



## Potential impacts of a baiting prohibition on Wisconsin hunters

### What percentages of Wisconsin hunters use bait?

Data gathered from the 1990 – 2001 gun deer hunter surveys and the 1993, 1997 and 2001 bow hunter surveys show two differing trends in bait use (Figure 1). Bow hunters exhibited an increasing trend in the number of archers who bait (currently 40%), while gun hunters using bait has held steady at 16% after an increase in bait usage in the early 1990's.

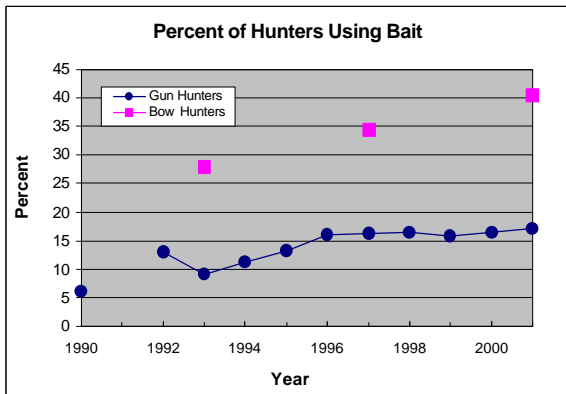


Figure 1. 1990 – 2001 Percent of Wisconsin hunters using bait.

### How does the use of bait affect hunter success?

Surveys and research conducted in Wisconsin and Michigan are our best sources for answers regarding hunter success relative to using bait.

A survey of hunters conducted in Wisconsin in 1993 found that use of bait did not increase gun hunter's success rates, 50% of bait users bagged a deer compared to 54% of hunters who did not use bait. This pattern was consistent between north and south regions (Figure 2). However, success in bagging a deer during the gun season was affected by the duration of baiting. Hunters who used bait during both gun and bow seasons had somewhat higher success during the gun season (61%) than hunters who did not use bait (55%), or hunters who used bait only during the gun season (43%).

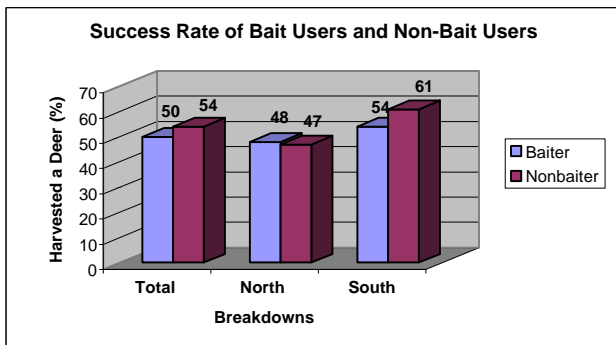


Figure 2. 1993 Baiter and nonbaiter harvest success rates.

These results were consistent with a second Wisconsin survey done in 1994 when 7,676 sportspersons were surveyed at the Spring Fish and Wildlife Hearings. Success in harvesting a deer during the gun season was affected by when hunters used bait, earlier and longer baiting improved the hunter's chance of success. Non-bait users had higher success rates (44%) than bait users who baited only during the gun season (35%). However, 52% of hunters who used bait only during the bow season were successful and 47% of hunters who used bait in both the bow and gun seasons were successful.

Surveys during 1998-2001 mailed to 50,000 Wisconsin gun hunters found that use of bait had little effect on success in harvesting bucks or antlerless deer (Table 1). Twenty-nine percent of hunters using bait harvested a buck compared to 26% of hunters who did not use bait. Antlerless harvest success was the same for hunters using bait (33%) as for hunters who did not use bait (33%). In contrast, bait use appeared to affect success of Wisconsin bow hunters. Of the more than 4,700 bow hunters who responded to the 2001 bow hunter survey, 45% of bait users reported killing at least 1 deer compared to 31% of hunters who did not use bait.

Michigan studies conducted over the past 20 years did not show a consistent effect of bait on hunter success. In a 1984 survey, Langenau et al. (1985) discovered that hunters who used bait were only slightly more efficient in harvesting deer (2.4 deer per 100 days) than those who did not use bait (2.2 deer per 100 hunter days). In 1992, Winterstein (1992) reported that hunters using bait were 20 percent more effective in harvesting deer (3.8 deer harvested per 100 days of hunting) than those who did not use bait (3.1 deer per 100 days of hunting). In contrast, a 1999 phone survey conducted by the Michigan DNR reported that in a specific deer management area in northeast Michigan 44 percent were successful using bait, while 52 percent were successful without bait. In the most recent Michigan study, archers who baited were more efficient in harvesting deer (4.9 deer/100 days) than non baiting archers (1.8 deer/100 days), but little difference was seen between baiting (8.3 deer/100 days) and non-baiting (7.4 deer/100 days) firearm hunters.

### What impact would a ban on baiting have on the deer harvest?

Given the apparent higher success rate of archers who bait, a logical question to ask is will an elimination of baiting lead to a major reduction in the antlerless harvest making it more difficult to control deer populations? To answer this question, we can take a look at the antlerless bow kill in the Northern Forest during 2001. Because the differences in success rates for gun hunters who use bait and those who do not is so small and statistically insignificant, it is not necessary to conduct the same calculations for gun hunters (Table 1).

## What impact would a ban ... continued.

Table 1. Responses to Baiting Questions from the Gun Deer Survey 1998-2001.

Year	Baiting Status	% Doe Harvest Success	% Buck Harvest Success
2001*	Baiter	27.8%	27.5%
	Non-Baiter	25.5%	23.6%
2000	Baiter	39.1%	35.3%
	Non-Baiter	36.9%	29.7%
1999	Baiter	34.4%	27.9%
	Non-Baiter	32.7%	26.7%
1998	Baiter	35.9%	26.7%
	Non-Baiter	39.7%	24.7%

\* Number of gun deer hunters surveyed was 10,000 per year in 1998-2000 and 20,000 in 2001.

From the 1997 bow hunter survey, we can estimate that 24% of bow hunters hunted in the Northern Forest. The total number of bow licenses sold in 2001 was 257,571. Assuming a similar distribution of bow hunters as in 1997, we would estimate there were 61,800 Northern Forest bow hunters in 2001.

The 2001 bow hunter survey found that 40% of bow hunters used bait and 60% did not use bait. Assuming that bait use is uniform among regions, we can estimate that there were 24,720 baiters and 37,080 nonbaiters among Northern Forest bow hunters. Also, 23.9% of baiters reported killing at least 1 doe compared to 14.2% of nonbaiters.

Using this information we can calculate that baiters killed 7,169 antlerless deer and that nonbaiters killed 6,304 antlerless deer for a total antlerless bow kill of 13,473. If we assume that the success rate for bow hunters who use bait would drop to the nonbaiter success rate if baiting was banned, then we would estimate that the antlerless bow kill would decrease from 13,473 to 10,506. This would amount to a 22% reduction in the Northern Forest antlerless bow harvest.

While this is a significant reduction in the antlerless bow harvest, it is important to consider this in the perspective of the total antlerless harvest. In 2001, the antlerless bow kill amounted to 17% of the total antlerless harvest in the Northern Forest. Therefore, if there was no compensatory increase in the antlerless gun kill the reduced bow kill would only result in a 4% reduction in the total antlerless kill in the Northern Forest.

## How much bait is used in Northern Wisconsin?

This question has never been asked in one of the DNR's surveys, and the issue is open for discussion. However, for the purpose of this document, we will use the information we know about the Wisconsin deer hunter and provide a list of assumptions and information from other states to provide a conservative estimate of the number of bushels used by our hunters.

Based on data from the 2001 deer bow hunter questionnaire we can estimate that there were approximately 24,720 hunters in the Northern Forest who used bait during the archery season and that on average archers hunted 23 days. That equates to 568,560 hunting days for archers that baited in northern Wisconsin.

Using hunter data from the 2001 gun hunter questionnaire we can estimate that there were approximately 208,000 gun hunters who hunted the northern forest in 2001 and that 17% of gun hunters reported using bait, resulting in approximately 35,355 hunters in northern Wisconsin who baited. The gun hunter survey found that gun hunters who baited averaged 6 days in the field. This equates to 212,130 gun hunting days.

If we assume hunters are using one bait site and are only using ten gallons of bait, which we assume will need replenishment every 2nd hunting day, that gives a rough estimate of over 450,000 bushels (~ 4 million gallons) of bait present in northern Wisconsin during the 2001 deer season. This equates to 8 bushels per northern deer hunter that baited in 2001. We consider this a minimum estimate because hunters probably tend more than one bait site and may bait more frequently than every other day. For instance Winterstein (1992) in a survey of Michigan hunters found 40 bushels were being utilized per hunter during the 1990 deer season. If Winterstein's (1992) estimate for Michigan hunters is consistent with Wisconsin hunters who bait, then this would equate to 2,403,000 bushels (over 19 million gallons) of bait placed by hunters in 2001 in northern Wisconsin. However, it is important to note that Michigan hunters were not restricted by a 10-gallon limit, as are hunters in Wisconsin.

For an economic perspective, if we assume on average a bushel of bait costs a deer hunter \$3. Based on our conservative estimate that is \$1.5 million.

## How might a ban on baiting affect deer behavior?

Hunters commonly report that access to bait piles causes deer to "go nocturnal", essentially using bait piles during the night and becoming less visible during legal hunting hours. Research on deer behavior in response to supplemental feeding supports this. Garner (2000) studied radio-collared deer with access to several baiting and feeding stations in northern Michigan. He found that all ages and sexes of deer quickly change their behavior in response to large amounts of supplemental food.



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### ***Behavior...continued***

Bucks were especially wary and were more likely to switch over to nighttime feeding exclusively. When supplemental food was limited to 5 gallons deposited during the day, deer became habituated to the feeding schedule and the available food was quickly eaten. This created competition and Garner (2000) observed more daytime feeding by bucks.

Garner (2000) reported that relative to natural conditions and regardless of the feed or feeding techniques, fall baiting and winter feeding of deer fostered higher amounts of face-to-face contacts among deer as well as higher local deer densities. He concluded that these conditions would maintain as well as enhance the spread of TB in Michigan. Paradoxically, restricting baiting to 5 gallon limits given daily resulted in "drastically" higher face to face contacts because of competition for feed over a smaller area. Garner (2000) reported that large piles tended to freeze during winter and he witnessed deer using the warmth from their mouths and nostrils to thaw and consume food. This behavior tended to produce semi-permanent piles of food that were "dented with borrows made from deer noses". He suspected that a deer feeding in this manner "leaves much of its own saliva and nasal droppings in the feed pile at which it's working".

Social strife at supplemental feeding sights is commonly reported (Ozoga and Verme 1982, Lewis 1990, Garner 2000). Dominant does typically eat their fill and control access to feed sites for their social groups. Less dominant individuals and social groups may mill around the periphery of the feeding station waiting their turn at the feed pile (Ozoga and Verme 1982). Consequences of this increased activity at the baiting sight is that natural browse may be more heavily impacted (Doenier et al. 1997) and feeding sites can be fouled by urine and feces (Garner 2000). Dominance hierarchies are established by fighting, sparring, and threat displays.

The presence of supplemental food affects movement behavior of deer in complex ways. Deer may show fidelity to 1 feeding site or may access several feeding sites. In general, does are less likely to travel between several feeding sites, and bucks are more apt to have a network of feeding sites (Ozoga and Verme 1982).

Deer will alter their home ranges slightly to access supplemental food but drastic change in movement behavior is unlikely; the ability of food piles to draw deer from large distances is limited (Ozoga and Verme 1982, Garner 2000).

Research clearly demonstrates that different social groups of deer will establish overlapping home ranges in order to access supplemental food. Moreover, social groups will tolerate each other in very close proximity such that extensive face-to-face contact occurs between individuals of different social groups (Garner 2000).

Changes in short-term movement behaviors (e.g. home ranges) can eventually become long-term changes in deer behaviors such that seasonal migration traditions break down. Local areas in the north that have a long history of baiting and

feeding have a higher proportion of deer that do not migrate between distant summer and winter ranges (Lewis 1990). Consequently, a ban may restore natural seasonal movements for Wisconsin deer.

### ***Take Home Points:***

- ❖ The use of bait is greater among Wisconsin bow hunters than among gun hunters.
- ❖ The percentage of bow hunters using bait increased throughout the 1990s while the percentage of gun hunters using bait has stabilized during the past 6 years.
- ❖ The effect of bait on harvest success differs between bow and gun hunters and is influenced by the duration of baiting.
- ❖ Bow hunters who use bait have higher success rates than those who do not use bait.
- ❖ While the elimination of baiting may lower bow hunter success, it would have little effect on overall antlerless harvest and the ability to control deer populations.
- ❖ A conservative estimate of 487,391 bushels (3,983,450 gallons) of bait was used by deer hunters in northern Wisconsin during the 2001 deer season.
- ❖ Elimination of artificial feeding and baiting will reduce face-to-face contacts among family groups and individuals.

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