



The Five Tools of Wildlife Management

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Aldo Leopold

'Father of wildlife management'

- Worked for US Forest Service from 1909-1924
- Professor at University of Wisconsin
- Wrote numerous books, the '5 tools of wildlife management' are discussed in the book 'Game Management'



Hill Country's landscape

- Historically, the Hill Country was a grassland with scattered oak mottes
- Over time, these grasslands gave away to parklands and woodlands
- Several variables played into this permanent change of the ecosystem, most prominent are:
 1. Overgrazing by domestic livestock and wild herbivores
 2. Humans suppression of wildfires

Hill Country's landscape

Overgrazing

- Traditional grasslands were overgrazed by cows, goats and sheep
- As more people move away from traditional grazing, domestic livestock were replaced with exotic livestock (axis, fallow, etc.) and an over population of white-tailed deer

Hill Country's landscape

Humans suppressing wildfires

- As Europeans started settling in the US, suppressing wildfires was bound to happen
- Suppressed to protect crops, infrastructure and livestock
- Wildfires were naturally occurring and helped keep brush densities at a minimal level

This brief history of the past landscape leads to the 5 tools of wildlife management

Five tools of wildlife management

1. Axe
2. Cow
3. Plow
4. Fire
5. Gun

- How these are implemented will vary on your management goals, eco-region and are case by case
- Developed to build and maintain a healthy ecosystem
- Conducted in moderation

Five tools of wildlife management: Axe

- The increase of juniper forests has lead to a decrease in available grassland, which has greatly decreased the plant diversity, and reduced the animal diversity
- Method of clearing varies, traditionally bulldozing was a widely accepted methods
 - Bulldozers are destructive to the land
 - Exposed soil has a greater probability of being washed away
 - Destroys vegetation currently growing



Five tools of wildlife management: Axe

- Using less intrusive methods are recommended
 - **Hand clearing (chain saw / hand loppers)** – more time consuming, but allows for selective clearing; keeps non-target vegetation intact
 - **Hydraulic shears** – can clear twice as much (can cost more) and still allows for selective clearing and less soil disturbance
 - **Mulching** – (costly) mulch left behind can act as a barrier / moisture retention improves plant diversity over time
- Selective clearing
 - Instead of clear cutting, creating a mosaic pattern of brush is beneficial to all wildlife and a recommended method
 - Only good cedar is a dead cedar isn't really a best management practice (and I don't recommend it)

Five tools of wildlife management: Cow

- Bison used to be common in Texas before settlers
- Their migration routes helped keep grasslands healthy and diverse
 - Their hooves tilled the soils, manure fertilized, and they overgrazed, which helps increase vegetation diversity
 - Increased wildlife diversity greatly benefitted doves, turkey, quail
- Main difference is bison were nomadic, domestic livestock are not, and grasses never get the chance to rest and recover

Five tools of wildlife management: Cow

- Using cattle can still be beneficial and can be used to mimic bison herd
 - Stocking rates are extremely important as well as using a rotational grazing method
 - The key is to not overstock and reach / exceed your properties carrying capacity
 - How does cattle grazing help?
 - Grazing helps reduce the quantity of grass, which allows sunlight to reach the ground making more forbs present, which benefits wildlife
 - Rotational grazing
 - Allows grasses period of rest and recovery – constant grazing shortens the blades, shortening the roots and killing the grass (remember: kill the shoot, you'll kill the root)

Five tools of wildlife management: Plow

- Now this one really is hard to do in the Hill Country and cannot really apply to a large percentage of the land
- Hill Country has little to no topsoil (depending on property) and therefore is not recommended
- Plowing mimics the bison's hoof action on the soil and promotes a greater plant diversity
 - Lightly discing can also re-create hoof action



Five tools of wildlife management: Fire

As settlement happened, fires were suppressed

- Fires were naturally occurring every 5-7 years, Indians also used to set fires
- As suppression continued, grasslands decreased which resulted in increased brush encroachment and became parklands and woodlands
- When properly implemented and used in correlation with grazing and deer harvesting, a property can be shaped into a preferred wildlife habitat
- Juniper is not fire tolerant and can help control it, especially secondary growth juniper

Five tools of wildlife management: Gun

We have all had that close encounter with deer (exotic & native) when driving, it happens in the middle of towns these days

- In the early 1900s, white-tailed deer were almost extirpated from the US (hard to imagine with their numbers today)
- Deer populations are increasing
 - Higher densities results in over-browsing vegetation, degraded rangelands, higher disease rates, lower body weights, decreased fawn crops, ultimately leading to lower wildlife diversity
- Harvesting deer is one of the more important tools of management, without it, all the others tools are moot points

Five tools of wildlife management: Gun

- There are less people hunting now vs 20 years ago (multiple reasons why, I'm not going to discuss them here, but it needs to be acknowledged)
- Things to consider why harvesting is such an important tool (even if you are opposed to harvesting):
 - Vegetation decreases and exposed soil washes away increasing exposed rocks, resulting in no ground cover to help capture rainwater and prevent erosion making land more prone to flooding during large rain events (nothing to slow down and capture the water, think concrete)
 - Annual harvesting benefits all wildlife species, as well as makes your property healthier and more diverse

Some of my favorites...

Site visit in 2013 vs 2017

- Property is high-fenced with axis, black buck and white-tailed deer
 - Herd was culled, exotics removed, only WTD left
 - White-tailed deer numbers were brought down to an acceptable population for the property



Some of my favorites...

Overgrazed, plus it was towards the end of a drought

- Removal of exotics and cull white-tail herd
- Given rest, recovery happened, and numerous species of grasses, forbs and shrubs started growing



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Thank you!

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Questions?