

White-tailed Deer

Fast Facts

Compiled by Christian W. Cold, WDNR Ladysmith

“Throughout most of Wisconsin’s history, we had a very simple objective concerning the whitetail: produce more deer. In this effort we succeeded remarkably well.”

Les P. Voight, Director

Wisconsin Conservation Department 1956

Scientific Name: *Odocoileus virginianus borealis* (Northern White-tailed Deer)

Order: Artiodactyla (even-hoofed mammals)

Family: Cervidae (deer and allies)

Genus: *Odocoileus* (North American deer)

Also known as: whitetail, deer, Virginia deer, flag deer, *o-masch-kosh* (Chippewa), *psu-ksi* (Potowatomi)

Physical Description: A medium-sized, reddish-tan to brownish-gray deer with dark markings on the face & ears. Underparts (throat, undersides, insides of legs and underside of long tail) are white or whitish at all seasons.

- **Height (at shoulder):** to 42”
- **Total Length:** to 85”
- **Weight:**
 - Adult bucks weigh 150-310 lbs. (WI record 491 lbs. - 1924)
 - Adult does weigh 90-210 lbs.
- **Life span:** Deer can live to be 15 years old (20 years old is the record). However, in hunted populations, deer rarely live beyond 6 years.

Range: Deer occur in most of southern Canada and all of mainland United States except for 2-3 states in the West. Range extends south throughout South America to Bolivia. Whitetails have been introduced (and established) in localized areas of Northern Europe, including parts of Finland and the Czech Republic.

Origin: The earliest artiodactyls appeared in the early Eocene (50 million years ago), probably evolving from primitive, rabbit-sized ancestors (condylarths) living with the dinosaurs at the end of the Cretaceous (>65 million years ago). The greatest radiation of the true antlered artiodactyls occurred in Eurasia during the Miocene (24-5 million years ago) as grasslands were replacing forests worldwide. For a time, they even occupied most of North Africa, where they are now (almost) wholly absent. Ruminant forms then proliferated as smaller (muntjac-like) forest forms declined and vanished. During the Pliocene (5-1.8 million years ago) cervid evolution continued and several lines diversified from common “stem stock,” first in Eurasia and then in North America. In North America, a gradual increase in body and antler size continued, culminating in the massive (and now extinct) Stag Moose – a beast that rivaled the famous (also extinct) Irish Elk of Eurasia. The ancestral progenitor to *Odocoileus* immigrated to North America from Eurasia at the end of the Pliocene and continued to develop (and diverge*) through the Pleistocene (1.8 million years ago – 10,000 years ago) into the familiar two forms we see today.

* Based on mitochondrial DNA studies, mule deer and whitetails share a common ancestor.

Wisconsin Status & History: In the 1600’s early explorers reported deer as common everywhere in Wisconsin and especially so in the south. Deer were primarily concentrated in the “prairie-oak-maple” areas of southern Wisconsin while the northern forests were considered secondary range. Wisconsin population estimates for the period prior to 1800 put deer at less than 10 per square mile in northwestern Wisconsin; 10-15 per square mile in the northeast part of the state, and at 20-50 per square mile in the south and west-central part of the state.

The ax and the plow reduced deer numbers in the south. By 1860 deer had practically vanished from Wisconsin south of latitude 40 N. The ax and the saw benefited deer in the north. The population growth was phenomenal. Following the cutover, deer range began to show the clinical signs of this population growth.

- **1930’s:** We had our first warnings that deer range was beginning to deteriorate due to high deer numbers.
- **1930’s - 1940’s:** Deer range continued to deteriorate.
- **1941:** State deer population estimate was 604,625.

- **1947:** State deer population estimate was 800,000.
- **1949-1951:** Deer numbers are reduced in many assessable areas through liberal hunting regulations. Temporary range improvement followed, so we let the herd go again.
- **1956:** We are faced with the chance that deer range problems will repeat themselves.....
- See a pattern here?

Ecological Significance: The white-tailed deer exerts a profound influence on the overall richness and structure of the local plant community via its highly-selective grazing and browsing activity—especially where it occurs in high numbers. The quality and/or state of degradation of the local flora are often a preliminary or “post-mortem” reflection of the present (or recent) condition of the local deer herd.

Deer are considered a **keystone species**—they play a major role in the shaping of their community (by eating local plants). Recent research appears to confirm that a small amount of deer browsing (intermediate disturbance) actually stimulates or maximizes forb diversity and abundance in a tallgrass ecosystem. But unlike beaver (also a keystone species)—that create habitat (this is a debated “fact”), deer have demonstrated a greater influence as habitat degraders, especially in forest ecosystems. (See “The Dark Side,” below.)

Habitat: Forest edge and parklands, farmland, sometimes old growth forests where white cedar (*arbor vitae*), balsam fir and mountain maple predominate. Deer also will sometimes congregate in tamarack and spruce swamps (winter yards) in north.

Behavior: Deer are most active at daybreak and just-before nightfall (they are crepuscular). Moonlit nights also prompt activity. Their movements are primarily influenced by the locations of feeding and resting areas. When alarmed, deer (usually does) often emit a wheezy-whistle, or a grunt/snort (usually bucks) and their tail goes up (flags), especially when running.

Adaptations:

- Hearing and sense of smell is exceptional.

- Sight is excellent, but best suited for detecting motion and in low-light conditions.
 - Deer are not entirely colorblind!
 - They cannot see red or green, but they can see yellow and blue.
 - They see Ultraviolet blue better than you can see blaze orange!
 - ❖ Commercial laundry detergent contains UV-brighteners. If you wash your camouflage clothes in this (even one time) your camo will glow UV HOT to deer. You will be a “glowing blue ghost” in their eyes! (Test this with a black light).
 - ❖ To further frustrate you....most camo fabric today is made in China, where the base cloth is commonly treated with permanent UV brightening dyes! You can buy commercial products to fix this mess.
- Run to 50mph, leap objects to 8’ high and swim (reluctant) reasonably well.
- Deer (esp. bucks) communicate by emitting olfactory cues via glandular secretions:
 - Orbital gland (head- near eyes). Buck rubs secretion on hanging twigs.
 - Tarsal glands (hind leg) Buck deposits secretion on vegetation while walking.
 - Metatarsal gland (inside of “knee” and most-potent) Scent is deposited while the buck urinates down his leg, mixing secretion, urine & bacteria into a pungent and potent “potion”.
 - Scrapes are made with the front legs & then topped with (above) metatarsal deposit.

Antler development: Antlers emerge from raw pedicles in April or May. They develop quickly and attain full size in 14-15 weeks. Antlers are shed annually from mid-December to late January. Their size is primarily a function of genetics, but nutritional state and age also play a role in determining final size. However, antler size and number of “points” are not reliable indicators of age. Older bucks often have progressively smaller and more abnormally-formed antlers.

Diet: The whitetail primarily browses on leaves and twigs, but it will also graze on grass. Its preferred browse in Wisconsin includes yew, white cedar, hemlock, red-osier dogwood, alternate-leaved dogwood, willow, mountain ash, yellow birch, basswood, red maple, staghorn sumac, wintergreen and wild cranberry. The most commonly grazed agricultural plants are alfalfa and clover. Researchers have recorded over 100 other types of woody browse and forbs in deer stomachs. An average-sized deer will consume 6-8 lbs. of browse daily! Field corn in excess may overload (engorge and damage) deer with carbohydrates.

Reproduction: Does normally breed when they are 19 months old. Some may breed as early as 7 months, particularly in southern Wisconsin. The doe is in estrus only 24 hours. If not bred, she repeats the cycle in 28 days. The rut is usually during the last week of October through early December, but peaks during the last two weeks of November.

The rut is triggered by the shortening length of daylight (photoperiod). Gestation is approx. 196 days (6 ½ months). One or two (rarely three) 6-8 lb spotted fawns are born in late May-early June. Fawns are nursed 2-3 times per day. They are weaned in about 3 months and they lose their spots at 4 months. Fawns normally remain with their mother through their first year. The previous-year fawns (yearlings) are chased-off just prior to the birth of their mother's new fawns. Yearling does will often establish a home range near their natal area and may occasionally associate with relatives.

Population dynamics: Deer populations appear to reach highest densities where woody cover and open grassland occur in equal proportions. Deer numbers are never evenly (or randomly) distributed across the environment. They occur in clumps which are proportionate to the quantity, quality and accessibility of resources in that area.

In the northern forest region, winter severity exerts its influence on deer survival and subsequent fawn production. In the central forests and southern farmlands, deer populations benefit by the presence of dairy and grain-based agriculture.

Mortality & Disease: Predators include people, wolves, coyotes, dogs, bears (they may account for up to 20% of fawn deaths), bobcat, fox

(primarily fawns) & fisher (fawns). Eagles occasionally take unattended fawns.

Vehicle-Deer collisions are the next significant mortality factor after hunting (more than 50,000 collisions are reported annually).

Over 14 different parasites plague deer, including liver fluke, lungworms, stomach worms, meningeal worms (rarely a serious problem with whitetails), arterial worms, abdominal worms, tapeworms, nasal bots, ticks, louse flies, lice, ear mites, and follicle mites (mange).

Viral and bacterial diseases include leptospirosis, bovine tuberculosis, salmonellosis (especially in young deer), hemorrhagic disease (including bluetongue), and bacterial brain abscesses.

Historically, diseases have never been a serious destructive factor in Wisconsin. Our current concern about Chronic Wasting Disease (CWD) and DNR's management measures directed toward controlling the spread of this disease reflects DNR and citizen commitment and effort to pre-empt the likelihood that this new contagion will become a serious destructive factor in Wisconsin.

Management: In Wisconsin, wildlife biologists set overwinter population goals for approximately 130 compartmentalized Deer Management Units (DMU). Each DMU provides a framework for collecting harvest data on a yearly basis which is then plugged into a "Sex-Age-Kill" formula, a nationally acclaimed model used in Wisconsin for estimating overwinter deer populations. By law the DNR must manage each unit to its assigned goal. In time, a unit history provides wildlife biologists with a practical (and intuitive) ability to predict the status of the fall deer population each year and set a harvest objective.

An assortment of climate*, biological and social factors comes into play when overwinter goals are determined. Wildlife biologists must also consider the interests, actions, and influences of citizens, farmers, public officials and their constituents, and the wishes of hunters—who continue to provide the primary financial support for the DNR Wildlife Management program.

* **Winter Severity Index:** Dec 1 through April 30th. Accumulate daily value points for snow over 18" (1 point), and temperatures

less than 0 degrees F (1 point). Tally total points as index period progresses.

- Winter Severity Index Tally Total:
 - < 50 points = mild winter
 - 50-80 points = moderate winter
 - > 80 points = severe winter

The Dark Side: Whitetail venison has (slightly) more cholesterol than beef. The economic losses in forestry, agriculture, and transportation are measureable and a matter of record. The impact of deer to natural ecosystems is also dramatic but difficult to quantify. The cascading negative effects of deer herbivory extends from vegetation dynamics and nutrient cycles to entire suites of mammals, birds, reptiles, amphibians and insects. The cumulative result is often a redirection of succession in a community that has lost most of its richness. A community that has lost most of its richness has lost a great measure of its resiliency. A heavily disturbed site is vulnerable to the establishment of exotic/invasive plants (no longer a "closed shop"). It is also susceptible to further decline via erosion and/or desiccation—especially where much of the herbaceous cover is missing and soils are trampled or exposed. Once the community richness is reduced or lost, it is difficult and costly to reestablish the missing plants & animals.

The Brighter Side: Whitetail venison has less fat than beef. Venison continues to provide an economical and wholesome source of protein to millions of people. The intangible recreational and esthetic value of the whitetail is legendary and immeasurable.

People and Deer: In that part of the U.S. and Mexico east of Longitude 105 degrees the white-tailed deer is (and will continue to be) the most economically and socially-important big game animal on the continent. But the success of the whitetail has not come without a price. Hunters, skiers, snowmobilers, birders, hikers, other recreationalists, biologists and other land managers (including farmers) are continually confronted with conflicting interests, which make deer management difficult. Even in areas where deer numbers continue to exceed the capacity of the land to sustain them, many hunters continue to insist on having more deer. The logic of having too much of a good thing perplexes some people—especially those with an insufficient understanding of deer biology and landscape ecology.

On the front lines of this controversy stand our wildlife biologists—equipped with the cumulative findings of sound scientific inquiry and entrusted with a contractual obligation (as public servants) to maintain a valuable public resource in perpetuity.

