



**Maryland's Bowhunter Survey**  
**Final Report**  
**2008-09**

*by*

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*Martin O'Malley, Governor*  
*Anthony G. Brown, Lt. Governor*  
*John R. Griffin, Secretary*  
*Eric Schwaab, Deputy Secretary*

Dear Wildlife Enthusiast:

The attached report summarizes the Bowhunter Survey data for the 2002-03 through 2008-09 archery seasons. It should be noted that mailing problems occurred with the 2007-08 survey and there were not enough forms returned to support any meaningful analysis. Therefore, the data for that period has been omitted.

I hope that you will get a chance to read the report and that you will participate in future surveys. Your participation is critical as we continue to monitor Maryland's diverse wildlife resources.

I would like to personally thank each and every individual that took the time to fill out and return the Bowhunter Survey form. Your efforts contribute greatly to our overall knowledge and conservation of Maryland's wildlife resources. If you are interested in participating, the form can be accessed at [www.dnr.state.md.us](http://www.dnr.state.md.us) prior to the upcoming hunting season.

Respectfully,

Robert C. Colona

Furbearer Project Leader

## **Introduction**

**By Robert Colona**

Bowhunters typically spend a large number of days in the field each year and tend to be quite observant. These two traits enable these individuals to be ideal participants in structured observational surveys like the Bowhunter Survey.

The Bowhunter Survey was established in 2002 to gain insight into furbearer and other wildlife populations across Maryland and has been conducted annually since that time. During the 2008-09 survey period, survey forms were sent to approximately 10,000 bowhunters with 388 returning usable survey forms.

Survey participants were asked to complete the survey forms and record any wildlife observed while they were bowhunting. They were also asked a myriad of other questions, including the number of hours hunted, county hunted, if the hunt occurred on public or private land, and if lure, cover scent or an elevated stand were used.

Survey participants recorded information at the county level. Counties were then lumped into their respective physiographic provinces (Figure 1). In some instances it was necessary to include a county in only one physiographic province despite two provinces occurring in that county (Frederick and Cecil).

For this survey, the Appalachian Plateau Province consisted of Garrett County. The Ridge and Valley Province included Allegany, Frederick, and Washington counties. The Piedmont Province was comprised of Baltimore, Carroll, Cecil, Harford, Howard, and Montgomery counties. The Western Coastal Plain Province consisted of Anne Arundel, Calvert, Charles, Prince George's, and St. Mary's counties. The Eastern Coastal Plain Province included Caroline, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester counties.

The resulting data were then tabulated and reduced to a standard unit of measurement (observations per 100 hours of hunting). This standard unit of measurement was then used to analyze a number of different variables (e.g. lure, elevated stand, month, region, etc.). Standard errors (SE) were provided and calculated using ratio estimates and provide a measure of the variability in the results.

It should be noted that different species have varying susceptibility to surveillance. Therefore, variations in observation rates between different species may not be an accurate reflection of comparative densities. Nocturnal species, aquatic species, and species that utilize inaccessible areas or habitat types that bowhunters

do not frequent will normally have a lower probability of being observed.

Although vulnerability to observation varies between species, it remains consistent for individual species during successive years. For example, species such as beaver have a low probability of being observed, however that probability remains the same from year to year. As a result, a properly designed survey can detect beaver population changes over a period of years.

The inherent value of this type of survey is to accurately track wildlife population trends through time on a regional and statewide scale. It is important to note that data from a number of successive years is necessary before you can begin to accurately assess these trends. With the 2008-09 season marking the sixth year that the survey has been completed, observation trends for certain species are just beginning to emerge. As the body of data from this survey continues to increase in future years, the results will supply one of the cornerstones for the conservation and management of many of Maryland's wildlife species.

## **Furbearers**

**By Robert Colona**

All of Maryland's 14 species of furbearers have been reported in one or more years since the inception of the Bowhunter Survey in 2002-03. Although regional observations for some species varied between individual survey periods, statewide observation rates remained relatively consistent (Table 1, Figure 2).

In 2008-09, red fox were the most frequently observed furbearer with the greatest number of sightings occurring in the Piedmont Province, followed in descending order by the Eastern Coastal, Ridge and Valley, Western Coastal, and Appalachian Plateau provinces. Red fox observations did not fluctuate significantly between the 2002-03 and 2008-09 survey periods in any region of the state (Table 1, Figure 3).

Gray fox observations were highest in the Western Coastal and Piedmont provinces during 2008-09, and statewide levels remained relatively stable between 2002-03 and 2008-09 (Table 1, Figures 2 & 3).

During 2008-09, coyote were observed most frequently in the Ridge and Valley Province followed in descending order by the Appalachian Plateau and Piedmont provinces. No coyote sightings were reported in the Western and Eastern Coastal provinces during the 2008-09 sampling period. (Table 1, Figures 3 & 4).

Bobcat and fisher populations have historically been centered in the Appalachian Plateau and Ridge and Valley provinces. During 2008-09 no bobcat were

recorded in the Appalachian Plateau, however an increase in fisher was noted in that region. Bobcat and fisher observations in the Ridge and Valley Province remained stable during this period. Bobcat were also reported in the Eastern Coastal Province which is well outside of the known range in Maryland and will require additional verification (Table 1, Figure 5).

Increases in raccoon observations were noted in the Appalachian Plateau, Ridge and Valley, and Piedmont provinces during 2008-09 while decreases were recorded in the remainder of the state (Figure 5). With the exception of the Appalachian Plateau where no opossum or striped skunk were observed during 2008-09, observation rates for these two species have remained relatively constant since 2002-03 (Table 1, Figure 5).

Aquatic furbearer (mink, muskrat, beaver, otter and nutria) observation rates are typically lower than many of the terrestrial species. Sampling error probably accounted for abnormally high otter observations in the Western Coastal Province during 2002-03 and these records have been removed from this analysis. During 2008-09, the observation rates for beaver, muskrat and nutria were highest in the Eastern Coastal Province. During this period, otter were observed most frequently in the Western Coastal Province and mink were observed most frequently in the Ridge and Valley Province. (Table 1, Figure 6).

Long tailed weasel were the least observed furbearer and were only recorded in the Ridge & Valley, Piedmont and Western Coastal provinces (Table 1, Figure 5).

The use of lures and/or cover scents did not substantially influence observations for most furbearers. However, the use of cover scents did result in increased observations for coyote and gray fox (Table 2). The use of an elevated stand did not result in appreciable increases in sightings (Table 3). The month in which a hunt was conducted also influenced observations for gray fox, red fox and raccoon (Table 4, Figure 7).

For the majority of furbearers, observation rates between public versus privately owned property did not vary substantially. The one notable exception was red fox. Preferred red fox habitat includes a large component of cultivated and/or altered landscapes that are often more prevalent on private property. This probably accounts for the disparity between observation rates.

### **Rabbits and Squirrels** **By Robert Colona**

Cottontail rabbits and the three harvestable species of squirrels (eastern fox, gray, and red) were observed during the 2008-09 survey period (Table 1). Little variation in observation frequency for these species

occurred between the 2002-03 and 2008-09 sampling periods.

Gray squirrels were the most commonly observed species while red squirrels were encountered the least. Eastern fox squirrel observations were highest in the Ridge & Valley Province. Red squirrels were detected at low levels in the Appalachian Plateau, Ridge and Valley and Piedmont provinces during 2008-09. Cottontail rabbits were observed statewide (Table 1, Figure 8). Cottontail rabbit, eastern fox squirrel and red squirrel observation rates were similar on both public and privately owned property. However, gray squirrels were observed more frequently on private property (Figure 9).

### **White-tailed Deer** **By Brian Eycler**

Bowhunters who completed survey forms in 2008-09 observed 4,054 whitetail bucks, 10,437 whitetail does, 5,977 whitetail fawns, and 2,454 whitetails of unknown sex or age (22,922 deer total) during approximately 23,031 hours of hunting. Bowhunters observed a mean of 17.42 whitetail bucks, 44.85 whitetail does, 25.68 whitetail fawns, and 10.54 unknown whitetails per 100 hours statewide (Table 1). The average bowhunter who participated in the survey spent a total of 60.5 hours bowhunting in 2008-09 with an average hunt length of 4.1 hours.

Since the inception of the Bowhunter Survey in 2002, the number of bucks and fawns observed per 100 hours each hunting season has remained relatively stable. The number of does observed per 100 hours declined each year until the 2008-09 season (Fig. 10). These trends are to be expected, given the liberalization of the antlerless harvest over the past five years. These results suggest the Maryland deer population is stable in many parts of the state.

### Physiographic Province Results

In 2008-09, bowhunters observed from a high mean of 20.03 whitetail bucks per 100 hours in the Piedmont Province to a low mean of 13.00 bucks per 100 hours in the Ridge & Valley Province (Table 1). Bowhunters reported the most whitetail does per 100 hours (53.63) in the Piedmont Province and the fewest whitetail does per 100 hours (34.63) in the Ridge & Valley Province. Fawn observations ranged from a high mean of 33.13 in the Appalachian Plateau Province to a low mean of 21.81 in the Ridge & Valley Province. The number of unknown whitetails observed per 100 hours ranged from a high mean of 13.19 in the Piedmont Province to a low mean of 7.12 in the Western Coastal Province (Table 1).

Bowhunters in the Western Coastal Province in 2008-09 spent the most time bowhunting (56.0 hours/hunter)

whereas bowhunters in the Appalachian Plateau Province spent the least amount of time bowhunting (23.1 hours/hunter). Average hunt length ranged from 3.3 hours/hunt in the Appalachian Plateau Province to 4.4 hours/hunt in the Eastern Coastal Province (Table 1).

Bowhunter observation rates since the inception of the Bowhunter Survey in 2002 suggest there are differences in deer population trends for the five physiographic provinces of Maryland. In the Appalachian Plateau and Ridge & Valley provinces, overall deer observation rates have declined, suggesting the population has probably declined as well (Fig. 11). However, both of these provinces experienced an increase in observation rates for the 2008-09 season, suggesting the population may have rebounded last year.

Data from the Piedmont, Western Coastal, and Eastern Coastal provinces suggest the deer population in those regions has not followed the same trend as the western part of the state. Based on the observation data, the deer population in the eastern provinces is primarily stable (Fig. 12). Additional years of data and increased sample sizes will be helpful for monitoring deer population trends in the geographic provinces.

#### Lures, Cover Scents, and Bait

As in previous years, bowhunters observed similar numbers of whitetail bucks and does in 2008-09 regardless of whether they were using lures or cover scents (Table 2). Bowhunters observed 16.54 bucks per 100 hours when not using lures compared to 20.67 bucks per 100 hours when using lures. Likewise, bowhunters observed 44.01 does per 100 hours when not using lures compared to 47.99 does per 100 hours when using lures.

Observation rates followed similar trends when using cover scents (Table 2). Bowhunters observed 17.08 bucks per 100 hours when not using cover scents compared to 17.92 bucks per 100 hours when using cover scents. Bowhunters observed 43.53 does per 100 hours when not using cover scent versus 46.69 does per 100 hours when using cover scent.

Like cover scents and lures, bowhunters observed similar numbers of bucks and does regardless of whether they were using bait or not using bait (Table 3). Bowhunters observed 17.72 bucks per 100 hours when not using bait compared to 16.35 bucks per 100 hours when using bait. Bowhunters observed 45.14 does per 100 hours when not using bait versus 43.81 does per 100 hours when using bait.

Attractants such as lures, cover scents, and bait while sometimes useful, are not a substitute for knowledge concerning deer behavior and effective hunting techniques. Understanding deer habitat use, wind

currents, weather effects, and deer movement patterns for a given hunting area can significantly increase deer hunting success rates. While using attractants at times can increase the odds of observing and harvesting deer, hunters are more successful when they first place themselves in the proper location at the proper time based on normal deer behavior, and follow up with the use of attractants as needed.

#### Elevated Stand Use

Like previous years, bowhunters in 2008-09 observed more bucks per 100 hours when hunting from an elevated stand (18.64) than when hunting from the ground (12.15; Table 3). Also like previous years, bowhunters observed similar numbers of does per 100 hours when hunting from an elevated stand than when hunting from the ground (45.57 versus 41.75, respectively). Bowhunters spent an average of 4.1 hours/hunt bowhunting from an elevated stand compared to 4.3 hours/hunt bowhunting from the ground.

#### Monthly Results

Bowhunters observed an average of 16.71, 19.89, and 18.07 whitetail bucks per 100 hours for the periods 9/15 – 10/14, 10/15 – 11/14, and 11/15 – 12/14, respectively in 2008-09 (Table 4). Expectedly, bowhunters observed fewer whitetail bucks per 100 hours for the period 12/15 – 1/31 (11.20 per 100 hours). Bowhunters observed the fewest number of does (38.01 per 100 hours) during the period 10/15 – 11/14 and the most does (54.77 per 100 hours) for the period 12/15 – 1/31.

#### Deer Management Region Results

Maryland had two deer management regions in 2008-09. Region A consisted of Garrett and Allegany counties while Region B encompassed the remainder of the state. Bowhunters hunting in Deer Management Region A in 2008-09 observed a mean of 10.86 whitetail bucks per 100 hours and 33.92 does per 100 hours. Bowhunters in Region B reported a mean of 18.08 bucks per 100 hours and 45.95 does per 100 hours (Table 5).

Bowhunter observation trends for the deer management regions follow harvest and population trends for those areas. The Region A deer population was reduced in the early 2000s via liberal antlerless bag limits after reaching an all-time high that was detrimental to the deer population and habitat in the region. Seasons and bag limits were restricted shortly thereafter and the Region A deer population has stabilized. As a result, bowhunter observation trends in Region A have started to increase (Fig. 13). The deer population in Region B has been more stable for the duration of the Bowhunter Survey, and observation rates have been more consistent in Region B than they have been in Region A (Fig. 13).

## Public and Private Land Results

As in previous years, bowhunters observed more deer on private lands than on public lands in 2008-09. Bowhunters reported seeing 19.80 bucks, 49.19 does, and 28.81 fawns per 100 hours on private land compared to 10.13 bucks, 31.51 does, and 16.10 fawns per 100 hours on public land (Table 6).

Deer observation rates tend to be higher on private lands because private land deer habitat often is available in better and greater quantities than habitat on public lands. Likewise, private lands often do not receive the hunting pressure that public lands do and deer populations are therefore higher.

## Doe:Buck and Fawn:Doe Ratios

Bowhunters observed approximately 2.58 adult does for every 1 adult buck statewide in 2008-09 (Table 7). Bowhunters in the Appalachian Plateau, Ridge & Valley, and Piedmont Plateau provinces observed 2.66 – 2.69 adult does per adult buck while bowhunters in the Western and Eastern Coastal provinces observed 2.39 – 2.45 adult does per adult buck.

Bowhunters in 2008-09 observed approximately 0.57 fawns for every adult doe statewide. Fawn:adult doe ratios were similar across the regions (Table 7). Bowhunters observed a high of 0.72 fawns per adult doe in the Appalachian Plateau Province and a low of 0.51 fawns per adult doe in the Western Coastal Province.

## **Sika Deer**

**By Brian Eyler**

A total of 39 hunters reported observing 323 sika deer while bowhunting in 2008-09. Hunts were recorded primarily in Dorchester County, with several additional hunts noted for Wicomico and Worcester counties. Bowhunters observed 3.73 stags, 12.16 hinds, 3.66 calves, and 4.10 unknown sika deer per 100 hours of bowhunting.

Bowhunters reported the most stags and hinds per 100 hours (4.17 and 16.67, respectively) from 12/15 – 1/31 in 2008-09. Like white-tailed deer, observation rates for sika deer were similar whether or not the bowhunter indicated they used attractants such as lures, baits and cover scents.

## **Upland Game Birds**

**By Bob Long**

Bowhunters observed 14.5 wild turkeys per 100 hours in the 2008-09 season (Table 1, Figure 14), similar to the average of 13.9 turkeys per 100 hours observed since the survey began. Turkey observation rates were highest in

the Appalachian Plateau Province (31.9 per 100 hours). The Ridge and Valley and Eastern Coastal provinces also reported good numbers with 26.4 and 24.6 turkeys observed per 100 hours, respectively. Turkey observation rates were lowest in the Western Coastal Province (8.3 per 100 hours) and the Piedmont Province (3.9 per 100 hours). Turkey populations remain strong throughout most of the state, with the highest densities occurring in the western mountains and the Eastern Shore.

Ruffed grouse are only found in the western mountains. As in previous years, grouse observation rates were the highest in the Appalachian Plateau Province in 2008-09 (Table 1, Figure 15; 2.6 per 100 hours). Fewer grouse were seen in the Ridge and Valley Province (0.5 per 100 hours), encompassing Allegany and Washington counties. Based on these data, grouse numbers appear to have been generally stable in Maryland over the last seven years. Annual fluctuations in grouse sightings in the Appalachian Plateau Province have mirrored trends in turkey sightings, suggesting that populations of both of these ground-nesting birds are influenced by similar factors such as weather during nesting and brood-rearing.

Bobwhite quail are most abundant in the Eastern Coastal Province. Sightings in other regions are scattered and inconsistent among years. Bowhunters in the Eastern Coastal Province observed 2.6 quail per 100 hours in the 2008-09 season, lower than 2006-07 (Figure 16; 3.5 per 100 hours) but similar to the average since the survey began (2.5 per 100 hours). The data suggest the quail population in the Eastern part of the state has remained stable in recent years.

## **Black Bear**

**By Harry Spiker**

Black bears have been observed across all four counties of Maryland's black bear range (Garrett, Allegany, Washington, and Frederick) since the inception of the survey in 2002. The bowhunter survey data continue to support other population monitoring tools that reveal Maryland's highest bear density occurs in Garrett County and lessens as you head eastward to Allegany, Washington, and Frederick counties. The data provided by volunteer bowhunters is especially valuable to wildlife managers as the bear population grows and bear densities increase throughout the region. This information is also especially valuable since bear hunting is currently restricted to Garrett and Allegany counties.

The Bowhunter Survey provides an unbiased tool for monitoring the bear population in the hunted and unhunted portions of Maryland's black bear range. Bowhunters who completed survey forms during the 2008-09 hunting season reported 40 bear observations. Twenty-six bears were observed in Garrett County by 35 hunters, two bears were observed in Allegany County by

30 hunters, 10 bears were observed by 28 hunters in Washington County, and two bears were observed in Frederick County by 35 hunters. Interestingly, this was only the second year that bear sightings were reported by Frederick County bowhunters.

During the 2008-09 hunting season, bowhunters observed 0.17 black bears per 100 hunting hours across the black bear's range (Table 1). Bowhunters observed 3.21 black bears per 100 hunting hours in the Appalachian Plateau Province (Garrett County). During the same period, 0.32 bears per 100 hunting hours were observed in the Ridge & Valley Province of Allegany County, Washington County, and Frederick County.

These observations provided by volunteer bowhunters continue to prove very valuable to DNR's Black Bear Project. The Bowhunter Survey remains a valuable tool for monitoring range expansion into new territories, increases in density in Maryland's peripheral black bear range, and changes in density in the areas where bears are currently hunted (Garrett & Allegany counties).

### **Other species**

Bowhunters reported a myriad of other species while bowhunting. Geese, crows, mourning doves and ducks were observed most frequently (Table 8).

Table 1. Observations of select species per 100 hours (SE in parentheses) by archery hunters statewide and physiographic province during the 2008-09 Maryland archery season.

Sex/Age Class	Number Observed Per 100 Hours Hunted					
	Statewide	Appalachian Plateau	Ridge & Valley	Piedmont	Western Coastal	Eastern Coastal
<i>Furbearers</i>						
Beaver	0.09 (0.04)	0.00 (0.00)	0.02 (0.02)	0.14 (0.09)	0.05 (0.06)	0.07 (0.08)
Bobcat	0.12 (0.09)	0.00 (0.00)	0.16 (0.08)	0.01 (0.01)	0.03 (0.03)	0.37 (0.37)
Coyote	0.20 (0.12)	0.62 (0.39)	0.78 (0.62)	0.09 (0.03)	0.00 (0.00)	0.00 (0.00)
Fisher	0.04 (0.02)	0.99 (0.47)	0.02 (0.02)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)
Gray Fox	0.56 (0.11)	0.12 (0.13)	0.48 (0.21)	0.73 (0.24)	0.74 (0.16)	0.28 (0.08)
Mink	0.02 (0.01)	0.00 (0.00)	0.07 (0.07)	0.02 (0.02)	0.00 (0.00)	0.00 (0.00)
Muskrat	0.03 (0.01)	0.00 (0.00)	0.02 (0.02)	0.02 (0.02)	0.03 (0.03)	0.07 (0.05)
Nutria	0.06 (0.06)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.26 (0.26)
Opossum	0.18 (0.04)	0.00 (0.00)	0.14 (0.08)	0.14 (0.06)	0.25 (0.09)	0.28 (0.10)
Otter	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.03 (0.03)	0.02 (0.02)
Raccoon	1.62 (0.18)	1.48 (1.00)	1.70 (0.46)	1.83 (0.30)	1.68 (0.44)	1.16 (0.21)
Red Fox	5.45 (0.38)	0.37 (0.20)	3.83 (0.78)	7.91 (0.59)	2.34 (0.57)	5.43 (0.79)
Striped Skunk	0.20 (0.06)	0.00 (0.00)	0.18 (0.08)	0.16 (0.10)	0.33 (0.14)	0.22 (0.09)
Weasel	0.03 (0.02)	0.00 (0.00)	0.07 (0.07)	0.03 (0.02)	0.03 (0.03)	0.00 (0.00)
<i>Forest &amp; Upland Game</i>						
Black Bear	0.17 (0.05)	3.21 (1.22)	0.32 (0.15)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Bobwhite Quail	0.68 (0.23)	0.37 (0.38)	0.00 (0.00)	0.07 (0.07)	0.27 (0.28)	2.62 (0.94)
Cottontail Rabbit	1.53 (0.25)	1.11 (0.62)	1.26 (0.48)	1.71 (0.46)	1.40 (0.69)	1.57 (0.44)
Eastern Fox Squirrel	2.20 (0.44)	1.24 (0.78)	7.25 (1.42)	0.20 (0.13)	1.98 (1.74)	1.82 (0.65)
Gray Squirrel	102.26 (3.98)	21.51 (4.8)	99.04 (7.92)	114.21 (5.34)	103.29 (10.04)	95.67 (10.37)
Red Squirrel	0.09 (0.04)	1.11 (0.81)	0.05 (0.03)	0.12 (0.08)	0.00 (0.00)	0.00 (0.00)
Ruffed Grouse	0.18 (0.05)	2.60 (0.93)	0.46 (0.16)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)
Wild Turkey	14.54 (1.68)	31.89 (12.34)	26.44 (4.70)	3.86 (0.72)	8.38 (2.20)	24.64 (4.85)
<i>White-tailed Deer</i>						
Buck	17.42 (1.01)	17.06 (2.69)	13.00 (1.56)	20.03 (1.68)	15.36 (2.42)	17.95 (2.37)
Doe	44.85 (2.45)	45.86 (6.35)	34.63 (3.05)	53.63 (3.87)	37.56 (6.99)	42.82 (5.49)
Fawn	25.68 (1.60)	33.13 (7.26)	21.81 (2.44)	28.36 (2.09)	18.96 (3.29)	27.64 (4.68)
Unknown	10.54 (0.94)	15.20 (3.94)	10.25 (1.51)	13.19 (1.67)	7.12 (1.81)	7.85 (1.94)
<i>No. Of Hunters Who Reported At Least One Hunt In State or Physiographic Province</i>						
	385	35	84	167	65	131
<i>No. Of Hunts Logged</i>						
	5,626	242	1,013	2,242	895	1,234
<i>Total Hrs. Hunted</i>						
	23,031	809	4,309	9,035	3,583	5,296
<i>Avg. Total Hrs. Per Hunter</i>						
	60.5	23.1	51.9	54.8	56.0	40.7
<i>Avg. No. Of Hrs. Per Hunt</i>						
	4.1	3.3	4.3	4.1	4.1	4.4
<i>Total No. Of Deer Observed</i>						
	22,922	900	3,475	10,535	2,875	5,137

Table 2. Observations of select species per 100 hours (SE in parentheses) by archery hunters who used or did not use lures or cover scents during the 2008-09 Maryland archery season.

Species	Number Observed Per 100 Hours Hunted			
	Lures		Cover Scents	
	Used	Not Used	Used	Not Used
<i>Furbearers</i>				
Beaver	0.24 (0.16)	0.04 (0.03)	0.11 (0.08)	0.07 (0.04)
Bobcat	0.04 (0.03)	0.15 (0.11)	0.27 (0.19)	0.01 (0.01)
Coyote	0.26 (0.19)	0.19 (0.11)	0.37 (0.27)	0.06 (0.03)
Fisher	0.08 (0.06)	0.03 (0.02)	0.05 (0.03)	0.04 (0.02)
Gray Fox	0.66 (0.28)	0.54 (0.11)	0.85 (0.21)	0.33 (0.08)
Mink	0.00 (0.00)	0.03 (0.02)	0.01 (0.01)	0.03 (0.02)
Muskrat	0.04 (0.03)	0.03 (0.02)	0.04 (0.02)	0.03 (0.02)
Nutria	0.00 (0.00)	0.08 (0.08)	0.13 (0.13)	0.00 (0.00)
Opossum	0.22 (0.07)	0.17 (0.05)	0.26 (0.07)	0.13 (0.05)
Otter	0.00 (0.00)	0.01 (0.01)	0.02 (0.01)	0.00 (0.00)
Raccoon	1.45 (0.28)	1.66 (0.20)	1.85 (0.25)	1.43 (0.22)
Red Fox	5.71 (0.70)	5.38 (0.41)	6.10 (0.59)	4.94 (0.46)
Striped Skunk	0.22 (0.10)	0.20 (0.06)	0.18 (0.06)	0.22 (0.08)
Weasel	0.02 (0.02)	0.03 (0.02)	0.04 (0.03)	0.02 (0.02)
<i>Forest &amp; Upland Game</i>				
Black Bear	0.12 (0.06)	0.19 (0.07)	0.12 (0.06)	0.21 (0.09)
Bobwhite Quail	0.50 (0.34)	0.73 (0.27)	0.95 (0.36)	0.47 (0.28)
Cottontail Rabbit	1.23 (0.33)	1.61 (0.30)	1.86 (0.42)	1.26 (0.29)
Eastern Fox Squirrel	1.17 (0.36)	2.49 (0.53)	2.48 (0.73)	1.99 (0.54)
Gray Squirrel	106.49 (7.37)	101.16 (4.24)	107.86 (5.19)	98.12 (5.40)
Red Squirrel	0.14 (0.12)	0.08 (0.04)	0.04 (0.04)	0.14 (0.06)
Ruffed Grouse	0.16 (0.09)	0.19 (0.05)	0.04 (0.03)	0.30 (0.09)
Wild Turkey	15.73 (3.30)	14.22 (1.74)	16.91 (2.57)	12.67 (2.16)
<i>White-tailed Deer</i>				
Buck	20.67 (1.87)	16.54 (1.07)	17.92 (1.39)	17.08 (1.36)
Doe	47.99 (4.49)	44.01 (2.72)	46.69 (3.62)	43.53 (3.13)
Fawn	27.32 (3.25)	25.25 (1.56)	25.55 (2.50)	25.90 (1.90)
Unknown	11.29 (2.03)	10.35 (0.97)	9.48 (1.31)	11.46 (1.26)
<i>No. Of Hunters Who Reported At Least One Hunt</i>	179	367	229	273
<i>No. Of Hunts Logged</i>	1,105	4,521	2,418	3,208
<i>Total Hrs. Hunted</i>	4,895	18,137	10,453	12,579
<i>Avg. Total Hrs. Per Hunter</i>	27.8	49.8	45.6	46.8
<i>Avg. No. Of Hrs. Per Hunt</i>	4.5	4.1	4.3	4.0
<i>Total No. Of Deer Observed</i>	5,340	17,582	10,415	12,507

Table 3. Observations of select species per 100 hours (SE in parentheses) by archery hunters who used or did not use elevated stands or bait during the 2008-09 Maryland archery season.

Species	Number Observed Per 100 Hours Hunted			
	Elevated Stand		Bait	
	Used	Not Used	Used	Not Used
<i>Furbearers</i>				
Beaver	0.05 (0.03)	0.25 (0.18)	0.00 (0.00)	0.11 (0.05)
Bobcat	0.14 (0.11)	0.07 (0.05)	0.02 (0.02)	0.15 (0.11)
Coyote	0.20 (0.15)	0.21 (0.08)	0.10 (0.05)	0.23 (0.15)
Fisher	0.05 (0.02)	0.02 (0.02)	0.00 (0.00)	0.06 (0.02)
Gray Fox	0.55 (0.10)	0.64 (0.33)	0.84 (0.29)	0.48 (0.11)
Mink	0.03 (0.02)	0.00 (0.00)	0.06 (0.06)	0.01 (0.01)
Muskrat	0.03 (0.02)	0.05 (0.03)	0.08 (0.05)	0.02 (0.01)
Nutria	0.07 (0.07)	0.00 (0.00)	0.27 (0.28)	0.00 (0.00)
Opossum	0.13 (0.03)	0.41 (0.16)	0.47 (0.17)	0.10 (0.03)
Otter	0.01 (0.01)	0.00 (0.00)	0.02 (0.02)	0.01 (0.01)
Raccoon	1.59 (0.19)	1.71 (0.48)	2.53 (0.59)	1.36 (0.15)
Red Fox	5.73 (0.42)	4.25 (0.70)	5.62 (0.88)	5.40 (0.38)
Striped Skunk	0.15 (0.03)	0.43 (0.26)	0.35 (0.22)	0.16 (0.04)
Weasel	0.03 (0.02)	0.05 (0.05)	0.06 (0.06)	0.02 (0.02)
<i>Forest &amp; Upland Game</i>				
Black Bear	0.16 (0.05)	0.21 (0.19)	0.24 (0.13)	0.15 (0.05)
Bobwhite Quail	0.67 (0.26)	0.73 (0.45)	0.84 (0.58)	0.64 (0.24)
Cottontail Rabbit	1.48 (0.27)	1.74 (0.53)	2.02 (0.55)	1.39 (0.26)
Eastern Fox Squirrel	2.25 (0.51)	1.99 (0.66)	1.29 (0.37)	2.46 (0.54)
Gray Squirrel	105.54 (4.45)	88.16 (7.23)	122.20 (10.96)	96.67 (3.72)
Red Squirrel	0.08 (0.04)	0.14 (0.10)	0.04 (0.03)	0.11 (0.05)
Ruffed Grouse	0.09 (0.04)	0.57 (0.19)	0.10 (0.08)	0.20 (0.05)
Wild Turkey	14.75 (1.91)	13.66 (2.62)	16.04 (3.31)	14.12 (1.77)
<i>White-tailed Deer</i>				
Buck	18.64 (1.11)	12.15 (1.46)	16.35 (2.08)	17.72 (1.05)
Doe	45.57 (2.52)	41.75 (5.34)	43.81 (4.98)	45.14 (2.54)
Fawn	26.82 (1.80)	20.78 (2.27)	27.59 (3.40)	25.15 (1.63)
Unknown	10.20 (0.97)	12.04 (2.25)	9.17 (1.94)	10.93 (1.02)
<i>No. Of Hunters Who Reported At Least One Hunt</i>	353	166	161	349
<i>No. Of Hunts Logged</i>	4,596	1,030	1,302	4,324
<i>Total Hrs. Hunted</i>	18,679	4,352	5,075	17,957
<i>Avg. Total Hrs. Per Hunter</i>	53.5	26.4	31.7	52.1
<i>Avg. No. Of Hrs. Per Hunt</i>	4.1	4.3	3.9	4.2
<i>Total No. Of Deer Observed</i>	19,125	3,797	4,949	17,973

Table 4. Observations of select species per 100 hours (SE in parentheses) by archery hunters during four monthly periods of the 2008-09 Maryland archery season.

Sex/Age Class	Number Observed Per 100 Hours Hunted			
	9/15 – 10/14	10/15 – 11/14	11/15 – 12/14	12/15 – 1/31
<i>Furbearers</i>				
Beaver	0.03 (0.02)	0.12 (0.06)	0.11 (0.07)	0.06 (0.06)
Bobcat	0.06 (0.05)	0.02 (0.02)	0.04 (0.03)	0.66 (0.62)
Coyote	0.24 (0.18)	0.15 (0.07)	0.29 (0.21)	0.13 (0.06)
Fisher	0.06 (0.04)	0.05 (0.04)	0.04 (0.03)	0.00 (0.00)
Gray Fox	0.53 (0.11)	0.61 (0.16)	0.36 (0.11)	0.88 (0.43)
Mink	0.06 (0.05)	0.00 (0.00)	0.02 (0.02)	0.00 (0.00)
Muskrat	0.03 (0.03)	0.04 (0.02)	0.05 (0.04)	0.00 (0.00)
Nutria	0.13 (0.13)	0.07 (0.07)	0.00 (0.00)	0.00 (0.00)
Opossum	0.10 (0.05)	0.27 (0.08)	0.20 (0.06)	0.13 (0.06)
Otter	0.00 (0.00)	0.01 (0.01)	0.02 (0.02)	0.00 (0.00)
Raccoon	2.15 (0.37)	1.72 (0.25)	0.93 (0.17)	1.50 (0.46)
Red Fox	5.35 (0.61)	4.85 (0.40)	5.47 (0.54)	7.13 (0.81)
Striped Skunk	0.22 (0.08)	0.24 (0.10)	0.13 (0.05)	0.19 (0.10)
Weasel	0.02 (0.02)	0.04 (0.03)	0.04 (0.03)	0.03 (0.03)
<i>Forest &amp; Upland Game</i>				
Black Bear	0.38 (0.16)	0.16 (0.07)	0.05 (0.03)	0.00 (0.00)
Bobwhite Quail	0.40 (0.25)	0.47 (0.25)	1.68 (0.81)	0.03 (0.03)
Cottontail Rabbit	1.75 (0.38)	1.36 (0.25)	1.18 (0.27)	2.13 (0.78)
Eastern Fox Squirrel	2.04 (0.44)	2.91 (0.71)	2.04 (0.53)	1.00 (0.37)
Gray Squirrel	109.33 (4.71)	103.53 (4.69)	97.01 (5.39)	93.96 (9.01)
Red Squirrel	0.10 (0.06)	0.18 (0.09)	0.00 (0.00)	0.03 (0.03)
Ruffed Grouse	0.16 (0.06)	0.17 (0.06)	0.25 (0.15)	0.13 (0.08)
Wild Turkey	14.09 (1.92)	15.23 (2.43)	14.83 (2.59)	13.07 (3.12)
<i>White-tailed Deer</i>				
Buck	16.71 (1.44)	19.89 (1.34)	18.07 (1.32)	11.20 (1.44)
Doe	45.93 (3.04)	38.01 (2.40)	47.95 (3.86)	54.77 (5.92)
Fawn	28.96 (2.09)	22.17 (1.62)	25.50 (2.19)	28.56 (3.61)
Unknown	9.07 (0.96)	10.40 (1.08)	10.60 (1.27)	13.67 (2.53)
<i>No. Of Hunters Who Reported At Least One Hunt During The Time Period</i>	316	336	278	172
<i>No. Of Hunts Logged</i>	1,614	1,960	1,258	794
<i>Total Hrs. Hunted</i>	6,181	8,155	5,535	3,160
<i>Avg. Total Hrs. Per Hunter</i>	19.8	24.6	20.1	18.6
<i>Avg. No. Of Hrs. Per Hunt</i>	3.9	4.2	4.5	4.1
<i>Total No. Of Deer Observed</i>	6,282	7,467	5,714	3,459

Table 5. Observations of white-tailed deer per 100 hours (SE in parentheses) by archery hunters in Deer Management Region A and Region B during the 2008-09 Maryland archery seasons.

<b>Sex/Age Class</b>	<b>Number Observed Per 100 Hours Hunted</b>	
	<b>Region A</b>	<b>Region B</b>
Buck	10.86 (1.71)	18.08 (1.08)
Doe	33.92 (4.27)	45.95 (2.64)
Fawn	21.99 (3.88)	26.05 (1.70)
Unknown	13.23 (2.07)	10.27 (1.01)
<i>No. Of Hunters Who Reported At Least One Hunt In The Region</i>	60	347
<i>No. Of Hunts Logged</i>	540	5,086
<i>Total Hrs. Hunted</i>	2,146	20,885
<i>Avg. Total Hrs. Per Hunter</i>	35.8	60.9
<i>Avg. No. Of Hrs. Per Hunt</i>	4.0	4.2
<i>Total No. Of Deer Observed</i>	1,717	21,205

Table 6. Observations of white-tailed deer per 100 hours (SE in parentheses) by archery hunters on private and public lands during the 2008-09 Maryland archery seasons.

<b>Sex/Age Class</b>	<b>Number Observed Per 100 Hours Hunted</b>	
	<b>Private Land</b>	<b>Public Land</b>
Buck	19.80 (1.26)	10.13 (1.16)
Doe	49.19 (2.99)	31.51 (4.04)
Fawn	28.81 (1.98)	16.10 (2.13)
Unknown	11.34 (1.12)	8.08 (1.51)
<i>No. Of Hunters Who Reported At Least One Hunt</i>	332	135
<i>No. Of Hunts Logged</i>	4,475	1,151
<i>Total Hrs. Hunted</i>	17,321	5,711
<i>Avg. Total Hrs. Per Hunter</i>	52.8	42.6
<i>Avg. No. Of Hrs. Per Hunt</i>	3.9	5.0
<i>Total No. Of Deer Observed</i>	19,135	3,787

Table 7. Number of adult does per adult buck and number of fawns per adult doe observed statewide and by physiographic province by archery hunters during the 2008-09 Maryland archery seasons.

<b>Physiographic Province</b>	<b>Adult does:Adult buck</b>	<b>Fawns:Adult doe</b>
Appalachian Plateau	2.69	0.72
Ridge & Valley	2.66	0.63
Piedmont	2.68	0.53
Western Coastal	2.45	0.51
Eastern Coastal	2.39	0.65
<b><i>Statewide</i></b>	<b>2.58</b>	<b>0.57</b>

Table 8. Statewide observations (per 100 hunts) of miscellaneous animals reported by Maryland archery hunters during the 2008-09 Maryland archery seasons.

<b>Animal</b>	<b>Total Observed</b>	<b>Observations Per 100 Hunts</b>
Crows	521	1.28
Delmarva Fox Squirrel	30	0.53
Domestic Cat	9	0.16
Domestic Dog	17	0.30
Ducks	689	12.25
Eagles	104	1.85
Eastern Chipmunk	90	1.60
Flying Squirrels	2	0.04
Geese	9,192	163.38
Mourning Dove	486	8.64
Osprey	4	0.07
Other Raptors	160	2.84
Owls	70	1.24
Raven	2	0.04
Small Mammals (mice, voles, etc.)	4	0.07
Snakes	3	0.05
Songbirds	63	1.12
Turtles	7	0.12
Vultures	20	0.36
Waterbirds (herons, egrets, etc.)	24	0.43
Woodchuck	112	1.99
Woodcock/Snipe	65	1.16
Woodpeckers	45	0.80

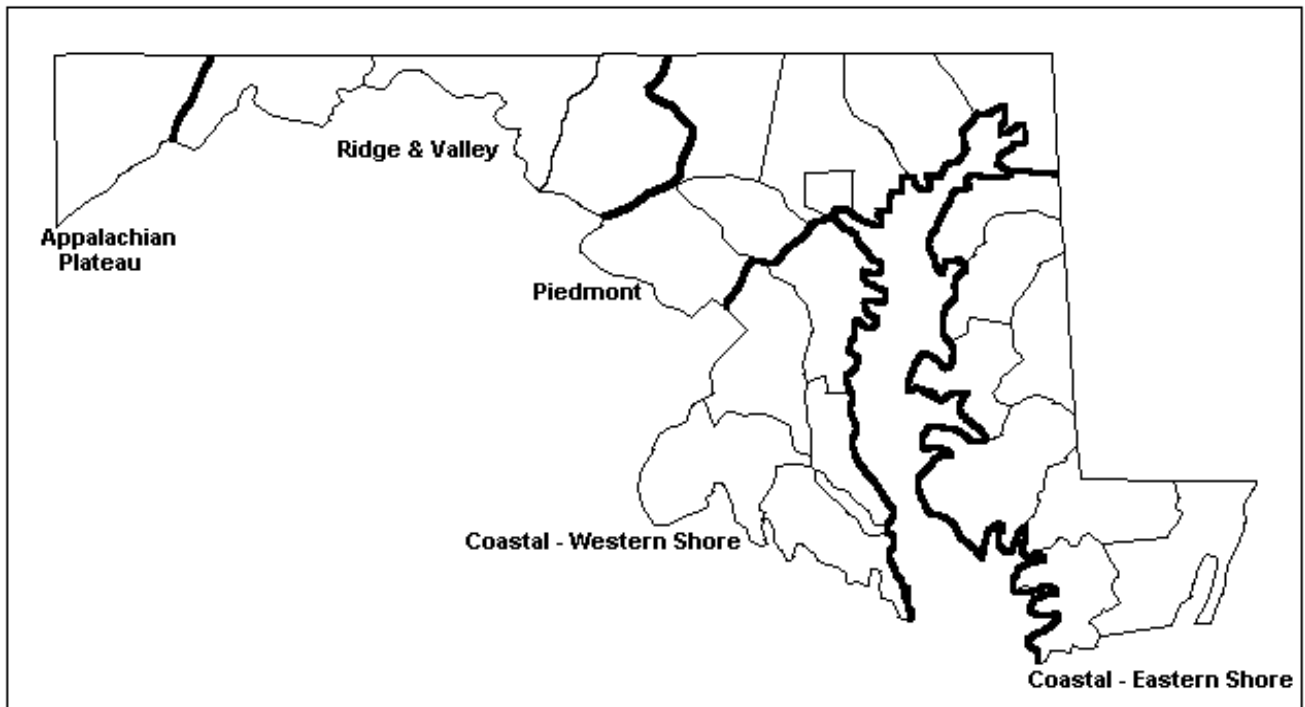


Figure 1. Physiographic provinces for the annual Bowhunter Survey.

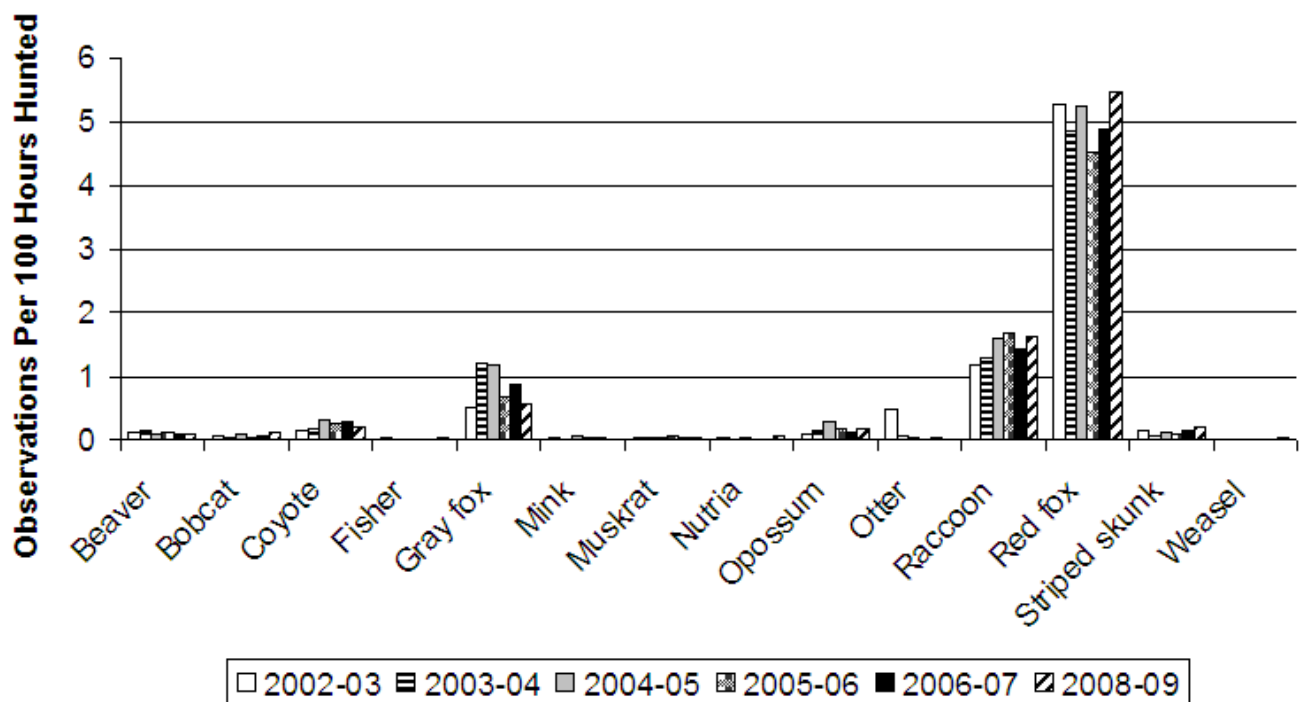


Figure 2. Furbearer observation rates by archery hunters during the Maryland archery seasons (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

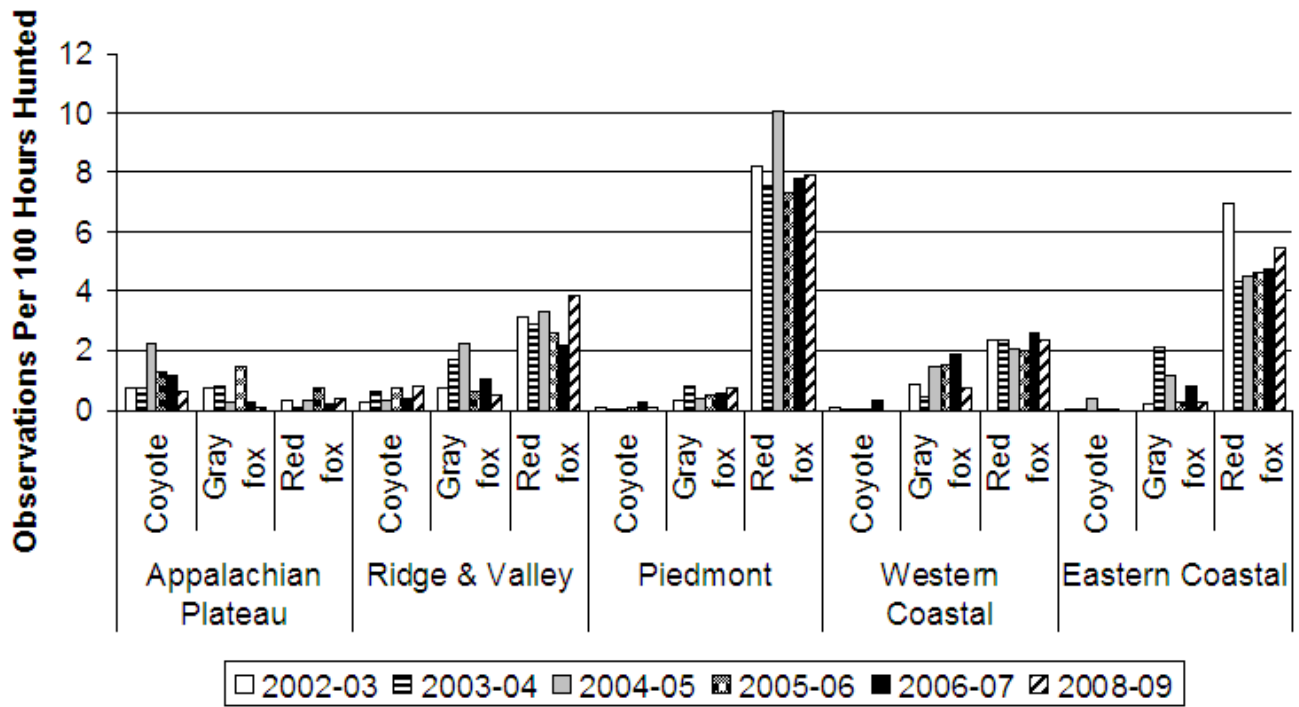


Figure 3. Canine observation rates by archery hunters in the five Maryland physiographic provinces during the Maryland archery seasons (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

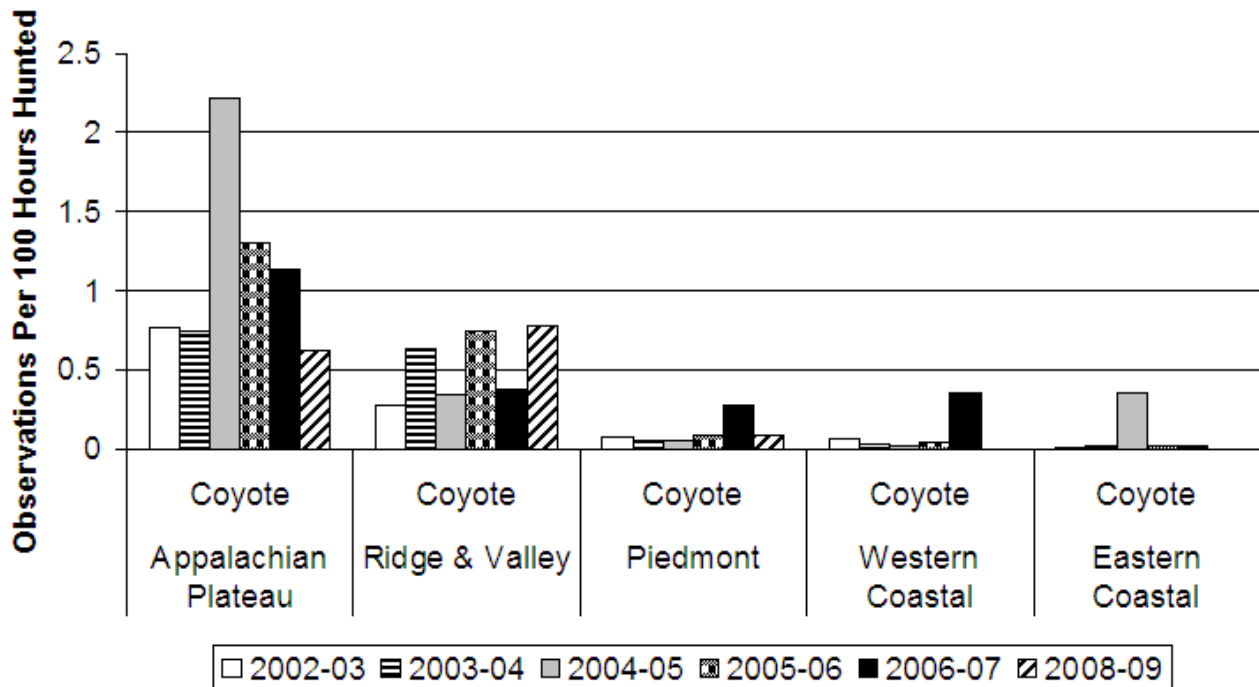


Figure 4. Coyote observation rates by archery hunters in the five Maryland physiographic provinces during the Maryland archery seasons (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

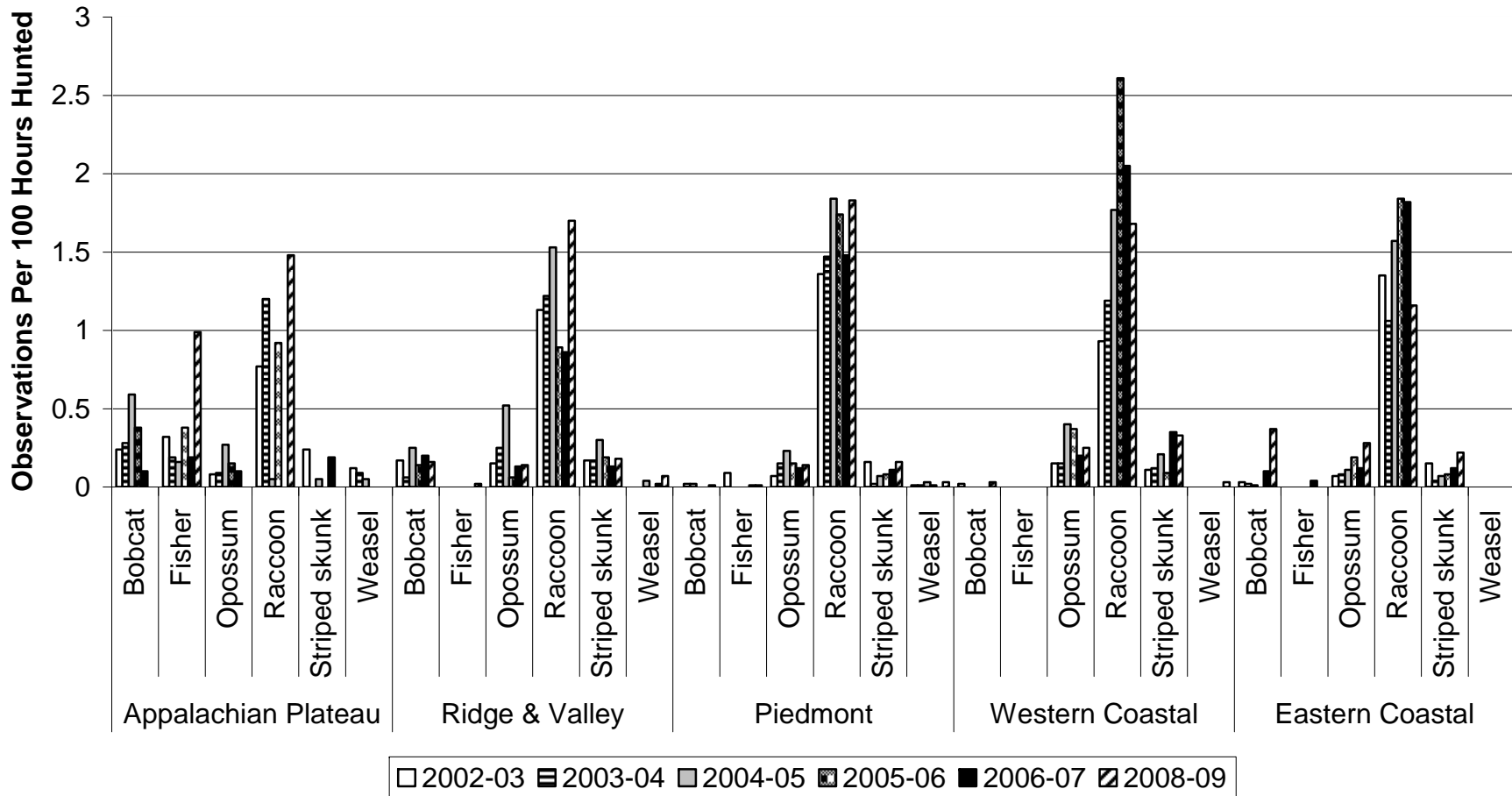


Figure 5. Terrestrial furbearer observation rates by archery hunters in the five Maryland physiographic provinces during the Maryland archery seasons (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

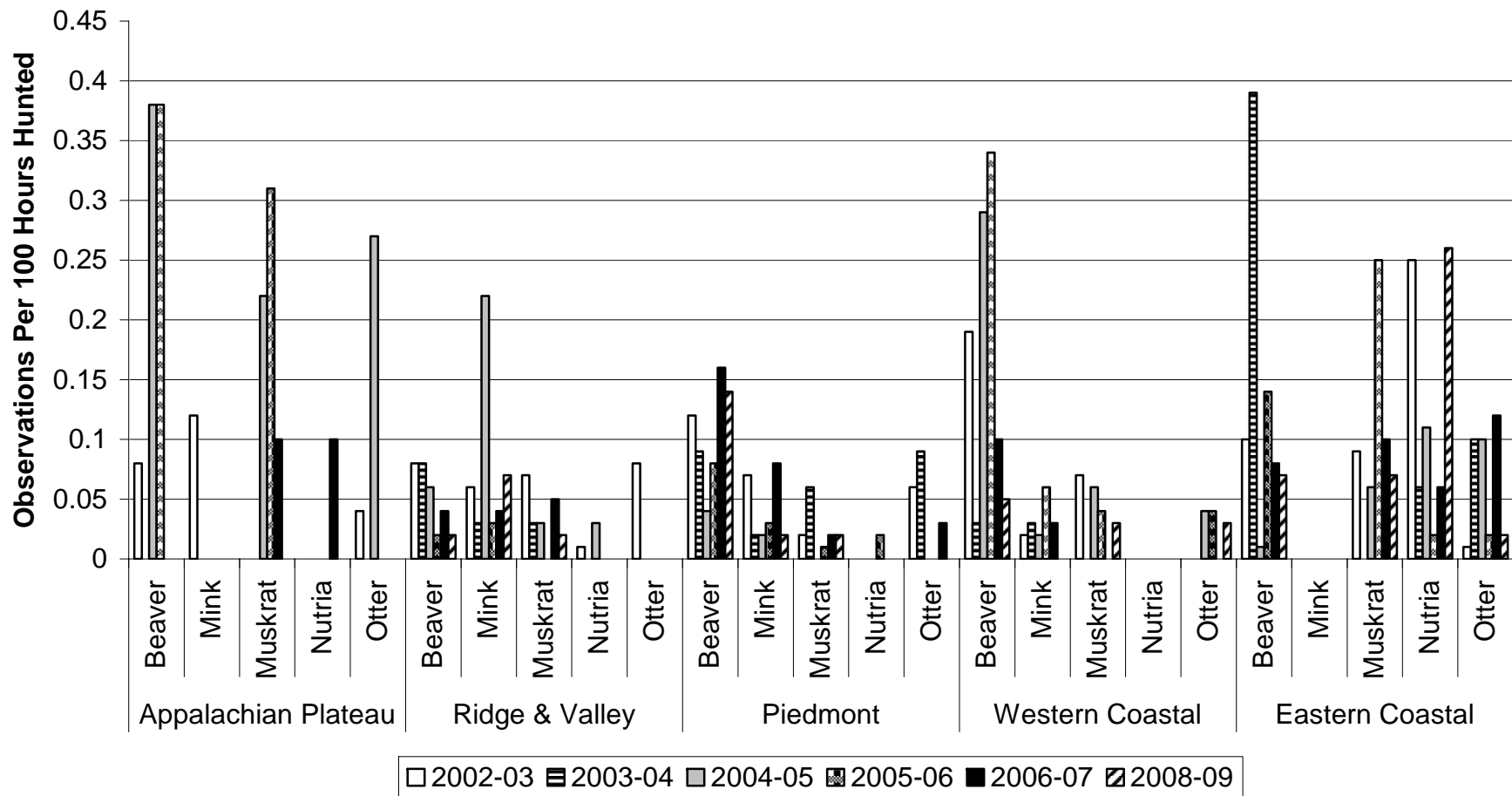


Figure 6. Aquatic furbearer observation rates by archery hunters in the five Maryland physiographic provinces during the Maryland archery seasons (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

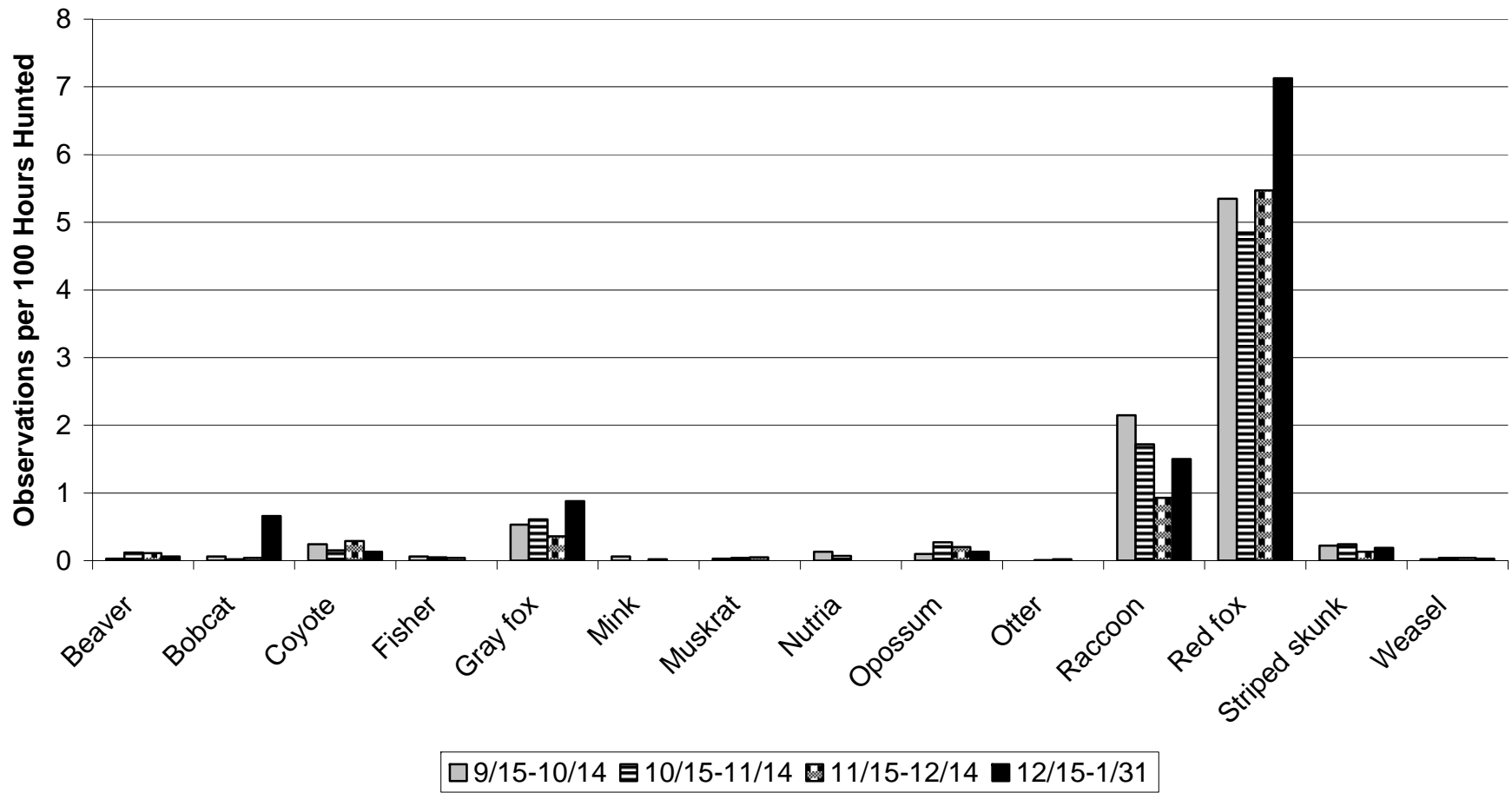


Figure 7. Furbearer observation rates during four monthly periods of the Maryland 2008-09 archery season.

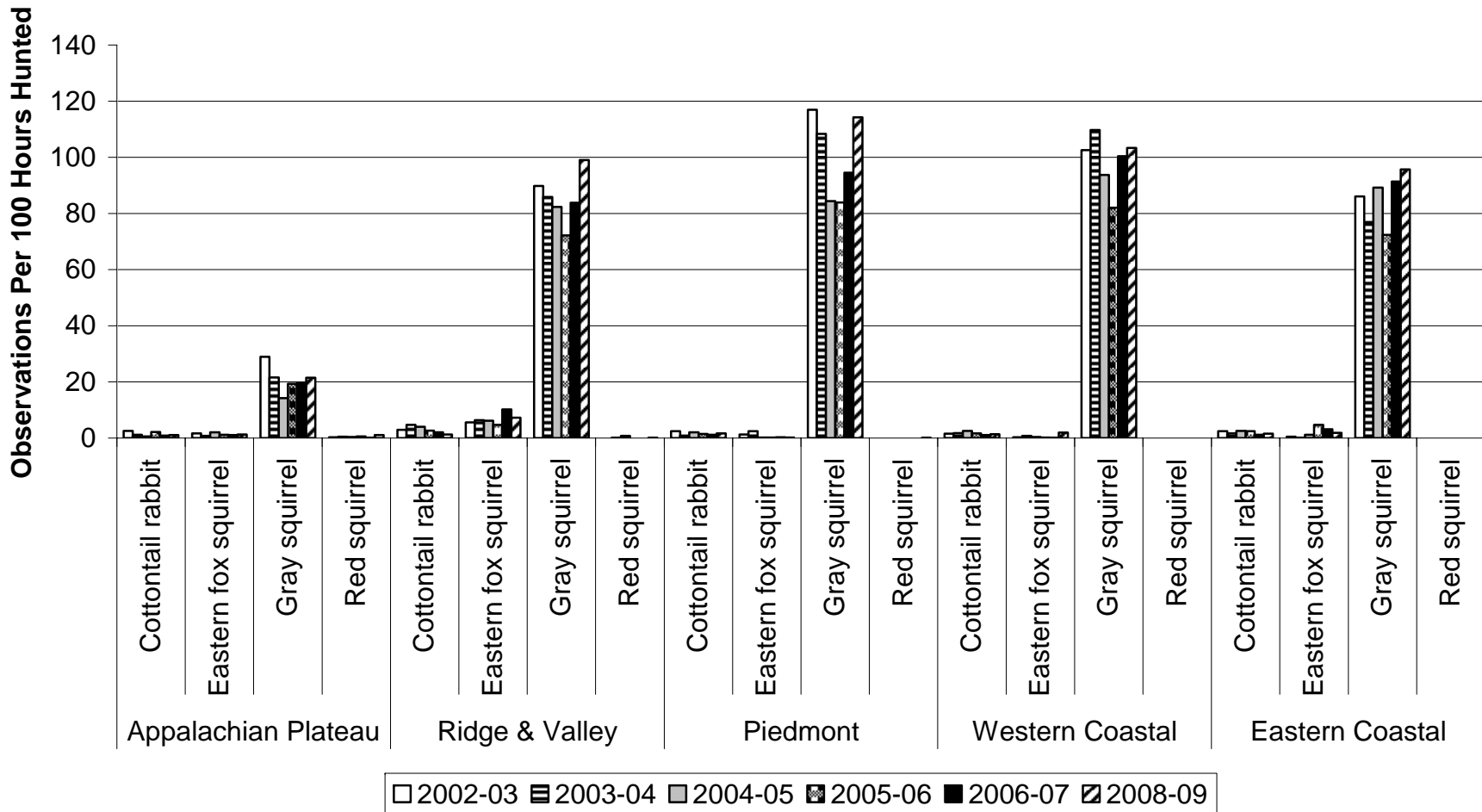


Figure 8. Rabbit and squirrel observation rates by archery hunters in the five Maryland physiographic provinces during the Maryland archery seasons (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

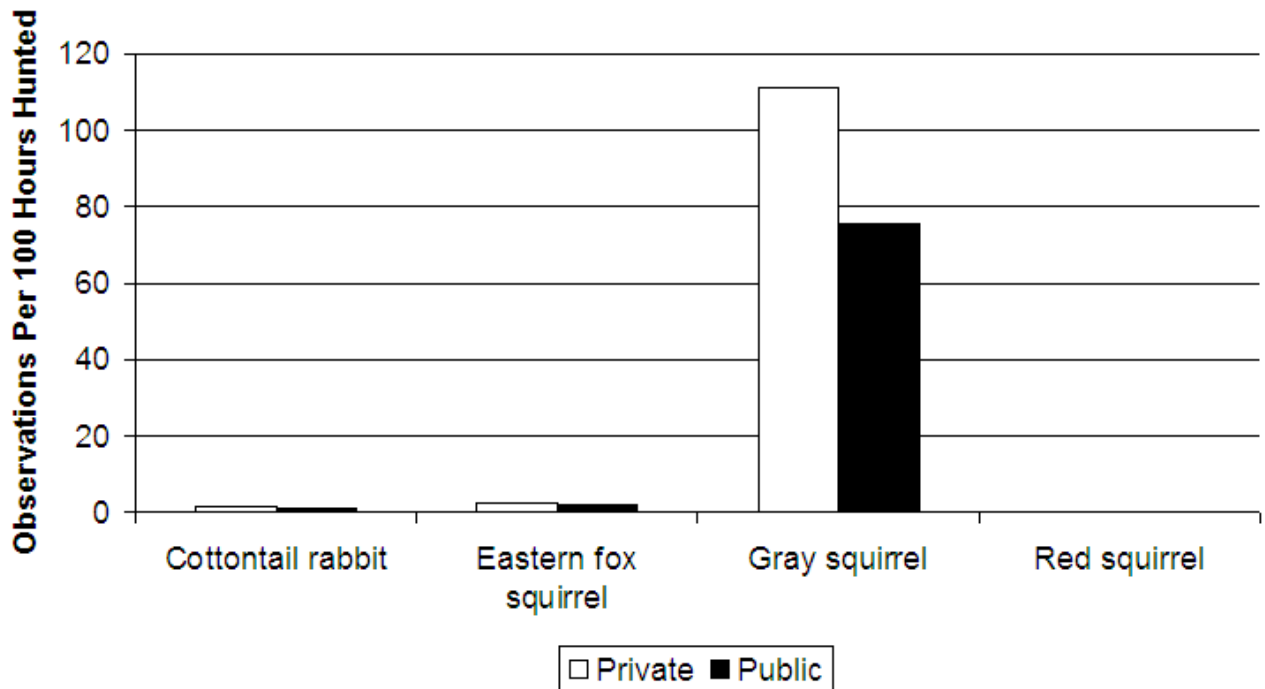


Figure 9. Rabbit and squirrel observation rates by archery hunters on private and public lands during the 2008-09 Maryland archery season.

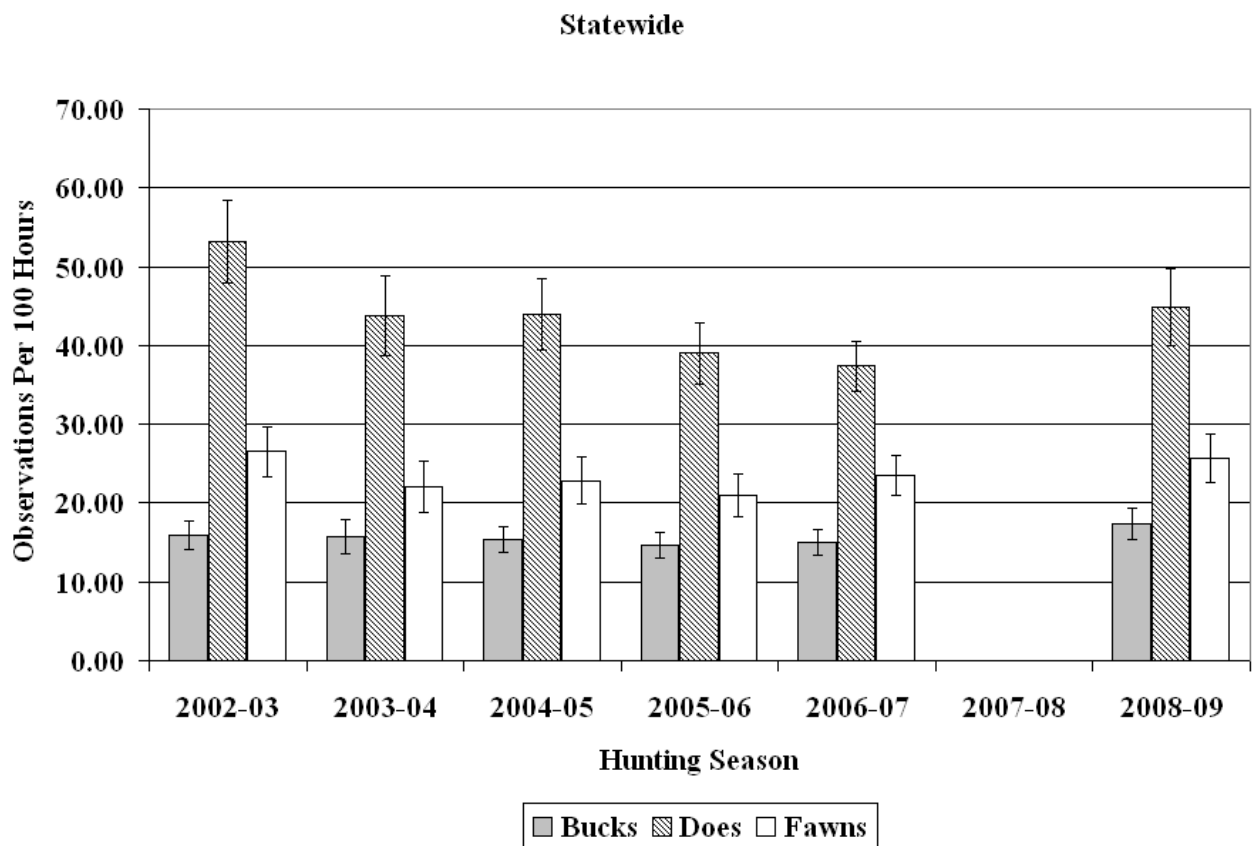
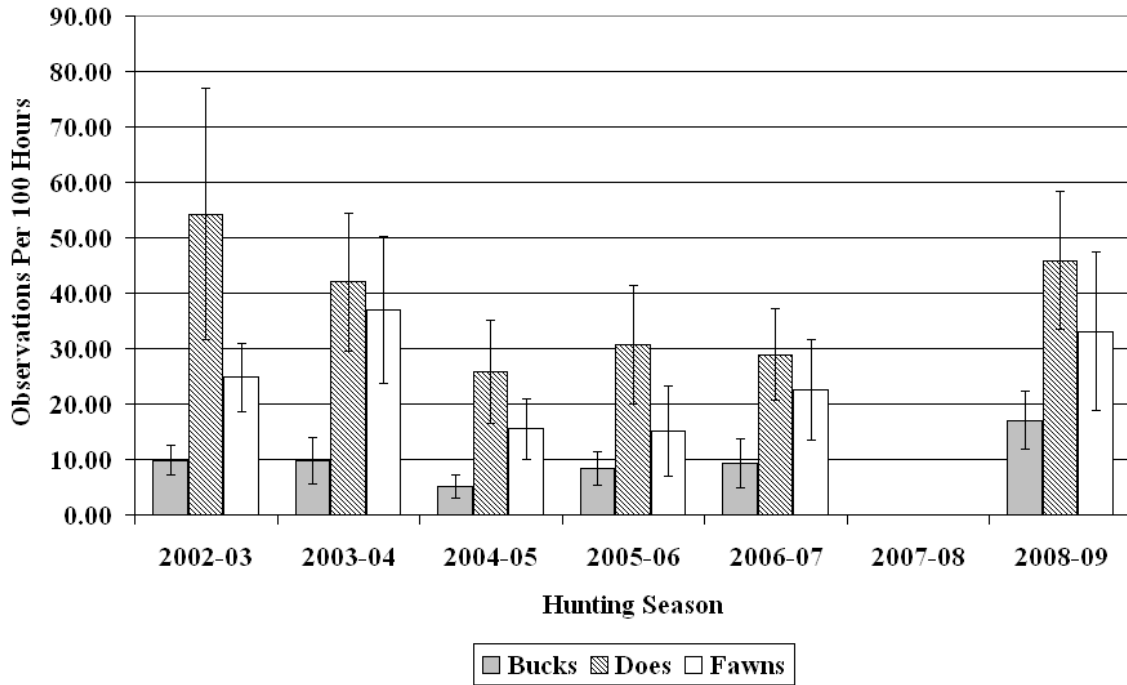


Figure 10. Deer observation rates by archery hunters in Maryland (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

### Appalachian Plateau Province



### Ridge & Valley Province

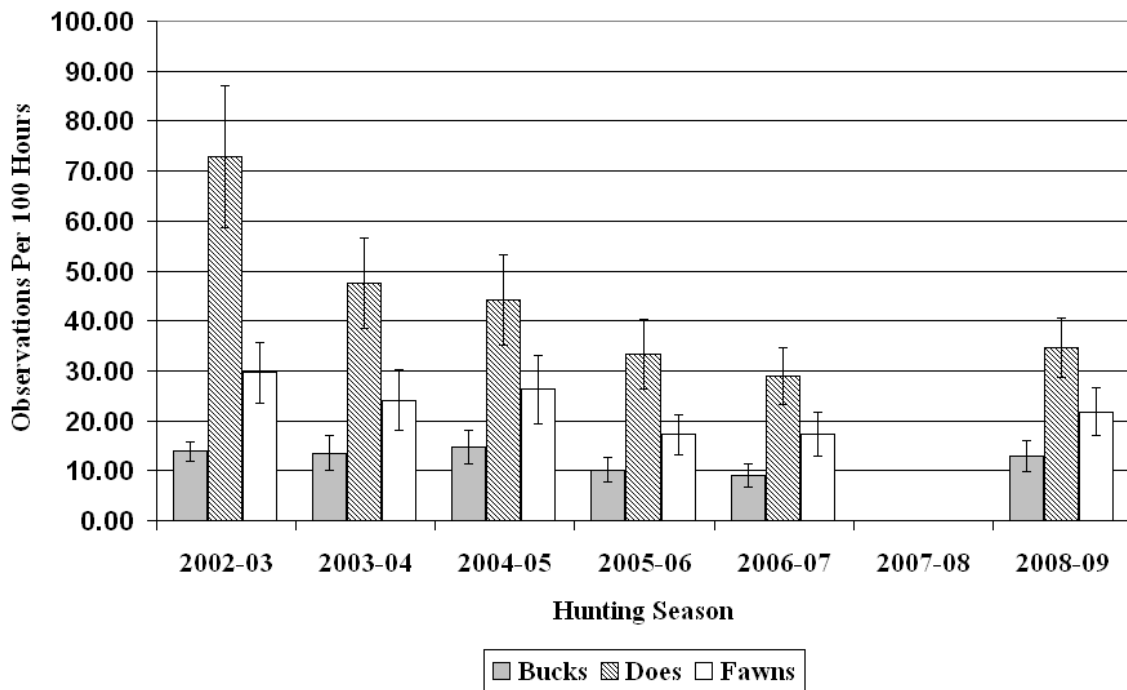


Figure 11. Deer observation rates by archery hunters in the Appalachian Plateau and Ridge and Valley provinces of Maryland (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

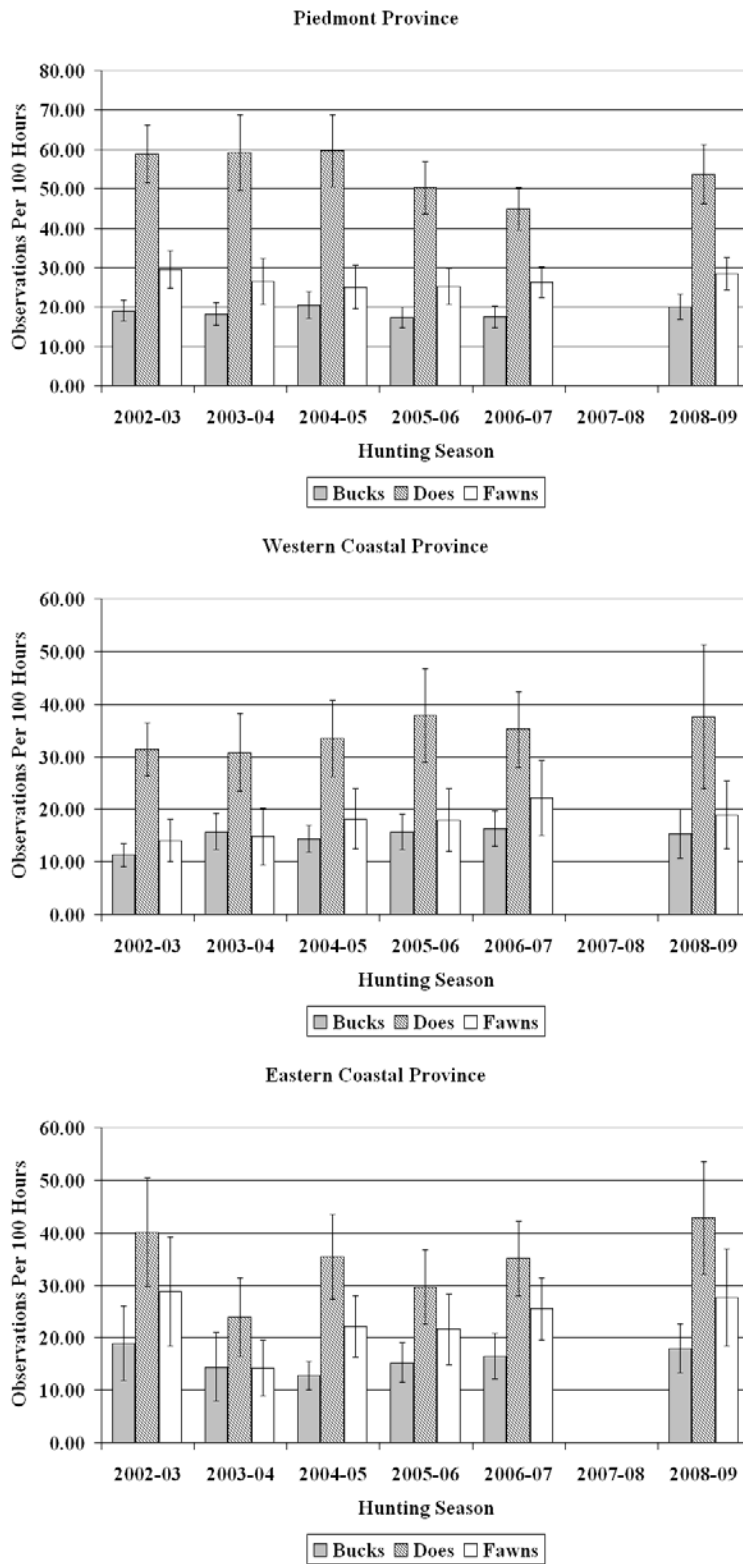


Figure 12. Deer observation rates by archery hunters in the Piedmont, Western Coastal and Eastern Coastal provinces of Maryland (2002-03 - 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

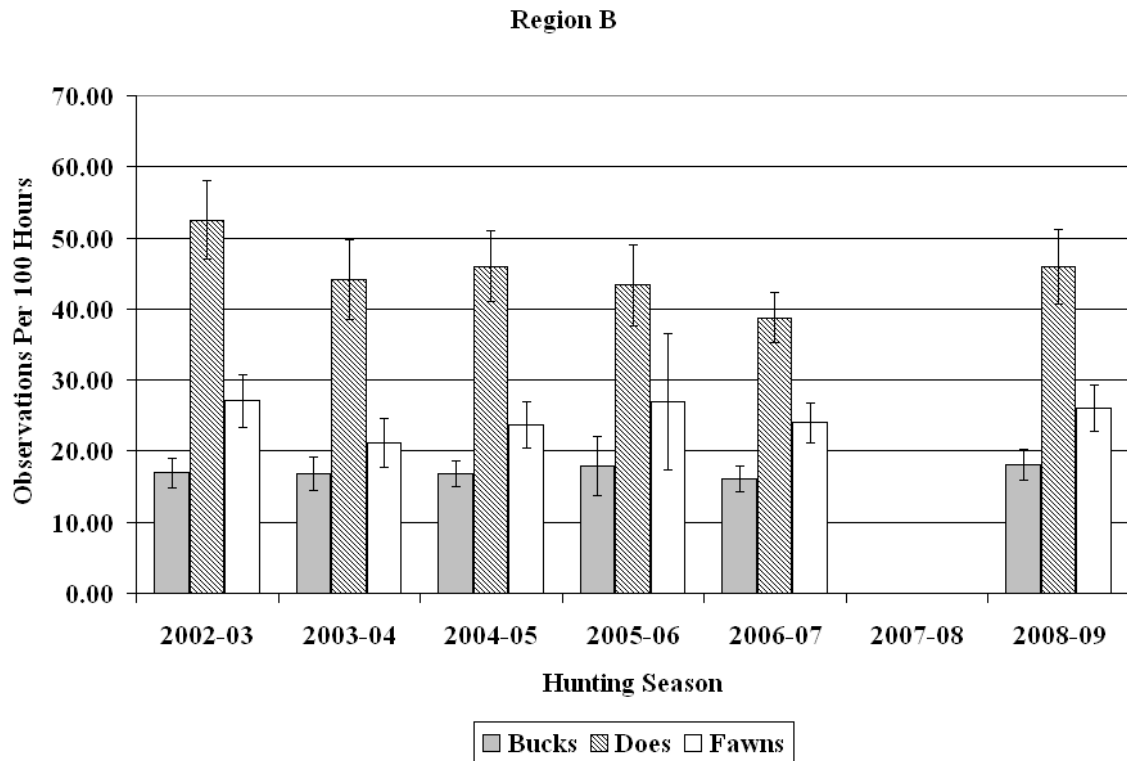
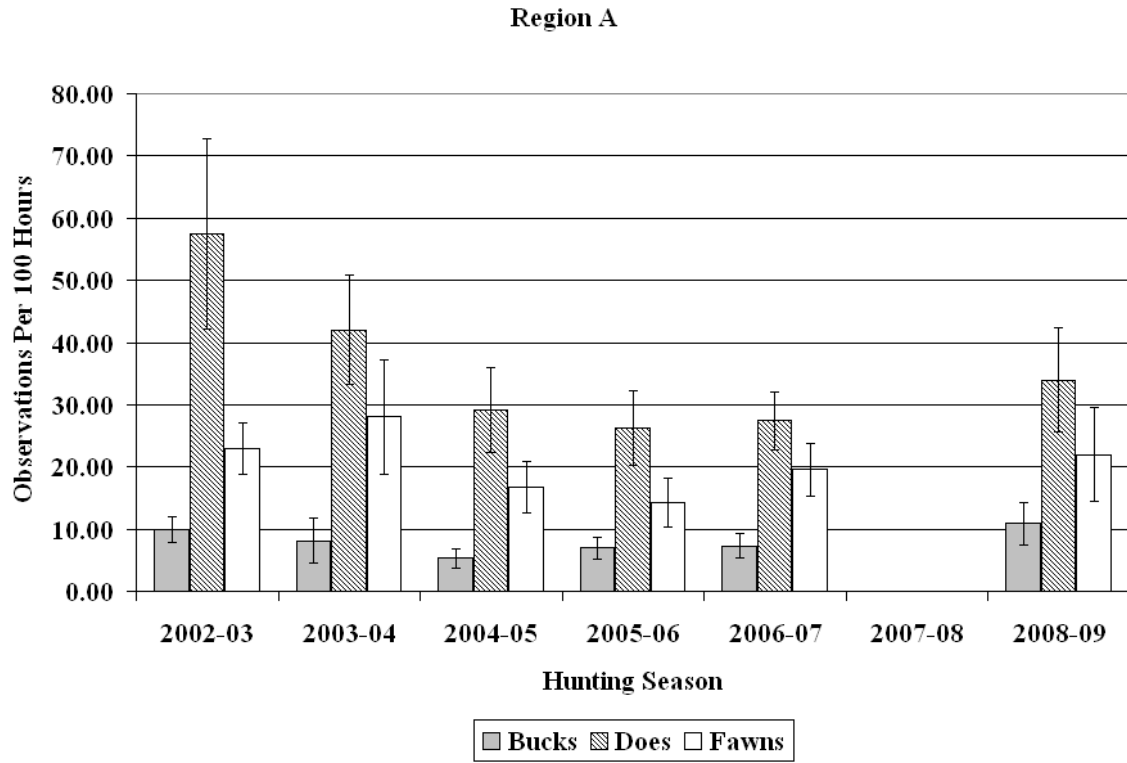


Figure 13. Deer observation rates by archery hunters in Maryland Deer Management Region A & B (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

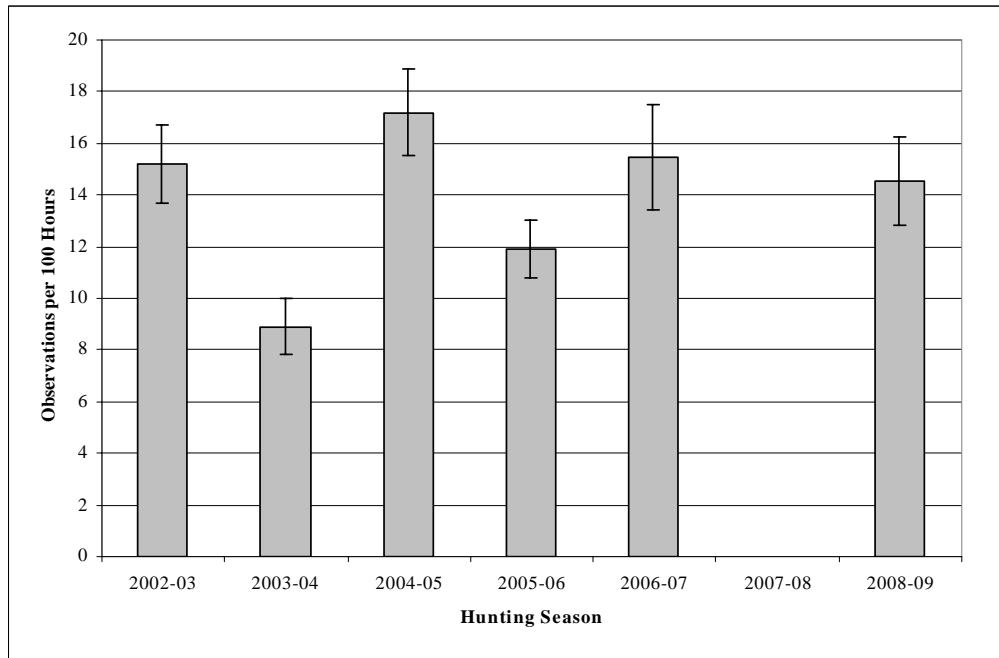


Figure 14. Wild turkey observation rates by archery hunters in Maryland (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

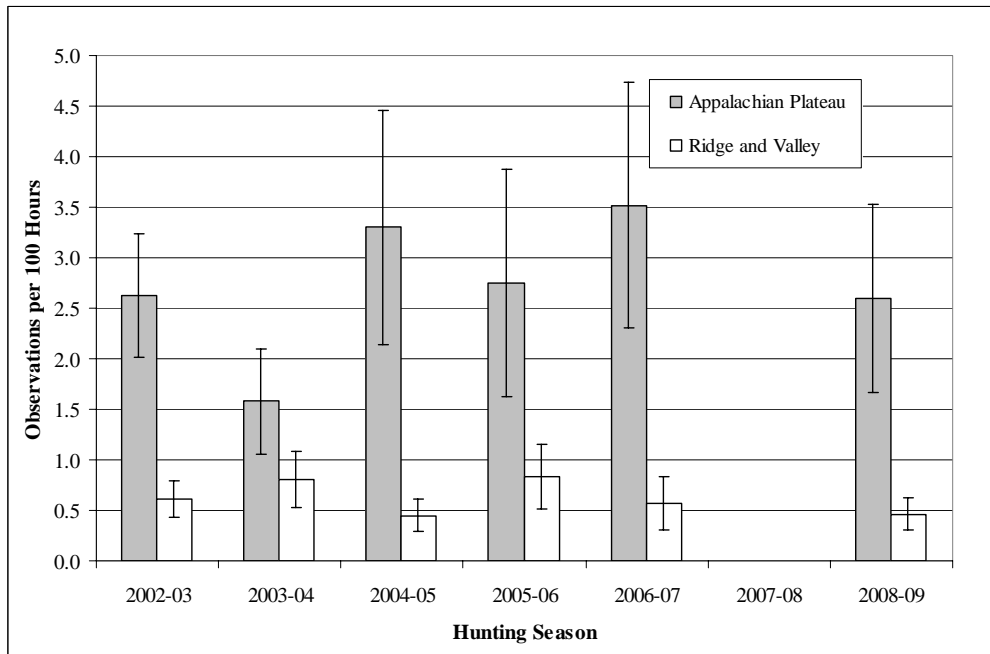


Figure 15. Ruffed grouse observation rates by archery hunters in the Appalachian Plateau and Ridge and Valley provinces of Maryland (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.

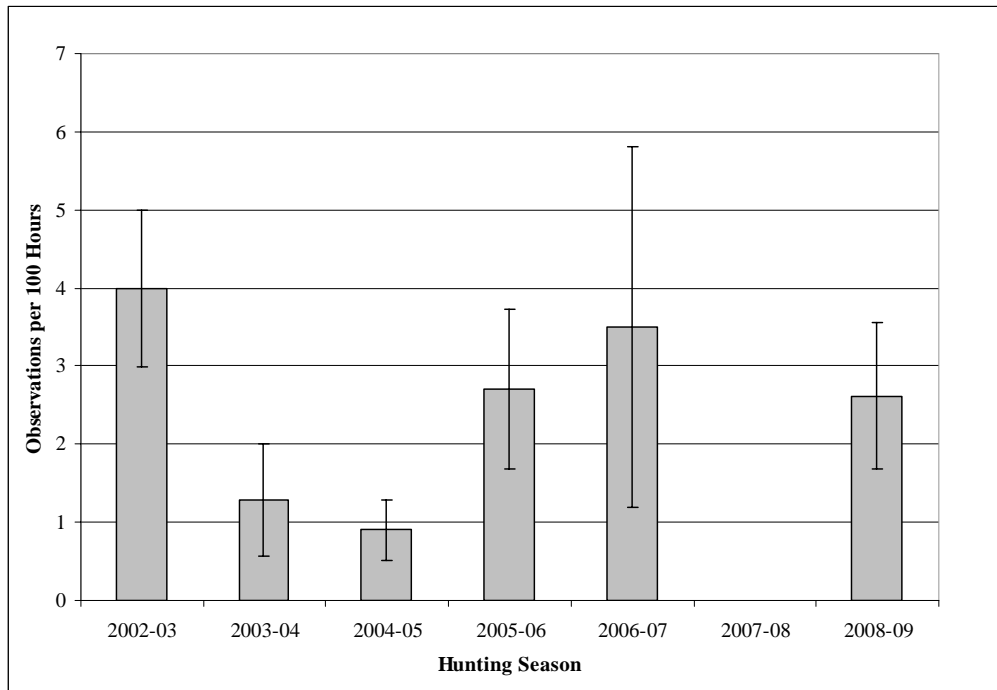


Figure 16. Bobwhite quail observation rates by archery hunters in the Eastern Coastal Province of Maryland (2002-03 – 2008-09). Insufficient data precluded analysis of the 2007-08 bowhunter survey.