

Deer Harvest Characteristics 2008

Number of deer brought to check stations. - Number of deer harvested on the Project Area and brought to check stations declined consistently 2003-2007 but increased from 2007 to 2008 (Figure 25), the result of weather, hunting regulations and licenses, and deer abundance. The relatively high number of deer brought to check stations in 2008 most likely was due to ideal hunting conditions the first two days of the season: fresh snowfall of less than 6 inches and cool temperatures. The slight increase in DMAP licenses available (550 in 2008 compared to 300 in 2007) may also have contributed to the increased harvest. Most of the harvested deer were brought to the two long-standing check stations at the Warehouse Restaurant (34) and the Willows Restaurant (29); only one deer harvested on the Project Area was brought to the new location at Bob's Trading Post, although an additional 5 deer harvested just off the Project Area were brought to the Trading Post.

Number of deer harvested on the Project Area and brought to check stations is a good indicator of fall deer herd abundance (and vice-versa) as harvest and abundance tracked each other extraordinarily well (Fig. 24).

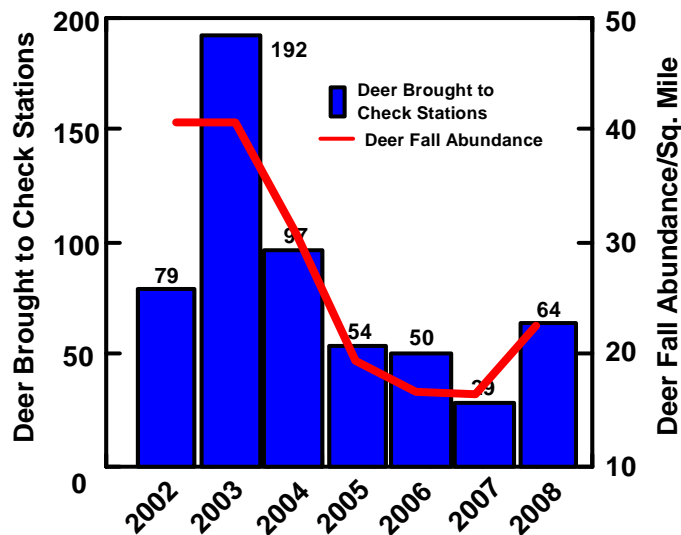


Figure 25. Comparison of number deer brought to check stations 1st two days and Saturdays of rifle season with fall abundance.

Representativeness of Harvest. – Proportions of antlered and antlerless deer recorded from roadside counts and brought to check stations indicate that hunters were overharvesting bucks and under harvesting does (Fig. 26). Proportion of antlered deer counted in roadside counts exceeded 25% only once, in 2007. Proportion of antlered deer brought to check stations always exceeded 50%, except in 2003 when more antlerless than antlered deer were brought to check stations. Initial hunter response to increased antlerless licenses in 2003 – harvesting more antlered than antlerless deer – reversed in 2004. With the exception of 2007, when few deer were harvested, the trend has been for hunters to bring proportionately more antlered deer and fewer antlerless deer to check stations. By 2008, hunters returned to 2001 level of overharvest of antlered deer and under harvest of antlerless deer. There will be fewer and fewer antlered deer in the future, and hunters may not restrict their harvests of antlered deer

to older bucks with more impressive racks. Thus, few potentially older deer will survive hunting beyond 2 ½ years of age and there will be few trophy racks harvested.

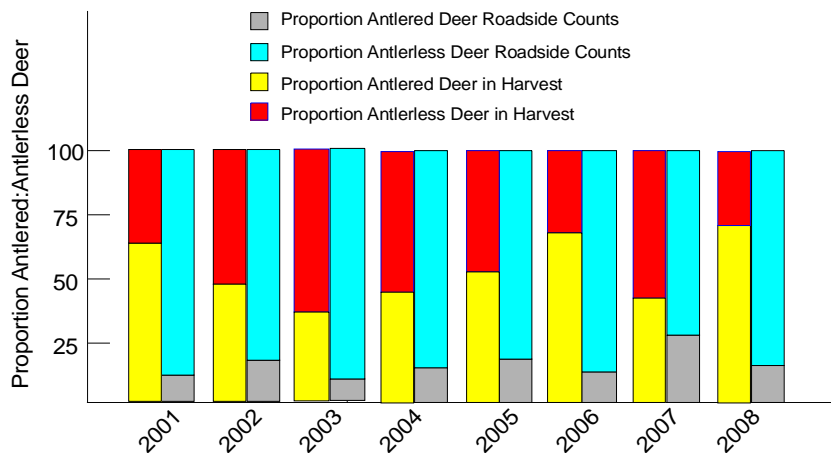


Figure 26. Comparison of proportions of antlered and antlerless deer counted in roadside counts and brought to check stations.

Distribution of harvest by sex and by day. - The trend for more antlerless deer to be brought to check stations, begun in 2002 and heightened in 2003 with the advent of the DMAP program, only lasted three years (2002-2004: Fig 27). By 2005 hunters were once again bringing more antlered than antlerless deer to check stations. The reversal of this trend may have been partly due to hunter concern over low deer abundance translating into a reluctance to harvest does. Another reason for the reversal is the greatly reduced number of DMAP licenses available after 2004. Three thousand DMAP licenses were available in 2003 and 2004, then the numbers declined to 700 in 2005, 150 in 2006, 300 in 2007, and 550 in 2008.

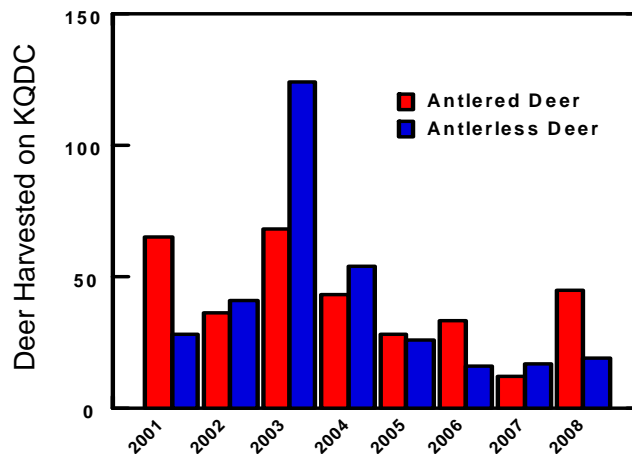


Figure 27. Distribution antlerless/antlered deer brought to check stations.

As before, highest number of deer brought to check stations in 2008 came on the first day (Fig. 28). Excepting 2007, when hunting condition on opening day featured an all-day rain and dense fog, an average of 58% of deer brought to check stations are checked the first day, and an average of 75% are checked during the first two days. As before, these results indicate the influence first and second day harvest has on total harvest.

Hunters encountered fewer deer opening day during the 2005 -2007 rifle seasons than during the 2001-2004 seasons (see Table 3) and many may have become disgruntled and quit hunting after the first day in latter years.

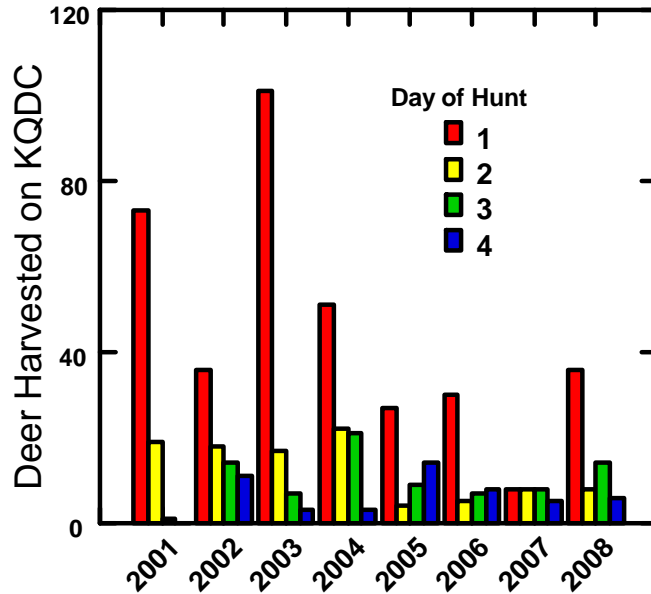


Figure 28. Number of deer brought to check stations by day of operation.

As in all previous years, the higher proportion of the deer brought to check stations on the first day in 2008 was antlered (Fig. 29): hunters primarily “hunted for horns” the first day. Beginning with 2003 when DMAP licenses were available on the Project Area, hunters brought more antlerless deer than antlered deer to check stations on one or more days after opening day, indicating that after opening day hunters were more willing to harvest antlerless deer. This finding indicates that the *concurrent* buck-doe season is successful in increasing and maintaining harvest of antlerless deer, especially in conjunction with the DMAP program.

However, the trend of more antlerless than antlered deer being brought to check stations on days subsequent to opening day was reversed in 2008: hunters brought more antlered than antlerless deer to check stations each of the four days of check station operation. Proportion of antlered to antlerless deer in 2008 roadside counts (Fig. 21) was little different from previous years: there was no plethora of antlered deer in 2008 for hunters to harvest. Instead, hunters returned to pre-DMAP days by focusing on harvesting antlered deer. In 2008 9.4% of harvest was fawn deer, which was significantly less ($p < 0.001$) than the average (17.7%) for the prior seven years, another strong indicator that hunters were selectively hunting antlered deer in 2008. If this reversal of the trend for hunters to selectively hunt for antlerless deer after opening day is not itself reversed, deer density may again surge on the Project Area, and abundance of mature bucks with desirable antler characteristics will dwindle.

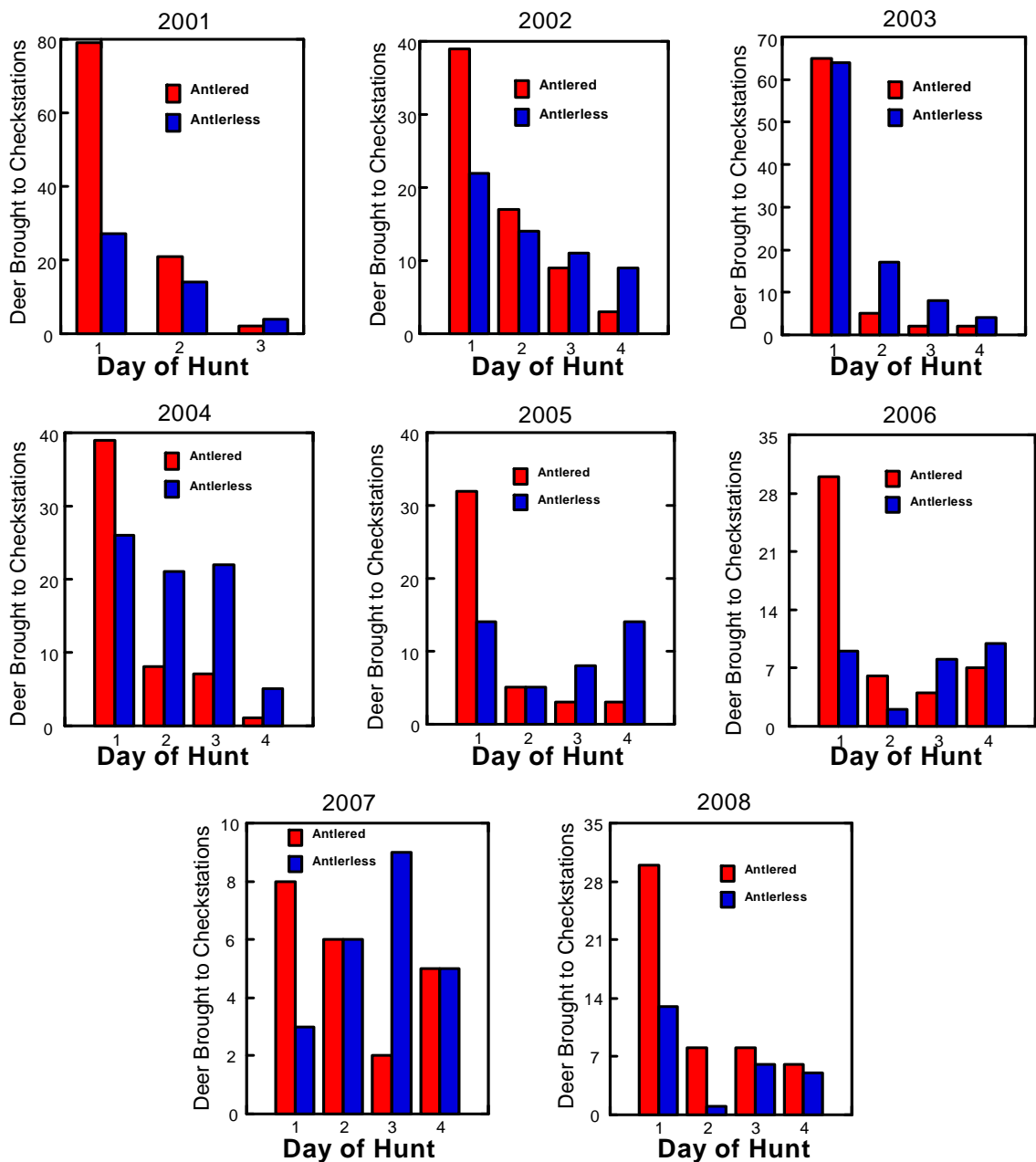


Figure 29. Number of deer brought to check stations by antler class and day of operation.

Harvest by sex and age. - Age distribution of deer brought to check stations varied among years and between bucks and does (Figs. 30 & 33) but consistent age distribution patterns emerged over time.

Buck harvest in 2001 was heavily weighted to yearlings, prior to the 3-point antler restriction (Fig 30). In the years before the 3-point restriction was in effect, fawn bucks maturing into yearling bucks were the most numerous of antlered deer available for harvest, as few yearlings from the previous year survived the hunting season to be available as older bucks in succeeding years. In 2002, when it was illegal to harvest deer with less than 3 points on at least one side, proportion of yearling bucks in the harvest declined greatly and proportion of harvest comprised of 2½ year old and 3½ +

year old bucks increased greatly.

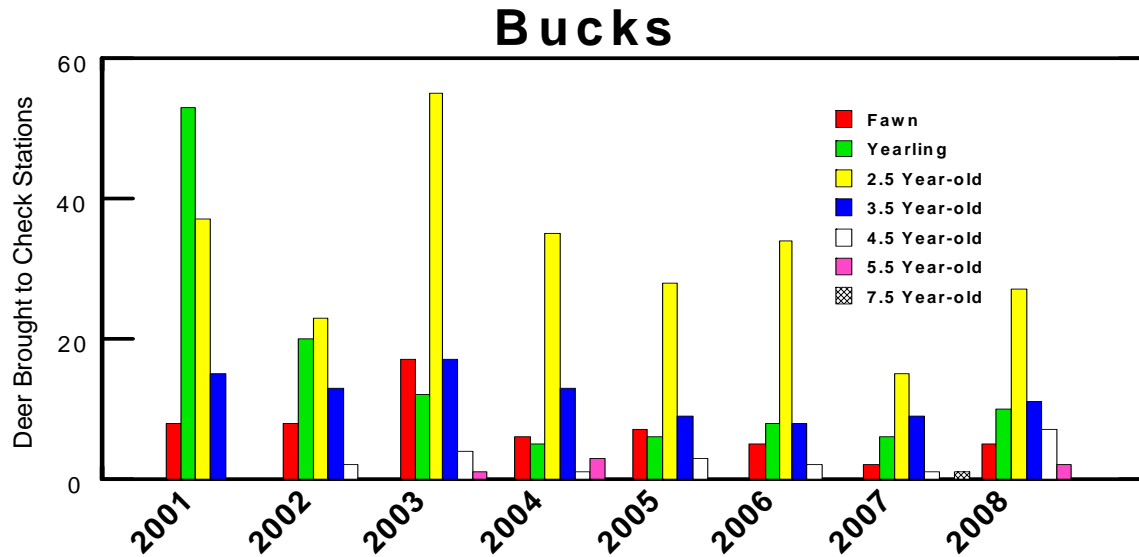


Figure 30. Age distribution of bucks brought to check stations.

By 2003, the highest portion of legal antlered buck deer brought to check stations was 2½ year-olds. Since 2003 harvests have been dominated by 2½ year-olds. However, hunters may have become more selective for older bucks after 2006 because proportion of deer older than 2½ years old increased while proportion of 2½ year-olds decreased in the harvest and proportion of yearlings was stable (Fig. 31). Proportion of 4½ and 5½ year-old bucks also increased after 2006 (Fig. 30), another indicator that hunters were selecting for older bucks after 2006.

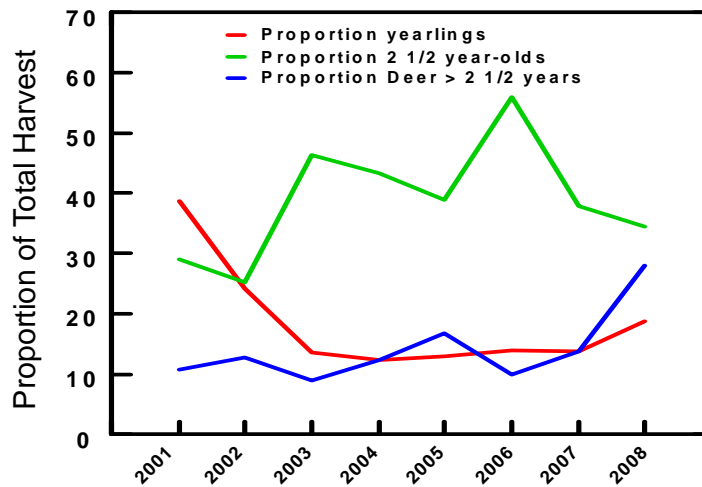


Figure 31. Proportion of total harvest comprised of yearling bucks, 2½ year-old bucks, and bucks older than 2½ years.

Doe harvest data present a different picture. As indicated by Fig. 32, ratio of fawns:does recorded in roadside counts is consistently and significantly ($P < 0.001$) less than the ratio of fawns:does in harvest. Assuming that reporting rate for fawns is similar to reporting rate for older does (i.e., hunters are not less likely to bring fawns than older does to check stations), hunters are able to distinguish fawns from older does and have avoided harvesting them for the entirety of the KQDC Project. During the years of high antlerless harvest (2003-2004) fawn:doe harvest ratio more closely approximated the

harvest ratio, but that was when there were 3,000 DMAP licenses issued each year and hunters were concentrating on harvesting antlerless deer.

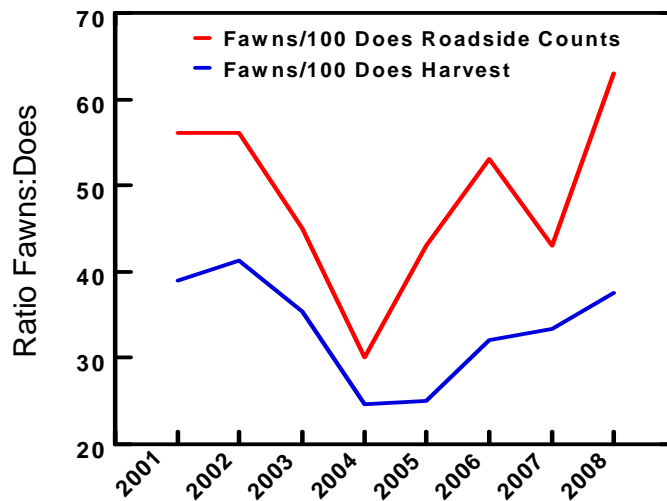


Figure 32. Comparison fawn:doe ratios between roadside counts and harvest.

In all years, number of older does (2½ year-olds and older) was greater than number of fawns and yearlings (Fig. 33), characteristic of a doe herd that is under-harvested. Even in the year with highest harvest (2003), proportions of 2½ year-olds and older were higher than proportions of younger deer. Proportion of does older than 2 ½ years in the harvest, after an initial dip in 2001, did not change 2002-2008, furthering the perception that the herd remained dominated by older deer and that the doe portion of the herd was consistently under harvested.

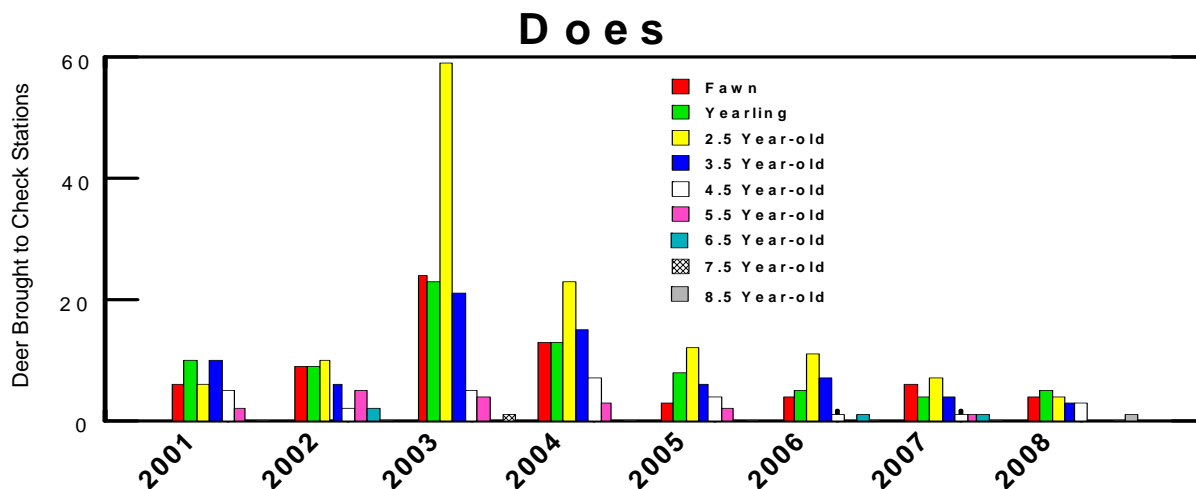


Figure 33. Age distribution of does brought to check stations.

The facts that: 1) more bucks than does have been brought to check stations 2005-2008; and, 2) that age distributions of bucks are dominated by 2½ year-old deer whereas age distributions of does are skewed to older deer indicate that younger bucks are being over-harvested and that does of all age classes are being under-harvested. Maintaining the deer herd at the desired density for the last three years has come at the expense of overharvesting bucks, especially younger ones.

To bring the herd into desired balance, more antlerless deer and fewer antlered deer should be harvested. If hunters could be stimulated to harvest one legally-antlered buck for every doe, proper balance could probably be achieved within a year or two. After that point, with a herd more evenly balanced to bucks and does, a harvest of 50% legally-antlered bucks and 50% does should be possible. Key components of such management of the harvest could include: a) encouraging hunters to restrict harvest to bucks with at least 4 antler points on at least one side to reduce harvest of bucks; and b) providing incentives to obtain a higher harvest of does.

Data from check stations 2002-2008 (under the 3-point), indicate that, if the current harvest definition of legal bucks (3 points or better on at least one side) were made more restrictive by requiring deer to have at least 4 points on one side, 86.4% of yearlings harvested 2002-2008 would not have been harvested as legal deer, 22.3% of 2½ year-old deer would not have been harvested and 15.3% of 3½ year-old deer would not have been harvested (Table 9).

Table 9. Percent harvested bucks by age class by antler restriction (3 points or better and 4 points or better) and percent “spared” under 4+ point regulation (post 2002).

Age Class	% Legal Under 3+ Point Regulation	% Legal Under 4+ Point Regulation	% “Spared” by 4+ Point Regulation
Yearling	100	13.2	86.4
2 ½	100	77.7	22.3
3 ½	100	84.7	15.3
4 ½	100	100	0.0
5 ½	100	100	0.0

Fewer bucks would have been harvested each year, at least initially, but every year there would be a higher proportion of older bucks in the population and more deer with better antler characteristics. Eventually, with more and more yearling, 2½ and 3½ year-old bucks surviving every year to enter older age classes, the population of bucks 4½ years old and greater might approximate proportions of all antlered bucks under the current (3 point restriction) antler restriction regulation. An additional benefit of a 4 point antler restriction could be more antlerless deer harvested as more hunters may harvest a doe after being unsuccessful at harvesting a legal buck.

Residency status of hunters harvesting deer. – Number of local, resident, and non-resident hunters hunting on the KQDC cannot be assessed: data are collected only for numbers of these hunters bringing deer to check stations. For this reason, success rates and reporting rates by residency status of hunters are unknown.

However, what is clear is that as the years went by, an increasingly larger proportion of deer brought to check stations (presumably reflecting actual harvest proportions) were harvested by local hunters (Fig. 34). In 2001 local hunters brought the fewest deer to check stations but by 2004 local hunters were bringing proportionally more deer to check stations than non-local residents and non residents (left graph, Fig. 34). By 2005 local hunters were bringing more than 50% of all deer (antlered and antlerless) to check stations.

Non-local resident hunters (resident hunters from counties other than those in the Project Area - Warren and McKean) brought the highest proportion of deer to check stations the first year (2001), but then their contribution declined slowly 2002-2008. Biggest drop-off in deer brought to check stations over the years was from non-resident (out of state) hunters.

Relative proportions of local, resident, and out-of-state hunters bringing deer to check stations were probably affected by weather, deer abundance, and hunting regulations. Declining deer abundance and availability of DMAP licenses may have had a larger influence over non-resident hunters who had to travel farther to hunt the KQDC and may not have been as successful in obtaining DMAP licenses, particularly as availability declined after 2004. Dismal opening day conditions in 2007 may have contributed to the lack of deer brought to check stations by non-resident hunters in 2007.

Whatever the reasons for changes in proportions of deer harvested and brought to check stations by residency status of hunters, local hunters have played an increasingly important role in reducing deer density and impact and in maintaining these reductions since 2004. Perhaps even more importantly, local hunters have been the most supportive group of antlerless harvest as they have brought the largest proportion by far of antlerless deer to check stations after 2004.

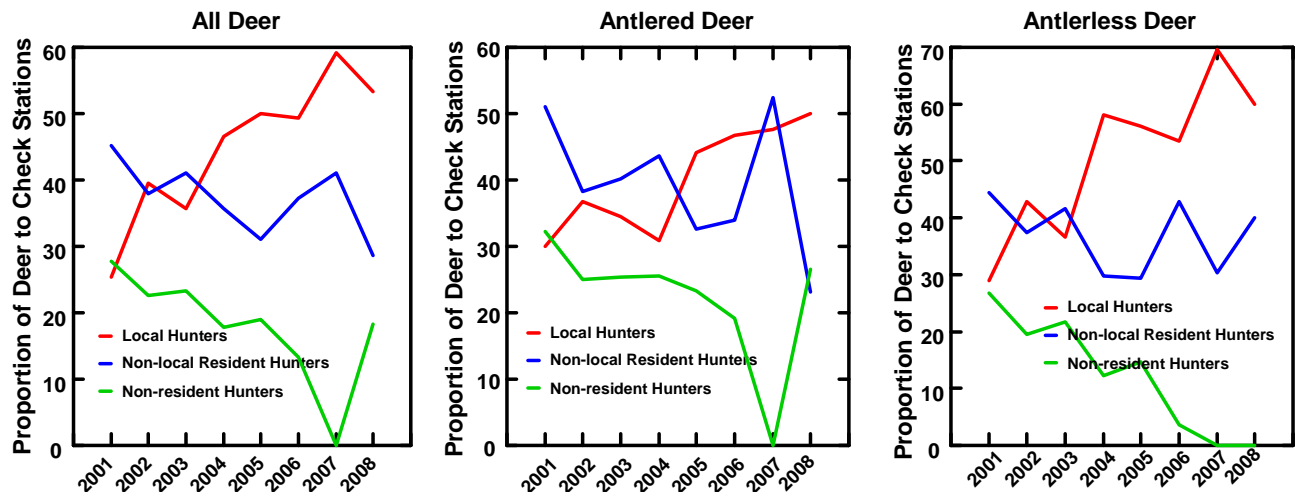


Figure 34. Proportion of harvest by residency status (local, non-local resident, non-resident) of hunters harvesting deer on KQDC.

Relationship between DMAP licenses and antlerless harvest. – For the 2003-2004 deer seasons on the KQDC 3,000 DMAP coupons were issued to hunters. Following the reductions in deer abundance and low fawn recruitment in 2004 and 2005, number of DMAP coupons offered in 2005 was cut to 700, and cut again in 2006 to 150. As deer density began to creep up in 2007 and 2008, more DMAP licenses were issued (300 and 550 respectively) in attempts to slightly increase harvest of antlerless deer and stabilize deer density in the 10-15 deer per square mile range.

Trend in numbers of deer harvested with DMAP licenses and brought to check stations (Fig. 35) has been consistent throughout the years: as number of DMAP licenses decreased, deer harvested with DMAP licenses decreased and as DMAP

licenses increased, DMAP harvest increased. Local hunters have brought the greatest number of DMAP-harvested deer to check stations, and non-residents have brought the fewest. As DMAP licenses declined 2004-2006, numbers of deer harvested with DMAP coupons declined also. As number of DMAP licenses increased 2007-2008, number of DMAP deer harvested increased. However, more antlerless deer were harvested with DMAP licenses in 2007 than in 2008 even though more DMAP licenses were issued in 2008. By 2008 hunters had returned to pre-DMAP period (prior to 2003) preferences for harvesting more antlered than antlerless deer: this reversal of hunter preference for antlerless deer likely is the reason for fewer DMAP-harvested deer in 2008 in spite of more licenses being available.

Presumably, more local hunters brought deer harvested with DMAP licenses to check stations in 2004 and 2005 than non-local residents because they were more familiar with how to apply for DMAP licenses; they got more licenses, and harvested more deer. Possibly the reason for the reversal of this trend in 2006 is that most of the DMAP licenses (2/3) were offered in Unit 135, where most may have gone to non-local resident hunters who hunted on the FIA portions of the KQDC area. The trend resumed in 2007 and 2008, and numbers of deer harvested with DMAP licenses increased in response to greater availability of the licenses.

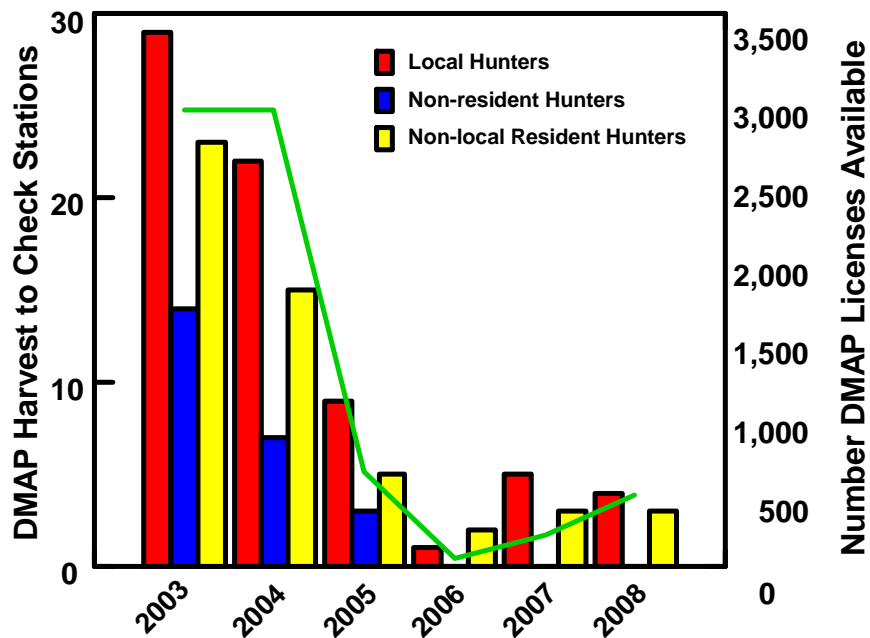


Figure 35. Residency status of hunters harvesting deer with DMAP licenses on Project Area and comparison of availability and use of DMAP licenses.

Utilization of DMAP program. – Because deer density/abundance was at goal in 2005, DMAP licenses were not used to further reduce deer density in 2006. Rather, a limited number of DMAP licenses was requested and distributed to provide additional incentive for hunters to hunt in areas with lower hunting pressure, and to direct hunters to areas with higher deer density to reduce density in these “hot spots.” Increasingly more DMAP licenses were issued in 2007 and 2008 (300 and 550, respectively) in attempts to offset increases in deer density observed in 2007 and 2008.

Location of harvested deer. - Distribution of loci of deer harvested in 2008 (Fig. 36) was similar to that for the entire period (Fig. 37). Relatively more deer were reported harvested from areas with relatively greater/easier road access (i.e., ANF portions of Project Area).

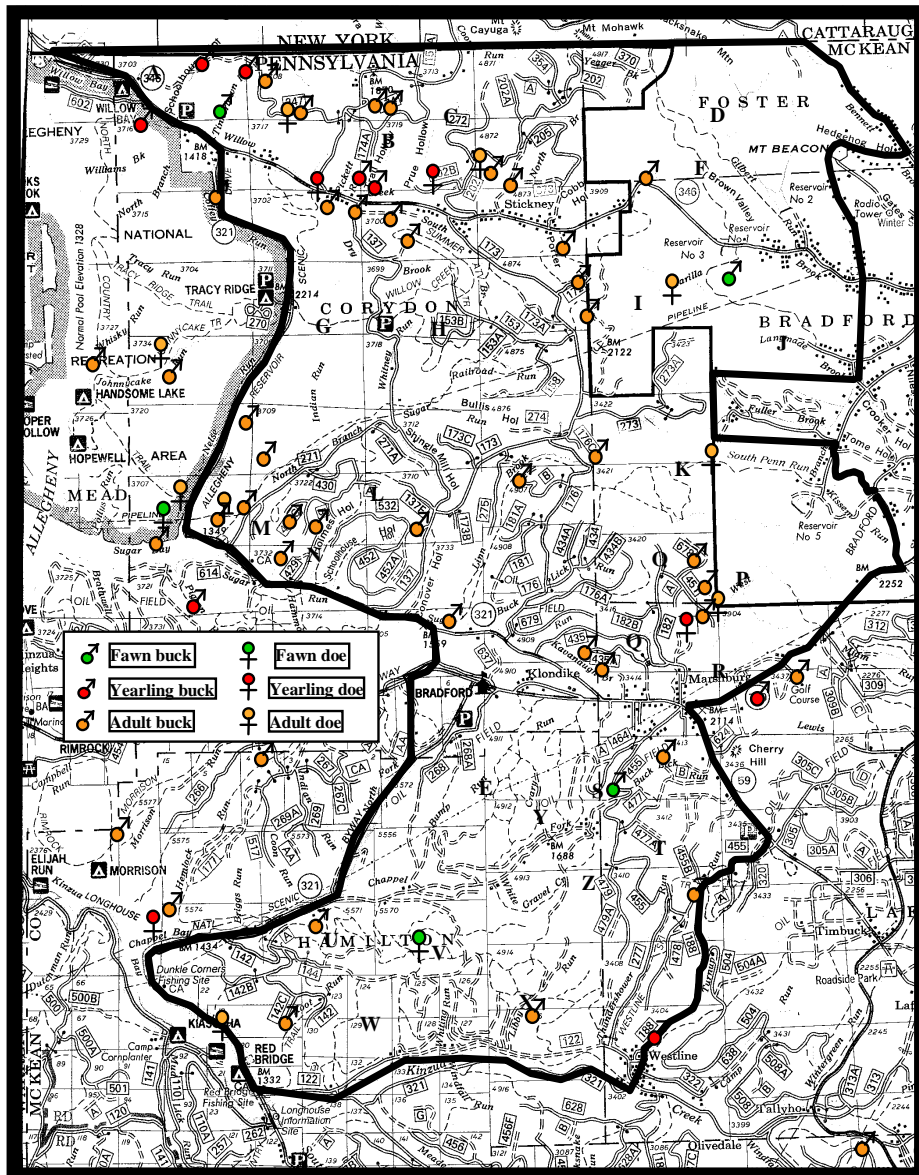


Figure 36. Locations of deer harvested and brought to check stations on the Project Area in 2008.

Locations of deer harvested and brought to check stations are acknowledged as approximate: hunters are not always exactly sure of where they harvested deer, or are secretive about harvest locations.

The northeastern portion of the KQDC area is owned/managed by the Bradford Water Authority and by Collins Pine Company and hunters are still not as familiar with road systems on these properties as on the Allegheny National Forest portion of the KQDC area. In the south-central region of the KQDC area, owned by Forest Investment Associates, access roads are a maze of changing and unmarked gas and oil roads (identified as dotted lines in Figs. 36 & 37): hunters likely are intimidated by the

confusing access into this area. None-the-less, efforts by managers of the Bradford Water Authority, Collins Pine, and Forest Investment Associates to increase hunter use of their roads since 2004 by marking them better, and providing maps of these roaded areas have resulted in increased use of the roads, and increased harvest: more deer from these areas show up at check stations.

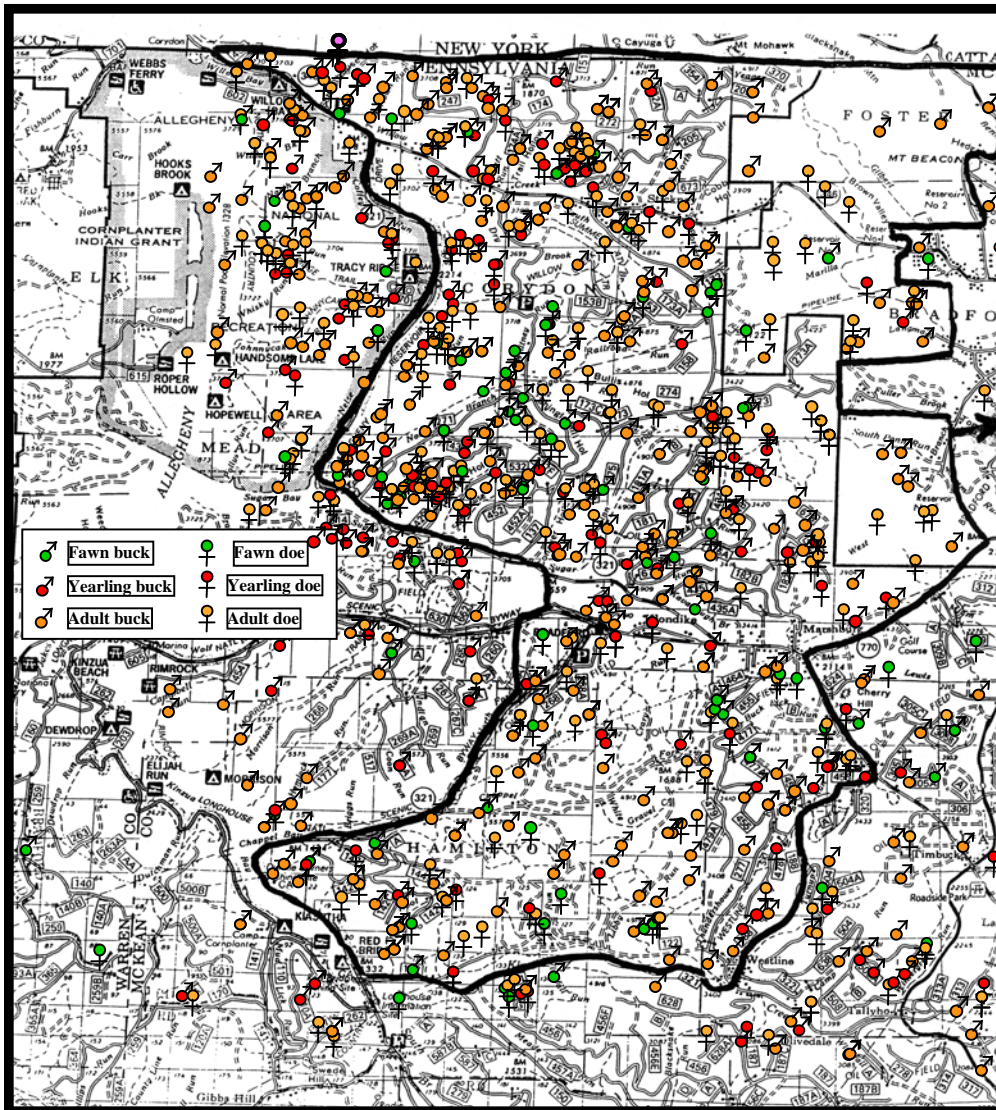


Figure 37. Locations of deer harvested and brought to check stations on the Project Area 2001-2008.

As in previous years, preponderance of deer harvested with antlerless and DMAP coupons on the Project Area was highest in 2008 on the ANF portion of the area and lowest on the private lands (Fig. 38). Seemingly, more deer were harvested with DMAP and antlerless licenses on FIA lands (inside green borders, Fig. 38) than on Bradford Watershed and Collins Pine lands combined (inside red borders, Fig. 38). Deer density consistently has been higher on Bradford Watershed/Collins Pine lands where antlerless harvest consistently has been lower. Management activities in 2009 and future years will have to stress efforts to increase antlerless harvest on Bradford Watershed/Collins Pine lands within the Project Area.

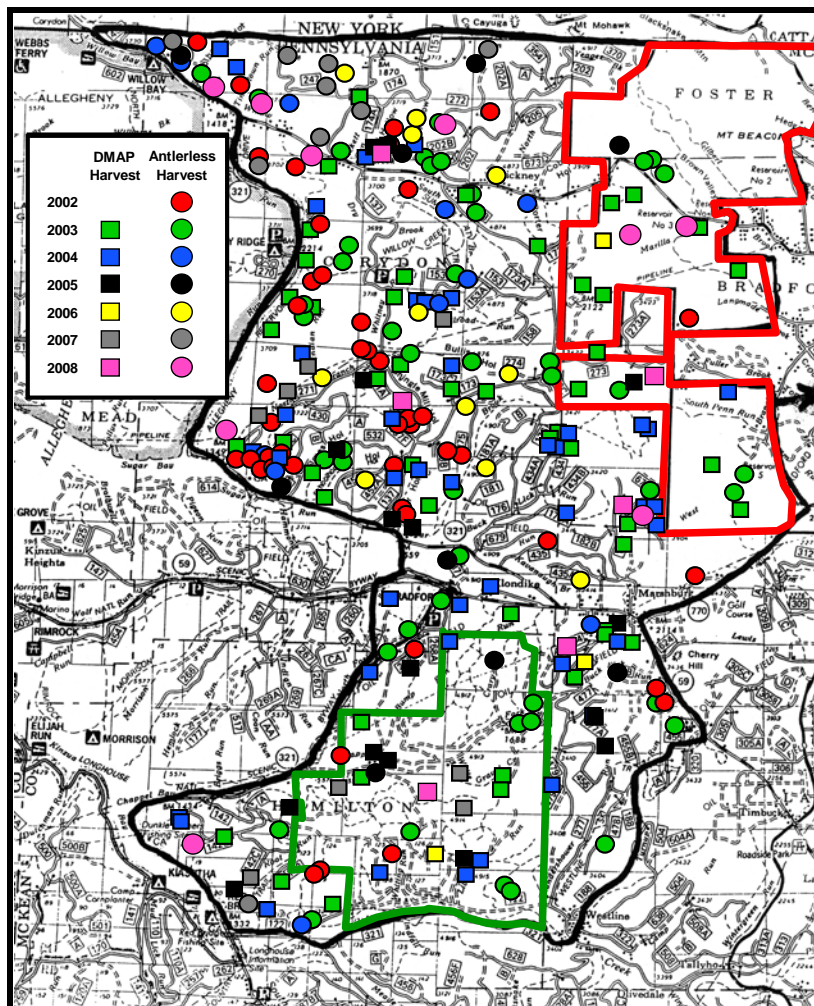


Figure 38. Location of deer harvested with antlerless/DMAP tags 2002-2008 on ANF portion of KQDC Area (inside black border) and on private portions (inside red and green borders).

Weight of harvested deer. - Weights of deer harvested and brought to check stations 2001-2008 (fig. 39) exhibited a consistent pattern regardless of sex or age of deer harvested. Prior to and during the early stages of the 3-point antler restriction and implementation of the DMAP program (2001-2004), field-dressed weights of harvested deer remained fairly static, with little change (primarily increases) from year to year. After implementation of the 3-point antler restriction and DMAP program, weights of harvested deer exhibited an initial increase and then plateaued and remained stable over the following years. This two-phased pattern of deer weights exactly (and inversely) reflects the two phases of deer density: an initial period of high density prior to and during early stages of the 3-point antler restriction and DMAP programs and then a significant one-year drop in deer density followed by a plateauing of deer density. Changes in deer impact (Figs 7 & 8) reflect the same two phases, timing and plateauing of the changes in deer density and weight.

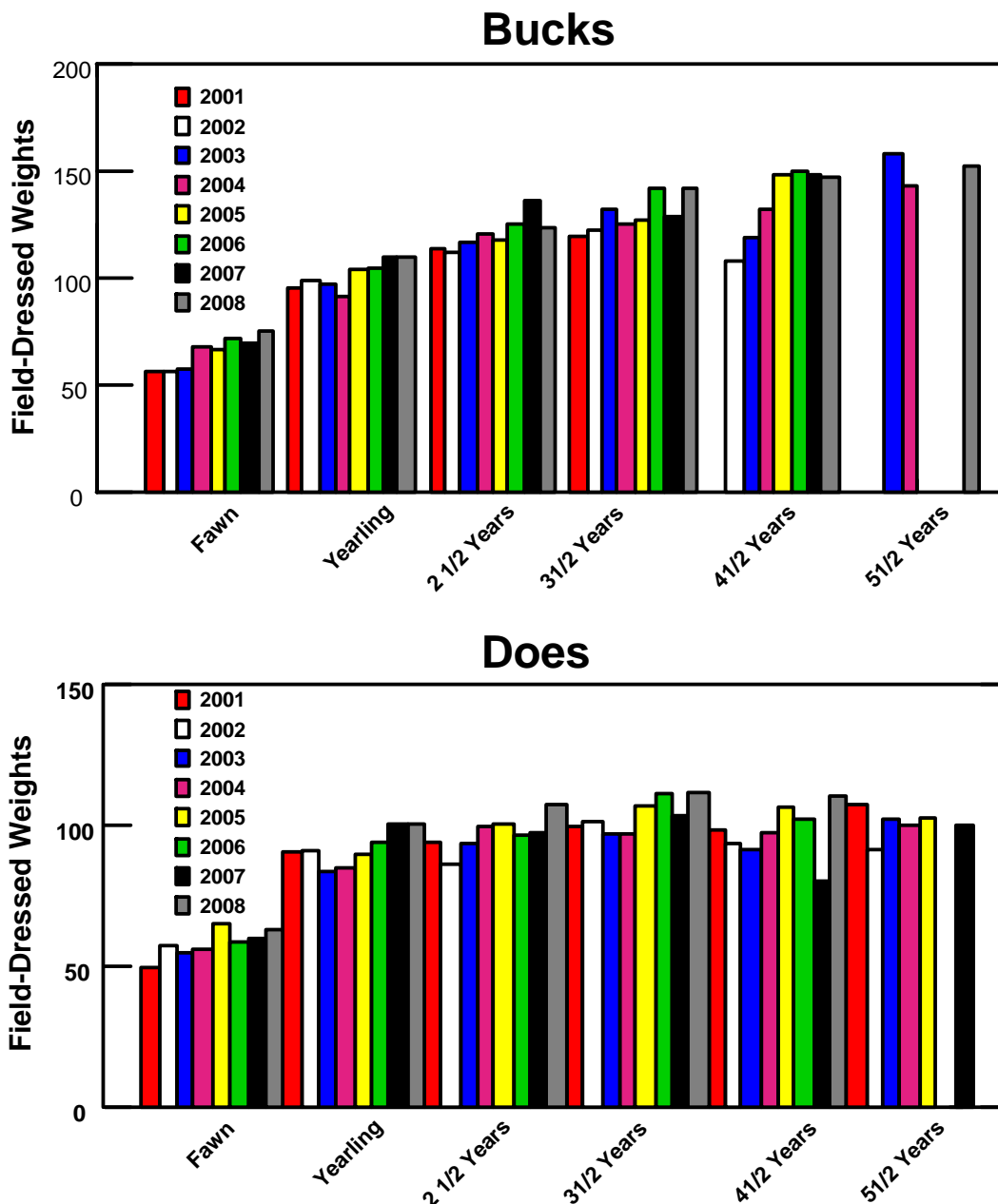


Figure 39. Average weight of harvested bucks and does by age class (fawn, yearling, 2 ½ year-olds, ≤3½ year-olds).

As in 2007, field-dressed weights of deer of all sex and age classes were significantly ($P>0.05$) higher in 2008 than in 2001, but differences between 2008 and 2007 were not significant, nor were differences between 2008 and 2005-2006. With few exceptions, the heaviest individual deer harvested for all sex or age classes were harvested 2006-2008.

Average total antler points . – Average total antler points in 2008 were down slightly but not significantly from 2007 but were still significantly higher ($P<0.05$) in 2008 than in 2001 for all age classes (Fig. 40). Average increase for the three age classes for which there were sufficient data 2001 to 2008 (yearlings through 3½ year-old deer, no bucks older than 3½ years old were brought to check stations in 2001) was 24.5%.

As with weight, total antler points plateaued 2005-2008 after gains made following the 3-point and DMAP regulations.

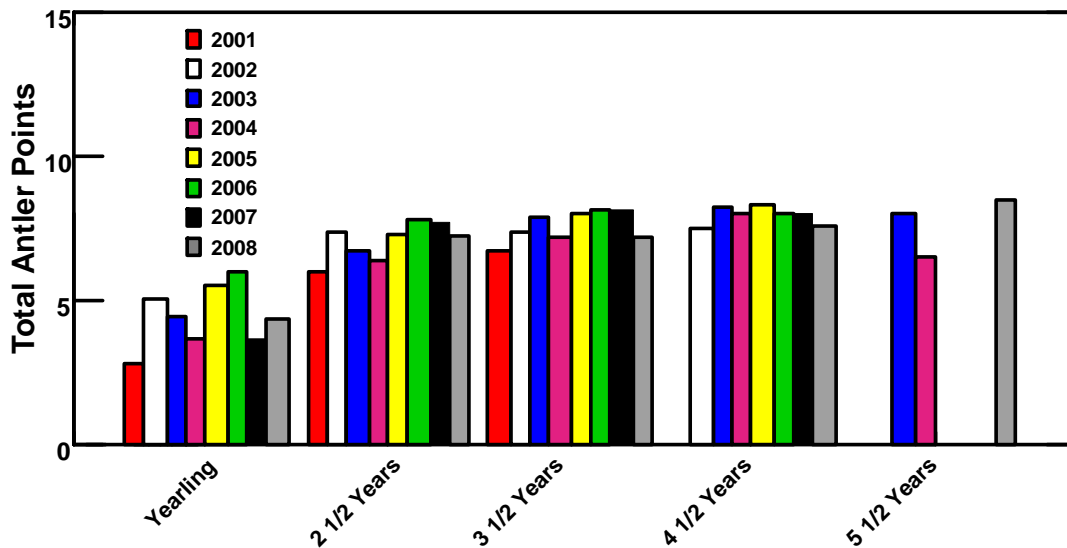


Figure 40. Average total points of antlers of bucks harvested on the KQDC area.

Average antler spread . - Average spread increased slightly in 2008 over 2007 and was significantly higher ($P < 0.05$) than in 2001 for all age groups for which there were data (Fig. 41).

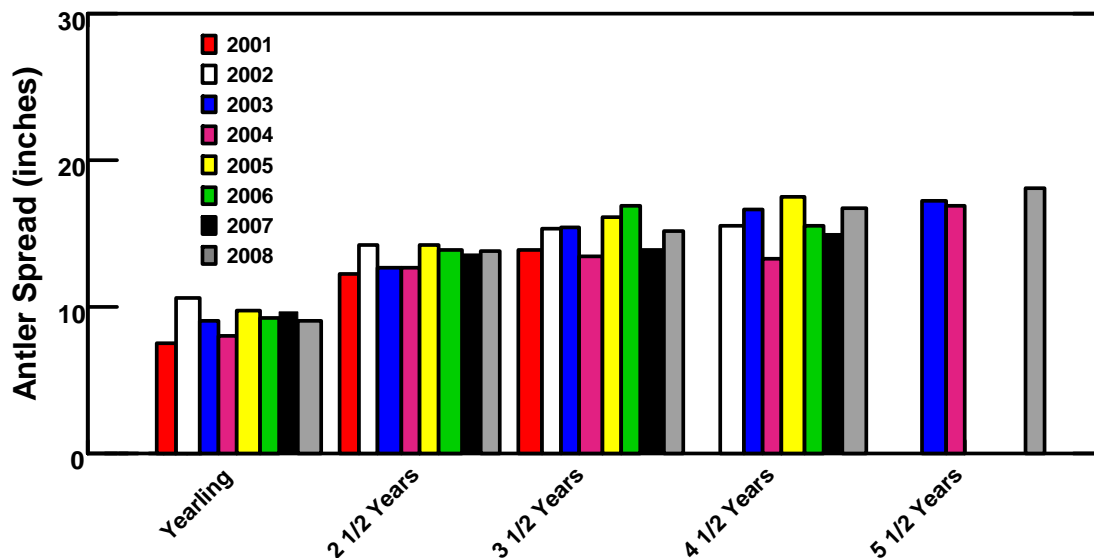


Figure 41. Average antler spread of bucks harvested on the KQDC area.

Average increase for the three age classes for which there were sufficient data 2001 to 2008 (yearlings through 3½ year-old deer, no bucks older than 3½ years old were brought to check stations in 2001) was 17.6%. As with weight and total antler points, spread plateaued 2005-2008 after gains made following the 3-point and DMAP regulations.

Average antler beam diameter . - Average antler beam diameter in 2008 was up slightly but not significantly from 2007 and was significantly higher ($P < 0.05$) in 2008 than in 2001 (Fig. 42). Average increase for the three age classes for which there were

sufficient data 2001 to 2008 (yearlings through 3½ year-old deer, no bucks older than 3½ years old were brought to check stations in 2001) was 20.4%. As with weight, total antler points and spread, mean antler beam diameter plateaued after gains made following the 3-point and DMAP regulations.

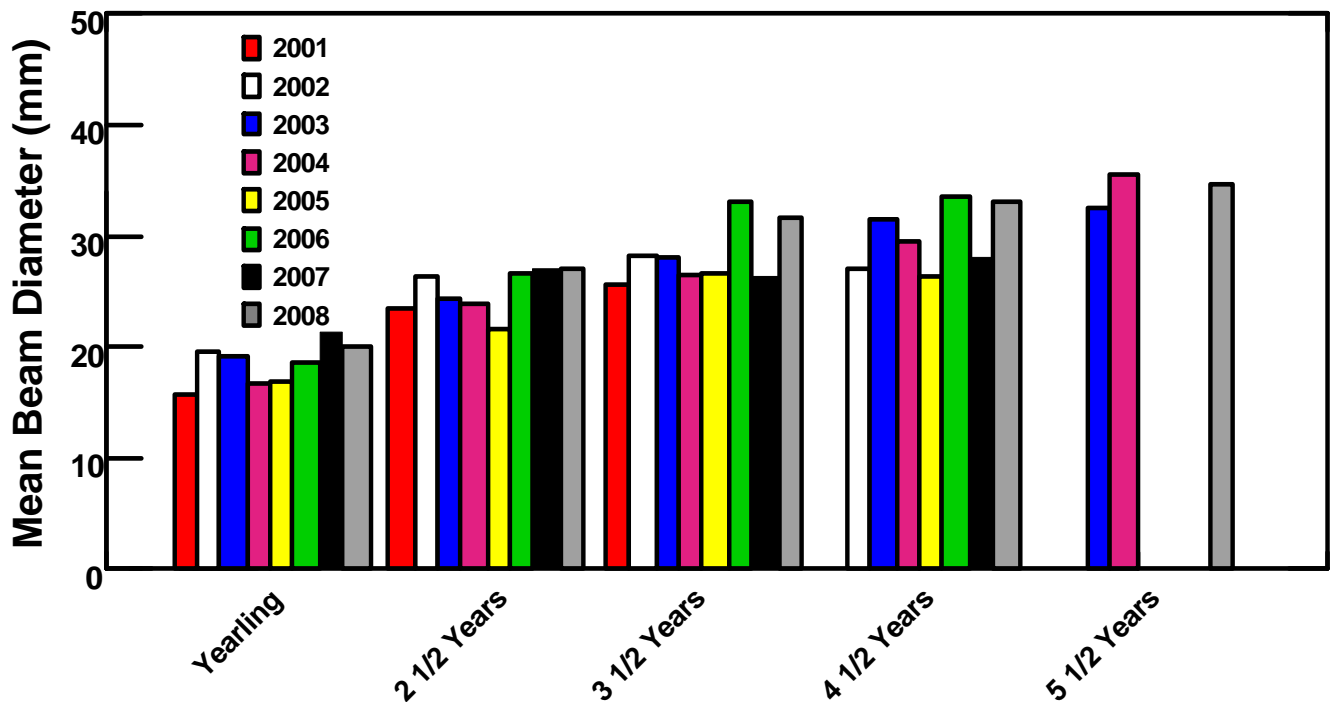


Figure 42. Mean antler beam diameter of bucks harvested on the KQDC area.

Thus, the three-point restriction initiated in 2002, DMAP regulations instituted in 2003, and the decline in deer abundance beginning in 2004 were associated with significant increases in deer weight and antler characteristics 2005-2008. However deer density did not decline further after 2006 and landowners were not able to significantly increase amount of forage production by harvesting trees through thinning, shelterwood, or final harvests and leaving such sites unfenced during 2005-2008, there was no nutritional basis for continued improvement in deer body weight or antler characteristics.

Depressing density below the low point of 11.6 deer per square mile in 2006 may not be possible, given the reduced number of hunters and resurgent hunter attitude of not harvesting antlerless deer. Thus, improving deer herd health will have to rely more upon creating more quality forage than by continuously reducing herd density. Historically, deer forage was created by timber harvest to supply the construction, veneer, and furniture markets with wood products. Given the depressed residential and commercial construction markets of today, and currently low prices of sawtimber, it is unlikely that there will be sufficient incentives for forest landowners to harvest increasing amounts of sawtimber in the near future. However, the recent increase in the demand for, and price of, pulpwood, may represent an opportunity for forest landowners to create more forage for deer – by creating openings in the midstory and overstory with pulpwood harvests and timber stand improvement cuttings. Such cuttings will increase the quality and quantity of deer forage provided, and making larger (>20 acres) rather

than smaller (<10 acres) treatment areas will do a better job of spreading deer foraging and impact over larger areas and reducing impact.