



Although Vital for Bobwhites
and a Vast Array of Songbirds,

It Isn't Easy Being a Shrub

—or Even a Forb—in Native Rangelands

Article and photos by Ron Klataske

Any farm family member from earlier generations who walked their land and worked the smaller fields of a time when fencerows and roadsides were surrounded by shrub thickets, native grasses and a complement of a few weedy patches, *any old time quail hunter*, and *any birder of any generation* knows that the presence of thickets and broadleaf plants are key to an abundance of many birds in rural landscapes.

Native *shrubs and forbs* (including an array of wildflowers) are often nowadays referred to negatively and as simply *brush and weeds*—even where naturally occurring in native rangelands. If they increase in abundance in grasslands due to an absence of adequate prescribed burning or due to the distressed conditions of grasses due to intensive grazing, they are blindly cast as invasives that surely don't belong there.

A range researcher in central Kansas recently reported to me in private conversation that he often gets phone calls from landowners describing a plant that seems abundant at the time with the questions of, "What is it, and how do I get rid of it?" As a range ecologist with both feet planted in sound science, he usually determines that the plant is native, either beneficial as part of the nutritious forage, of no consequence to grass production, or simply reflecting a temporary excess of moisture not utilized by dominant grasses. Due to advertising and promotional publications, the instinct to spray and eliminate broad-leaf plants is pervasive. And, inquiries usually go to chemical dealers and others who reinforce that approach. A few follow in the footsteps of the late John L. Launchbaugh at the Kansas Agricultural Research State at Hays.

In 1978, Launchbaugh and Clinton Ownsby co-authored Bulletin 622 entitled **Kansas Rangelands: their management, based on a half century of research**. The section on managing perennial forbs articulates that most subdominant forbs have root systems that use moisture below the major extraction zone of grass roots, also the taller growing broadleaf plants moderate microclimatic factors—wind velocities, temperatures, and evaporation rates near the ground—and "thereby reduce environmental stress on the perennial grasses." At that time, the report went on to state that, the "role of native legumes in adding nitrogen to range soils has not been clearly defined. Many legumes, along with other forbs, however, have much higher protein content than do the grasses, and the most palatable ones are sought out and grazed by livestock. Livestock gain more on

ranges with mixtures of grasses and forbs than on grasses alone...so most broadleaf plants...are desirable on native range."

This publication of 37-years ago even revealed that "western ragweed stands averaging 1,200 lbs. dry matter per acre appeared to be beneficial to grass production" in a study area near Hays. Stands with yields nearly to 3,000 lbs. did not reduce grass yields in another study. Western ragweed seeds are highly nutritious and one of the most important foods for quail and other grassland birds, especially wintering birds. I've also observed that when cattle are turned into pastures with ragweed in the fall they devour ragweed seedheads, likely for that very reason.

However, with the exception of far too few in the profession, range management has been overly influenced—highjacked in many institutions—by advocates of herbicide applications since the early 70s and the decades that followed. Prior to the slashing of budgets for such purposes, states funded research. That role is now taken by agribusiness interests that have products to sell.

During the past 27 years a corporation in Lindsborg, Kansas has produced and distributed 359,809 copies of a 16-page "Special report" publication entitled "**GRASS: The Stockman's crop**" prepared by NRCS range specialists who do not mention anywhere in the publication the values of native forbs. All broadleaf plants are simply referred to as weeds and brush, to be controlled by various means. Likewise, there is no current information of the value of patch burning. One headline section is "**Control Brush and Weeds.**" This publication has been purchased and distributed by NRCS, BLM, the US Forest Service and Bureau of Indian Affairs. With this systemic philosophy in publications, presentations and funding assistance as a backdrop, it is little wonder that grassland birds are the suite of birds in greatest decline in North America. With a 98 percent decline Greater Sage-Grouse are now imperiled in large part due to habitat destruction—including spraying of big sagebrush and associated plants on millions and millions of acres of public land and federal funding on private land. A similar approach has contributed to the precipitous decline of Lesser Prairie-chickens.

In reality, prairies, especially tallgrass prairies, have always consisted of hundreds of different plants. One doesn't have to be a wildlife or wildflower enthusiast to appreciate the ecological contribution of the full range of grasses, forbs, sedges and shrubs to the range of resource values contributed by the diversity of



55-gallon barrels of herbicides fill a trailer and are on the ground awaiting aerial spraying of a rangeland in northern Osage County Oklahoma in the mid 1970s.

this plant community. The legumes are part of the reason why native rangelands do not have to be fertilized to remain productive.

If you are wondering why the values mentioned above are overlooked and why native shrubs and forbs are regarded as brush and weeds, examine the combined contribution of ecologically-illiterate agronomists in agencies and the vested interests involved in sales of herbicides, and even academics funded and focused strictly on the efficacy of herbicides in field studies. The measure of success is killing plants.



A typical native rangeland needlessly sprayed (September 2015 photo) in the Flint Hills west of Cottonwood Falls. Although the narrow strip of shrubs along the waterway and the lightly scattered forbs and sumac in the foreground were killed, they were likely beneficial to the health of the rangeland, of value for grazing and certainly for wildlife. Stewardship is a landowner's privilege, but should the public pay for ecologically destructive practices?

For decades government agencies, most notably USDA, helped to finance—and along with the Extension Service—promoted with publications and programs the philosophy that herbicides were the answer to management of rangelands. Sales

representatives of Dow Chemical and other herbicide companies have often and continue to be included as part of Extension-organized programs. They provide free meals—and product literature such as the 63-page “**RANGE & PASTURE Weed Identification Guide**” published by Dow AgroSciences. It illustrates about sixty plants that they consider weeds, hoping people will come to believe they all need to be sprayed. Although many of the noxious weeds in the Great Plains are listed, others that are seldom a problem are included to give the impression that they are. In many cases they aren't prevalent in pastures simply because they are readily eaten by livestock. The long list is provided so a landowner comes away with the idea that surely some are out there and almost everything that isn't a grass should be sprayed. Don't expect to find any suggestion (or even a mention) that there are broadleaf plants that are important for wildlife and pollinators, of value for forage or for rangeland sustainability—as with native legumes.

The Dow preamble on page one states that, “*Annual and perennial weeds restrict grazing, ruin wildlife habitat and reduce forage yields....managing them is a must.*”

There isn't any suggestion that range management strategies that utilize planned grazing systems, prescribed burning, patch burning and mechanical control (particularly of woody plants) can effectively achieve optimal rangeland management conditions without the need for any broadcast applications of herbicides. By contrast, the first page discounts anything other than herbicide applications by suggesting that, “*Although mechanical control methods temporarily appear to do the job, they are labor-intensive and costly.*” “*That's where ForeFront™ R&P and MILESTONE™ herbicides can help.*”

Up until very recently, and almost universally even now, the same philosophy has been espoused by Extension publications. The 136-page annual **Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland** K-STATE Research and Extension how-to “bible” on the subject targets everything in grasslands under the banner of “weeds and brush.” There is no mention suggesting that it is important to protect native vegetation from the herbicide prescriptions. Every element of native habitat that a wildlife biologist, enthusiast or hunter might consider of value is simply ignored or included in that category. American plum, sand plum, sand sagebrush, sunflowers, ragweeds and goldenrods are simply listed as targets. There isn't any suggestion in the publication that other management practices, mechanical methods including mowing, prescribed burning, patch burning, pasture resting and grazing rotation, or even limiting herbicide applications to focus on “spot spraying” may be more economically and ecologically beneficial. Likewise, there is no mention of any specific broadleaf plants or shrubs of value to livestock, wildlife or for other conservation purposes.

Don't expect to find many *Extension* publications on the value of managing rangelands in a manner that utilizes or maintains the value of native forbs and shrubs for livestock forage, wildlife, pollinators and/or soil fertility, or simply based on the comparative economics (cost savings) of limiting herbicide applications and use of alternative management practices. Regardless of their value, native plant communities do not generate funding for university studies and overhead. However,

some departments in Land Grant Colleges depend heavily on research funding from agricultural chemical companies. Individuals are sometimes faced with *publish or perish*, and university staff either bring in funds or lose their jobs. As with political fundraising, research funds usually come with the expectation that the *vested* corporate interest will be a priority. We documented this principle in the “SILENT SPRING” REVISITED article in the Winter 2012/Spring 2013 issue of *PRAIRIE WINGS* (available on the AOK website).

This potential for corporate influence was highlighted recently when I learned of an exceptional range management researcher who was called to answer to the administration of his university. He published research on the value of forbs in rangeland, and dismissed the value of routine herbicide applications on rangelands during a keynote presentation at a national range management conference! Officials with Dow and DuPont (along with some “ranching interests” they corralled) were quick to contact the university with the suggestion that he was anti-herbicide. As a highly distinguished professor with tenure, he has little to worry about—although a potential funder’s threat of withholding funds for whatever purpose is powerful. For agencies the threat is political. Few academic, agency, publication or even conservation organization personnel are willing to speak up for *natural* resources if it doesn’t follow the money for advertising, funding or political influence. Don’t expect to read about the cost savings of NOT applying herbicides, or the economic value—and forage value—of native forbs in rangelands in agricultural magazines.

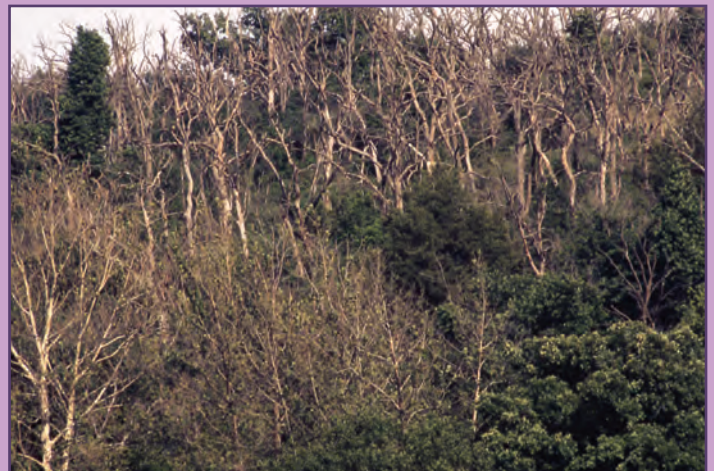
The promotion of herbicides is not unlike that of the effective marketing of **Marlboro** products in decades past. Cigarette ads were designed to make smokers envision themselves as rugged men of the open country. One only needs to view livestock and range publications to appreciate the multi-million dollar promotional advertising devoted to convincing landowners that (1) forbs are weeds and shrubs are brush and all are threatening other resources of value; and (2) herbicides are the logical solution. Herbicide names like Range Star, PastureGard, Plateau, Crossbow, Pathfinder, Cimarron Plus, Remedy Ultra, Redeem, Grazon, Overdrive, Milestone, Sterling Blue and Clarity are designed to sound as natural to the rugged individualist fighting the forces of nature as the image of the Marlboro cowboy.

Little wonder that landowners, especially many who buy rangeland and aren’t well grounded in more holistic and practical management succumb to all the promotion that pays for publications, trickles down through the airwaves, and is brought to them via Extension and USDA agencies. Some men who manage native rangelands for other owners in the Flint Hills refer to themselves as “grass managers.” Some do this without any recognition of the importance of plants other than grasses.

The Summer 2015 edition of **RANGE & PASTURE STEWARD** newsletter published by DOW AgroSciences has an article that highlights the philosophy that they hope to cultivate. Titled, “Cattle business is a learning curve,” a producer is quoted as saying, “*We try to spray everything every year.*” For more information, readers are encouraged to contact their local (DOW) “range and pasture specialist.”

The role of herbicide chemical companies in government programs received its biggest boost when **Operation Ranch Hand** (a military code name) was launched in 1962. Between 1962 and 1971 at least 19 million gallons of herbicides, 11 million of which consisted of Agent Orange (a combination of 2,4,5-T and 2,4-D), were sprayed over 5 million acres of Vietnam/Southeast Asia. It has been speculated that following the herbicidal warfare program our federal government felt obligated to be supportive of the chemical companies with other programs as a way of showing appreciation.

While living in another Flint Hills county in the early 1970s I attended an annual USDA/ASCS dinner and was astounded by the boast that the county committee had cost-shared with federal funds the spraying of 88,000 acres. The ASCS (now FSA) county chairman was a chemical dealer. I had seen and photographed rangelands and gallery oak forests that were sprayed. A small older rancher told me he didn’t want to spray but was encouraged to sign up by the SCS (now NRCS) district conservationist (at a cost to him of only about \$5 per acre) since adjacent rangelands on both sides of his Illinois Creek property were going to be aerially sprayed. He said he regretted it. Dogwood and cedar replaced an oak savanna on the upper slope of the ridge along the stream.



Remains of an oak forest on a steep slope adjacent to a Flint Hills stream in Wabaunsee County that had been sprayed (photo in the early 1970s). The trees along the edge of the stream were not in the pasture and were not directly sprayed.

What about Seeking a Second Opinion?

The best source of good advice are ranchers who are close to their land, don’t want to waste money, and have a sense of pride for quail or prairie-chickens on their land. They are increasingly rare, but we know several.

When it comes to exploring management and other alternatives to herbicide prescriptions, it is not easy to find qualified people in the arena who are not part of the chemical industrial complex with a vested interest in promoting chemical solutions to management challenges. Many others have unwittingly bought into that philosophy which has become embedded in educational institutions, agencies (including

USDA, the Kansas Department of Agriculture and most county *Noxious Weed* departments) along with agricultural organizations invested in agri-chemical companies.

Maybe \$3 Million for Herbicide Applications this Year Alone in Kansas?

For decades the herbicide approach has been coupled with USDA cost-share programs tied to range and pasture management. Tens of millions of dollars in federal funds have been expended for rangeland practices involving herbicide applications in Kansas. Several years ago we started to get more scrutiny of cost-share expenditures for broadcast spraying operations, and wildlife representatives succeeded in redirection of some resources to mechanical control and patch burning. Both were hard sells because the claim was that K-State hadn't done sufficient research to document success for these alternative approaches, and specs weren't written. We continued to push for more accountability on the ecological impacts of broadcast spraying. Then, in 2013 the NRCS State administrator decided to remove "wildlife resources" as a resource of secondary concern that should be considered by NRCS employees when writing plans and ranking cost-share applications involving range—unless wildlife concerns were specifically requested by the producer. The funding is provided as part of the **Environmental Quality Incentive Program** (EQIP). Now, without wildlife resources even being recognized as a resource of secondary importance, and without any transparency, it is difficult to know if *environmental quality* is an objective or if it has been eclipsed by practices with production becoming the only principle objective.

In 2015, NRCS obligated \$3,050,423 in EQIP funds in Kansas for "Brush Management," out of a total of \$3,861,712 allocated for "Grazing Lands Health." We have not been able to get the total paid involving broadcast herbicide applications, but it is likely the lion's share of the \$3 million plus. For those of us involved in conservation for 40 or 50 years, we can remember when USDA/SCS was actively involved in funding destructive programs to drain wetlands and channelize streams. Programs to spray America's rangelands with herbicides is equally destructive to wildlife resources and is a major factor resulting in the precipitous decline in grassland birds, sending some on a path toward threatened and endangered status.

Likewise, the subsidized and often mandated destruction of shrubs in "brushy waterways" when NRCS builds terraces and waterways eliminates vanishing habitat for many other species, including upland game birds. Most wildlife agency biologists are hostage to the system, they cannot speak up—and they remain silent.

***"It is difficult to get a man to understand something, when his salary depends on his not understanding it."* – Upton Sinclair,**

Despair isn't an answer. In fact there have been and are now a few *range ecologists* who recognize that ecological protection and livestock production can be managed in tandem.

One of the most objective and balanced of K-State publications, a four-page flyer with the heading **Rangeland Weed Management** was prepared by Paul D. Ohlenbusch and Gene Towne in 1991. On the subject of herbicides they wrote, "Elimination or large scale reduction of beneficial forbs will reduce (livestock) gains, disturb wildlife habitat, and produce a plant community that has a shortened season of high quality forage." Livestock routinely graze forbs. Native legumes including cat-claw mimosa, partridgepea, leadplant, various prairie-clovers, and Maximilian sunflower have protein contents higher than big bluestem. Many forbs—actually most—are so palatable and preferentially selected by cattle that they are grazed out or at least uncommon in pastures—and only noticeable across the fence in roadsides (assuming they aren't sprayed there by the county noxious weed departments). Maximilian and other sunflowers, Jerusalem artichoke, Canadian goldenrod, compass plant, Illinois bundleflower, roundhead lespedeza, common and butterfly milkweeds are a few of many plants seldom seen in pastures—because they are grazed out by livestock. The authors point out that western ragweed contains



Photos make it possible for us to see the obvious. Many, many native forbs—including butterfly milkweed and Jerusalem artichoke shown in these photos—are sometimes abundant in roadside refugia or meadows adjacent to pastured areas, but scarce in pastures because they are eaten by livestock. They are not weeds in rangelands—or roadsides although some county noxious weed departments spray everything. These photos illustrate roadsides along Highway 177 in Chase County.

20 percent crude protein and is palatable in the early grazing season, but overlook that cattle also relish it in October when seed heads provide a “grain crop.” Even annual forbs that qualify as “weeds” in croplands, such as giant ragweed, pigweeds and curly dock, are highly nutritious, consumed and eliminated by cattle in grazed areas.

Patch Burning with Grazing is Part of the Solution.

In recent years, “heterogeneity” has become a measure for the highest standard of range management. Patch burning and grazing enhances heterogeneity of grasslands. The benefits of patch burning, integrating fire and grazing, have been demonstrated by research conducted by range scientists at Oklahoma State University. Fire and grazing are two disturbance factors that can be utilized to keep biodiversity intact, and patch burning generally eliminates the need for herbicide applications. For more detailed information go to

<http://fireecology.okstate.edu/patch-burning>.

Unfortunately, governmental agencies have long promoted uniform livestock distribution and forage utilization; cost-share programs through USDA have been used to build cross fences, ponds and finance herbicide applications to maximize homogeneous grazing. As promoted in the “GRASS” publication, cattle can be used as “harvesting machines,” not unlike a mower. **With homogeneous grazing, as with annual landscape burning, there are few places with sufficient cover remaining for nesting and brood rearing of Prairie-chickens or Bobwhites.**

Two Diametrically Opposed Threats to Native Tallgrass Prairies/Rangelands

On the subject of shrubs and forbs, there are two common practices that I am inclined to characterize as negligence and brashness that threaten the ecological integrity of native rangelands. Negligence is a failure to recognize that native grasslands can be taken over with woody plants (shrubs and trees) in the absence of effective use of fire, appropriate grazing regimes and/or mechanical/mowing practices and sometimes use of SPOT spraying. True prairies cannot be fenced and totally forgotten now that they are no longer subject to historic fires and the historic benefits of roaming herds of grazers and browsers. Extended overgrazing and an absence of rest is another form of abuse. One of the worst forms of negligence is to let it go to hell (overtaken with far too much woody vegetation) and then with ultimate brashness employ broadcast spraying with wide-spectrum herbicides. Needless spraying of normal native rangeland is another ecological insult, leaving a monoculture not unlike that of fescue, bermuda or bromegrass.

A fescue pasture is a grass monoculture that is essentially devoid of other life, from fireflies and butterflies to birds. Likewise, most of our native flora and fauna are eradicated from prairie rangelands that are repeatedly sprayed with broad-spectrum herbicides. Nowhere is this more apparent than on some of the large ranches in Osage County Oklahoma where herbicides have been repeatedly applied. One can no longer expect to find Prairie-chicken chicks feeding there on insects under a canopy of native forbs.



A wild plum thicket in the Nebraska Sandhills. Plum thickets are among the best "headquarters" habitats for Northern Bobwhites.

Three Species Can Serve as Coal Mine Canaries in Tallgrass Prairie Landscapes: Greater Prairie-chickens, Northern Bobwhites and Fritillary Butterflies.

If a range landowner has a healthy population of Prairie-chickens on his land there are likely differing heights of native vegetation—and a complement of other grassland birds as well. If Northern Bobwhite coveys are present, the property likely has an array of habitat (including forbs and SHRUBS) and other birds. If Fritillary Butterflies are present, it is an indication of reasonably intact remnants of native prairie plant diversity.



A pair of Bobwhites loaf in the protection of a shrub thicket at the Hutton Niobrara Ranch Wildlife Sanctuary, May 2015. The calls of quail and the songs of Western Meadowlarks could be heard throughout the day.

How Can We Make a Difference?

As landowners, those of us who care need to take the needs of wildlife into consideration when designing management strategies. For landowners utilizing patch graze burning systems, one often has to inform the neighbors who may be

accustomed to igniting the entire landscape with annual burns. Audubon of Kansas and the Kansas Wildlife Federation need other organizations to step up in the USDA/NRCS State Technical Committee to argue for more—much more—ecologically beneficial and far, far less funding of destructive

practices under the *ENVIRONMENTAL QUALITY* Incentive Program involving \$20 million in taxpayer dollars. Residents also need to express their concerns about indiscriminant roadside herbicide spraying to their county commissioners. Insist on better stewardship of public resources—financial and land.

To highlight a thought in the Foreword to the book, **BEEF, BRUSH, and BOBWHITES: Quail Management in Cattle Country**, we share this text:

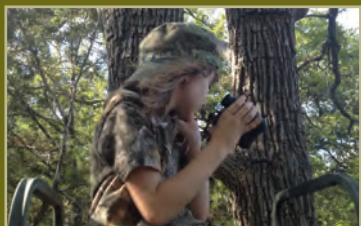
“...no less important is the whispering call of a covey of bobwhites, or the absence thereof, to remind me that wildlife and habitat conservation is directly proportional to the quality of stewardship that we bestow on the land.”

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Snapshots of a Prairie Before and After Application of a Cocktail of Herbicides

June 2009



July 2014