

LISA KNOPP

No Other River

It's an annual rite. Sometime between late February and early April, I drive west on Interstate 80. In south-central Nebraska, both the Platte River and the interstate swing low toward the Nebraska-Kansas state line. Somewhere along the bottom of this catenary curve, I pull off the interstate and drive gravel roads south of the river. What I'm looking for is the world's largest gathering of migrating sandhill cranes. They're easy to find. The half-million cranes are concentrated, more or less, within the forty-mile stretch of the river between Grand Island and Kearney, the narrow waist on the hourglass-shaped Central Flyway and the narrowest part of the crane's migratory route. Because this part of Nebraska is relatively flat and open, one doesn't have to look hard or far to see the elegant, leggy, four-foot tall, red-capped, gray birds.

I come to watch them feast and dance and drop out of and rise into the sky. Most of the cranes congregating on the Platte are lesser sandhills, the crane with the longest migration. The remaining cranes are greater sandhills and the endangered whooping cranes. After the roughly 600-mile trip from their winter homes in eastern New Mexico, northwestern Texas, and northern Mexico, the sandhill cranes are lean and hungry. Once in Nebraska, they glean corn left from the harvest and slurp up snails, worms, grubs, insects, snakes, and crayfish in the wet meadows near the Platte. Each crane stays in Nebraska about four weeks and adds a pound or so of fat during this time. At night, they return to the shallow river where they sleep standing in water, usually on one leg in roosts of as many as 10,000 to 15,000 cranes per half mile of river. From the air, these sleeping masses, some of which are a mile long, look sandbar-shaped, and the individual cranes are evenly spaced, as if, writes Steve Grooms in *The Cry of the Sandhill Crane*, positioned on a grid of four-foot squares, each bird staying just beyond the reach of its neighbors' sharp bills. At dawn, the cranes head for the fields near the river.

And there, they dance, bowing, strutting, pumping their heads, raising their bills, flapping their wings, tossing corncobs into the air, and gracefully hopping as high as twenty feet. "Great bouncing

balls” is how one observer described them. “Great theater” is how I describe the dance. Scientists once considered the dance to be a mating ritual. Yet the behavior isn’t limited to mated pairs. Juveniles, chicks, and unpaired cranes dance as well. Now, scientists believe that the dance serves several functions: it is a courtship ritual performed mostly by unpaired cranes; it is a bonding ritual among life mates; it is a way, according to Nebraska ornithologist Paul Johnsgard, to “thwart aggression, relieve tension, and strengthen the pair bond” and so is enacted year-round.

I drive back roads with other crane-watchers (“craniacs,” we’re called) who creep along at ten to twenty miles per hour, radios off, windows down. We stop frequently to peer through binoculars. But if I see cranes spiraling on motionless wings on rising columns of air (“kettling”), I stop, get out of my car, and watch. Johnsgard, who has been watching cranes since 1962, speculates that cranes might use these “high-altitude maneuvers as reconnaissance flights” before they leave the Platte in the spring in order “to scan the river and commit its topographic features to the collective memories of the flock members.” Johnsgard says that this activity may be especially important for the younger and more inexperienced birds, since they must learn all the species’ most reliable migratory stopping points along their several-thousand-mile migration. Kettling also prepares the cranes for that time when they leave this part of the Central Flyway in a dramatic mass departure, winging north over the Nebraska sandhills and on to their breeding grounds in northeastern Siberia, Alaska, and northern Canada. When they go, they take tons of Nebraska with them: grain, insects, and invertebrates converted into flight fuel. When they leave, we craniacs go home, carrying images of these great, gray-clad “preacher birds,” as travelers and settlers once called them, delivering their wild sermons near the Platte.

Though I’d lived in Nebraska many springs and many times had planned or promised myself to make the trek west to their staging grounds, I didn’t see my first cranes until 2000. Then, on Alda Road south of Wood River, Nebraska, I pulled onto the edge of a gravel road and watched. At first, I didn’t know what I was seeing and hearing. Movement in the cornfields. A chorus of trills, trumpets, rattles, calls, and croaks. A sky speckled with black dots. Dropping out of the sky were big birds, with broad, cupped wings, over six feet from tip to tip, fully extended necks, and dangling legs, an

almost cartoonish sight that reminded me of people dangling from parachutes. I had never seen or heard anything like this great congregation. I wept with joy. Now, I return to the central Platte each spring just as the cranes do. The cranes know of no other springs than these along the Platte. How good and homey this stretch of the river must be to them after so many spring returns.

The sandhill crane has had many Nebraska landscapes “to scan... and commit its topographic features to the collective memories of the flock.” Nearly ten-million-year-old crane fossils, similar to those of the Crowned Cranes, one of the two crane subfamilies, were found buried in beds of volcanic ash at Ash Falls Fossil Beds State Historical Park near Royal, Nebraska. Typical Cranes, the other subfamily, which includes the sandhills (*Grus canadensis*), first appear in the fossil record in the Miocene, five to twenty-four million years ago. In the 1920s, Dr. Alexander Wetmore, an avian paleontologist with the Smithsonian Institute, found an eight- to ten-million-year-old fossilized humerus or “arm” bone of one of the Typical Cranes in Nebraska. Wetmore said that he couldn’t distinguish this bone from that of a contemporary sandhill crane.

During the Miocene, *Grus canadensis* were here when the Rockies were being uplifted and the climate changed enough that the forests contracted and the grasslands evolved. Did the Miocene cranes migrate, too, or were they permanent residents of what is now Nebraska, sharing the landscape year-round with exotic grazing mammals (rhinoceroses, elephants, camels, and the curious ancestors of the pig, sheep, deer, and horse) and equally exotic predators (lions, short-faced bears, dire wolves, and saber-toothed cats)?

The sandhill cranes were here during the Pliocene, when the world became colder and ice sheets formed and descended upon the center of North America. Then, the cranes fed, danced, and roosted in a landscape covered by ice and bordered by arctic tundra or coniferous forests, rather like their present-day summer breeding grounds. The cranes were here as the landscape, flora, and fauna were reshaped by the repeated waxing and waning of the great glaciers. The cranes persisted as much of the megafauna, for whatever reason or cluster of reasons—volcanoes, meteorites, climate change, the arrival of new species (namely, spear-hurling, flesh-eating humans)—became extinct.

During the early Pleistocene, the cranes were here when wind-blown loess, a yellowish, “rock flour” sediment, covered glacial deposits in parts of Nebraska, Iowa, and Missouri. Then they shared the sky with giant condors and teratorns, as well as birds that we recognize. Ten thousand years ago, at the beginning of the Holocene, the current epoch, the cranes were here when meltwater from the Rockies moved east across the Great Plains to the Missouri River in a sprawling, braided course. For ten thousand springs, the sandhill cranes have danced and loafed near the Platte.

The cranes were there as almost a half million people passed over the Great Platte River Road on foot or horse or in wagons to what is now Utah, Oregon, Colorado, and California in the mid-nineteenth century. Nebraska historian James C. Olson called this road, with its “broad, flat valley” and its easy climb to the foothills of the Rockies, one of the world’s “great natural highways.” The cranes were there when some of those emigrants settled down near the river, planting corn and wheat and trees, building cities, towns, roads, and railroads. The rapid decimation of sandhill crane populations in Nebraska, due to loss of habitat and over-hunting, began with gusto in the 1870s. The 1925 account of sandhill cranes in Bent’s *Life Histories of Familiar North American Birds* includes a quotation by Professor Wells W. Cooke, an expert on bird migrations, that suggests how precarious the crane’s existence once was: “Its numbers have decreased decidedly in the past 30 years, and it is now rare as a breeder in the southern half of the above-defined breeding range.... It is interesting to note that it still breeds commonly in Florida where it can still find large tracts of uninhabited, open plains; *here it will perhaps make its last stand*” (italics are mine).

The cranes survived several waves of extinctions, including those of the nineteenth and twentieth centuries, and were here when the last passenger pigeon, carolina parakeet, heath hen, great auk, Bachman’s warbler, slender-billed grackle, Labrador duck, and numerous species of hummingbirds, including Emerald, Brace’s, Gould’s, and Alfaro’s, drew their final breaths. Because of the passage and enforcement of the U.S.’s Migratory Bird Act of 1913 and the Migratory Bird Treaty of 1916 between the U.S. and Canada, sandhill crane populations increased, though in 2005 the National Audubon Society reported that when compared to their historic numbers, all sandhill crane populations are low. Perhaps

they will not survive the present, human-made “extinction spasm.” Currently, every Central Flyway state and Alaska permit regulated hunting of the sandhill cranes except Nebraska, where it is against the law every day of the year.

The cranes were here as people diverted the waters of the Platte for irrigation, electricity, and municipal water supplies, constricting the crane’s staging area from two hundred to eighty, then forty tight miles. Cranes are here in the twenty-first century as people fight each other for every last drop of water in the narrower, shallower Platte.

Because of the long, severe drought in the early years of the new millennium, as well as continuing depletions from the dams and water diversion projects in Colorado, Wyoming, and western Nebraska, the channels of the Platte in south-central Nebraska ran dry. Then, the “river” looked like a scruffy field where the vegetation had been worn or scorched away. Is a river still a river if it has no water? The Platte didn’t flow again until it picked up water from the Loup near Columbus, Nebraska.

A century ago, the Platte was a different river. Then the channel was one to three miles wide in the spring and with far more sandbars than it has now: a river of water and sand. Because it flooded most springs and because of the scouring action of ice, the Platte was relatively free of trees and vegetation: a wide, open, shape-shifting river. Now the river carries less than one-third of its historic flow, and so the channels are thick with cottonwoods, willows, goldenrod, false indigo, purple loosestrife, phragmites, saltcedar, reed canary grass, and Russian olives: a narrow, enclosed, predictable river.

I know the older river through the written accounts of those who traveled there long ago. Many traveling on the Great Platte River Road, also called the Mormon or the Oregon Trail, were struck by the flatness of the river that inspired its name: the “Platte” or “plate,” bestowed by French explorers and “Nebraska” or “flat water,” bestowed by the Otoe. In 1859, emigrant Martha Missouri Moore wrote, “The river is a perfect curiosity, it is so very different from any of our streams that it is hard to realize that a river should be running so near the top of the ground without any timber, and no bank at all.”

As Erwin Hinckley Barbour, a professor of geology at the University of Nebraska, was studying the homemade windmills of the Platte River Valley in the 1890s, he observed that this “singular and highly

interesting river” was so “overloaded and taxed beyond its power” that it couldn’t “carry its burden of sand out of the State.” Barbour noted that “its energy is spent in shifting its sand bars from side to side and in forming a lace work of channels through its broad bed.” Because the river was constantly receiving deposits of sand, its bed was built up fifty to two hundred feet or more—which is why it ran “so near the top of the ground.”

Loren Eiseley, one of Barbour’s students, was struck by the Platte’s changeability. In *The Immense Journey*, he wrote: “In the spring floods, on occasion, [the river] can be a mile-wide roaring torrent of destruction, gulping farms and bridges. Normally, however, it is a rambling, dispersed series of streamlets flowing erratically over great sand and gravel fans that are, in part, the remnants of a mightier Ice Age stream bed. Quick sands and shifting islands haunt its waters.” For Eiseley, the Platte was a “treacherous place... where neither water nor land prevails,” a sentiment captured in the oft-repeated saw: “The Platte is a mile wide, an inch deep, too thick to drink, and too thin to plow.”

When I came to the Platte as an adult, I viewed it with condescension. “More of a creek than a river,” I said. My prototypal river, the Upper Mississippi, on whose western banks I was born and raised, is deep, wide, and swift, flowing from north to south, a dangerous river, whose currents can pull you down and hold you there, whose floods were deadly and destructive. But in time, I grew to love this sloppy, shallow, loosely knit, prairie river. In time, I found it irresistible and sustaining.

While I will never know the wild and free river that long ago residents, explorers, emigrants, and cranes saw, I can imagine a Platte that has been restored to some of its former glory: rushing, scouring, braiding, flooding, emptying, gulping, frothing, sprawling, ravaging, winding, roaring, withering, nurturing, murmuring, shifting, haunting. I can imagine a Platte where sandhill and whooping cranes are comfortably spread out over the entire, two-hundred-mile-wide bend in the river, all the way from Chapman to North Platte.

For most of its existence, the Platte, with its braided land and water, has been a place of extravagant abundance for the cranes. After their long, energy-consuming flight to the Platte, they need to pack on twenty to twenty-five percent of their weight in fat to

sustain them as they complete their journey to their still-frozen breeding grounds where food isn't yet available. For many millennia, the cranes found enough calcium, protein, and minerals in the wet meadows near the Platte to trigger the breeding process and to make egg shells and embryos. In the past century, they met most of their caloric needs not in prairie near the river but in cornfields that have replaced the prairies.

And for many millennia, the Platte was a secure place. Because cranes find safety not in concealment but in exposure, they sleep standing in water or on slightly submerged sandbars in the wide, shallowness of the Platte. Dogs and coyotes, or in wilder times, wolves and bobcats, were reluctant or unwilling to cross the water. But if one did, the cranes could easily spot it from the middle of a river flushed clean of vegetation by spring floods, and flee or fight the intruder with their sharp-clawed feet.

Now the Platte is a different river. While the cranes prefer channels that are five hundred feet wide, they've settled for fifty feet. While they prefer a wide, open space around their roosting areas, they've settled for a place where vegetation obscures their view. With so many of these beautiful creatures concentrated in such a small space, one violent winter storm, one cluster of tornadoes, one outbreak of avian cholera or other virulent disease, one prolonged drought, or one violent winter storm could be catastrophic. Since eighty percent of the world's sandhill crane population gathers on the Platte in the late spring and early winter, and since cranes have a low reproductive rate (one or two eggs per breeding cycle, with only one of the colts surviving), one catastrophe could cause the crane population to crash.

It's not only the roosting conditions that have changed for the worse. Many of the wet meadows have been drained for agriculture or houses, businesses, streets, and highways, and more efficient combines leave less grain in the fields. Gary L. Krapu, a biologist with the North Prairie Wildlife Research Center, writes that in the late 1970s, cranes could meet their energy needs within two or three miles of the river; but by the late 1990s, they had to range several miles beyond the valley to feed. Krapu also found that cranes spend as much time foraging to obtain the three percent of their diet comprised of invertebrates as the ninety-seven percent comprised of corn. More work for the same amount of food. Consequently, the cranes are flying off with less and less of Nebraska.

Still, they keep returning. The Missouri River is too deep and hasn't the wet meadows of the Platte. Neither the Loup in central Nebraska nor the Niobrara in the northern part of the state have shallow sandbars and wet meadows. The Republican has been so tapped for irrigation along its course in Colorado, Nebraska, and Kansas that it's little more than a trickle. Quite simply, there is no other river near the middle of the sandhill crane's migratory route that meets its requirements for a staging ground with calcium, calories, and relatively safe roosts.

When we watch a river flow past, we are seeing both ground and surface water. James Goeke, a hydrologist at the University of Nebraska–Lincoln's School of Natural Resources, says that ground water makes up fifty to ninety percent of the flow of the Platte. When one pumps groundwater that is connected to a river, one has intercepted water that would have flowed into that river. "Hydrologically connected" is the term that describes this intimate link. According to the United States Geological Survey, since 1950, just prior to the boom in the extensive development of ground water irrigation, the water level in the High Plains Aquifer, an Ice Age ocean underlying most of the Great Plains, has fallen in some places by several feet per year. Currently, ninety-six percent of the groundwater withdrawals in Nebraska are for irrigation. As of August 2007, over 90,000 active irrigation wells were pumping water in Nebraska, with the highest density (sixteen wells per square mile) in the Central Platte Valley where the cranes stage. Even when the river shriveled and disappeared during the severe drought of the early years of the new millennium, the center pivot sprinklers continued to rain on the corn and soybeans. It's no wonder that the Platte carries less water than it once did.

Until recently, the state of Nebraska split the duties of regulating water use between the twenty-three Natural Resource Districts (NRDs), which managed groundwater, and the Nebraska Department of Natural Resources (the Department), which managed surface water. Legislative Bill 962, passed in 2004, required the two entities to manage hydrologically-connected surface and groundwater as a single, integrated unit. Moreover, LB 962 requires that NRDs in basins with water shortages lessen water use through plans that the individual NRD and the Department develop togeth-

er. In April 2006, the Department added a provision to LB 962 that established a regulating formula called “10-50.” According to this formula, surface and groundwater are connected if the pumping of groundwater depletes a stream by ten percent over a fifty-year period. A 10-50 area must be treated as a single, integrated system.

Because of LB 962, the 130-mile stretch of the Platte River Basin between Columbus and Lexington has been declared “fully-appropriated,” meaning that no water remains for new development. The Platte River between Kearney and the city of North Platte, and the North and South Platte Rivers have been declared “over-appropriated,” meaning that cuts must be imposed since existing water use has exceeded the supply. In other words, the wet meadows are drier and so less productive than they used to be, and the cranes are packed into even fewer roosts along an even narrower stretch of the river, in water that is already claimed, with none to spare.

Various groups are fighting to save the Platte for the cranes and for those of us who can't live without them. The Lillian Annette Rowe Sanctuary, owned and managed by the National Audubon Society, was founded in 1974 when Rowe, a New Jersey teacher, donated 782 acres and 2.5 miles of river channel and wetlands. Today, the sanctuary includes 1,448 acres and several miles of river channel. To preserve the river and meadows for sandhill and whooping cranes and other migrating birds, sanctuary employees and volunteers clear woody growth from the sandbars and the river channels, fight the invasive species that take up so much water, and maintain the nearby prairies through grazing, haying, and prescribed burns.

The non-profit Platte River Whooping Crane Maintenance Trust (“the Trust”) conserves habitat along the Platte River in central Nebraska for whooping and sandhill cranes and other migratory birds. The Trust was formed in 1978 as part of a settlement stemming from the construction of the Grayrocks Dam and Reservoir and the Laramie River Power Station on a tributary of the North Platte River near Wheatland, Wyoming. The State of Nebraska filed suit claiming that the Rural Electrification Association, which was funding the project, and the U.S. Army Corps of Engineers, which had issued permits for the project, were compromising the habitat of endangered species and in violation of the Endangered Species Act (ESA) of 1973 and the National Environmental Policy Act of

1969. The chief species at risk was the whooping crane, though other listed species, including the bald eagle, Eskimo curlew, American burying beetle, and the western prairie fringed orchid, were also affected. In order to complete the dam, reservoir, and power station, the Missouri Basin Power Project agreed to provide \$7.5 million to fund a trust. In turn, Congress granted the project an exemption from the ESA. With income from this endowment, the Trust has acquired and managed 10,000 acres of habitat and conducted research about migratory birds and their habitat needs. It is one of the reasons why the whooping crane population rose from 22 in 1940 to 226 in 2007.

The Platte River Recovery Implementation Program (PRRIP), a major restoration program backed by the federal government, originated in 1994, when the U.S. Fish & Wildlife Service issued a biological opinion stating that restrictions had to be imposed on Platte River water use in order to comply with the ESA. Despite the improvements made by the PRRIP, there is still much to be done. The federally threatened or endangered species currently at risk are the whooping crane, interior least tern, piping plover, and pallid sturgeon, the latter a fish found in the Lower Platte. Like the sandhill cranes, each of the listed birds requires open river channels, bare sandbars, and an adequate stream flow.

The PRRIP, which was developed in response to the U.S. Fish & Wildlife Service opinion, is a joint, Platte River Basin-wide effort between the Department of the Interior and the states of Colorado, Wyoming, and Nebraska to provide habitat for the three listed bird species that use the central Platte. The agencies involved in the PRRIP are working to meet three goals during the first thirteen years of the plan. First, they will increase the stream flow in the central Platte to normal levels by releasing water stored in upriver reservoirs such as Lake McConaughy. Second, they will acquire, restore, and maintain 10,000 acres of new habitat in the Central Platte Valley by 2019, eventually increasing that to a total of 29,000 acres. In order to expose the sandbars, unclog the channels, and lessen the amount of water lost to thirsty invasive plants, the program also funds the removal of trees and vegetation growing in the riverbed. Third, they will return the river to its July 1, 1997 level of development, in terms of water use and associated river depletion. Since irrigation uses the lion's share of the Platte's water, farmers

and ranchers must reduce the amount of water they pump onto their fields. Any new or expanded water uses which diminish the stream flow must be offset by such methods as water rights transfer, groundwater recharge projects, the relocation or retiming of ground water withdrawals, crop mixing, and changes in tillage practice.

Needless to say, the program has critics. Nebraskans First, an organization of Nebraska irrigators “dedicated to protecting Nebraska’s groundwater for agriculture,” claims that “It took over a century of hard work and investment by Nebraska farmers to develop the Central Platte River Basin from nothing into a productive agricultural powerhouse,” and that “this success story” may now “be undone for an unnecessary and contrived species/habitat program.” When PRRIP was signed into law May 8, 2008, Wood River farmer Mike Dobesh summarized his objections in an editorial—“The Platte River Boondoggle”—published in the *Lincoln Journal Star*: “The first phase of the compact, as well as LB 962, calls for farmers to get back to 1997 levels of irrigation development.” Dobesh predicts that the economic impact on the state from the loss of crops on those irrigated acres will be devastating. Like many irrigators who oppose limiting water use on behalf of the wildlife, Dobesh believes that “to address the issue of low river flows, one should look at the trees and invasive species of plants in the river, the salt cedar, purple loosestrife and phragmites” rather than the irrigators, whose effect on the river, Dobesh contends, is nominal.

Now, the river is running high and wide because of greater than usual precipitation in 2008 (October 2008 was the wettest on record in Kearney and the second wettest in Grand Island). But if there’s another severe, extended drought here or in one of the world’s other food-producing regions, if fuel prices soar and grain becomes an even more desirable way to fuel engines, will there be greater incentive to raise irrigated crops with the land and water the cranes need? If the staging grounds become more crowded, if calcium and calories become harder to find, if no other river will suffice, what will become of the cranes?

On a sunny Saturday in late October, I hike through the Lillian Annette Rowe Sanctuary to the river, hoping for cranes. The prairies and woods are tan, yellow, and seedy (curly locust pods, tiny hackberries, empty milkweed pods, the hairy seedheads of little blue-

stem) and the grasshoppers are on their last legs. I have never gone to the central Platte during the fall to look for migrating cranes, and for good reason. They merely pass through on their way south, stopping for no more than a night, if they stop at all. In the fall, the cranes stage farther north, in the prairie provinces of Canada, in the Dakotas and northwestern Minnesota. Though I don't see a single crane on the ground, the sky is full of migrating birds—Canada and white-fronted geese, mallards, pintails, blue-winged teals, and sandhill cranes. I know the latter because of the slow, heavy movements of their massive wings. As I watch the sky, I imagine that this is how a late winter or early spring morning on the central Platte might look if the cranes found another river: no cranes roosting in the river, no cranes dancing in the fields; cranes merely passing overhead. But for now, I count on a half-million cranes returning next spring as surely as I count on the new, green thrust of little bluestem and common milkweed.

When I arrive here next spring, I'll look closely and carefully, as if this is my last chance to see the cranes so close to home. I'll note the texture of the red patch that starts at the base of the bill and extends just under and beyond the eyes. From photographs I've seen, it looks stubbly, more like the bare, pink-purple head of a vulture than the red-feathered head of a woodpecker. I want to discern if this blaring red, so painfully bright on a gray day, is scarlet, crimson, cherry, ruby, or some other red. I'll see for myself if the edges of the long, strong bill really are serrated and make it easier for the crane to grasp slippery food. I'll observe the crane's "true" tail, the short, stiff, unremarkable tail that I've never noticed before, as well as the more familiar false one, formed by the long, drooping, inner wing feathers that, when folded, create a frilly, out-of-character embellishment, what many have called a "bustle." I'll watch the dance closely enough that I can join in, bowing my head, strutting a bit, tossing sticks, and leaping high above the earth. I'll listen carefully to what Aldo Leopold describes as "a pandemonium of trumpets, rattles, croaks, and cries" that issue from the cranes' long and convoluted tracheas, until I can translate these utterances into human words and phrases. I'll hide in a blind so that I can look a sandhill crane in its yellow eye and see this and more distant landscapes reflected back.

Works Cited

- Barbour, Erwin Hinckley. "Wells and Windmills of Nebraska." *Water-supply and Irrigation Papers of the United States Geological Survey* 29 (1899): 6–82.
- Bent, Arthur Cleveland. *Life Histories of North American Water Fowl, Part 2*. Reprinted by Dover Pub., Inc., 1962.
- Dobesh, Mike. "Platte River Boondoggle." *Lincoln Journal Star* on the web 8 May 2008. <http://www.journalstar.com/articles/2007/04/06/opinion/columns/doc46157b133cd48852994662.txt>. Accessed 15 October, 2008.
- Eiseley, Loren. *The Immense Journey*. New York: Vintage Books, 1957.
- Goeke, James. "Surface Water and Groundwater Relationships in Nebraska." <http://watercenter.edu/wrri/WaterResearch/GoekeLegislatorsBriefingMaterialsOct10.pdf>. Accessed 10 October 2008.
- Grooms, Steve. *The Cry of the Sandhill Crane*. Minocqua, WI: NorthWord Press, Inc., 1992.
- Johnsgard, Paul A. *Cranes of the World*. Bloomington: Indiana University Press, 1983.
- . *Cry of the Sandhill Cranes*. Lincoln: University of Nebraska Press, 1991.
- Krapu, Gary L. "Sandhill Cranes and the Platte River." In K.P. Able, ed. *A Gathering of Angels: Ecology and Conservation of Migratory Birds*. Ithaca: Cornell University Press, 1999.
- Moore, Martha Missouri quoted in Mattes, Merrill J. *The Great Platte River Road*. Lincoln: Nebraska State Historical Society, 1969.
- "Nebraskans First." www.nebraskansfirst.com, 1 September 2008. Accessed 15 October 2008.
- Olson, James C. and Ronald C. Naugle. *History of Nebraska*. Third ed. Lincoln: University of Nebraska Press, 1997.
- "Sandhill Crane." National Audubon Society, 2005. <http://web1.audubon.org/waterbirds/species.php?speciesCode=sanfra>. Accessed 30 September 2008.
- "Water Level Changes in the High Plains Aquifer, Predevelopment to 2005 and 2003 to 2005." September 2007. *USGS Scientific Investigation Report 2006-5324*. http://www.dnr.state.ne.us/lb862/annualreport_2008/lowerplatte.pdf. Accessed 12 October 2008.