

MULE DEER

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Past And



Upper photos - Viewed northwest to Bald Knoll on southern Utah's Paunsaugunt deer unit. In 1909, pinyon and juniper were few in number and sagebrush-grasslands provided ideal mule deer habitat.

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s mule deer hunters, we are all concerned about the West's forests and rangelands.

Are ecological conditions better today than they were in the past, or are they worse? More specifically, how does mule deer habitat in the past compare with present conditions? One way to address these and similar issues is through repeat photography, where scenes depicted in historical

photographs are re-photographed as they appear today forming sets of images taken, or repeated, from the same camera stations. Repeat photographs are extremely valuable because they provide a long-term perspective that is often missing from other studies and because the photo-pairs can readily be interpreted by the public. Want to know what things were like 100 years ago? Find an old photograph. Want to see how things have changed? Locate the original cam-

era station, and re-photograph the scene as it appears today. After all, if a picture is worth a thousand words, repeat photographs are priceless.

I recently completed 355 photosets on Utah's Fishlake National Forest. I have now begun a similar project on the Dixie National Forest and the surrounding areas of southern Utah where, to date, I have repeated 1,168 early historical images. All 1,523 photosets have been evaluat-

HABITAT:

Present



Today, all that has changed. As pinyon and juniper have increased, mule deer forage has declined. For more details, see Plate 522x on USU Extension's website, HYPERLINK "<http://extension.usu.edu/rra>"

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ed for changes in plant cover and soil erosion, and that data shows a marked improvement in range conditions since the early 1900's. Plant cover increased in 33% of the photo pairs, remained unchanged in 65%, and only declined in 2% – clearly an upward trend. Similarly, soil erosion decreased in 26% of the photosets, while increasing in only 1%. The remaining photo-pairs showed no erosion past or present.

As you know, riparian areas are a

major point of contention on many ranges. According to some, livestock have destroyed riparian areas throughout the West. Now, open-range livestock grazing during the late 1800's certainly did have a negative impact on range resources, but surprisingly, there has been a dramatic increase in woody riparian vegetation, such as willows and cottonwoods, in southern Utah. Since the early 1900's, of the 305 photosets that depict riparian areas, woody vegetation has increased in

57%, remained unchanged in 25%, and only declined in 18%. Moreover, most of the decline was due to road construction, reservoir enlargement, or land clearing, not livestock grazing.

So the good news is that overall range conditions and riparian areas have improved markedly with the institution of rest-rotation grazing and other modern management systems. Unfortunately, all is not well though, for there has been a

major increase in unpalatable woody vegetation, not only in southern Utah, but across the West.

Of the 755 southern Utah photosets that depict pinyon and juniper, P/J increased in 94% of the photo-pairs, and often dramatically. West-wide, there was an estimated 7.5 million acres of pinyon juniper in 1880, but today that figure has exploded to 75 million acres — a ten-fold increase. Much of that has come at the expense of shrub winter ranges and other important mule deer habitat. Similarly, coniferous trees and forests such as ponderosa pine, douglas fir, and spruce-fir are more abundant today than at any point in the past. In southern Utah coniferous trees, other than pinyon juniper, appear in 944 photosets and 92% of those show a marked increase in forest cover.

As conifers have increased, aspen and meadow habitats, (both key mule deer summering areas), have declined. Aspen was depicted in 634 southern Utah photosets and in 76% of those cases, aspen declined.

The Forest Service estimates that Utah contained 2.5 million acres of aspen during the early 1900's, but today that figure is down to less than a million acres and aspen is still declining. Other studies in the West have documented up to a 95% decline in aspen. Unless something changes dramatically, many western aspen stands are headed towards extinction.

As unpalatable woody species have increased, forage production has fallen precipitously. This is because the relationship between overstory coniferous trees and understory forage production is a negative expo-

ponential function, not a linear relationship. For instance, going from 0% to 20%, forest cover reduces forage production by 70% to 80%, not 20%. Thus, you do not need many pinyon, juniper, pine, spruce, or fir to cause a dramatic decline in forage production — forage that is needed to feed mule deer.

To put this problem in perspective, preliminary calculations suggest that each year, Utah's National Forest rangelands lose 3 to 4 million AUM's (Animal Unit Months) of

woody vegetation are of the same order of magnitude in other states, which is why this is the number one problem on western ranges and why this is the number one habitat problem facing mule deer. It should be noted that woody vegetation also increases stalking or hiding cover for predators, (especially ambush predators such as mountain lions), and thus mule deer are subjected not only to declining forage availability but increased predation, as well.

Now, it is generally believed that the increase in woody vegetation in which I and others have documented on western rangelands is due to the suppression of naturally occurring lightning fires by federal and state agencies. However, this turns out not to be exactly true. Through Forest Service records, and as part of my research on long-term ecosystem states and processes, I was able to calculate lightning-fire ignition rates for every National Forest in the U.S., (excluding Alaska and Hawaii). I then compared that data with potential aboriginal-

ignition rates based on estimates of the number of native people and the number of fires, both accidental and purposeful, each Native American set per year. That data shows that the potential aboriginal-ignition rates were 270 to 35,000 times greater than known lightning-ignition rates. That is to say, lightning-caused fires have been largely irrelevant for at least the last 10,000 years. Instead, the dominant ecological force has been aboriginal burning, which created habitats heretofore thought to be "natural". So not only is there a problem with the agencies putting out fires, but we need to light mil-



PHOTO JEREMY HOUSTON

forage production. For comparison, on all the National Forests in Utah today, only around one million AUM's are allocated to livestock. That is to say, 3 to 4 times more forage is lost each year due to encroaching woody vegetation, than is consumed by livestock. As defined by range managers, an AUM is the amount of forage needed to support a cow-calf pair for one month, and based on metabolic weight, four mule deer are equivalent to one cow. So, 4 million AUM's is enough forage to support 1.3 million mule deer for a year — and this is only in one state!! But forage losses due to invading



Upper and lower photos - View up Kanab Creek in southern Utah.

Note how denuded the stream channel was in 1931 (above) and how willows and cottonwoods have increased today (below).

In general, range conditions have improved on southern Utah rangelands since the early 1900's.

For more details, see Plate 862x on USU Extension's website, HYPERLINK "<http://extension.usu.edu/rra>"





Upper photos - In 1872, Bee Lake, on southern Utah's Boulder Mountain, was surrounded by aspen — a forest type that provides key mule deer summer habitat. The few conifers on the distant ridge were all growing on boulder piles and other fire refuges. As native burning and other fires were eliminated, conifers have increased and mule deer habitat has declined. Forest fuels have also increased setting the stage for high-intensity crown fires, something that never happened in the past. For more details, see Plate 91x on USU Extension's website, [HYPERLINK "http://extension.usu.edu/rra"](http://extension.usu.edu/rra)

Lower photos - In 1943, pinyon and juniper were just beginning to invade this mule deer winter range in southern Utah. Today, however, few mule deer use the area. For as pinyon and juniper have come to dominate the site, mule deer forage plants have been eliminated. Hiding cover has also increased for mountain lions and other predators. For more details, see Plate 1033x on USU Extension's website, [HYPERLINK "http://extension.usu.edu/rra"](http://extension.usu.edu/rra)



lions more! Where fire is no longer appropriate for safety reasons, mechanical treatments are a viable alternative. Letting nature take its course is not an option if we want to maintain mule deer habitat. The key is management.....that and consigning Smokey the Bear to the scrap-heap of history!

This is also why mule deer hunters need to be leery of "wilderness" designations. For while roadless areas might be fun places to hunt, management is not permitted — be they mechanical treatments, prescribed burns, or water-develop-

ments. In fact, as I have explained elsewhere, there is more wilderness today than at any time in the last 10,000 years, but that is another story.

Finally, as woody vegetation has increased, so have forest fuels — setting the stage for high-intensity wildfires that are entirely outside the range of historical variability. By setting a high frequency of low-intensity fires, native people prevented the raging crown fires that are becoming increasingly common in the West today. For why native people burned, I suggest

two recent books; 'Forgotten Fires' by Omer Stewart, and 'Tending the Wild' by Kat Anderson.

Editor's Notes:

All Fishlake and Dixie repeat photosets, as well as descriptive text, have been placed on Utah State University's website, which may be accessed at [HYPERLINK "http://extension.usu.edu/rra"](http://extension.usu.edu/rra)



MDF

A photograph of a mule deer with large, velvet-covered antlers. The deer is standing in a forest, looking towards the camera. The background is filled with green foliage and tree trunks. The deer's coat is a mix of brown and tan, and its antlers are a light brown color with visible velvet.

MULE DEER FOUNDATION
Magazine

For the Conservation of Mule Deer, Black Tail Deer, and their Habitat.

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