

Living a Dream

TRANSFORMING CROPLAND WITH HABITAT ISLANDS FOR WILDLIFE

By Randy Rodgers

In December 2011, my wife Helen Hands and I went to an auction in hopes of purchasing a 239-acre tract of land in Rush County, 33 miles from our home in Hays, Kansas. By all accounts, the land had been badly abused for decades. A couple of weeks earlier we had walked it and could see that both the pasture and the cropland were seriously beat up. But it also had potential. A total of 2.6 miles of perennial and intermittent creek meandered through the property, and there were signs of good native grasses still surviving in the pastures, although severely suppressed by long-term heavy grazing and invasive weeds. We felt lucky to win the bid, but we knew we had years of hard work ahead to help the land live up to its potential for producing wildlife.

That purchase was part of a long-held dream. In my mid-teens, while working in my family's tiny grocery store in Medicine Lodge, Kansas, I often daydreamed of how I would eventually own land to manage for wildlife. This was long before I knew of a profession called wildlife biology. After I discovered it, I pursued that course of study at Kansas State University.

My desire to own land became fully cemented with my first reading of Aldo Leopold's *A Sand County Almanac*. His eloquent words were inspirational, and his serious yet almost comical concept of sharing the land with wildlife "tenants" that are "negligent about rents, but very punctilious about tenures" had great appeal to me. I hoped to one day create examples embodying his contention that "when we see land as a community to which we belong, we may begin to use it with love and respect."

After receiving my master's degree in wildlife ecology from the University of Wisconsin—Madison in 1979, I returned

to Kansas and worked for 31 years as an upland gamebird biologist for the Department of Wildlife and Parks (KDWP). During that time, I focused on finding and promoting agronomically sound practices that were also beneficial to wildlife.

I retired in 2010. One year earlier, Helen had left her position with KDWP after working 20 years as a biologist specializing in webless migratory birds.



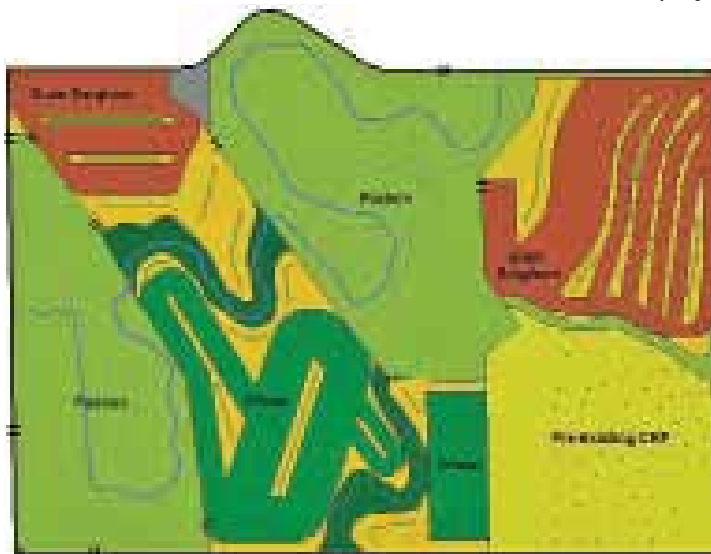
Credit: Helen Hands

Randy Rodgers retired in 2010 after 31 years as an upland gamebird biologist with the Kansas Department of Wildlife and Parks. He and his wife Helen Hands currently manage their private land for wildlife.



Credit: Randy Rodgers

A June 2012 aerial shot of the 119-acre Wetland Tract shows habitat islands (green) and even-width cropped areas with two phases of the crop rotation: recently cut wheat (gold) and just-emerged soybeans (gray). The five-acre wetland area, constructed in 2011 (just visible at right) had not yet filled. On a planning map for the 239-acre Otter Creek parcel (left), new grass-buffer habitat (gold) will be seeded in areas that drain to the streams and on habitat islands. Forb-only strips (narrow green strips within the buffers) complete the plan.



Credit: Randy Rodgers

I had the good fortune to marry a woman who not only loves the outdoors, but is a willing partner in the dream to own land. Together, we purchased our first quarter section in 2005 and now own four tracts in Rush County totaling 665 acres. Each property had a history of over-exploitation:

- **Two Draws.** An intermittent stream had been farmed through on the west side of this 158-acre tract, as had the bottom of the large central draw, resulting in serious soil erosion. Patches of invasive Caucasian bluestem (*Bothriochloa bladhii*)

were present on the annually-hayed side slopes of the central draw.

- **Highway Hill.** Shallow, rocky soils on slopes were farmed on this 149-acre tract, and the gradient terraces were badly eroded. Two irrigation wells in the Walnut River Valley tapped an already overtaxed alluvial aquifer. Aggressive exotic grasses, both yellow bluestem (*Bothriochloa ischaemum*) and Caucasian bluestem, were spreading in the 30-acre pasture.

- **Wetland Tract.** This 119-acre parcel had level contour terraces that were broken in numerous places, and gullies had formed below the breaks. Crops planted in the relatively flat drainage on the east side of the property often failed due to flooding.

- **Otter Creek.** Years of tillage of a steep slope on this 239-acre tract resulted in three feet of soil loss. Gradient terraces on the northeast field were eroded and broken, and little or no crop rotation for over a decade produced serious weed problems. In addition, long-term heavy grazing left the pastures in poor condition, with severe infestations of noxious musk thistle (*Carduus nutans*) and bull thistle (*Cirsium vulgare*). The banks of Otter Creek were also badly eroded.

Oddly enough, all these problems fit in with my desire to rehabilitate and transform mistreated tracts of land into areas that integrate optimum soil, water, and wildlife conservation.



Credit: Randy Rodgers

Shallow, rocky soils were once farmed on the Highway Hill Tract (above), but now habitat islands with forb-only strips and even-width crop strips create a diverse mosaic resistant to erosion and beneficial to wildlife. Lighting a flank fire on the same tract (below), Randy Rodgers controls invasives and encourages native growth. This patch was burned using a tilled firebreak and a wet line. Prescribed burns of areas surrounded by wheat (background) can be done very safely.



Credit: Sara Kay Carrell

The Transformation

In an agricultural landscape, establishment of healthy habitat is only the first part of the equation when it comes to producing abundant wildlife. Ongoing habitat management is equally critical. The initial design of wildlife habitats should carefully consider not only the needs of the desired species, but also how the layout might facilitate later management.

If, for example, native herbaceous habitats that need periodic fire to remain vigorous are established adjacent to land covers that should not be burned, then considerable effort will be needed to develop a burn plan, establish firebreaks, and assemble the necessary personnel and equipment for a safe burn. This can be daunting, particularly for a farmer or rancher who has established native grass as part of USDA's Conservation Reserve Program (CRP). That difficulty has limited the productivity of habitats established through the CRP because many

land managers are reluctant to burn due to both logistical and safety concerns.

This observation has been central to our habitat designs. Our croplands (about half our acreage) are planned as interconnecting even-width strips, which are multiples of our farm tenant's sprayer width. These cropped strips are designed to: (1) include only the more productive soils; (2) avoid highly-erodible slopes, drainages, and conservation structures like terraces; and (3) follow the contour where moderate slopes occur. The cropped strips also generally follow the perimeter of the pre-existing crop field to serve as permanent fire-breaks for perennial habitats.

Most of the land removed from cropping becomes a series of "habitat islands" seeded to a variety of mixtures of native grasses and forbs, the composition of which depends on the soil quality, potential moisture availability, and the desired wildlife species. The resultant mosaics differ with each tract. A five-year no-till crop rotation using wheat, grain sorghum, and a legume (soybeans or forage peas) has added temporal diversity to the spatial diversity these patterns create.

In Kansas, forbs and legumes were generally not used in the earliest native-grass stands established through the CRP, but that was rectified as wildlife conservation eventually became a major goal of the program. Still, the forbs and legumes in these newer stands expressed themselves mainly in the first three growing seasons, then were suppressed after the native grasses became well established. This observation, made by many biologists, spawned the concept of mid-contract management, which was meant to revitalize the forbs by providing physical disturbance (fire, grazing, disking) to these CRP stands during the middle years of the contract period.

I planned our habitats with fire intended to be the primary means of disturbance. I also wanted to maintain vigorous broadleaved habitats, particularly for their value in offering insect-rich foraging sites to upland gamebird broods and songbirds. Within most of our habitat islands, I established grass-free strips seeded only with perennial forbs and legumes. Our first forb-only strips were seeded in 2007 and have maintained their grass-free characteristics very well to date. Most were established in terrace channels, which are typically more mesic and offer a milder microclimate to young chicks during our hot summers.



Credit: Randy Rodgers

Most of the shrub thickets we've planted are also in terrace channels, again because these sites have better soil moisture. The shade these thickets will offer should be invaluable to wildlife during summer and will provide loafing and escape cover in winter. I use fragrant sumac (*Rhus aromatica*) in these thickets for its drought tolerance and because it is less vulnerable to damage from cottontails and black-tailed jackrabbits.

While Helen and I are adding shrub cover, we are also removing many trees, which facilitate predation, thereby reducing the productivity and survival of the grassland birds we want to benefit (Bakker 2003). In particular, we have targeted invasive eastern red cedar (*Juniperus virginiana*) and honey locust (*Gleditsia triacanthos*).

Case Study: The Wetland Tract

Our Wetland Tract provides perhaps the best illustration of the work we've undertaken. All but three acres of this 119-acre tract were farmed when we purchased it in 2008. The terraces were broken and part of the cropland often flooded, so our first step, in March 2009, was to rebuild the terraces. Our farm tenant planted grain sorghum in June and harvested it in the fall, with the remaining stubble acting as a cover crop for subsequent native grass and forb seeding. Using the terraces as reference points, I laid out the planned cropland pattern in the early spring of 2010. A biologist with the U.S. Fish and Wildlife Service's (FWS) Partners for Wildlife Program also surveyed the area we planned for a constructed wetland.

In April, I seeded the habitat islands with two different native-grass mixtures, one predominantly

Standing in a lush cluster of Maximilian sunflower and switchgrass, Helen Hands enjoys the sight of renewal on the Wetland Tract. In 2011, a dam was built here using the "Shallow Water Areas for Wildlife" practice, cost-shared through USDA's Conservation Reserve Program. After three years of drought, the wetland finally filled in August 2013, and now provides seasonal habitat for ducks and other waterbirds.

switchgrass (*Panicum virgatum*) and the other a five-species mixture with much little bluestem (*Schizachyrium scoparium*), both with 11 species of forbs and legumes. In March of 2011, we constructed a wetland dam and installed a water-control structure. We borrowed fill from the upper arms of the wetland area to create more shallow-water retention, rather than borrowing from near the dam. Next, we cut a small grove of cottonwoods

in the drainage and treated the stumps with herbicide to limit future woody invasion along the wetland shoreline.



Credit: Randy Rodgers

Our efforts on the Wetland Tract have paid off for wildlife. This land now holds high densities of pheasants, some bobwhite, numerous grassland songbirds (including western meadowlark and grasshopper sparrow), mule deer, white-tailed deer, and abundant cottontails. Although extreme drought dominated since the wetland's construction, it finally filled in August 2013 and is attracting a wide variety of waterbirds, from ducks to shorebirds.



Credit: Randy Rodgers

Sweat equity pays off as Helen Hands digs invasive bull thistles on the 239-acre Otter Creek Tract (top). On another "thistling" trip to the site, she and Randy startled a white-tailed buck (above). Once grazed to the ground and loaded with noxious thistles, these pastures are becoming a wildlife haven, created by temporary rest from grazing and carefully targeted weed control. Prescribed fire is planned for 2014, one more step to help heal and enliven the land.

Habitat Island Advantages

The greatest advantage of habitat islands is that they can be easily and safely burned in early spring in either of the two years when they are surrounded by green winter wheat. Our crop rotation dictates that each habitat island will typically be burned once every five years.

Another advantage is that habitat islands create high amounts of grassland-cropland interspersion, which benefits most of the wildlife that inhabit our agricultural landscapes. We have 26 miles of habitat edge on our three completed tracts (426 acres), 23 of which are grassland-cropland edge. The cropland surrounding the habitat islands also acts as a buffer against aggressive exotic species such as smooth brome (*Bromus inermis*)—often used to vegetate roadsides and waterways—which has invaded and degraded many native-grass stands established through the CRP (Rodgers and Hoffman 2005).

Another plus: Habitat islands offer good hunting. Anyone who has ever pursued wild pheasants knows their tendency to run through continuous habitats; but when they reach a habitat edge, they often hesitate. All this edge is a great advantage for getting roosters in the air within gun range.

Hunter Mark Shoup described hunting on our land in *Kansas Wildlife and Parks* magazine, where he wrote: "I ... have hunted pheasants in west-central Kansas for pushing 50 years, but I have never seen as many birds in one place as I saw last November [2011], when we were in the midst of the worst drought since the 1950s. Bird numbers were sharply down almost everywhere, but not on two Rush County quarters operated by former KDWP upland bird research biologist Randy Rodgers" (Shoup 2012). That kind of hunting success is a result not only of highly productive wildlife habitat, but of a distinctly huntable habitat pattern.

Helping Hands for the Future

Most of what we have accomplished has been done with our own labor, money, and considerable help from friends. But we have also benefited from financial and technical assistance available through federal and state programs. We have used six different CRP practices, particularly those of the Continuous Sign-up of the CRP, to establish native-species habitats. This includes financial help for our five-acre wetland using the "Shallow Water Areas for Wildlife" practice (CP9) and assistance from the

FWS. The KDWP (now Kansas Department of Wildlife, Parks, and Tourism) has often loaned us a grass drill, and the Kansas State Conservation Commission cost-shared the plugging of one of two irrigation wells. We voluntarily terminated our water rights on those wells, a move we hope will help support downstream aquatic habitats.

Our planning, development, and land management are all aimed at creating habitats with micro-climates to help mitigate the negative effects on wildlife of the often-harsh, semi-arid Kansas climate. We also keep an eye toward adapting to the emerging effects of global warming, which will likely make our already-challenging High Plains climate hotter, drier, and even more unstable. Our habitat islands provide grass windbreaks that reduce evapo-transpiration from our crop strips, and we try to maintain as much crop-stubble height as possible to further improve moisture conservation (Rodgers 2002). The high level of habitat interspersion puts all the resources needed by farmland wildlife close to each other, thus reducing wildlife exposure to the elements and to predation.

I want to provide the highest-quality habitat to wildlife in our agricultural landscape because only the best habitats will support significant wildlife populations as the effects of climate change intensify. Previously adequate habitats will no longer suffice. This is already evident in that we continue to have abundant, if modestly reduced, gamebird populations on our land while bird numbers have plummeted elsewhere since extreme drought began in the summer of 2010.

In our own small way, Helen and I even hope we are moderating climate change directly. By adding grassland where once was marginal cropland and by no-till farming, we are sequestering carbon in the soil and reducing fossil-fuel consumption. Our efforts to restore our pastures to health with well-timed rest from grazing, prescribed fire, and targeted noxious-weed control should store even more carbon in our prairie's root systems.

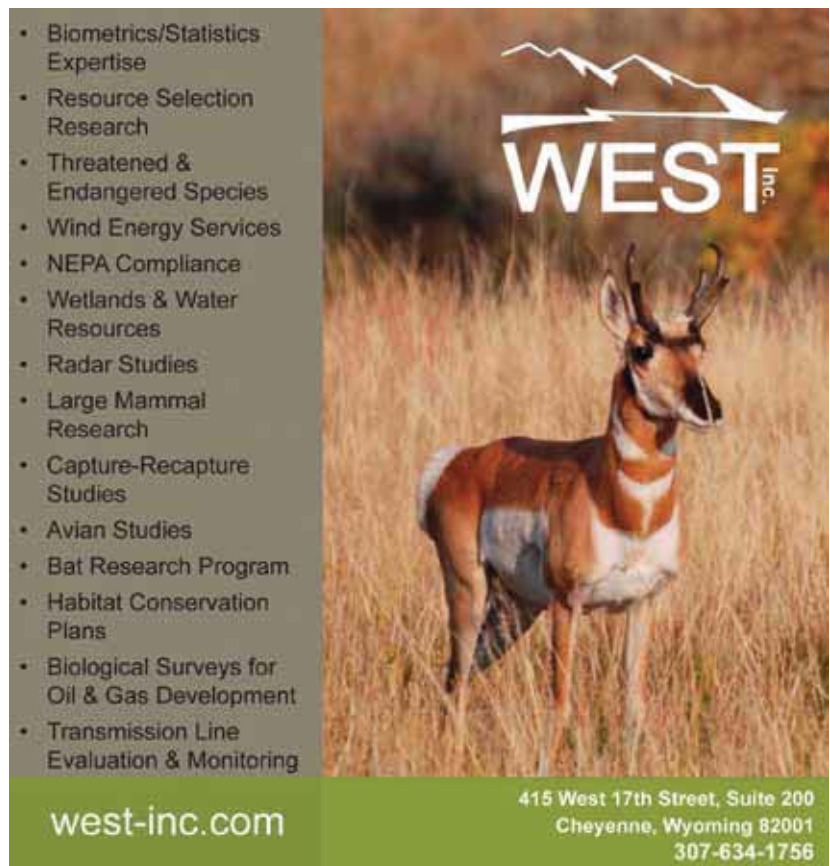
Work that Offers Its Own Rewards

We have reaped many benefits from our efforts, including great hunting for ourselves and our friends. We have also enjoyed showing our land to wildlife and agriculture students from Fort Hays State University in hopes of sparking their own dreams of land stewardship. But the deepest personal satis-

faction comes from the land restoration itself. This tangible, hands-on work not only offers a form of recreation but provides a sense of purpose.

To be sure, we've had plenty of setbacks, many caused by three years of extreme drought. I've been known to curse the former tenants of our newest tract for their prior abuses of the land, and there have been many hot, sweaty days when we've returned home exhausted and tick-bitten after long hours of killing noxious thistles. But the hard work is worth it, setbacks can be overcome, and knowing those land abusers are no longer in control is a real source of satisfaction.

Conservation is more than a profession for most wildlifers. It is also an avocation and even a calling. As I get older, I can think of nothing that offers more peace of mind—and even a little hope for the future—than the opportunity to pass a few restored pieces of the Earth into the hands of a younger generation of land stewards. Helen and I plan to make that happen. ■



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