[*This essay first appeared in* ***Big Muddy: A Journal of the Mississippi River Valley Volume 16.1 (2016)*** *published by Southeast Missouri State University Press.*]

# Change and Comfort in Nature

(*with acknowledgement to D.B. Botkin*)

By Thomas V. Lerczak

There is great comfort in the concept of stability. It makes me feel good, for example, returning to a favorite forest, even after many years between visits, and finding it appear to be unchanged and stable. Even as I grow older, the forest seems the same, and it makes me feel young, as if I have stepped back in time. In what seems like a chaotic world at times, having something to count on is important and maybe even necessary.

But it works only if I don't think about it too much.

In his book *Discordant Harmonies*, Daniel B. Botkin writes: "Wherever we seek to find constancy [in nature], we discover change…[and] we find that nature undisturbed is not constant in form, structure, or proportion, but changes at every scale of time and space. The old idea of a static landscape…must be abandoned, for such a landscape never existed…." He made these statements after many years of studying the natural world in great detail in a scientific manner and from a variety of angles.

I have been thinking about these topics because of recent drought years in the Midwest followed by a record-breaking flood on the Illinois River, and then the harshest winter in decades; these weather events have led me to think about the concept of stability in nature. On this topic I cannot help but think of the climate. A stable climate, of course, is highly desirable for a variety of reasons; agriculture and preservation of natural areas are two that immediately come to mind. Our wants and needs notwithstanding, however, historical records bear out very clearly that over the long term, climate is no more stable than any other aspect of nature, and there is no reason why we should expect it to be any other way. One example is the Medieval warm period, a time when the Vikings were able to colonize Greenland. It was not long, though, before the onset of a colder climate called the "Little Ice Age," which may have continued through the 19th century. During the Little Ice Age, crop failures and famine were common. In Illinois during 1816, cold weather and frosts occurred repeatedly in July and August. Going back further, we find many examples of the climate changing, not the least of which were several great ice ages, where the last one, called the Wisconsin Glaciation, ended only about 10,000 years ago.

Another example that stands out is the 1930s drought combined with the misery of the Great Depression. Folks who can relate firsthand accounts of those days are, alas, dwindling in number with each passing year; even so, memories can be unreliable. To even get a sense of the 1930s, I might read a book such as John Steinbeck's *The Grapes of Wrath* or listen to a few of Woody Guthrie's dust bowl ballads, with titles like "The Great Dust Storm" and "Dust Bowl Refugee." And still, I'll never really know what it was like back then.

The article "Late Quaternary Vegetational History of Illinois," by James E. King of the Illinois State Museum, has shed even more light on past climate changes. He made a study of ancient bog sites in Illinois in order to reconstruct changes in Illinois' natural landscape following the Wisconsin glacial period. He did this by studying the pollen that had fallen into the bogs and then remained ever since. By constructing detailed graphs showing years versus pollen abundance for a

variety of plant species, King was able to show what types of plant communities occurred in the area over thousands of years. One of the most striking of his findings was that prairie grasslands, which covered about half of the state just before settlement by Americans of European descent (roughly before 1800), did not occur in Illinois until about 8,500 years ago; before that, Illinois for a time was covered in deciduous forest.

How did prairie take over the landscape from forest? The answer seems to be extreme heat and drought combined with fire. A drought not measured in decades, but in centuries. Perhaps 35 centuries. It was the mother of all droughts. For all that time, the climate must have been so severe that prairie was able to move into Illinois from the even dryer West on the Great Plains; trees died, and forests and the advancing prairies became tinderboxes, which must have burned on such an intense scale that, over time, prairie vegetation—which requires open, high-light conditions—supplanted forest. Following the expansion of the prairies, the climate changed yet again allowing wooded communities to expand as much as they were able to against frequent prairie fires, most probably set by the Native Americans. When the first Europeans viewed the Illinois country in the late 1600s, what they saw was really the latest state of a dynamic landscape that had been ebbing and flowing with climate changes and other factors for thousands of years.

Currently, prairie communities in Illinois, the few that are left from the pre-1800s landscape, struggle against encroachment by woody plants. The 1,500-acre Sand Prairie-Scrub Oak Nature Preserve, in Mason County, Illinois, provides a good example of this phenomenon. The preserve is a mosaic of remnant and restored sand prairie, woodland, and savanna; it has been managed by the Illinois Department of Natural Resources with controlled fires for several decades. With an excellent fuel source of dried oak leaves and prairie grasses, the fires can be intense, especially with warm temperatures, low humidity, and even moderate winds. Yet even though trees may show fire scars, most survive the fires intact. Saplings are typically top-killed, but readily re-sprout from the undamaged root systems, later sending up multiple shoots. Fire management may have slowed the advance of the woody vegetation onto the sand prairies, but the advance continues nevertheless. The prairies have not advanced into the woodlands, despite all of the controlled burning.

*Oak encroaching on the prairie at Sand Prairie-Scrub Oak Nature Preserve*

Because decades of fire management have not been adequate to maintain the natural communities at this site, as a desperate attempt to reverse these successional changes to a previous state, to prevent further loss of the prairies, state biologists have made the decision to begin cutting back the advancing oaks with chainsaws and treating the cut stumps with herbicide, thereby preventing regrowth. On

[*This essay first appeared in* ***Big Muddy: A Journal of the Mississippi River Valley Volume 16.1 (2016)*** *published by Southeast Missouri State University Press.*]

one workday, I joined a crew of resource managers to cut advancing oak trees on the periphery and within the highest quality prairie opening at the preserve. At day's end, I looked back upon our work at this nature preserve, a site that has had a special place in my life for over twenty years, a place to escape the rigors and complexities of the modern world, not just in imagination but in reality; it is a place wherein, according to the Illinois Natural Areas Preservation Act, which allowed for the creation of the Illinois Nature Preserve System, "…one may envision and experience primeval conditions in a wilderness-like environment." What I saw were slash piles and stumps, and my feelings were ambivalent. But what was the alternative? Continued succession to forest and eventual loss of the prairie, and I did not wish that. And what of the primeval, wilderness-like qualities? Does a natural area maintained with chain saws and herbicide still qualify to be called a natural area? Perhaps imagination must now play a larger role.

With these thoughts in mind, it seems clear that rather than seeking in vain for constancy in nature, our labors might be more fruitful if we looked for signs of change, which are all around us. But because the clues are usually subtle, patience and attention to fine details will be required.

* * *

One of my favorite hikes is through the Funks Grove Natural Area, just west of Interstate 55 in McLean County, Illinois. It is an old-growth tract of forest, with portions protected as part of the Illinois Nature Preserves System. Every time I visit this site, I hear the words "forest primeval" in my mind. Some of the oak trees are the largest I have ever seen, and the forest interior is quintessentially dark and quiet. At first glance, it epitomizes stability.

But even this forest is changing, although the change is not usually discernible from year to year. Giant red oak, bur oak, and sugar maple trees may still form the forest canopy, but seedling and sapling oaks are nearly absent. There are, however, an abundance of pawpaw trees and sugar maple trees in the forest's sub-canopy. These species create deeply shaded conditions that can prevent oak seedlings from surviving. What will happen when the mature oaks die of old age? This forest primeval is changing. The Funks Grove Natural Area may be protected by state law from direct destruction, but the state law cannot change the laws of nature. Another Botkin quote, from his book *Strange Encounters*, may help to inform our expectations of the natural world, though the quote may not exactly bring comfort, and it doesn't make me feel young again: "Ideas about our relationship with nature…[are] confused by wish, want-to-be, and imaginary worlds that have never existed."

*Dead canopy oak with understory sugar maples, Funk's Grove Natural Area.*

[*This essay first appeared in* ***Big Muddy: A Journal of the Mississippi River Valley Volume 16.1 (2016)*** *published by Southeast Missouri State University Press.*]

Many years ago, well before I entered the natural resources field, it pleased me to view natural areas as places where nature was left unhindered to follow its own course, wherever that may have led. So when I first became aware of the notion of "managing" a natural area, I was quite taken aback: No, such a view could not possibly be right! How arrogant, I thought, for people to think they could maintain a natural area better than the natural processes that allowed it to form in the first place. But those ideas I have left far behind, mainly as a result of studying the science of ecology in detail and corroborating what I learned with my own observations. For others, though, I wonder if one of the reasons folks in general so easily expect stability in nature is because our increasingly urbanized, computerized population has learned to compartmentalize the natural world; it is a place to visit for a time, much like a museum, that can be left behind and later returned to with the expectation that nothing will have changed in the interim. Meanwhile, the real world, where the serious business of living occurs, is unreliable, chaotic, stressful, and noisy, offering little in terms of comfort and peace.

In fact, if a common public perception of an undisturbed, old-growth forest is of stability, then the opposite would have to be along the advancing front of a growing suburban area. Here subdivisions gobble up the farms, fields, forests, and wetlands faster than one can keep track; nothing is sacred and everything has a price that reliably and inexorably rises with time and more development. After the wave of intense change passes, there is usually little of the previous landscape left behind: perhaps only the shape of the land itself as rolling hills and basic drainage patterns, but not much else; a protected nature preserve may remain and be completely surrounded by buildings, roads, and concrete. In such an environment, the human hand is a tornado, an agent of rapid change and complete transformation. Who with a love of nature would not prefer an imaginary world of wish and want-to-be?

* * *

Along the central Illinois River valley in May, it is worthwhile to take a good look at the landscape of forested bluffs with deep hollows, steep hills, and complex ravine systems. The forest has an unmistakable patchiness of white against the deep green of new growth from trees such as sugar maple, white oak, shagbark hickory, and hackberry. This patchiness is caused by the white flowers of black locust trees, which can occur as single trees or small groups.

Only at this time of year do these trees stand out from the rest of the green, and show just how pervasive black locust has become. The flowering black locusts add a subtle texture and beauty to the forests as seen from afar. Yet I find the widespread distribution of this tree troublesome, because black locust trees are fast-growing and spread rapidly. Black locust is, in fact, increasing at the expense of native trees such as the oaks and hickories, spreading not only by seed, but also by underground runners; a small patch may actually be a single organism, connected together by the root system.

Black locust, a member of the pea family, did not originally inhabit central or northern Illinois. Its natural distribution is mostly south of Illinois, extending into the state only in the southern counties. It was purposely brought elsewhere mainly for its utility as fence posts, railroad ties, firewood, and erosion control. But by bringing this invasive species into areas where it normally did not occur, we have changed our forests apparently forever.

[*This essay first appeared in* ***Big Muddy: A Journal of the Mississippi River Valley Volume 16.1 (2016)*** *published by Southeast Missouri State University Press.*]

But why should this matter? Leaving the ecological effects on the forest aside, it is really a question of what we decide to label as natural, which is by default judged as good and desirable, or unnatural, which is usually thought of as undesirable. Unnatural, with its negative connotation, also implies a human-mediated situation. But is this really what we want, a dark cloud over ourselves? Do these labels truly reflect reality? Why not cultivate a view of nature that also includes human influences?

Ethnoecologist M. Kat Anderson suggests that human-nature interactions be considered from the perspective of a continuum, where complete use and destruction of nature is at one extreme (clearcutting, bulldozing, and then paving over an area) while pure wilderness (no human influence) is at the other extreme. An area could then be evaluated not simply as natural or unnatural; but rather, its evaluation could be based on where the site places on the human-nature interaction continuum. The judgement, then, of whether a human influence is good or bad loses its meaning. And the question of what is natural also loses its meaning. For example, it makes little sense to suggest that the prairies of central Illinois maintained by Native American burning for thousands of years were any less natural than the changing climate that allowed the same plot of ground in central Illinois to support Arctic tundra during the Ice Age, then deciduous forest, and finally tallgrass prairie. Each of these natural communities while they prevailed probably would have seemed stable, though, because changes noticeable at the plant community level would have more than likely occurred over time spans much greater than a human lifetime.

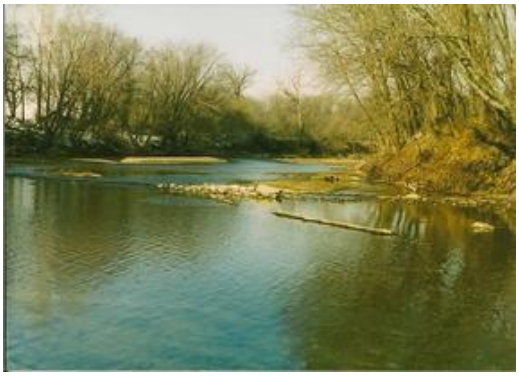
* * *

Noticing gradual change over the long term and observing events in nature without bias are difficult tasks. Sometimes I'll think about this when crossing the Spoon River's route 97/78 bridge, west of Havana in Fulton County, Illinois. The river's channel is constrained by the bridge, but elsewhere it is active, changing its course ever so slightly with each year. I know this is happening, even though I can't actually see it in progress. The changes are subtle. It is our poor ability to notice gradual change in nature that enables us to expect stability, especially wherever human influences are absent or minimal. People speak of "the balance of nature." In his book *Our Natural History*, Botkin wrote about this phenomenon when he stated that "In our minds, we have an idea of nature undisturbed by human influences as constant, fixed, and permanent." In other words, "in balance."

Botkin points out that a natural river is an example of how something may be constantly changing, and yet still seem the same, giving the illusion of stability. A river will be continually changing its course over its floodplain in a very gradual way as it slowly, over periods of years, meanders over the landscape, randomly forming curves, sand bars, pools, and islands. Channels are eventually abandoned even as new ones form. View a particular stretch of a river from one day to the next and, barring catastrophes, nothing may seem different; but see the same scene after ten years, and it will be obvious how much has changed, though the same types of features will likely be there as before. Of course, not all rivers are equally active. Still, in general, a meandering river epitomizes how changes tend to occur in nature.

I have noticed this phenomenon along many rivers, but at no better site than

the Salt Creek in Mason County, Illinois. Salt Creek has been channelized over most of its length. But at Barton-Sommer's Woodland Nature Preserve, in the far southeastern corner of the county, Salt Creek meanders like a natural river. I wrote about this site in my book *Side Channels*: "…there is…evidence of previously shifting stream channels [at this preserve]: curved undulations of the ground that fit together like a giant jigsaw puzzle. The meander scars in the ground show that over the long-term, the floodplain is a dynamic environment, altering its shape as the stream slowly moves across the land…."



*Salt Creek at Barton-Sommer's Woodland Nature Preserve*

Our view of how nature works—static versus dynamic—is important because, as Botkin noted, again from *Our Natural History*: "…when we sit down to work out how the environment should be, when we set down plans to manage and conserve nature, we get ourselves into trouble because we forget about the naturalness of change…and we revert to our belief in the constancy of the environment." Since this is our natural inclination and it provides a feeling of security and comfort, I am not surprised, within the context presented above, to find a group such as the United Nations' Intergovernmental Panel on Climate Change seeking in recent years to prevent no less than the earth's climate from deviating away from some apparent optimum—dare I suggest, "stability." The notion causes me a certain degree of uneasiness. Because, with all due respect, it has been my experience that our understanding of nature is not complete—computer wizardry (modeling) notwithstanding—which makes predicting future conditions, especially on a global scale, problematical, let alone determining cause and effect. For example, I would contend that even small systems like remnant native prairies are not understood well enough in order that they can be adequately managed and not continue to fade away. How well have we done at managing larger ecosystems such as the Great Lakes, referred to by author William Ashworth as the "late Great Lakes"? Are we ready to tackle the entire biosphere in its unimaginable physical and biological complexity? Is that even possible?

In spite of this, I am still optimistic that progress will continue to be made at improving our understanding of nature and at least properly addressing our environmental problems—as long as we see things as they are and remain inquisitive and bold enough to challenge favored ideas that fail alongside of unbiased observations. For as Albert Einstein said, "The important thing is not to stop questioning." And that is a comfort.

**Selected References**

Anderson, M.K. 1996. Tending the wilderness. Restoration and Management Notes 14(2):154-166.

Ashworth, W. 1987. The late, Great Lakes: an environmental history. Wayne State University Press, Detroit, Michigan.

Botkin, D.B. 1990. Discordant harmonies: a new ecology for the twenty-first century. Oxford University Press, New York.

Botkin, D.B. 1995. Our natural history: lessons of Lewis and Clark. G.P. Putnam's Sons, New York.

Botkin, D.B. 2003. Strange encounters: adventures of a renegade naturalist. Jeremy P. Tharcher/Penguin, New York.

Clark, R.W. 1971. Albert Einstein: the life and times. The World Publishing Company, New York and Cleveland.

Illinois Natural Areas Preservation Act. http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1739&ChapterID=44 referenced on 15 February 2015.

Intergovernmental Panel on Climate Change. http://www.ipcc.ch/index.htm referenced on 16 February 2015.

King, J.E. 1981. Late Quaternary vegetational history of Illinois. Ecological Monographs 51 (1): 43-62.

Lerczak, T.V. 2011. Side channels: A collection of nature writing and memoir. Mill City Press, Minneapolis, Minnesota.

Pirtle, C. 2000. Escape betwixt two sons: a true tale of the Underground Railroad in Illinois. Southern Illinois University Press, Carbondale and Edwardsville, Illinois.

Steinbeck, J. 1939. The grapes of wrath. P.F. Collier and Son Corporation, New York.

Taylor, C.A., J.B. Taft, and C.Warwick (editors). 2009. Canaries in the catbird seat - the past, present, and future of biological resources in a changing environment. Illinois Natural History Survey Special Publication 30. Illinois Natural History Survey, Champaign, Illinois.