

Summary Basis for Building Wildlife Habitat-Needs & Protection into Forage Utilization Limits

Don DeLong, West Zone Wildlife Biologist – BTNF, September 9, 2015

Forest Plan Direction and Migratory Bird Requirements

Two requirements of the Forage Utilization Standard are (1) to prescribe, during allotment management planning, site-specific utilization limits needed to meet Forest Plan objectives; and (2) establish site-specific utilization limits on key wildlife ranges. As such, utilization limits must be purposely designed to meet the following Forest Plan objectives for wildlife, among other Forest Plan objectives, relative to DFC direction:

- Objective 2.1(a) — Provide suitable and adequate habitat to support game and fish population objectives established by the WGFD.
- Objective 3.3(a) — Protect sensitive species and provide an adequate amount of suitable habitat to ensure activities do not cause: (1) long-term or further declines in populations or habitats supporting these populations; and, (2) trends toward federal listing.”
- Objective 4.7(d) — An adequate amount of suitable forage and cover are retained for wildlife and fish.

The onus is on Biologists to be able to demonstrate that a maximum utilization limit would result in suitable forage and cover being retained for sensitive species, big game, migratory birds, and other affected wildlife; if this cannot be done, a lower utilization limit needs to be considered.

During allotment management planning, the Standard does not allow deference to be given to current utilization levels until monitoring data shows they are inadequate to meet wildlife needs. The standard is stated deliberately and in the affirmative, both in terms of “prescribe” utilization limits and “to meet” objectives.

As explained in the ROD for the Bridger-Teton National Forest Land and Resource Management Plan (Forest Plan), “...the first and most important part of the [Forest] Plan is.... Goals and Objectives” (USFS 1990a:6-7). The purpose of standards in the Forest Plan is to support the attainment of Forest Plan goals and objectives, with standards being subordinate to Forest Plan goals and objectives (Forest Plan 1990a:6).

To further implement the Migratory Bird Treaty Act, Executive Order 13186 requires the following of all federal agencies, to the extent permitted by law and agency missions:

- Integrate bird conservation principles and practices into agency plans like allotment management plans, and ensure that agency plans promote recommendations of migratory bird conservation plans.
- Restore and enhance migratory bird habitat, and avoid or minimize adverse effects on migratory birds and their habitat.
- Minimize the unintentional taking of migratory birds. Unintentional take includes the inadvertent killing, wounding, or capturing of migratory birds, eggs, or nests.

Related Principles of Wildlife Conservation

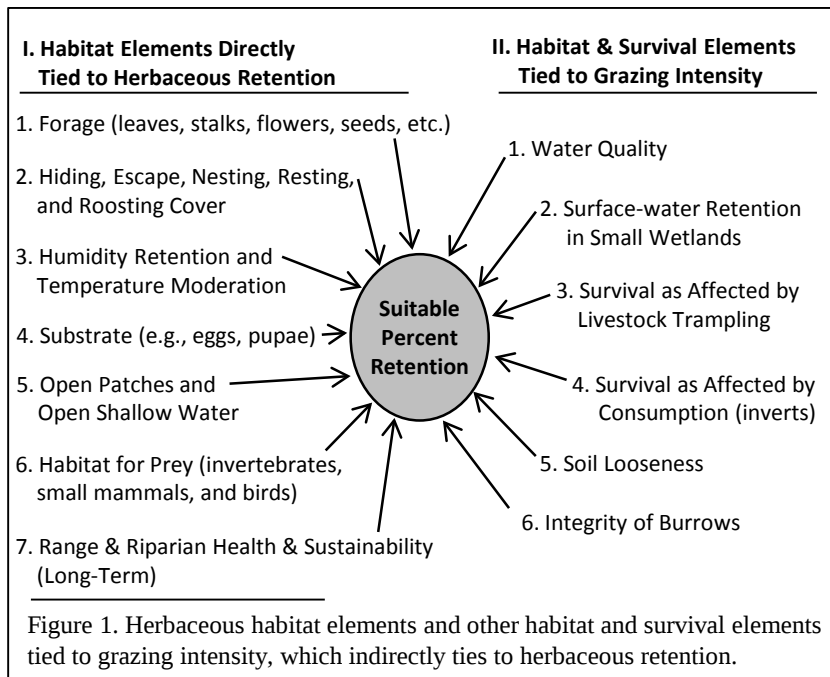
The practice of adjusting utilization limits to ensure that habitat needs of wildlife are met on livestock allotments is well recognized in the wildlife conservation literature, but in practice it remains difficult to carry out.

In herbaceous plant communities (e.g., wet meadow, moist meadow, grassland, forbland), herbaceous vegetation *IS* wildlife habitat and, in shrub-herb communities (e.g., shrubby cinquefoil, silver sagebrush, willow-herb communities), herbaceous vegetation is a major component of wildlife habitat. Because livestock eat herbaceous vegetation, the intensity of livestock grazing use has major ramifications on the ability to provide suitable wildlife habitat in herbaceous-dominated plant communities.

Habitat and Survival Elements Tied to Herbaceous Vegetation

Retained herbaceous vegetation serves two distinct roles with respect to meeting Forest Plan Objectives 2.1(a), 3.3(a), and 4.7(d); Sensitive Species Management Standard; Forage Utilization Standard; and migratory bird requirements. Percent retention of total herbaceous vegetation provides (I) direct measures of herbaceous habitat conditions, and (II) indicators of other factors directly related to the intensity of grazing use (Figure 1).

Wildlife that depend on or are associated with herbaceous vegetation respond to the elements in the category I and elements 1, 3, and 4 in category II (Figure 1); and all elements in categories I and II can affect survival. Trampling by livestock is the only direct form of mortality.



Minimum Retention Threshold for the Provision of Suitable Habitat

Detailed examinations and syntheses of more than 500 scientific studies, papers, and textbooks from a wide range of disciplines demonstrated that 70% herbaceous retention has a reasonable likelihood of (1) retaining enough herbaceous vegetation to provide suitable conditions for the habitat elements outlined in Figure 1 for most dependent wildlife, and (2) providing sufficient protection from direct impacts of livestock use (DeLong 2009, DeLong 2012, DeLong 2015a, DeLong 2015b).

There is moderate scientific support for this conclusion even though there are relatively few scientific studies *directly* showing that $\geq 70\%$ herbaceous retention is sufficient to maintain suitable forage and cover for particular wildlife species and to protect particular species from direct impacts like trampling (Figure 2). Given limited direct evidence, drawing scientific information from a wide range of disciplines and geographic locations was needed to be able to demonstrate that a low-end threshold of 70% is suitable for a range of species

It is being argued that there is too little scientific support for a minimum herbaceous retention level of 70%. There is less support showing that $\geq 60\%$ herbaceous retention will (1) retain enough vegetation to provide suitable habitat and (2) protect wildlife, and even less support for $\geq 50\%$ retention.

and for native wildlife-communities. Having only moderate support for a low-end threshold of 70% should not be surprising given the relatively large reductions in herbaceous habitat attributes (Fig. 2). It is far from optimum conditions.

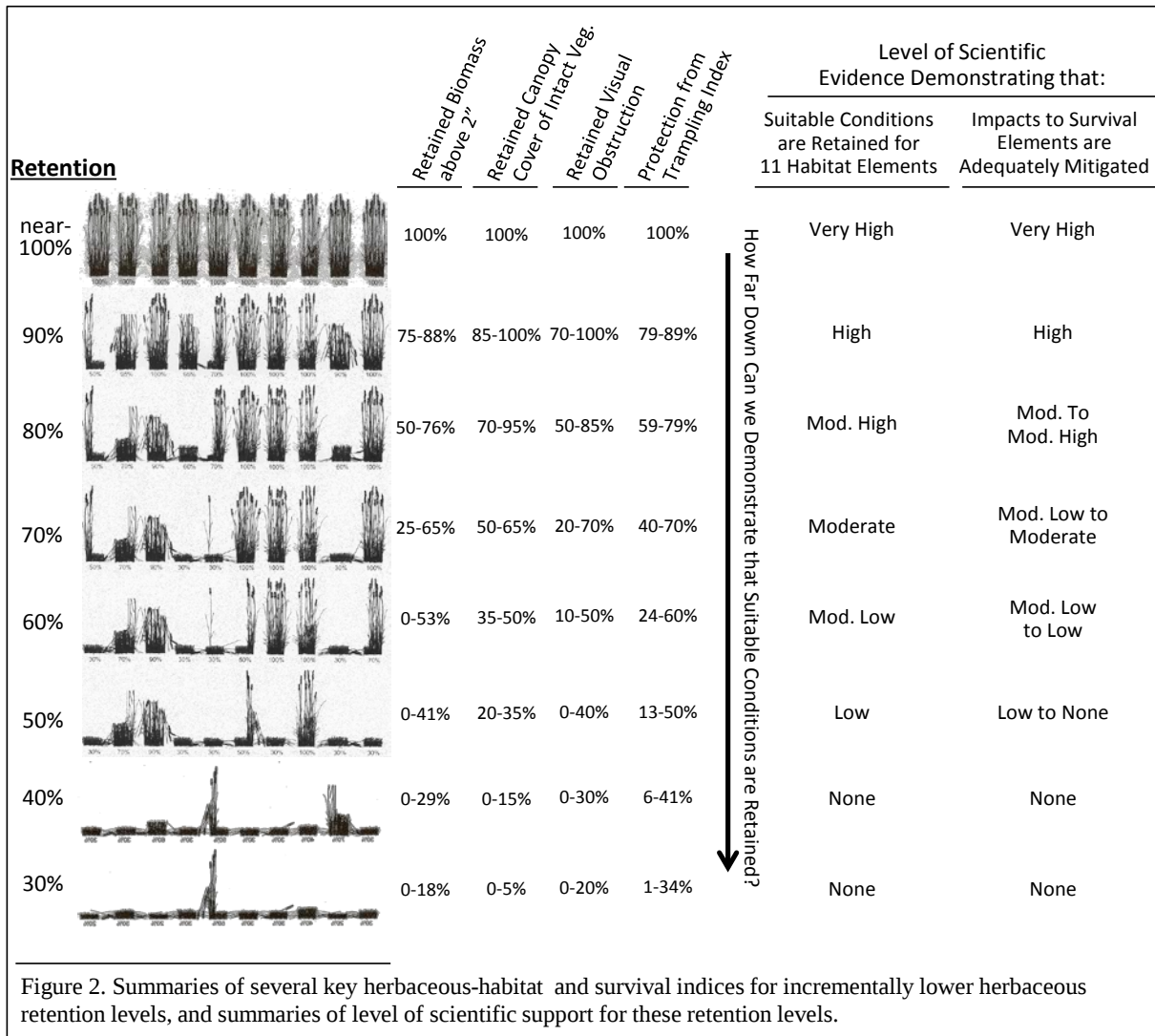
There are fewer studies directly showing that $\geq 60\%$ herbaceous retention is sufficient to maintain suitable habitat for particular wildlife species, and fewer yet directly showing that $\geq 50\%$ herbaceous retention is sufficient to maintain

suitable habitat for wildlife species. There are no studies showing that 60% or 50% herbaceous retention maintains suitable habitat for a range of wildlife species. The large pool of scientific information reviewed for the reports cited above, when looked at comprehensively (and individually), provides no more than minimal support for 60% or 50% herbaceous retention as low-end thresholds and shows there to be substantive negative impacts. This corresponds to the minor amount of herbaceous vegetation retained above about 2 inches (Fig. 2).

Attributes of pre-grazed herbaceous habitat are nearly gone by about 50% herbaceous retention and are virtually eliminated by about 40% herbaceous retention (Figure 2). Similarly, there is virtually no support for a 4-inch stubble height (away from stream channels) as a low-end threshold for suitable conditions for wildlife.

The examination and synthesis of scientific information revealed no more than minimal support for a maximum 50% utilization of *key forage species* retaining suitable forage and cover for wildlife, and the preponderance of scientific information shows there to be substantive negative impacts across a wide range of wildlife species at this utilization level.

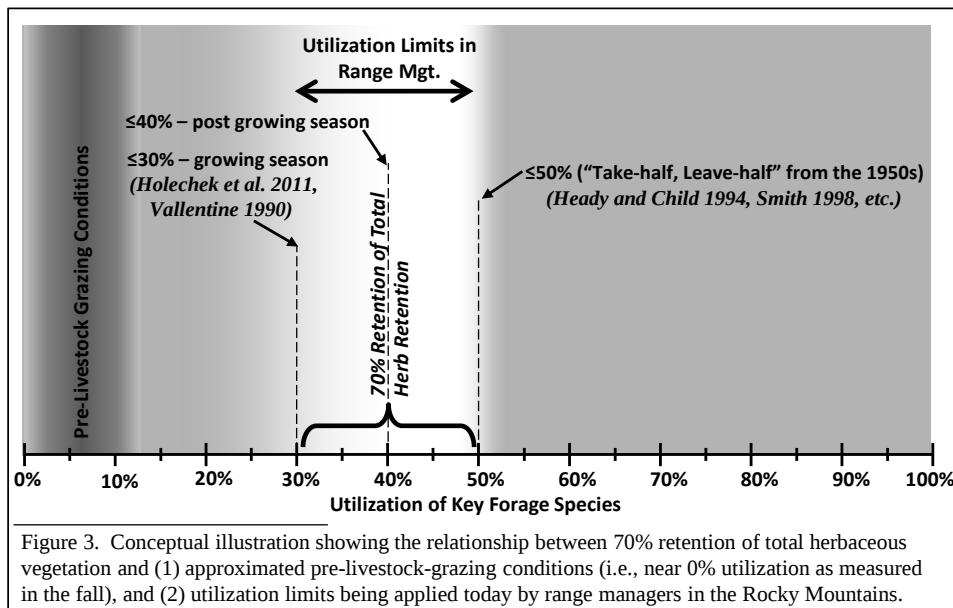
Therefore, 70% herbaceous retention is the lowest retention level that can be supported as Wildlife Program input into the process of prescribing utilization limits during allotment management planning (as per the Forage Utilization Standard). For wildlife species that forage on key forage species for livestock, 60% use of key forage species is the lowest supportable limit.



Relationship to Utilization Limits for Retaining Rangeland Health

A minimum herbaceous retention level of 70% fits completely within utilization limits currently recommended by range experts and currently in use in livestock management programs (Figure 3).

It is noteworthy that the previous District Ranger on the Pinedale District — who has a range background — characterized a maximum 35% use of key forage species as reflecting “...the contemporary understanding of the needs of the land and wildlife and livestock grazing operations” (letter dated February 12, 2015). This level of grazing translates to an estimated 65-80% retention of total herbaceous vegetation.



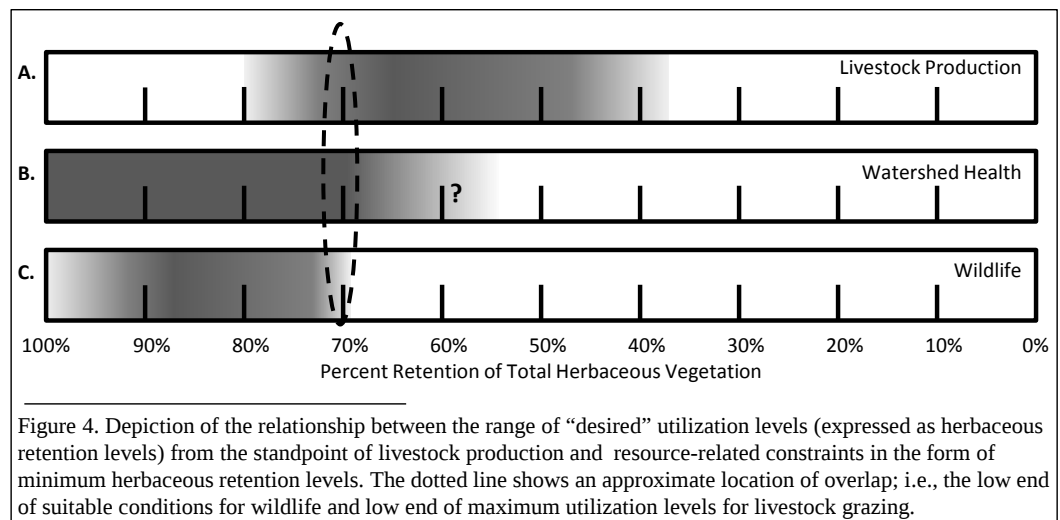
A maximum 50% use of key forage species represents an *absolute* maximum since use above this level clearly sets the stage for declining rangeland conditions (all range texts). This “take-half, leave-half” limit was devised in the 1950s to protect plant health and did not take into account wildlife needs.

Holechek et al. (2011:140) assessed that a maximum 50% use of key forage species results in deterioration of rangelands

in the coniferous forest belt of the Intermountain West. They and Vallentine (1990) recommended maximum key-forage use levels of 30% (growing season) and 40% (post-growing season) as management controls for maintaining herbaceous species composition and other aspects of rangeland health (Figure 3).

A maximum 70% herbaceous retention falls at the low end of suitable conditions for wildlife and near the low end of utilization limits recommended by range management experts (i.e., max. 30-40% use of key forage species). A maximum 30-40% use of key forage species fits within the limits of 70% herbaceous retention (Figure 3).

Until recently, the needs of wildlife had not been seriously addressed in setting utilization limits on livestock allotments of the BTNF, but meeting wildlife objectives is now part of discussions. This transition has been causing some angst in range management on the Bridger-Teton National Forest in recent years.

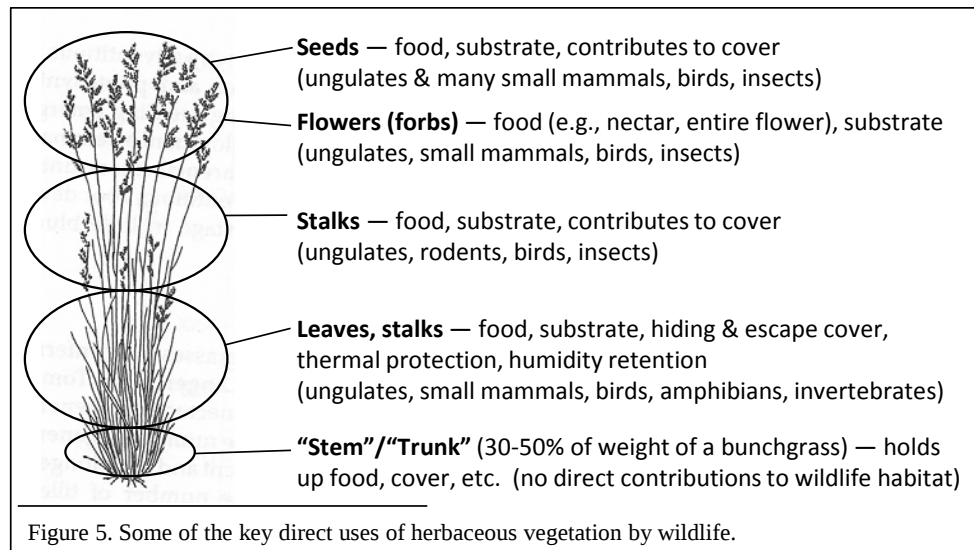


Additional Information

A large amount of scientific and ecological information supports a minimum herbaceous retention level of 70%. A small portion of the information in the referenced reports is summarized on the following pages.

How are Different Parts of Plants Used by Wildlife?

Different parts of plants contribute differently to wildlife habitat (Figure 5) and this has implications to livestock grazing because grazing removes different parts at different rates and because plant parts lowest to the ground, which are most important to maintaining plant health, are least important as wildlife habitat. Different herbivorous wildlife species favor or require different plant parts, different herbivorous



wildlife prefer different plant species, many insect species have specific host plant-species and it is common for them to only use specific parts of these plants (e.g., flowers, base of the plant, leaves high on the plant).

Contributions of Herbaceous Structure and Canopy to Wildlife Habitat

Figure 6 illustrates the culmination of all of the functions of herbaceous vegetation that contribute to the habitat of small vertebrate wildlife and invertebrate wildlife in herbaceous communities that naturally are relatively dense, such as in moist meadows (see also Figure 2). By the time 50% of the biomass of herbaceous vegetation has been removed, a major proportion of pre-grazed habitat attributes have been eliminated, and when 70% has been removed, habitat attributes of pre-grazed conditions are gone for the remainder of the season. Making a statement that 50% herbaceous retention maintains most meadow habitat attributes for wildlife does not pass the “straight-face test,” when considering Figures 2 and 6.

It is widely accepted that moderate and larger alterations to the structure of forestlands impact wildlife diversity, and it should not be surprising that the same is true of meadow habitat (Figure 7). Many of the same physical principles and wildlife-habitat relationships apply, just at much smaller scales.

Food Webs, Energy Flow, and Ecosystem Functions

Assessments of the suitability of different herbaceous retention levels need to be done in consideration of food webs and energy flow. Herbaceous vegetation is a major foundation of ecosystems. It comprises THE habitat for wildlife in herbaceous plant communities and is a major part of wildlife habitat in shrub-herb communities, and livestock nearly exclusively feed on (and remove) herbaceous vegetation. Functional plant species composition and canopy cover after the livestock grazing season — from the standpoint of wildlife habitat — does not include any plant material that was removed through grazing; it is defined only by what remains.

Not only are invertebrates, small mammals, and birds considered wildlife in their own right, they also are prey of predatory wildlife and many species play key functions in ecosystems (e.g., pollinators). A wide variety of invertebrate species and abundance of invertebrates are central to maintaining healthy populations of migratory birds, bats, insectivorous small mammals, reptiles, and amphibians. Many invertebrate species contribute to ecosystem functions through pollination and decomposition of dead animals and plants. The Forest Service is increasingly recognizing the central role of pollinators and the importance of conserving these invertebrates.

The only missing native herbivore in many parts of the BTNF is bison and available information indicates that, prior to Euro-American settlement, bison sporadically or periodically grazed parts of the BTNF (e.g., lower elevations, wide valley bottoms). However, there is no indication that they heavily grazed more than a minor portion of the BTNF on an annual or regular basis.

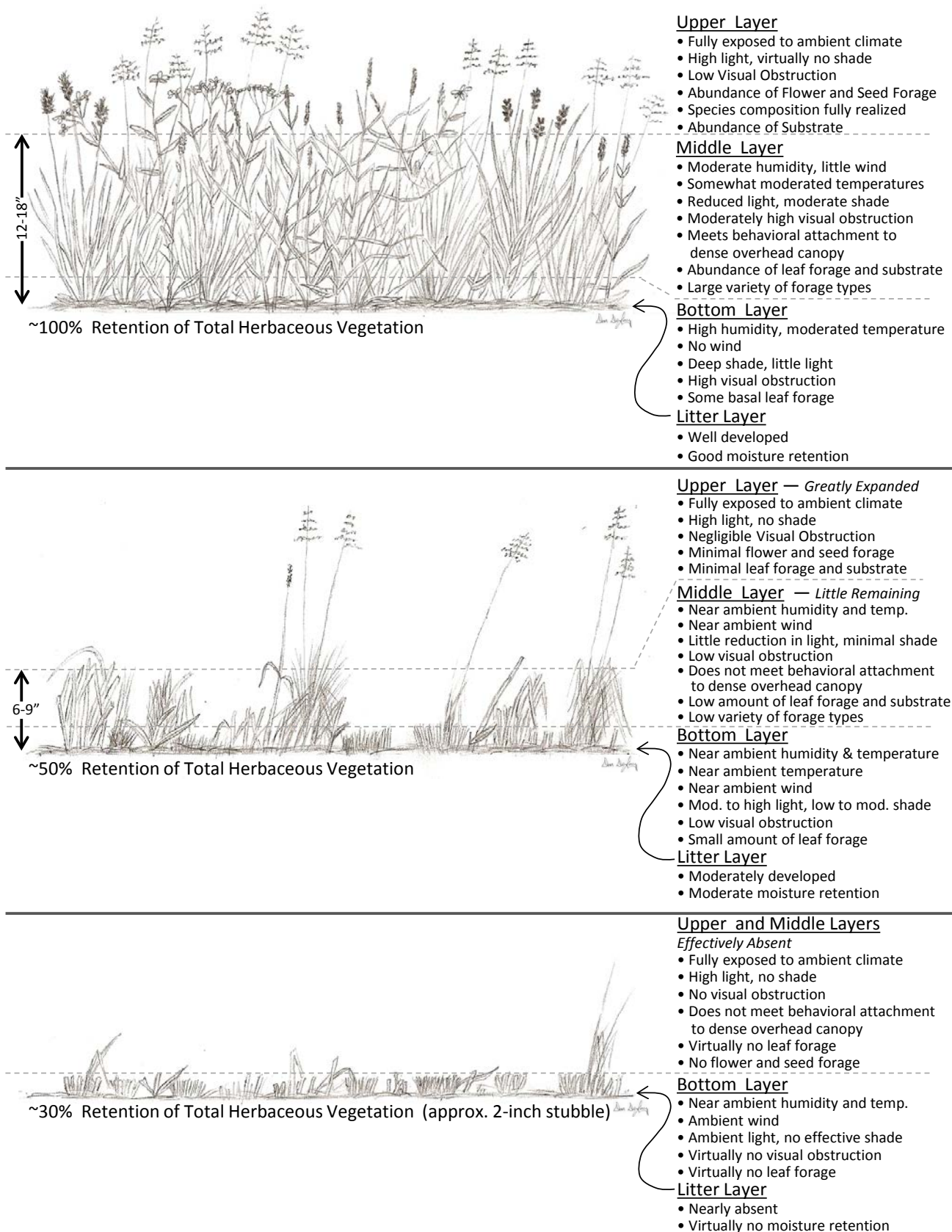


Figure 6. Contributions of meadow vegetation to wildlife habitat and changes relative to retention levels.

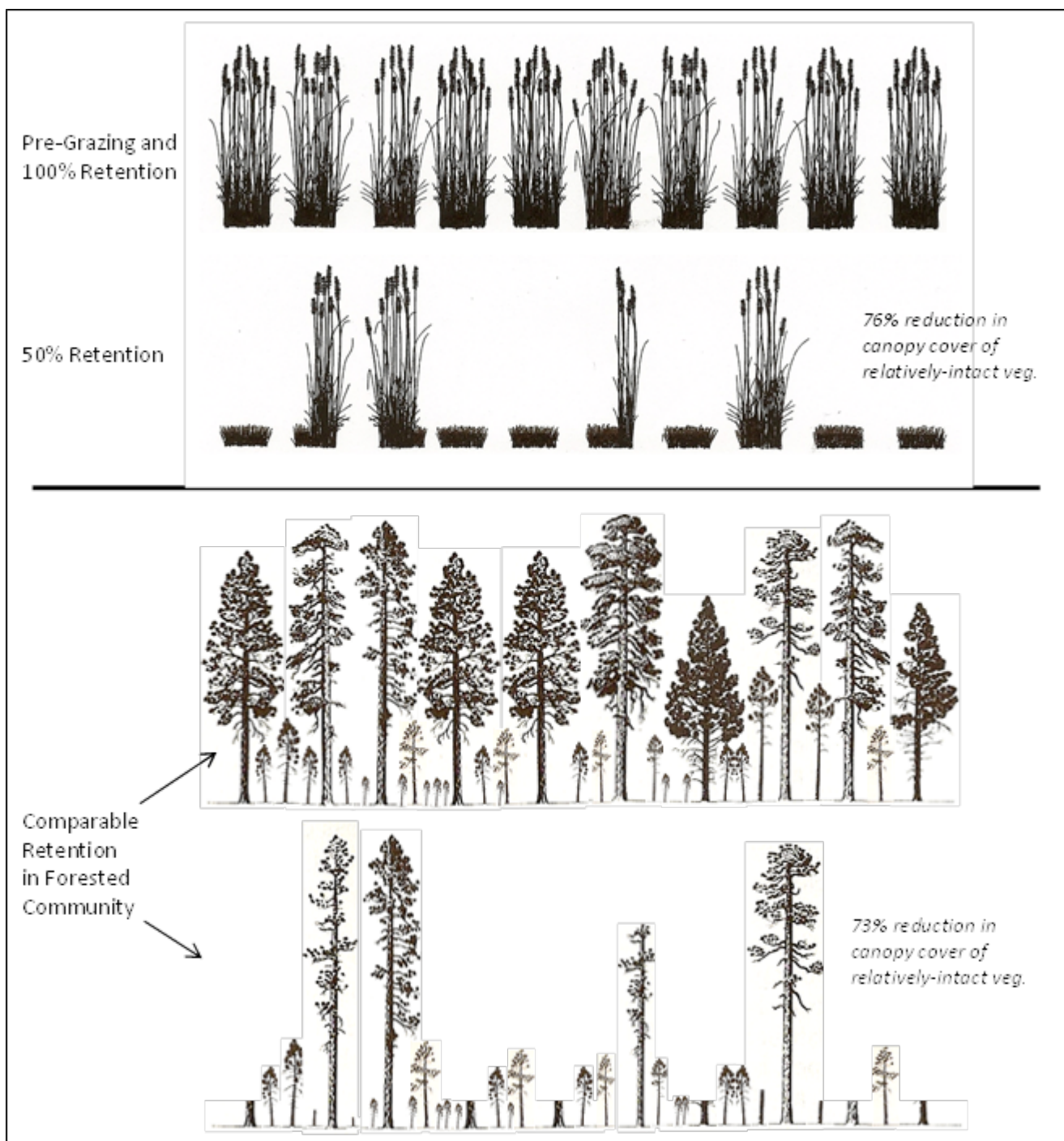


Figure 7. Comparison of 50% retention of herbaceous vegetation in a meadow to a comparable relatively-intact canopy cover in a forestland situation.

Native Wildlife-Communities

Retaining a minimum 70% herbaceous retention is not just about one, two, or even a handful of wildlife species; it is about entire wildlife communities. Some wildlife species depend on or favor relatively-tall, dense herbaceous vegetation, others favor moderate heights and densities, and only a small number require or favor short or sparse herbaceous vegetation (Figure 8). As an example, only 4 small mammal species on the BTNF are associated with or favor short or sparse herbaceous vegetation in contrast with 13 species of small mammal species that require or favor relatively-tall, moderately-dense to dense herbaceous cover.

This is particularly relevant given the underrepresentation of herbaceous vegetation and herbaceous communities on and around the BTNF, due a wide range of reasons.

