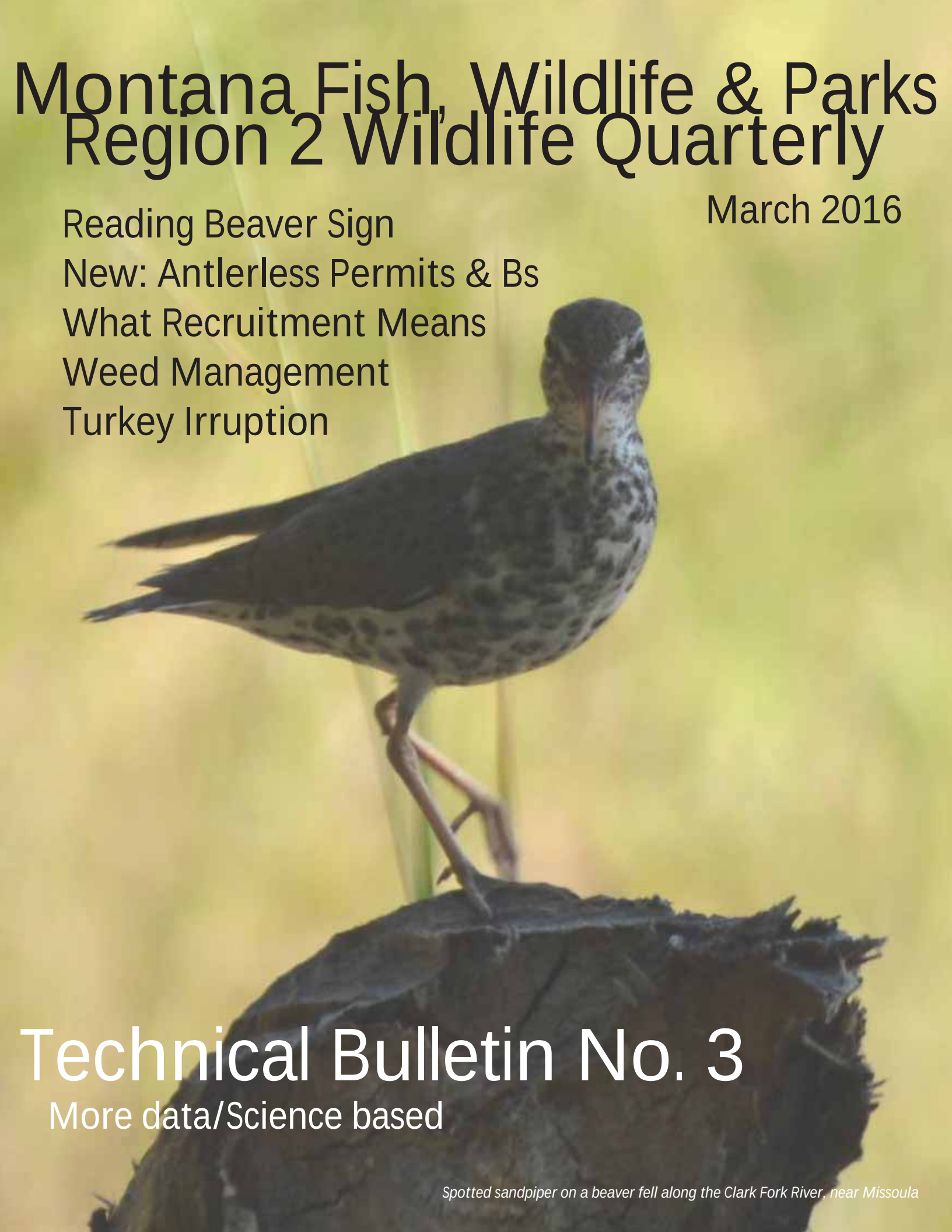
Montana Fish, Wildlife & Parks
Region 2 Wildlife Quarterly

March 2016

Reading Beaver Sign
New: Antlerless Permits & Bs
What Recruitment Means
Weed Management
Turkey Irruption



Technical Bulletin No. 3

More data/Science based

Spotted sandpiper on a beaver fell along the Clark Fork River, near Missoula

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Castor canadensis—*Reading Beaver Sign*

by the Region 2 Wildlife Staff

Montana Fish, Wildlife & Parks (FWP) receives inquiries about accelerated beaver activity every spring, especially along streamsides where people share the land. Beaver works are especially prominent these days on the Tower Street Conservation Area, on Missoula's west side (Figure 1). The City of Missoula manages the property as a natural flood plain and the public is welcome to hike and appreciate the beaver's role. Due to the heavy hiking traffic, trapping is not allowed there. What follows are insights into beaver activity from a rare compendium on fur bearing animals (Figure 2), and other sources.

Figure 1. Beaver dam in a side channel of the Clark Fork River, near Missoula. Bottom right: Close-up of the same dam, viewed from the downstream side. Top right: Dam construction viewed from the upstream side.

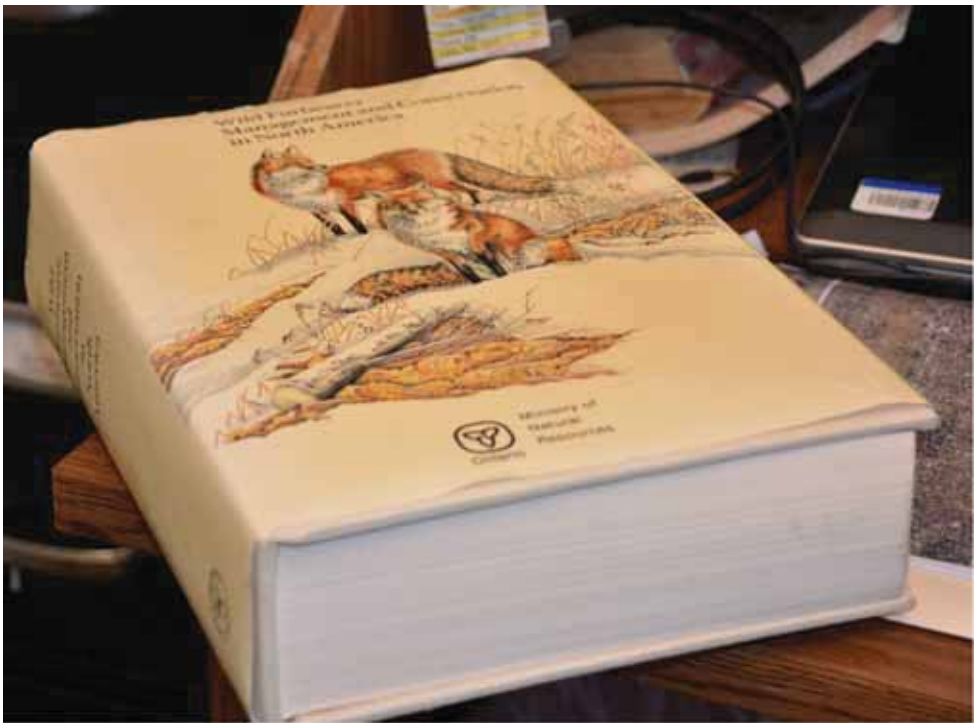

Figure 2. Introducing a collector's item and extraordinary reference for the scientist and naturalist: "Wild Furbearer Management and Conservation in North America." 1987. Edited by Milan Novak, James A. Baker, Martyn E. Obbard and Bruce Malloch; published by the Ontario Trappers Association under an agreement with the Ontario Ministry of Natural Resources. At 1,150 pages, it is not for the faint of heart.

FOOD HABITS

Karen Henker (2009) prepared a literature review on beaver food habits, which may be consulted online at: http://www.grandcanyontrust.org/sites/default/files/ut_beaverDietReview.pdf. Henker writes:

> *Beaver are known for their consumption of the bark and twigs of woody vegetation. However, they appear to prefer herbaceous vegetation over woody vegetation during all seasons of the year, if it is available (Jenkins 1981 cited in Allen 1983). Forbs and grasses are important diet constituents in spring and summer (Fitzgerald et al. 1994, Collins 1976 cited in Olson & Hubert 1994) while rhizomes and aquatic roots or tubers are important additions to winter food supplies. In one Pennsylvania study, the ratio of woody : nonwoody materials consumed by beaver shifted from 25:6.2 in winter to 2:30 in summer (Brenner 1962). Woody vegetation may be desired primarily for its ability to be preserved and consumed over a long, icy winter when other resources become unavailable.*

The most conspicuous signs of beaver activity onshore do not represent feeding activity, directly (Figure 3). When felling trees, beavers may ingest some material incidentally, but most of the chips are left behind and are too dense for consumption. Rather than feeding, the beaver's purpose for chewing on large trees is more likely to gain access to the smaller twigs and branches in the tops for subsequent feeding and building purposes. Beavers stay near water to provide ready escape from predators, and in many locations along the Clark Fork, the best food on the water's edge is in the tree tops, which the beavers, lacking wings, must fell to a place within their reach.

Figure 3. Fresh beaver cutting of cottonwoods, photographed along the Clark Fork River in the Tower Street Conservation Area on December 15, 2015. Chips are left as waste and are not suitable for food. Instead, beaver feed on the inner bark when foraging on trees.

TREE FELLING

Hencker (2009) summarized scientific literature to explain why beavers select certain sizes of certain tree species at certain distances from the water. With this understanding, it may be possible for landowners and land managers to predict the likely future extent of beaver cuttings on a particular property of interest. Hencker wrote:

> *Beaver are most vulnerable to predation when out of the water and prefer to remain within proximity to its banks. Jenkins (1980) and Hall (1960) found that up to 90% of cutting of woody material occurred within 30 [meters] of the water's edge. Olson & Hubert (1984) agree, though they documented occasional forays up to 600 feet, while others (Allen 1983, Fitzgerald et al. 1994) restrict the likely feeding corridor to 100 [meters], or 328 feet.*

"Central Place" Foraging Theory: Some ecologists have tried making sense of the beaver's foraging habits by ascribing them to a prevailing theory of evolution called the "central place" foraging theory. As Hencker described in more technical terms, the water is the beaver's central place, where the beaver wants to consume its food. Its central place—the water—is a relatively safe place for the beaver to allow itself the distraction of peeling and feeding on the inner bark of succulent stems. If you think of the beaver as a predator of trees, the central place foraging theory says that the beaver should kill bigger trees the farther it hunts from the water. Why expend the effort and take the risk of hunting away from the central place if not to gain forage in larger amounts than are available close by?

Figure 4. Nutritious tops felled into the water—the beaver's "central place"—are peeled of their inner bark for forage.

However, the central place foraging theory is turned on its ear for species that kill prey that are larger than the predator. In the case of the mature cottonwood tree and the beaver, the beaver is more vulnerable to its enemies as it cuts big trees farther from water. The beaver is exposed for a long time while felling a big tree and, once felled, the beaver must make numerous long trips to and from the water to consume its branches. So, in the case of big trees, the central place foraging theory dictates that the beaver should cut big trees in close proximity to deep water, and smaller material as the beaver ventures further upland.

Hencker went on to suggest that the beaver employs the central place foraging theory in one way or another, depending on the habitat. In the Tower Street Conservation Area, where cottonwood is in the form of large trees and relatively abundant, the beaver would be expected to cut big trees close to water. Forays away from water would be for more palatable species in smaller sizes, suitable for dragging or floating in side channels, such as the relatively few aspen in the area. This would suggest

that only large cottonwoods occurring close to the river's edge will be vulnerable to felling outbursts in the Tower Street area and similar habitats.

FOOD CACHES

According to Novak (1987) on page 297 in the compendium entitled Wild Furbearer Management and Conservation in North America (Figure 2):

> *Food-pile construction is another instinctive and vital beaver activity. Behaviorally, constructing the food pile is closely related to dam or house construction. Beavers normally construct only one food cache during fall, but beavers in the Far North must replenish their depleted food supply during late winter or early spring in order to survive until the ice thaws (Aleksiuk 1970).*
>
> *. . Onset of cache building is correlated with the first heavy frost, and, according to Hodgdon and Lancia (1983), either the adult male or adult female may initiate this activity. Kits contributed material to the food pile only during late fall (Patenaude 1984). After the preferred material is collected for the food pile, the whole mass is often capped with branches of alder (Fabricius and Wilsson 1960). In Ontario, alder is used almost universally for the cap [Figure 5], although peeled logs are used sometimes and, less frequently, conifers (M. Novak, pers. Observation).*

Novak commented further on the use of alder on page 294:

> *Most food habits studies have determined species and quantity eaten by examining beaver cuttings on shore (e.g., Aleksiuk 1970b, Shipes et al. 1979) or in feedbeds (e.g., Novakowski 1965), and these techniques may result in errors in interpretation. I have often observed beavers using undesirable woody vegetation to build dams and houses, and to cap-off the feedbed prior to freezeup (Slough 1978). The commonest species used for these purposes, where it occurs, is the alder. . . Gibson (1957) concluded that mountain alders were frequently cut but never eaten, and that they were used for construction purposes only.*

Figure 5. The distinctive orange faces of alder cuts betray their place of use: a beaver food cache along the shoreline of the Clark Fork River in the Tower Street Conservation Area on December 15, 2015.

Antlerless Permits & B-Licenses—Tools for Harvesting Antlerless Elk

by the Region 2 Wildlife Staff

In Region 2:

A "B-LICENSE" IS:

- A license/tag for a second elk.
- A license/tag for an antlerless elk only.
- A license that does NOT affect hunting for bull elk.
- Valid only for a specified hunting district (HD) or portion of district.
- A special license that must be applied for by June 1 OR may be available to purchase over-the-counter for some HDs.
- Usually prescribed in portions of HDs with mostly private land and where a reduction in elk numbers is desired.

AN "ANTLERLESS PERMIT" IS:

- NOT a license/tag for a second elk.
- A PERMIT that allows the hunter to hunt antlerless elk instead of antlered elk with the general elk license.
- A permit that prohibits the hunter from harvesting a bull in the hunting district (HD) where the permit is valid.
- Valid only for a specified HD or portion of district.
- A special permit that must be applied for by March 15.
- Usually prescribed in HDs on mostly public land where reduced harvest pressure on bulls is desired.

Sleek, new coat on a cow elk near Monture Creek on June 13, 2015.

HISTORY OF ANTLERLESS PERMITS

In 2016 the Fish and Wildlife Commission reauthorized the use of antlerless permits in a number of hunting districts in Region 2. Montana Fish, Wildlife & Parks (FWP) has offered special permits for the harvest of antlerless elk in Region 2 since at least the early 1970s, with an interruption in the availability of permits from 2010 through 2015, when only B-licenses were used to manage antlerless harvest. Prior to 1992, antlerless permits generally allowed the hunter to harvest either a cow or a bull in the district for which the permit was valid. However, from 1992 through 2009, an antlerless permit disqualified a hunter from taking an antlered bull in the district for which the permit was valid. Antlerless permits have never affected a hunter's eligibility to hunt elk in another hunting district.

Focus on antlerless elk, National Bison Range, September 26, 2015.

HISTORY OF B-LICENSES

Prior to 2003, a hunter was able to harvest no more than one elk per year in Montana. In 2003, the Montana Legislature authorized a B-License for elk and established that a properly licensed hunter could harvest up to two elk per year. In 2004, FWP Region 2 began offering Elk B-licenses in a few hunting districts, and a mix of Elk B-licenses and antlerless permits across the region until 2010, when antlerless permits were temporarily eliminated as a harvest management tool. Most people in Region 2 who commented on the proposal to eliminate antlerless permits in 2010 registered opposition to the notion of a hunter being able to kill two elk in a season. In 2014 and 2015, Region 2 experimented with a modification of the B-License that disallowed the harvest of bull elk in the district for which the B-License was valid, but the result was confusion. With the Fish and Wildlife Commission's decision to reauthorize the antlerless permit for 2016, FWP can now prescribe antlerless harvest with a restriction on bull harvest, using antlerless permits, or FWP can prescribe antlerless harvest with NO restriction on bull harvest, using B-Licenses.

A-7 LICENSE

The A-7 License is not used in Region 2 at this time. FWP Region 2 began employing the A-7 License in 1991, in certain situations. Back then, antlerless permits allowed bull harvest as well as antlerless harvest. The new A-7 License was the tool by which FWP could authorize antlerless elk harvest while prohibiting bull harvest. The A-7 License went further by requiring that the hunter trade-in her general elk license for the A-7 License. So, the holder of an A-7 License could hunt elk only in the district for which the A-7 License was valid, and could only hunt antlerless elk there. In 2008, the use of A-7 Licenses was discontinued in Region 2, though the Fish and Wildlife Commission reauthorized the A-7 License in 2016 as a tool that could be employed if necessary to achieve management objectives. In the past, A-7 Licenses were most commonly used to attract a pool of hunters who were dedicated to the task of hunting antlerless elk in a particular hunting district—often on private land.

Recruitment Matters—Getting Recruitment in Wildlife Populations

by the Region 2 Wildlife Staff

DEFINITION OF RECRUITMENT

Recruitment is defined as the survival of a juvenile cohort to breeding age. For ease of conversation, a juvenile ungulate is said to have recruited into the breeding population on or approaching its first birthday. In the period from birth to recruitment, ungulates face the highest death rates that they will face in their lives and most juveniles born in some years and some places will die before reaching 1-year of age. Recruitment, then, is a graduation of sorts, from the juvenile period of high physiological stress and predation pressure to the adult stage of lessened death risk. Recruitment must balance the deaths or other losses of adult animals for a population to remain steady.

NOT recruitment: Month-old fawns still face hunting season and their first winter before they might recruit into the breeding white-tailed deer population in the Blackfoot.

MEASURES OF RECRUITMENT

Recruitment is estimated as the number of calves per hundred cows in elk and moose, for example, or the number of fawns per hundred does in deer and antelope. Biologists sample recruitment as late in the spring and as close to the 1-year birthday (~June 1) of juvenile animals as is practical. They are hampered, however, by the ever-increasing difficulty of distinguishing juvenile animals from adults as the juveniles approach their full size. Compromises must be made with the awareness and understanding that approximations of recruitment have their limitations. For example, biologists in the western half of Region 2 sample elk recruitment by counting cows, bulls and 9-11 month old calves from aircraft in March, April and May, when elk are aggregated and visible on green-up. In the eastern half of Region 2, elk are more visible to count on their open winter ranges than on spring ranges; so, calf: cow ratios obtained in December-March must take winter severity into account when assessing recruitment. Mule deer pose an additional challenge: They are visible and aggregated for aerial surveys on early green-up—in April—but the bucks have lost their antlers by then and are not readily distinguishable from does. So, the ratio of

NOT recruitment: A 5-month-old lamb coughing in Lower Rock Creek on October 25, 2015. Some lambs succumb to latent sources of pneumonia in sheep populations that have experienced recent die-offs, as immunity provided in the colostrum of mother's milk declines in the summer and fall.

fawns-per-hundred-does is not available from spring surveys and biologists must rely instead on the ratio of fawns-per-hundred-adults, including bucks. We have to hope that the biases in recruitment estimates are relatively consistent from year to year.

Recruitment? A small, 10-month-old, mule deer fawn on April 16, 2015, harvesting sappy cottonwood buds felled in a windstorm near Bearmouth. A pulse in fawn deaths sometimes occurs in late spring.

CALCULATIONS

The young: adult-female ratio is calculated by dividing the number of juvenile animals by the number of adult females in the sample. For example, FWP Region 2 biologist, Rebecca Mowry, counted 30 adult-nanny mountain goats, 26 adult billies and 13 kids in the southern Bitterroot Mountains (Hunting District 240) on February 11, 2015. Therefore, her young: adult-female ratio is 13 kids divided by 30 adult nannies, which equals 0.43—a very good ratio for goats, by the way. This ratio is normally multiplied by 100 to remove the decimal, so it would be expressed as 43 kids-per-hundred nannies.

Note that this is not the same thing as the percentage of kids in the population. The percentage of kids would be calculated by dividing the number of kids by the total number of goats counted. In the mountain goat example, Rebecca counted a total of 80 goats on her flight, if you include yearlings and 3 unclassified adults. Her totals of 13 kids divided by 80 goats (including kids) gives a result of 16 percent, compared with 43 kids-per-hundred-nannies. Percentages introduce more variation and bias to recruitment estimates, but can be useful to biologists for visualizing concepts and making off-the-cuff assessments.

A group of 35 (?) elk, 9 (?) calves and 1 spike bull. That's how biologists count them from the air, which yields 25 cows and a good ratio of 36 calves-per-hundred-cows on April 22, 2013. Photo of Bitterroot elk by Craig Jourdonnais.

RECRUITMENT STANDARDS

Recruitment happens every year. Each year offers a new opportunity for recruitment to boost the population or dampen its growth. Recruitment can vary widely from year to year and place to place (Figure 1). Recruitment tends to vary in waves, trending generally upward or downward over a period of several years. Elk recruitment was at a low ebb in 2009 in much of Region 2, and gradually rebounded to an average-or-better level by 2015 (Figure 1).

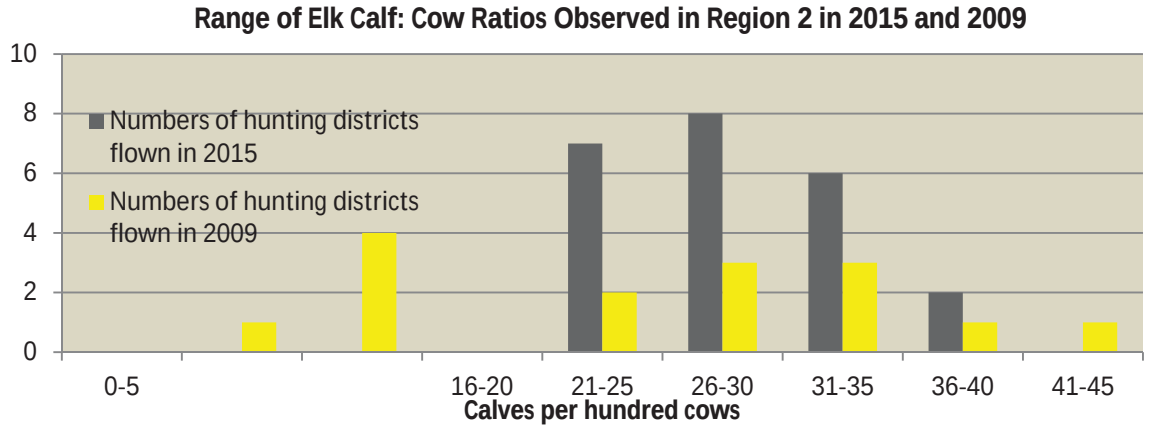

Figure 1. A comparison of elk recruitment sampled across 15-23 hunting districts or portions of districts across Region 2, showing the overall improvement in 2015 compared with 2009.

Recruitment extremes exert long-range effects on populations. In late-winter 2009, FWP documented a record-low 9 calf elk-per-hundred-cows in Hunting District 250, the West Fork of the Bitterroot. So, fewer of the adult elk killed by hunters, cougars, black bears, wolves, accidents and old age were replaced by young animals in that year. A healthy elk population can withstand the occasional year of poor recruitment—even severely low recruitment. However, multiple consecutive years of poor recruitment can deplete the breeding stock in an elk population and create cascading effects. Fewer elk in the breeding population produce fewer calves, which enter an environment that is stacked against calf survival when recruitment is poor. There are examples, though few, in North America where an ungulate population was virtually extirpated by the protracted effects of poor recruitment.

An adequate calf: cow ratio for sustaining elk populations and hunter harvest in Region 2 is 25 calves-per-hundred-cows or higher. Mule deer and white-tailed deer live shorter lives than elk and adult deer suffer higher death rates than elk, so deer require higher fawn: doe ratios for adequate recruitment. Generally, biologists look for fawn: adult ratios to hover around or exceed 40 fawns-per-hundred-adults in the spring, which would translate into a higher fawn: doe ratio if a useful fawn: doe ratio could be collected before antler drop. It's not unusual to see deer recruitment hold strong in Region 2 even when deer populations fluctuate downward because adult mortality is often the driver of population trajectory in western Montana deer populations (Figure 2).

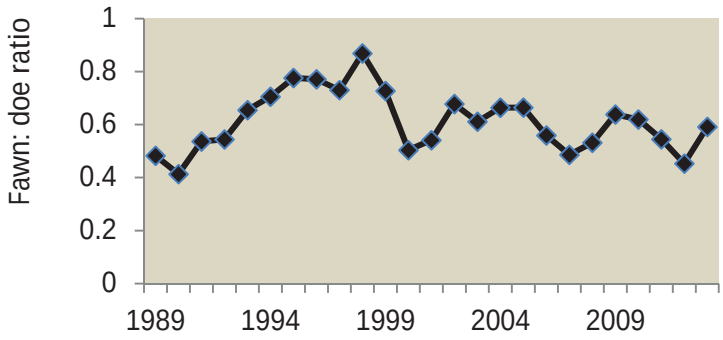

Figure 2. Trend in fawn: doe ratios sampled annually for the mule deer population of Hunting District 270, the East Fork of the Bitterroot, showing dependable recruitment through early winter while total counts (not shown) have declined over time.

Favoring Native Vegetation—*on Wildlife Management Areas*

by the Region 2 Wildlife Staff

Spotted Dog Wildlife Management Area

37,877	*Acres*
1,500	*Acres with Weeds*
$5,654	*Expense in FY15*
Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Rocky Ridge and the west slope of the Spotted Dog Wildlife Management Area on June 3, 2015.

REDUCING COMPETITION FROM INVASIVE PLANTS

While the control of noxious weeds and other invasive vegetation is but one aspect of native habitat management, it is among the most important to native plant communities and the public. Each year, Montana Fish, Wildlife & Parks (FWP) produces a noxious weed management report, summarizing its weed management activities on Wildlife Management Areas and Fishing Access Sites under its administration. Following (and above) are selected weed control data for 13 Wildlife Management Areas in FWP Region 2 for Fiscal Year (FY) 2015 (i.e., 1 July 2014-30 June 2015).

Aunt Molly Wildlife Management Area

1,184	*Acres*
3	*Acres with Weeds*
$94	*Expense in FY15*
Stable	*Infestation status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Blackfoot-Clearwater Wildlife Management Area

18,634	*Acres*
4,837	*Acres with Weeds*
$33,436	*Expense in FY15*
Stable to Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Blue-Eyed Nellie Wildlife Management Area

489	*Acres*
80	*Acres with Weeds*
$3,800	*Expense in FY15*
Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

BIOLOGICAL CONTROLS

In addition to prevention, mechanical control and chemical control, FWP has increased its use of biological controls in recent years to address

At left: leafy spurge on Garrity Mountain WMA. At right: effect of introduced flea beetles on the same spurge patch.

landscape-scale occurrences of noxious weeds such as leafy spurge and spotted knapweed. By biological controls, we mean the purposeful introduction of the natural enemies—insects from their native environments in Europe and Asia—of exotic plants that would otherwise thrive. The idea is to introduce stressors into the ecosystem that prevent exotic weed species from proliferating unchecked. Biological controls are advantageous because they do not affect native plants or other nontarget species; however, biological controls are not a substitute for chemical or mechanical treatment along roadsides or property boundaries where a buffer is desired to prevent weed spread.

Calf Creek Wildlife Management Area

2,173	*Acres*
776	*Acres with Weeds*
$450	*Expense in FY15*
Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Fish Creek Wildlife Management Area

34,573	*Acres*
8,500	*Acres with Weeds*
$8,514	*Expense in FY15*
Stable	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

At right: Region 2 WMAs Manager, David Dziak, discussing a challenging weed management situation during a tour of Fish Creek WMA. At left: Big game winter range that does not pose a weed management problem at Fish Creek.

Garrity Mountain Wildlife Management Area

5,779	*Acres*
24	*Acres with Weeds*
$400	*Expense in FY15*
Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Lost Creek Wildlife Management Area *not pictured*

1,403	*Acres*
215	*Acres with Weeds*
$300	*Expense in FY15*
Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Marshall Creek Wildlife Management Area

24,170	*Acres*
60	*Acres with Weeds*
$2,900	*Expense in FY15*
Stable	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Inherited log landing cleaned up on Mount Jumbo.

Mount Jumbo Wildlife Management Area

120	*Acres*
10	*Acres with Weeds*
$550	*Expense in FY15*
Stable	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Nevada Lake Wildlife Management Area

740	*Acres*
150	*Acres with Weeds*
$666	*Expense in FY15*
Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Spotted Dog Wildlife Management Area

Go back to page 12.

Brown Valley Conservation Easement illuminated in the foreground with Threemile WMA in the background.

Threemile Wildlife Management Area

6,089	*Acres*
815	*Acres with Weeds*
$5,514	*Expense in FY15*
Stable to Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Warm Springs Wildlife Management Area

1,000	*Acres*
33	*Acres with Weeds*
$1,570	*Expense in FY15*
Decreasing	*Infestation Status*

http://fwp.mt.gov/fishAndWildlife/wma/default.html

Turkeys Gone Wild—*in West-Central Montana*

by the Region 2 Wildlife Staff

ORIGINS

The wild turkey in Region 2 may be any of two or more subspecies of birds that are native to other portions of the United States, but not to Montana. According to Robert J. Greene and Robert L. Eng in *A Management Plan for Wild Turkeys in Western Montana* (c. 2000, FWP Region 2 files):

O'Brien Creek, Missoula County

Rock Creek, Missoula County

Near Lee Metcalf NWR, Ravalli County

Predominant Subspecies in Montana:

Merriam's wild turkey

- Snow-white tips on tail feathers
- More white and less black on wings

Eastern wild turkey

- Chestnut-brown tips on tail feathers
- White and black bars on the wings

http://www.nwtf.org/hunt/article/wild-turkey-subspecies

No mention was made of this bird in the Lewis and Clark Journals as they traveled through the area now known as Montana. Prince Maximillian, in 1833, considered Cedar Island in South Dakota as the western limit of turkeys as he traveled up the Missouri River (Greene, R. and R. Ellis 1971). This would very likely have been the eastern subspecies (Meleagris gallopavo silvestris) as the ancestral range of the Merriam's wild turkey (M. g. merriami) is south of Montana in the mountainous pine/oak habitats found in Colorado, New Mexico, western Texas and Arizona (Ligon 1946).

Greene and Eng (c. 2000) continued:

> *Although few records are available, attempts were made to establish wild turkeys in Montana during its early settlement. Most of these were very likely of the eastern subspecies and from pen-reared stock. In 1954, 13 wild trapped Merriam's turkeys were transplanted into central Montana from Colorado. In 1955, 55 and 57, 44 Merriam's turkeys wild trapped in Wyoming were released in two areas in southeast Montana. These initial transplants of wild trapped birds provided the base for continued trapping and transplanting throughout the state.*

HISTORY

Wild turkeys were comparatively scarce and scattered in FWP Region 2 before 2000 (Figure 1), and for many years turkey observations were noteworthy. For example, notes in the files document 11 turkeys on Highway 10, 1 mile east of Milltown, on October 9, 1962, and a hen and 6 young at the Cyr Ranch near Fish Creek on July 10, 1965. Notes dated 1967-1971 document turkey observations from Four Mile, Keystone, Quartz, Tarkio, Meadow Creek and Nemote Creek to Miller Creek. The BLM reported 16 turkeys on the Garnet Range Road in 1979. In a letter dated December 5, 1968, Region 2 Wildlife Manager, Reuel Janson wrote:

> *Thank you for reporting a band, No. T73, which you found on the ridge between the south and middle forks of Davis Creek. According to our records, this band is from a wild turkey which was captured in the Long Pine hills in Carter County, Montana. It was in a group of 17 turkeys from that area which were released on Dry Gulch, between Eightmile and Threemile Creeks in the lower Bitterroot valley on January 31, 1958.*

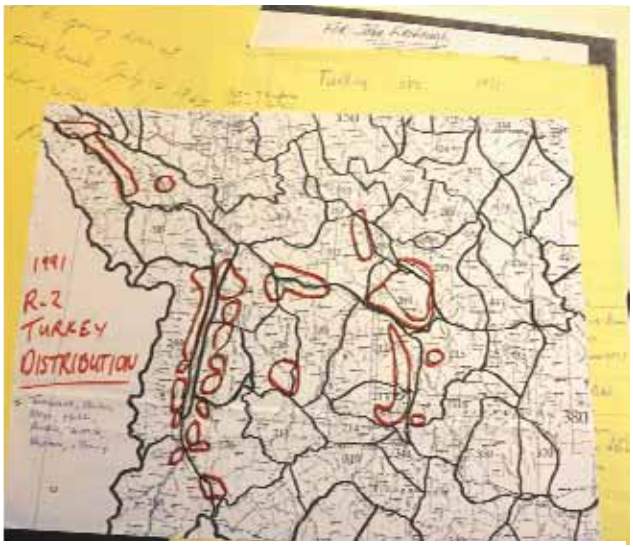

Figure 1. FWP's understanding of turkey distribution across Region 2 in 1991, from FWP files. Red outlines depict turkey range. Black outlines depict deer-elk hunting districts c. 1991.

In a separate correspondence, dated July 5, 1966, Janson wrote:

> *Western Montana appears to be only marginal for turkeys; they are widely scattered and do not attain abundance in any location except for fleeting periods. Our biggest flock in the District was in Miller Creek, south of Missoula. This flock has dwindled from about 40 in 1961 to about 6 during the past winter.*

According to meeting notes in FWP Region 2 files, which were attributed to former regional wildlife manager, John Firebaugh, feral turkeys were a problem in the Bitterroot in 2000. He said that Three Mile Creek, Ambrose Creek and the Burnt Fork had quite a few turkeys in 1985. By the 1990s, people were no longer seeing turkeys in those areas. The inference in the notes is that the Bitterroot birds were the Eastern subspecies, aside from feral turkeys of various descents.

HABITAT

According to Greene and Eng (c. 2000):

> *Montana is in the northern fringe of the "expanded" range of the Merriam's turkey and does not have the variety of mast producing plants found farther south in the ancestral range. With*

ponderosa pine being the only Montana representative of major mast producers found farther south, and because it has highly irregular year to year mast production, substitute winter foods must be in place. In central Montana, oats, snowberries, bearberries and hawthorne occurred in 42.3, 40.9, 37.3 and 20.9 percent respectively of the droppings examined (Rose 1956). In addition, grass leaves and grass heads occurred in 23.0 and 19.6 percent respectively. In southwestern Montana, 96 percent of 671 samples contained grain. Rose (1956) reported that cultivated fields were utilized after the first of October, a use which continued on a daily basis throughout the winter (Figure 2)*. Turkeys also fed in livestock feeding areas from November until March after which they moved back onto the forests. Thompson (1993) reported straight line distances traveled by turkeys in the Long Pines between winter and summer activity centers ranging from ¼ to 10.3 miles. Rose concluded that "winter was the critical season and survival apparently was greatly influenced by the ability of birds to acquire grain in cultivated fields, livestock feeding areas, or from supplemental feeding." . . . There is ample evidence to show that an "artificial" winter food source is needed if turkeys are to maintain themselves in Montana.*

Figure 2. Turkeys feeding in a harvested field along the Clark Fork River near the old pulp mill on November 11, 2015.

CURRENT STATUS

In response to public interest, FWP renewed its attempts to establish free-ranging populations of wild turkeys in Region 2 in the late 1990s and early 2000s, and made a concerted effort to eliminate or reduce illegally introduced populations of feral domestic turkeys. FWP released wild-trapped turkeys in the Quartz Flat and Fish Creek areas of Mineral County, lower Ninemile in Missoula County, and the Burnt Fork and Sleeping Child areas of Ravalli County between 2000 and 2005.

Turkeys increased rapidly after the transplants of the early 2000s to current levels of abundance never before experienced in Region 2. One explanation for the turkey boom is that turkey transplants were made upon a landscape development pattern on private lands in west-central Montana, which now provided winter foods where such foods did not occur in abundance in previous decades. Irrigation has

Turkey spooked from a lawn along O'Brien Creek seeks security in the limbs of a young aspen.

increased and winter feeding of horses, goats, chickens and other stock has expanded, along with a diversity of other foods associated with human rural development to offer enhanced turkey habitat. Turkeys grew to numbers that create a nuisance for many residents of Ravalli County who live near neighbors who feed turkeys, directly or indirectly. Turkey abundance in Missoula County followed the trend in Ravalli County shortly afterwards, and the pattern seems to be repeating itself in Mineral County. Turkey flocks appear to remain scattered and more isolated in other counties in Region 2.

HARVEST STATISTICS

Turkey hunting has grown in popularity. In 1992, FWP estimated that hunters harvested only 23 turkeys in all of Region 2, with 11 birds harvested in Granite County, followed by 6 each in Missoula and Ravalli Counties. In 2011, the most recent FWP survey of turkey harvest, hunters harvested an estimated 521 turkeys in Region 2. The spring season accounted for 383 turkeys harvested in 2011, compared with 137 estimated in the fall season harvest. Also in 2011, hunters reported harvesting 476 males and only 37 female turkeys. By county, the 2011 turkey harvest was predominately from Ravalli (391) followed by 83 in Missoula, 42 in Mineral, and 5 in Powell. In 2011, turkey hunting licenses for most of Missoula County were limited and available only in the special drawing, while a portion of Missoula County adjoining Ravalli County was open for turkey hunting on the general turkey license. Subsequently, all of Missoula County was opened to hunting on the general turkey license.

HUNTING REGULATIONS

On February 11, 2016, the Fish and Wildlife Commission approved liberalized turkey hunting regulations for the 2016 spring and fall turkey seasons in Region 2. Turkey hunters in Region 2 may now purchase 1 *General Hunting Area Turkey License* (valid for a male in spring or either sex in fall in the General Hunting Areas statewide, including the entirety of Ravalli and Missoula Counties in Region 2). In addition, turkey hunters in Region 2 may purchase 1 *Regional Turkey Area License* (valid for a male in spring or either sex in fall in Ravalli and Missoula Counties). And, in Region 2, a turkey hunter may purchase a third turkey license, known as a *Regional Female or Beardless Turkey License* (valid only in Ravalli and Missoula Counties, only for female or beardless turkeys, and only in the fall). Turkey hunting in Mineral, Powell and a portion of Granite Counties is allocated by special drawing for the spring season, and a drawing for fall licenses is conducted for Mineral County. Portions of Region 2 outside of these special drawing areas and the general hunting area are closed to turkey hunting. A hunter who is successful in drawing a special turkey license, and who holds the General Hunting Area and Regional Turkey Area licenses may conceivably harvest 3 male turkeys in Region 2 in the Spring 2016 turkey season: 2 across Missoula and Ravalli Counties, plus 1 in a special license area for which a special license was drawn. In addition, the same hunter holding a Regional Female or Beardless Turkey License and a Fall Special License for Mineral County might harvest 2 turkeys (at least 1 beardless) in Region 2 in the Fall of 2016. Turkey hunters should plan to obtain a copy of the current regulations from any license agent or from FWP's website.

Osprey Due to Return—*from Far-Southern U.S. or Central America*

FWP's Sharon Rose has learned to expect the osprey's return to their nest and perches outside her west window of the Region 2 Office on Tax Day every April. This photo documented the filing of an early (osprey) return last spring, on April 5.