

Harbingers of the Next Century

By Wade Sikorski

It's spring, and it is springing the way it usually does in southeastern Montana--an all-too short moment of green relief from the winter's cold trials of wind and snow before the onset of summer's relentless tanned landscape. I find myself out, going around the fence after the spring planting is done on my family's ranch. I like fencing. It is an opportunity to be by myself, alone with my thoughts. I love the fresh smell of grass emerging over the musky smell of decaying grass that the winter's snow pressed flat on the ground. I love watching the wary antics of rabbits as they eye hawks swirling overhead. But the last couple of years, my thoughts have taken a more troubling turn.

Spring fencing is an opportunity to take note of the changes time brings with it. Some changes have had their moment and returned again, like a corner post that I made in my youth, which I assured myself would last forever, I discover needs replaced again. Other changes are completely new, like seeing how cheat grass has climbed up to the top of our buttes, where only native grass grew before, or seeing a species of bird that I had never seen before, singing a song I had never heard before.

As I follow the fence line, I am carried even further back in time to when perhaps my great grandfather, or more likely, my grandfather, my granduncles, or a forgotten hired man did as I am doing. The fence line has seen many fencers come and go. Next year, 2011, my family will celebrate our 100-year anniversary of living on this place. And so, as I repair a splice so old parts of it are welded together with rust, I check my fencing skills against previous efforts, the kind of splice they made, the number of turns, their diligence, or lack of it. The wire in my hands goes back to the time when my family still used horses to work the fields and pull wagons, and when steam tractors were the advancing technology. Made much like the locomotives used to pull trains, these behemoths wandered the hills of our place like dinosaurs, breathing fire and smoke. Steel wheels, perhaps 10 feet in diameter, and a couple of feet wide, provided the traction need to pull the plows that broke up the prairie. Various pieces of them lie discarded along the fence, a strange assortment of broken gears, bent shafts, and twisted bits of metal that someone didn't bother to carry back home to the junk yard.

In those days, cedar posts were often used to make corner posts. Gnarly with age, weathered by wind and rain, and covered with mold and lichen, they often are leaning, as if rotted out. But I know that if I pull them out of the ground, and scrape the dirt away, the wood will look as fresh as the day they were buried. Instead of making a corner post that looks like an H, as my father taught me to do when I was a child, the people who put them in usually braced them diagonally, going from the top of the post down to the ground 4 feet away. Even though the cedar posts haven't rotted, the pull of the wire over the decades has been slowly, perhaps a hair's breadth a year, levering them out of the ground, leaving them barely anchored. Too often, I find myself replacing them with new corner posts that won't last a fraction of the time, erasing the mistakes of the past.

In a draw where the snow laid deep during the winter, burying the steel fence posts that used to hold up the barbed wire, there is the evidence of the much more regrettable mistakes of our present that increasingly troubles me. For an entire stretch about a hundred yards long, the weight of the snow resting on the wires as it melted, has forced the steel fence posts deep into the soft spring ground, like a straw settling into a milkshake. The steel fence posts should be chest high, an impassable barrier to an animal that is never more than chest high. Now the tops of the posts only reach my knees. If the cows

could survey the fence in its sad state of repair, I'm sure they would leap over it, kicking up their heels, as if saying, "Free at last, free at last, thank God Almighty, free at last."

This, obviously, will never do. I stop the pickup, pull on my gloves, and reach for the fence post puller. The puller has made my work much easier the last couple of years. It is just two tubes of steel, a fulcrum and a lever that has a clasp on the end of the lever to grab hold of the post. I go to the first post in the line, and put the base next to the post, raise the lever up, settle the clasp around the post, and ratchet the post up out of the ground. It is all so easy. At a restaurant in town one Sunday, I ran into a neighbor who had also recently bought one of these tools as well. We marveled at its simple engineering. We shake our heads and wonder, what had we done before?

Then it occurs to me: we hadn't really needed anything like this tool before. We didn't use to have to jack long lines of posts out of the ground in the spring. When I was a child, the wire would break from the weight of the melting snow, but the steel posts would stay where they were. Still frozen, the ground held the posts firmly in place as the snow melted. However, for the last decade or so, the frost has been out of the ground when the spring blizzards came. Now, when the snow melts, the ground is soft mud, unable to hold the posts in place, and so they sink.

For a while now, I have been contemplating the meaning of this change in my annual spring routine, having to pull posts back up out of the ground. It is a small change, to be sure, and I would hesitate to complain about it--if it were not a harbinger of so much more.

On another part of our ranch, we have a draw filled with trees. My family has long treasured them because most of southeastern Montana is treeless. Recently, we discovered that the trees are all aging, near death, and no new trees are replacing them. Alarmed, we invited a government scientist in order to try to figure out what was wrong. He speculated that a shift in grazing patterns had changed everything. The buffalo used to concentrate their grazing on the prairie, tearing up the ground with their hooves, leaving the ground trampled and bare, perhaps giving tree seeds a chance to get started. To see if this explained what was happening, he had us fence in two test plots on the draw. One we grazed heavily with cattle, the other we didn't graze at all. However, after a couple of years passed, it was clear that concentrated grazing didn't change anything. No new trees were starting in either plot. After some reflection, the scientist told us that he believes that the reason the trees are not reproducing in our draw is a change in the hydrological cycle due to climate change.

It's the same problem as with the steel posts. The warmer winters are melting snow throughout the winter. Snow does not accumulate on the ground the way that it used to, piling up deep in the draws where the trees are. Without the heavy snow to water the tree sprouts and to delay the grass, the trees are finding it too hard to compete against the aggressive prairie grasses.

Other changes on our place suggest more serious economic consequences. On our ranch, we have a flood irrigation system of about 60 acres. When I was a child, the spring melt usually filled the system of dikes with runoff from top to bottom. Some years, we might even have had two or three times as much water as we needed to flood all the dikes. One of my most vivid childhood memories is standing on a muddy dike in the middle of this project, water all around me like a sea. Cold, wet, and tired, I had been dragging ten pounds of mud on each boot around all day, walking up and down the dikes to open and close the watergates in the dikes. Little more than three feet tall, if I slipped on the mud and fell I would have been in over my head on either side. I didn't know how to swim, and doubted if I could anyway with my winter clothes on, so my thoughts were tending toward rebellion.

Today, cold, wet, and tired isn't a problem because the water doesn't come anymore. For the last decade or so, I could walk the lands between the dikes most years and not even get my boots wet. Perhaps our annual precipitation has declined, but not by that much. What has happened is that our long cold winters, where the snow accumulated until spring and then melted in a rush, have changed. Now, the snow typically melts away throughout the winter, frequently leaving the ground bare, without snow cover. Without the white snow to reflect the sun, the dark ground absorbs more heat. By spring, the ground has thawed and the water soaks in before it has a chance to run off into our irrigation project.

This irrigation system, which worked really well throughout my childhood, is not watering our land anymore. As a result, the hay windrows that used to be too big for me to jump across, are now only a casual step wide. We used to get more than enough hay off this one piece of irrigated ground to feed our cattle herd all winter long. Now we hay a lot more ground to do the same thing.

According to a recent federal government report, Montana will average 50, maybe even 60, days a year with temperatures over 100 degrees by the end of the century under a high greenhouse gas emissions scenario.¹ On average, temperatures across Montana could increase more than 10° F.² This report might be conservative. A recent study by the Massachusetts Institute of Technology called "Greenhouse Gamble" shows that under both a "no policy" scenario, which is to say business as usual, and a scenario where nations started to take some action in the next few years, the odds have shifted in favor of larger temperature increases than has been previously reported. By the end of the century, there is a 1 in 11 chance that the global average surface temperature will increase by more than 12.6° F. There is a ninety-percent chance that the increase will be between 6.3 and 13.3° F.³

People who are not farmers might not understand what this means. An increase of something like 10° F in Montana--which, by the way, will be less than most of the rest of the United States--would radically decrease the productivity of my family's farm. Several times, especially during the droughts of the late 80's, our fields looked lush and green in the morning. The leaves provided a canopy over the ground, choking out the weeds and protecting the soil from drying out, promising at least a decent harvest despite the drought. Later that day, after the temperature went over 100, the crop had clearly deteriorated. Bare ground was showing through the canopy because the leaves had narrowed, withered, and shrunk. It was as if, like a turtle, the wheat had pulled its stems and leaves back into the ground, trying to keep itself safe from the harsh sun.

My rule of thumb, which is probably conservative, is that for every day temperatures are over 100 degrees, our wheat yields fall one bushel per acre, two if there is a dry breeze. Using no-till continuous cropping, the spring wheat yields on our place are now between 20 and 30 bushels per acre. If we assume that only half of those 50 days over 100 degrees will be during the growing season, our yields will fall 25 bushels per acre with the higher temperatures. In other words, my family might not even be getting our seed back by the end of the century.

¹ *Global Climate Change Impacts in the United States*, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson (eds.), (Cambridge: Cambridge University Press, 2009), pp 90. <http://www.globalchange.gov/usimpacts>.

² *Global Climate Change Impacts in the United States*, pp. 29.

³ Sokolov, A.P., P.H. Stone, C.E. Forest, R.G. Prinn, M.C. Sarofim, M. Webster, S. Paltsev, C.A. Schlosser, D. Kicklighter, S. Dutkiewicz, J. Reilly, C. Wang, B. Felzer, J. Melillo, H.D. Jacoby, "Probabilistic Forecast for 21st Century Climate Based on Uncertainties in Emissions (without Policy) and Climate Parameters," *Journal of Climate*, 22(19): 5175-5204, 2009, <http://globalchange.mit.edu/resources/gamble/>

Scientists are only slightly less gloomy than I am on the impact of higher temperatures on crop yields. Crop ecologists believe that for every 1.8° F rise in temperature above historical norms, grain production will drop 10 percent.⁴ Similarly, a paper by Wolfram Schlenker and Michael J. Roberts reports that corn yields across the United States could fall by up to 80 percent under a high emission scenario by the end of the century.⁵ Yields like this simply won't come close to feeding the world's growing population. People will starve, possibly by the billions.

For a century, my family has endured blizzards and droughts, and we have survived plagues of grasshoppers, bankers, lawyers, and low commodity prices. The natural disasters were bad, but to my way of thinking the human-caused disasters, the ones that typically involved politicians, bankers, and lawyers, were always worse. Over the next century, we are going to confront them together, a human-caused natural disaster. The harbingers of that future are already upon us. We simply must not, must not, allow the worst to happen.

⁴ Lester R Brown, *World Grain Stocks Fall to 57 Days of Consumption*, Earth Policy Institute, (June. 2006) <http://www.earth-policy.org/Indicators/Grain/2006.htm>

⁵ Wolfram Schlenker and Michael J. Roberts. "Nonlinear temperature effects indicate severe damages to U.S. crop yields under climate change," *Proceedings of the National Academy of Sciences*, 106 (37), September 15 2009, pp.15594-15598.