posted as primary, raw data (eg journal entries and video interviews) on a webpage, and completed works are published in widely circulated journals. This growing body of material demonstrates the importance of taking the long view in building ecological knowledge. The writings display the value of metaphor and story in communicating such knowledge to the public.

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At the HJ Andrews Experimental Forest in the Oregon Cascades, research scientists have established experiments to observe processes such as log decomposition, watershed hydrology, and forest succession over time periods spanning many decades or even centuries. Much of this research is part of the Long-Term Ecological Research (LTER) program, sponsored since 1980 by the National Science Foundation. For the past 6 years, the Long-Term Ecological Reflections program has brought creative writers and philosophers to the Andrews Forest, where they interact with ecologists, observe the forest, and record their own reflections, as part of a humanities program designed to last 200 years. This long view spans the time scale of forest development to the old-growth state, the life of a decaying log, and several generations of human inquiry in the forest. Taking this view stimulates thinking beyond immediate issues.

In a nutshell:

- A group of ecologists, creative writers, and philosophers is building a collection of writings on long-term ecological change and our evolving relationship with the natural world
- The Long-Term Ecological Reflections program, based at Andrews Forest, is structured to parallel the Long-Term Ecological Research program and to encourage synergies between the sciences and the humanities
- Realized and potential outcomes of such collaborations include increased public understanding of the world and of the role of science, clearer communication about natural resource management issues, and strengthened interpretive programs

Through a residency program for individual writers, as well as special gatherings of small groups combined with larger public performances, the Reflections program is designed to bridge the worlds of scientists and creative writers by encouraging them to share insights with one another and with the public.

Both the research and humanities programs benefit by sharing ideas and taking a long-term perspective. As conservation biologist and writer Gary Paul Nabhan has observed, “Science, in and of itself, is seldom enough to re-shape public opinion. People have to feel some visceral connection to an issue to act upon it...Artists and scientists...need cross-fertilization or else their isolated endeavors will atrophy, wither, or fall short of their aspirations” (Nabhan 2004). In some cases, this merging of artistic and technically grounded views occurs in individuals, such as Rachel Carson, John Muir, or Aldo Leopold, who have had profound impacts on the thoughts and actions of others. Very few people embody that talent, but perhaps collective, sustained efforts that capitalize on awe-inspiring natural settings and energize human communities in places like LTER sites can make a distinctive contribution.

In this paper, we describe the Reflections program as a promising, place-based, long-term strategy for collaboration and sustained discourse.

■ Motivations for Long-Term Ecological Reflections

Both the LTER and the Reflections programs share a commitment to long-term inquiry into ecological and human change spanning generations. Because forests, watersheds, and cultural attitudes toward them change, sometimes gradually and sometimes abruptly, a long-term perspective is essential to understanding patterns, causes,

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Courtesy of A. Levno

Figure 1. Cold, cascading streams through Andrews Forest old growth nurture reflection on long-term ecological change and the place of humans in the environment.

and consequences of such change. Both programs are founded on a sense that compelling landscapes – such as the towering, old-growth Douglas-fir stands in the Andrews Forest (Figure 1) and the lands profoundly altered by the 1980 eruption of Mount St Helens – are ideal places to conduct this work. Both programs have some planned outcomes, while acknowledging that the most interesting discoveries often come as surprises.

The Reflections program is a collaboration of the Spring Creek Project for Nature, Ideas, and the Written Word; the Andrews Forest LTER program; and the US Department of Agriculture (USDA) Forest Service (see Panel 1). Most Reflections activities are based at the Andrews Forest, a beautiful, ecologically rich forest and world-renowned center for research and education on the ecology and management of forests and streams. The LTER program at Andrews Forest has helped to foster a strong community of scientists and a system for long-term scientific inquiry.

Patterned on the LTER program, the Reflections program is founded on a set of premises shared by writers and scientists:

- that paying close attention to a particular place over a long period of time will offer insights that transcend that place;

- that an unusual richness results when insights from many different perspectives and disciplines are merged;
- that when scientists and creative writers pay close attention to one another's work, we all learn by seeing through the eyes of others;
- that the more we understand about the natural world and about the role of humans in that world, the greater will be our insight into how to live our lives.

The places where we have held Reflections field events are federal public lands, managed by the USDA Forest Service and dedicated to learning through formal designations such as “experimental forest”. The plants, animals, forests, and streams in these places have been studied for decades, through major investment in long-term science. We believe it is time to bring the humanities and arts into the study of these places as well. Efforts to intensify the sciences–humanities connection at long-term research sites come at a time of increasing interest in the implications of concept and language, especially metaphor, in communications about natural resource issues. For example, a recent debate – about “demilitarizing” the language used for discussing invasive species – centers on how best to align concept, language, and practice to effectively deal with conservation issues (eg Larson 2005; Clergeau and Nunez 2006; Turner and Paterson 2006).

For land management agencies such as the US Forest Service and National Park Service, counsel from the humanities may help to clarify the roles of the agency and the public in managing public lands. In the case of interpretive programs for public lands with large numbers of visitors, such as the Mount St Helens National Volcanic Monument, insights from the humanities can join with science to illuminate questions, such as the meaning of destruction, survival, and renewal in interrelated geological, ecological, and human dimensions. By involving writers and other artists as part of conservation, restoration, and other resource management projects, land managers and non-governmental organizations can engage individuals whose specialty is communication, people whose life's work is to think deeply about how we can live wisely and gratefully on the land. The cultural and spiritual values people attach to land, often expressed in metaphors and stories, strongly influence their decisions and actions.

■ Approaches to Long-Term Ecological Reflections

The Reflections program has two main components: (1) writer-in-residence programs at the Andrews Forest, and (2) larger, group events at the Forest and in other locations, including Mount St Helens, and the cities of Portland and Corvallis, Oregon. The Blue River Fellowship residency program brings well-established writers to the forest for 1–2-week periods (see Panel 2). The newer Andrews Forest Writers' Residencies bring early-career writers to the Forest, based on a juried application process. Each writer is asked to visit Reflections

plots, which correspond with long-term research plots in some cases, and to reflect on ecological change and our place in the changing world. The recorded “data”, including journal entries and seed material for essays and poems, are posted on the Andrews Forest webpage (www.fsl.orst.edu/lter/research/related/writers.cfm?topnav=37). Much of this work finds its way into the academic and popular press. Thus, writers and scientists carry out their work in the forest in very similar ways.

Semi-regular Reflections field symposia, held for groups of around 20, have addressed topics such as new metaphors for restoration of forests and watersheds, destruction and renewal in the Mount St Helens landscape, and the meaning of “watershed health” (Figure 2). These symposia share a core set of characteristics:

- Each involves a mix of scientists and creative writers as central participants. Others – philosophers, photographers, singers, land owners, managers of the land, politicians, the general public – are involved in combinations appropriate for the location and theme.
- Each event takes place in a particularly inspiring setting, and elements of this setting (the sound of the creek, the height of the trees, the puff of ash from the volcano) inform the discussion.
- Cross-disciplinary conversation runs along diverse paths, in groups large or small, in sessions carefully crafted or deliberately unstructured. Poetry, ceremony, silence, questioning, music, analytical thinking, and natural history are all parts of the conversation.
- Participants, individually or collaboratively, write place-based impressions and reflections.
- Each Reflections event culminates in a public performance to communicate ideas with the general public, practitioners, and others. Preparation for this “reporting-out” session also helps participants to distill their chief insights before they fully disengage from the place of reflection.
- Wider dissemination of ideas is fostered through direct communication among individuals and via publications, webpage postings, and other venues.

We also hold special events when the opportunity presents itself. For example, a public lecture duet, *Lessons from cataclysms*, brought poet Gary Snyder and forest ecologist Jerry Franklin to Portland, Oregon, on the 25th anniversary of the eruption of Mount St Helens (May 18, 2005) to speak before a crowd of more than 1600 people about cataclysm and renewal on the mountain. Together, Snyder and Franklin have more than a century of personal expe-

Panel 1. Institutional configuration

The HJ Andrews Experimental Forest, the principal venue for the Long-Term Ecological Reflections program, is home to many forms of inquiry. The Long-Term Ecological Research (LTER) program, established by the National Science Foundation in 1980, now has 26 sites around the US and in Antarctica, where scientists conduct ecological studies with a long view. LTER science, a central part of the Andrews Forest program, includes long-term experiments; decades-long measurements of streamflow, climate, and forest change; and other research looking deep into the past and, in some cases, far into the future. This work, other research, and the Andrews Forest itself are managed jointly by the USDA Forest Service Pacific Northwest Research Station, Oregon State University, and Willamette National Forest (www.fsl.orst.edu/lter).

Long-Term Ecological Reflections is a collaborative program of the Andrews Forest LTER and the Spring Creek Project for Ideas, Nature, and the Written Word, an independently funded program in the Department of Philosophy at Oregon State University. The Spring Creek Project’s mission is to bring together the practical wisdom of the environmental sciences, the clarity of philosophical analysis, and the creative, expressive power of the written word to find new ways to understand and re-imagine our place in the natural world. Spring Creek conducts writers-in-residence programs, special public events, university courses, and other activities (<http://springcreek.oregonstate.edu/>). The Reflections program is funded in part by the Forest Service, as a contribution to the agency’s research and management responsibilities for the public lands where Reflections events occur.

rience in that landscape, which has inspired them to find hope in troubled times (Snyder 2004) and stimulated fresh thinking about forest ecology and forestry (Franklin *et al.* 2000).

■ Findings from Long-Term Ecological Reflections

Although Reflections is a young program, several themes are already recurring: the importance of think-

Panel 2. Writers in residence with Blue River Fellowships of the Long-Term Ecological Reflections program, the season and year of their residency, and citations to published work from their residencies

For full listing of writers in residence and their writings, see: www.fsl.orst.edu/lter/research/related/writers.cfm?topnav=37.

Robert Michael Pyle (lepidopterist, author of *Wintergreen* and *Walking the high ridge*). Spring 2004. Pyle (2004).

Robin Kimmerer (botanist, Burroughs-Award winning author of *Gathering moss*). Autumn 2004.

Scott Slovic (eco-critic, author of *Getting over the color green*, editor of the *Credo series*, *Milkweed*). Spring 2005. Slovic (2006).

Pattiann Rogers (poet, author of *Song of the world becoming* and *Firekeeper*). Autumn 2005. Rogers (2006, 2007).

Alison Hawthorne Deming (poet, author of *The monarchs: a poem sequence* and *Writing the sacred into the real*). Spring 2006. Deming (2006, 2007).

Michael Nelson (philosopher, co-author of *Native American environmental ethics*, co-editor of *The great new wilderness debate*). Fall 2006.

Mary Evelyn Tucker (religious studies scholar, author of *Worldly wonder: religions enter their ecological phase* and co-editor of *When worlds converge: what science and religion tell us about the story of the universe and our place in it*). Fall 2007.



Courtesy of MJ Furniss

Figure 2. Scientists, medical ethicists, and writers gather to discuss the meaning of “watershed health” in a Reflections event at the site of a 200-year log decomposition experiment in the old growth of the Andrews Forest.

ing and acting with a long view; the critical roles that language, especially metaphor, plays in how we think and act; and the excitement of the creative power that flows from the conversations between art and science, and between writers and scientists. While not novel ideas, they may reach new depths and new audiences through sustained, place-based efforts.

Taking the long view

Many ecological changes, such as the development of a forest after wildfire, logging, or volcanic eruption, involve long-term processes. So too does the understanding of our place in the natural world unfold slowly over time, in part because our influences on ecosystems may be gradual and protracted, and public awakening to the consequences of these influences presents new challenges for each generation. The ecological aspects of long-term change motivated the National Science Foundation to establish the LTER program, to encourage the long view in ecological sciences at a time when most research grants and published ecological studies dealt with one or two years of

data (Hobbie *et al.* 2003). We adopted a 200-year planning horizon for parts of our LTER science and the Reflections program, because that is the approximate lifetime of the subject matter (eg a decaying log), and because thinking on this time scale challenges our ability to chronicle the sweep of change in how people understand a forest ecosystem and their place in it. Of course, neither science nor the humanities will have completed their work in 200 years, but we will have learned a great deal from starting with that view.

All of the writers-in-residence at the Andrews LTER have been deeply moved by taking the long-term perspective. The program’s first writer-in-residence, writer and lepidopterist Robert Michael Pyle, emphasized the importance of a commitment to “the long haul” (Pyle 2004). Taking the long view in ecological research and reflection, Pyle wrote, requires “faith in the future – even if you won’t be there to see it for yourself”. Writer Alison Deming went hiking with owl biologist Steve Ackers, and was profoundly moved by a full hour of reciprocated contemplation with a northern spotted owl. In her essay, *The owl, spotted* (2006), Deming writes, “Two hundred years...When I mention this timeframe to friends and colleagues, they startle, as if they assume that in two hundred years forests will be either irrelevant or non-existent. The hope of this project is that by careful and sustained observation, a testimony on behalf of the forest will have kept it alive.”

In our experience, commitment to the long view embraces the inevitability of ecological change. We become more watchful of our methods, more cautious about our conclusions, more respectful of the integral workings of ecological and biocultural communities, more tuned to the presence of the past in the living forest and watershed, and more aware of the seriousness of our responsibility for shaping the future. Many of the resident writers have suggested that regarding the world across long time scales is itself a source of hope. As Pyle wrote, “Maybe looking to the future is a way of hoping there will still be something to see when we get there. Maybe it’s the only way to make sure of it.”

■ **Paying attention to language, concepts, and metaphors**

As Barker (2006) notes, “telling a story...is at the heart of communication” for both science and creative writing. Conversations among creative writers, philosophers, and scientists repeatedly call attention to the power of language, concepts, and metaphors to shape what we can see and what we can imagine. These conversations also highlight the ways in which new language and metaphors might allow us to shape new ideas and solutions. How can creative writers draw on the rich vocabulary and conceptual insights of science to help us understand and value the world? How can scientists learn to better communicate their ideas in stories that can become part of peoples’ lives?



Courtesy of MJ Furniss

Figure 3. Writers and scientists discuss ecological, geological, and human dimensions of destruction and resilience in a volcanic landscape as Mount St Helens puffs away in the background during a Reflections gathering in July 2005.

The September 2002 Reflections symposium, *New metaphors of restoration*, posed the questions: What does it mean to “restore” habitat? What different views of restoration are expressed in metaphors such as “health and healing” or “mending and stitching”? The scientists and writers we convened at the Andrews Forest LTER soon came to understand that the principal goal of restoration was a “re-story-ing” of our own relationship to nature. Scientists can recommend tree species to plant and strategies for water-quality improvements, but causes of habitat degradation are revealed in the narratives people tell about how we are to understand our relationship to other creatures, to the processes of nature, and to the land. In his account of the Mattole River on the north coast of California, for example, Reflections participant Freeman House weaves together stories of harmony and disharmony among salmon, indigenous cultures, and the modern human community (House 1999).

In another example, forest ecologist Mark Harmon established a 200-year log decomposition study in a shady, moss-covered forest glade that has become a favorite Reflections site. The lush old-growth habitat brims with life, but the subject of the research that occurs there is decay – just the kind of paradox that inspires writers. However, it was not a poet but a scientist, Harmon, who nicknamed his field of study “morticulture”, to suggest the importance of managing the dead component of forests with as much thought and care as the exercise of silviculture takes in managing living trees. Several visiting writers have written pieces exploring this idea.

■ Ecological, geological, and human responses to extreme change

In July of 2005, 25 years after the 1980 eruption of Mount St Helens, the Reflections program gathered 20 distinguished writers, philosophers, artists, ecologists, and geologists for 4 days on a high ridge near the volcano – camping, hiking, observing, talking around campfires, and sharing ideas, interspersed with periods of quiet reflection

and time for individual writing or study (Figure 3). Harnessing the power of this place, the group explored ideas of destruction and rebirth in geological, ecological, and human terms, and asked the question: what can this radically altered landscape tell us about how to understand nature and how to live our lives?

The mountain top and adjacent forests, streams, and human lives were blown apart in the eruption, but each is taking on new forms. As ecologists, geologists, and humanists deepen their understanding of this dynamic landscape, they see the extent and diversity of surviving biological materials, and the living and dead legacies of the previous ecosystems. These biological legacies strongly influenced ecological responses to the eruption. Recognition of biological legacies has contributed to major change in forest practices across the Pacific Northwest, shifting emphasis to what we leave on a logged site, rather than maintaining focus on the logs that are removed (Franklin *et al.* 2000). The views of residents of the region will not be the same, either. Portland-based writer Ursula Le Guin, for example, has written of her near-half-century of watching the volcano, observing the mountain’s shifting moods, and her own responses, adding nuance to our cultural awareness of the special privileges and responsibilities of living in a volcanic region (Le Guin 2006).

So, what do restoration, recovery, and re-establishment really mean? Whether we are writers or scientists, we all work with the same basic materials: probing questions, accurate information, vivid imagery, and engaging narratives. Key perspectives from reflections at Mount St Helens are that change is inevitable, that landscapes and human understanding are constantly moving forward through time on the foundation of the past, and that what appears to be a disaster may harbor astonishing new opportunities. The terms restoration and recovery imply a return to former conditions, but for parts of the Mount St Helens landscape, there is no going back. These and other ideas are explored in a book-length collection of writings from this field symposium (Goodrich *et al.* 2008).

■ Conclusions

We have found that the Reflections program excites and stimulates participating scientists and writers and those who learn of this work. It is heartening to see many prospering collaborations among the sciences, arts, and humanities. New societies have been formed to foster this work, including the Association for the Study of Literature and Environment and the Society for Literature, Science, and the Arts. Engagement of writers and artists with scientists is taking place at national and international meetings and at field stations (eg an arts–science program on climate change at the North Temperate Lakes LTER site in Wisconsin and a long-term, Reflections-like programs at the Bonanza Creek LTER site and Penn State University's Shaver's Creek Environmental Center). The power of places such as Andrews Forest and Mount St Helens and long-term commitments to learning bring people together, open minds, and enliven communication. As is the case with LTER science, the Reflections program intends to create a long-term record of creative observations to increase the potential for cumulative learning and illuminating surprises. We encourage others to undertake similar, sustained, place-based programs linking science and the humanities, and to engage in comparative analysis among research sites, similar to the inter-site studies within LTER (Hobbie *et al.* 2003).

This venture is still quite new. In the short term, the program has yielded evocative and thoughtful writings that have been published in widely read journals. Evidence of larger impacts may be discernible only over longer time frames, just as the impacts of basic ecosystem science on public thinking, land management, and policy have often developed over decades. Identification of acid rain and the characterization and conservation of old-growth forests in the Pacific Northwest, for example, emerged from years of science out of the public's view. It is our belief that sustained, place-based collaborations of the humanities and ecological sciences will yield important outcomes, however difficult they may be to anticipate.

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