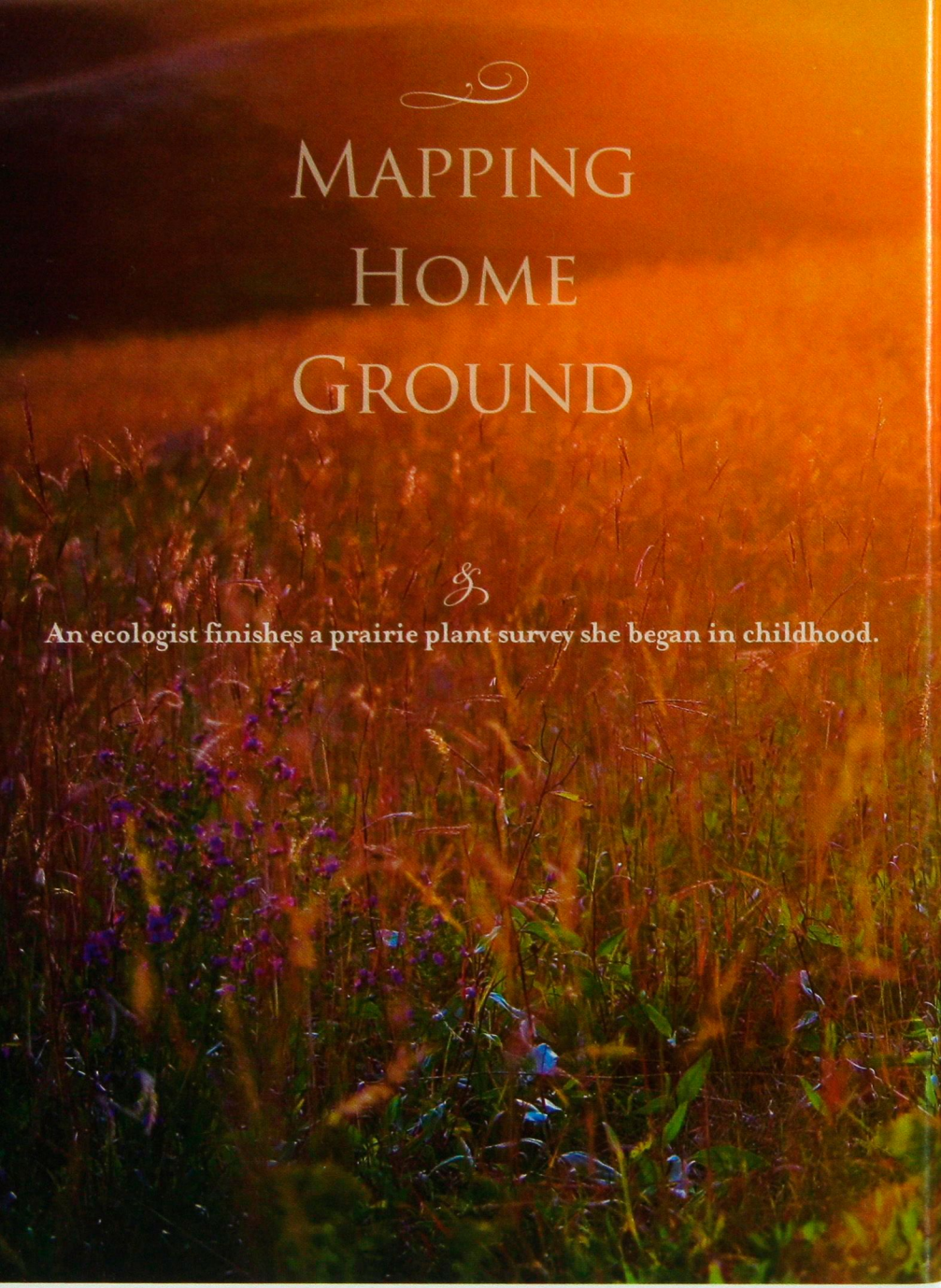
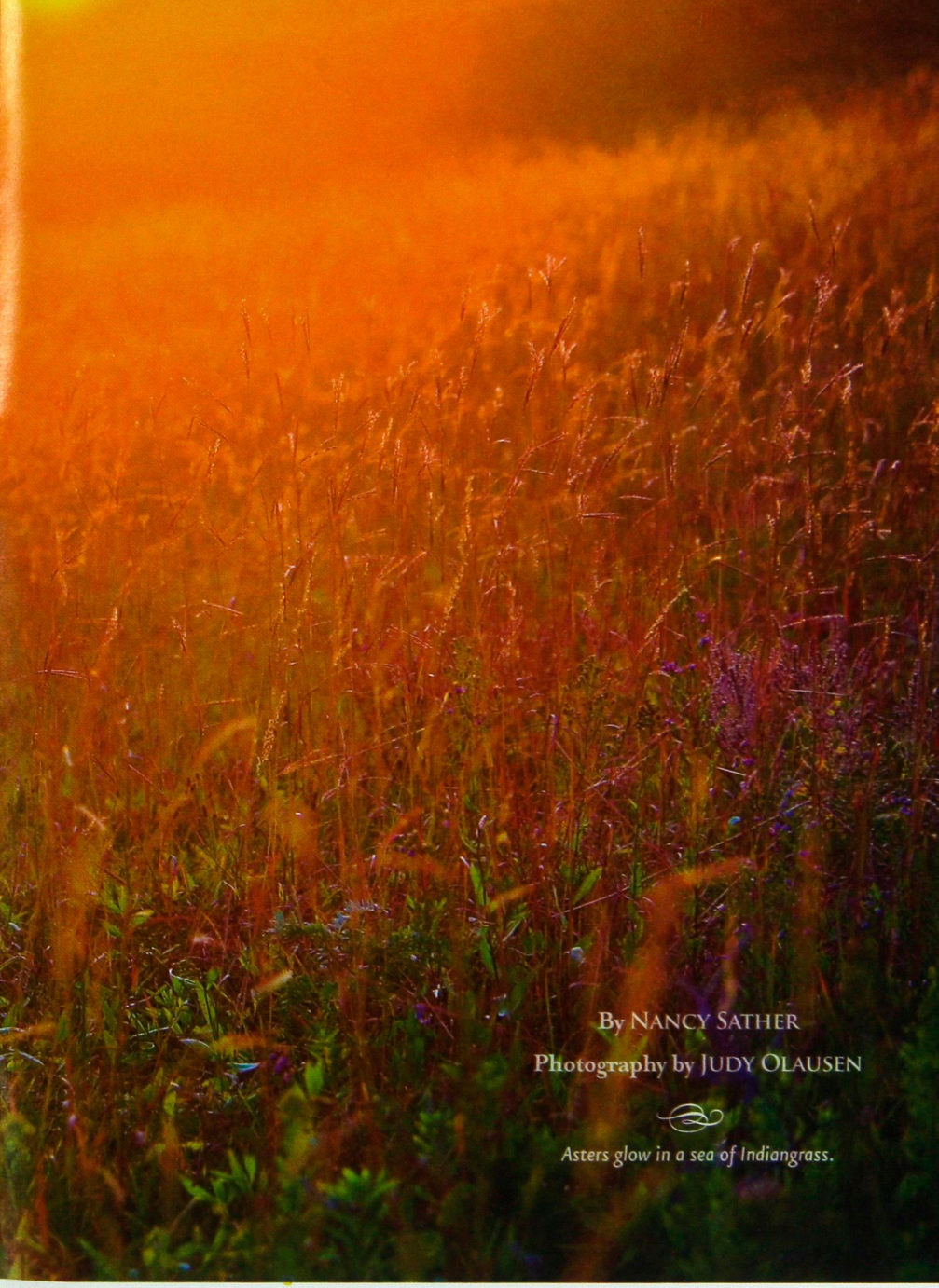


Mapping Home Ground

An ecologist finishes a prairie plant survey she began in childhood.

Expose a child to a particular environment at his susceptible time and he will perceive in

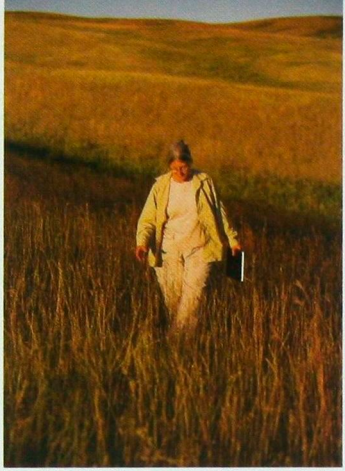


By NANCY SATHER

Photography by JUDY OLAUSEN

Asters glow in a sea of Indiangrass.

the shapes of that environment until he dies.— WALLACE STEGNER, WOLF WILLOW



PERSONALLY, I crept into Minnesota's prairie-forest border as an infant. Professionally, I returned to it in the mid-1990s as an ecologist charged with enumeration of the rare and detection of the natural, with mapping its native plant communities. Much science would contribute to my mapmaking, but glimmers of childhood explorations seep into my work like a sixth sense, informing my ability to locate remnant forests and natural areas.

To begin a biological survey, I use bearing tree data gathered by public land surveyors in the mid-19th century. Bearing trees recorded at section corners and halfway points provide a glimpse of the presettlement forest. But the prairie is marked by absence. No trees, no list of grasses either; just a note that often says "set a post in a mound." So our present-day measure of a natural prairie is largely derived from what we see in places that we know have been least disturbed since settlement.

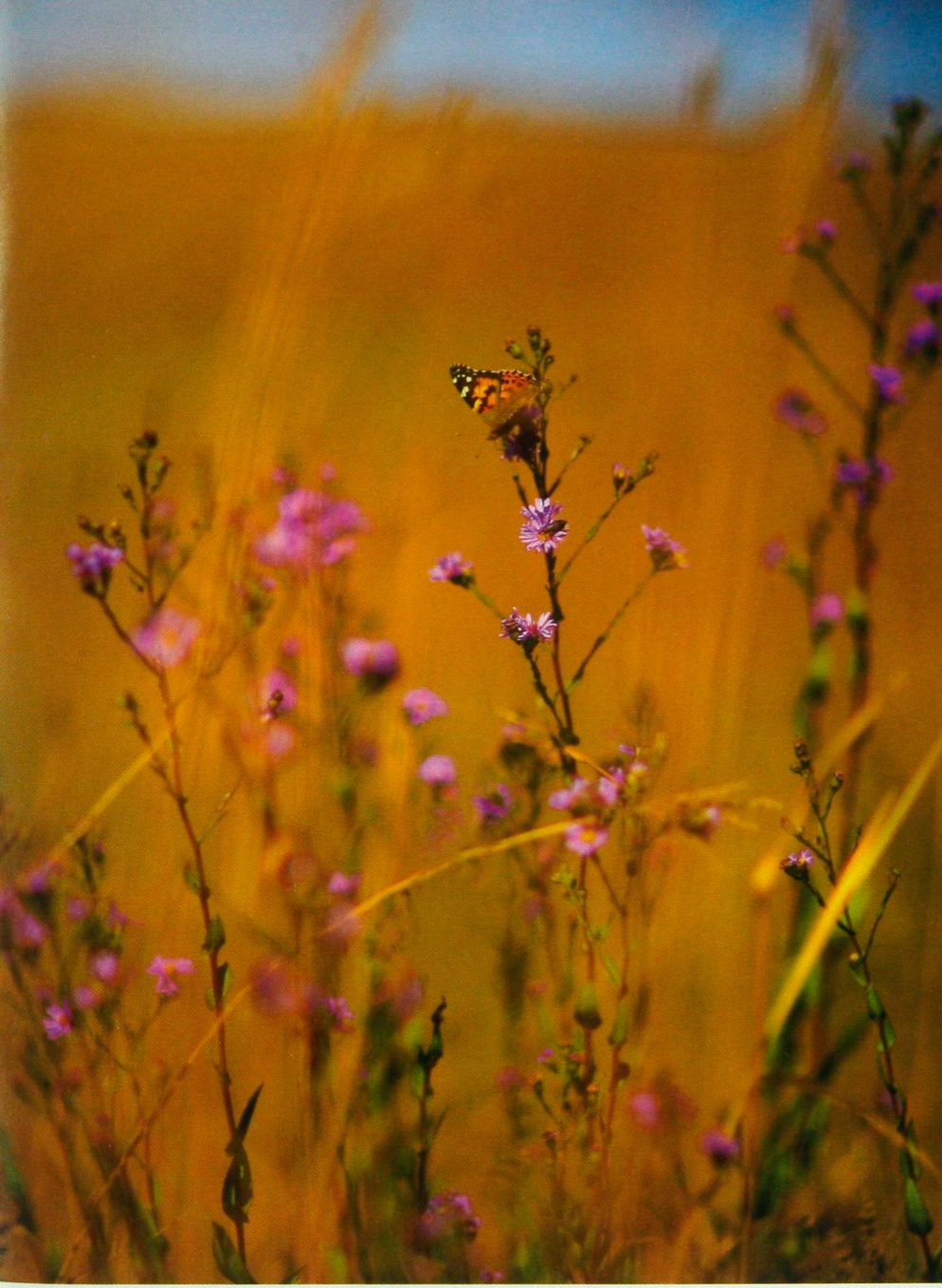
Although it is sometimes difficult to detect what is truly natural, there *are* obvious ways to measure disturbance. A grassland is disturbed if it's invaded by spotted knapweed or planted with a monoculture of switchgrass. A wetland is disturbed if it's choked with reed canary grass or purple loosestrife. A forest is disturbed if the carpet of rich maple leaves that once supported trillium, hepatica, and wild ginger has been devoured by earthworms, leaving only exposed soil. A prairie pasture is disturbed, even if dominated by waving big bluestem and Indiangrass, if the wildflowers have disappeared because of repeated broadcast applications of herbicide.

In many places, that doesn't leave a lot for an ecologist like me to map as natural.

True Beginnings. I've recently completed the last click of the cursor on a digital map of native plant communities in the eastern half of Polk County. Officially, I took more than six years to create it. In reality, it's taken me more than 60.

When I officially returned to my home ground as an ecologist, I couldn't repress the unofficial sense of personal pilgrimage. The Chester Hills weren't just an interesting place on an aerial photo or a set of tight topographic lines on a map. They had been a landmark throughout my childhood. As I began my fieldwork, I recalled the spring day in the 1950s when Mama got a hankering to check out the gravel pits for prairie wildflowers and the winter night when we spotted a wolf running across the road in

The author (top) explores Prairie Coteau Scientific and Natural Area. A painted lady butterfly (right) rests in a cluster of asters.



the early 1970s. But I'd forgotten my first exposure to those hills.

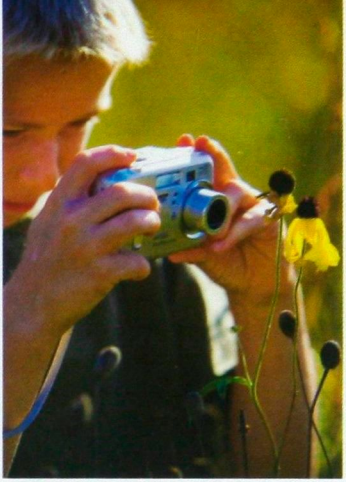
I wanted very much to prove to the scientific world what both the landowner and I already knew—that despite the pockmarks of gravel pits and the heavily grazed level pastures, there were prairies in those hills. On the steepest slopes, I found prairie smoke, pasque flower, bird's foot violet, big bluestem, Indiangrass, little bluestem, and hoary puccoon. Near the crest, as I looked north into the bed of old Lake Agassiz, sage and its associated semiparasitic broomrape lived side by side. In the pasture, the chestnut-collared longspurs made their homes. On a certain south-facing slope, amid the shining needle grass and grama, dotted blazing star, silky aster, and penstemon, I puzzled at the familiarity of the place. Something about the steepness of the slope ... Something about the lay of the land ... I was certain I'd been there before.

I marveled to the rancher about the quality of the prairie. He set me straight on its history: "They used to race motorcycles on that hill."

Motorcycle Hill! It all came back: *McIntosh motorcycles. My father has taken me to watch them spit up grass, gray sage, and yellow flowers from their wheels. The noise is deafening. We're enveloped in dust, and the hill is so steep I'm afraid I'll tumble down. I'm so small I can't see over the motorcycles.*

The year was sometime between 1945 and 1948.

As an ecologist I recognize the process



of natural succession, by which pioneer plants take hold in disturbed habitats. But I never expected this. Fifty years after that scary afternoon, as is often the case on the driest soils, Motorcycle Hill's resilient dry prairie has been reborn. For communities and species at risk, the survival of these remnants is dependent on the knowledge of where and what they are.

But the fate of the prairie does not depend on knowledge alone. Even if every acre of prairie on my digital map were managed exclusively for its native ecosystem, its fate would be linked to that of the planet. Climate change and pervasive pollutants hold it in their grip. Its future depends on human decisions, based on human values that often hark back to early childhood experiences.

In addition to the scientific effort that undergirds it, my map has another, critically important foundation—a relationship that

A bush katydid (left) *clings to a blade of grass. Joseph Hoversten, 9-year-old prairie enthusiast,* (top) *photographs a yellow cone flower for a school project.*

geographer Yi-Fu Tuan has termed *topophilia*, or love of place. When topophilia is "compelling," he says, "we can be sure that the place or environment has become the carrier of emotionally charged events or perceived as a symbol."

My 21st century biodiversity map of my home ground doesn't show the vacant lot where, as a toddler, I pulled tall purple grasses over my head to make a hut or the place where I sheared the pin of a motorboat by chasing water striders into the shallows. But it does include, among its remnants of the natural, the fern-scented island where I loafed as a teenager and the forest where our family cut Christmas trees. Some of the places depicted on this map are inextricably woven into the fabric of my soul.

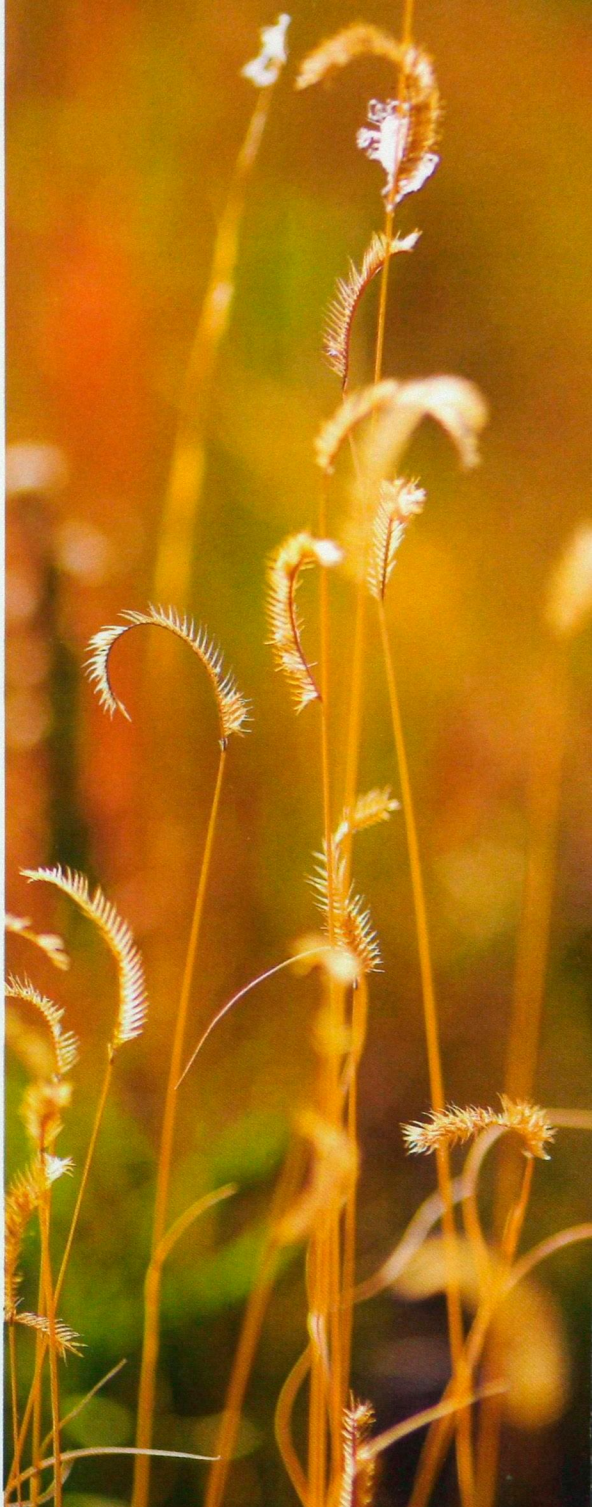
Widening Circles. Human experience, like a pebble tossed into quiet water, is the expansion of a childhood map. My map begins in my crib. When my mother doesn't arrive to rescue me from my nap, I scale the bars and back down two flights of stairs, following the *thumpety-thump* of the wringer washer to a place where I expect to find her. She's not there. I creep through the dank laundry room toward a shaft of light pouring through the door to the back yard. A spider web clings to

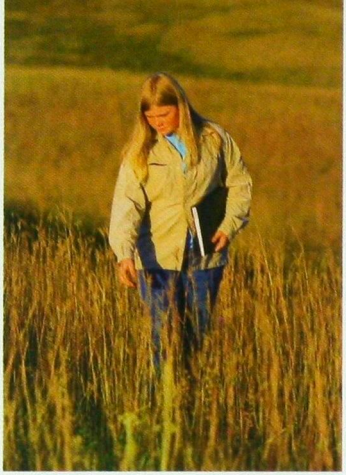
An orb-weaving spider (top, left) *waits for an insect to find its web. Downy gentians* (above) *and blue grama* (right) *are characteristic of the dry prairie at Prairie Coteau SNA.*

the wall of the stairwell. Sand has collected in the corners of the steps. The step surface is coarse and gravelly under my tiny palms. The fragrance of the air freshens as I ascend. And there's Mama, engulfed by a cloud of billowing white sheets. Sun streams over the roof of the house, onto the sheets, my found Mama, and a world of garden beyond. As I break out of that birth-channel of basement steps into the sunny yard, I am aware I've made a passage.

In that moment linking exploration with security, the map was born.

My explored territory grew in widening circles, over the garden wall to feed my dolls from acorn cup dishes at the foot of an open-grown oak that may well have been seen by the land surveyors. It enlarged two blocks into the town's only "woods," where I made my first assault on nature by riding down a sapling poplar, then gazed in dismay at the fallen tree. The lines on this map were traced to my favorite reading spot on the banks of the languid Hill River, to the leech-infested shallows of Poplar Lake, and to the blaze of one of the state's most northwesterly stands of sugar maple on the shores of Cross Lake.





When I make a digital map today, I have the dubious advantage of using a Global Positioning System to chart my route. GPS will "keep you from getting lost" on your fishing or hunting trip. It will give you an absolute bearing in latitude and longitude, determined by signals bounced off circulating satellites. I can know where I am in the universe. But where am I in relation to mother bear and her cub or the cattail marsh?

What have we lost as we gain new technologies to help us log our travels? Is this the legacy of progress: to abandon our ability to leave a trail like dogs or to follow the constellations like our ancestors? Who are we without our ability to fix the location of a rock or a tree or the angle of the horizon in our minds?

The map that opened itself to me as a child was inseparable from experience. It was anchored in particulars: the slimy white discharge of a captured salamander in my hands, the fragrance of prairie roses withering away in the wagon my sister and I pulled home, the fresh moldy fragrance of grass at the edge of spring's receding snow.

Half a century ago, such forays into nature were a common childhood experience. Children had opportunities to engage directly with elements of the natural world. We did not do this under supervision of a classroom teacher or along the established trails of a nature center. The key to the experience was that it was self-motivated, experiential, and unprogrammed.

Signs of Hope. Although land stewardship is informed by science and knowledge, it is nurtured by love. The signs of that love are seldom reflected in the biodiversity maps that I produce. The scale of biologically viable examples of remnant ecosystems exceeds the territory of a toddler's explorations. Topophilia is more likely to be born in an anthill in the sidewalk or a window well full of salamanders. My maps don't show bird feeders, bluebird nest boxes, wood-duck houses, wildflower gardens, the path to grandpa's secret fishing hole, wildlife plantings, village walking trails, or the secret corner where local ladies keep their eyes on three kinds of gentians. They don't reflect signs of hope like photo albums of wildflowers in the fen on the back forty, community recycling programs, and religious concern for the environment. From my perspective, the best hope for the prairie lies in these little things that reveal the attentiveness of indwellers to the natural world that sur-

Ruth Ann Hoversten (top), *age 13, has spent hours tagging along with the author on prairie surveys. Fruits of prairie dropseed* (right) *glitter in the sun.*

rounds them. When things we love begin to disappear, we take notice and act.

But how do we assure the continuation of this sense of stewardship?

By childhood immersion.

Tiny, semiwild, easily accessible, safe spots for early childhood exploration set the stage for adult environmental conservation of larger natural areas.

I love making maps. There's great satisfaction in viewing a depiction of land where my boots have been muddied, my jelly jars replenished by highbush cranberries, my arms scratched by prickly ash. When I began to work in the field of biodiversity conservation, I had faith that simply providing information would result directly in protection of natural resources. As I closed the last line on this digital biodiversity map of my home ground, I became keenly aware of how much my thinking has changed. Now I know the motivation to use such maps won't be there in the future without new generations of grown-up mud-pokers whose susceptible years have been imprinted by the smooth skin of a salamander, the glint of a dragonfly's wing, the flurry of ants emerging from their disturbed hill.