

Wild Turkey and Upland Game Birds 2007-2008 Annual Report

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INTRODUCTION

The Wild Turkey and Upland Game Bird Project manages populations and habitats of wild turkeys, ruffed grouse, bobwhite quail, and ring-necked pheasants. Although each of these species is managed differently due to their unique ecology, they are all important in providing recreational opportunities in Maryland through hunting and other wildlife-dependent recreation.



The restoration of the wild turkey ranks among the greatest conservation success stories in Maryland history. Photo courtesy of the National Wild Turkey Federation (NWTf).

Less than 50 years ago, only a few hundred turkeys remained in Maryland following years of unrestricted hunting and habitat loss. Fortunately, the DNR initiated a restoration effort that resulted in what many would rank among the most successful wildlife conservation success stories in the state's history. Wild turkeys now number over 30,000, providing recreation for over 10,000 turkey hunters and countless wildlife enthusiasts and citizens. Turkey hunting alone results in an economic benefit to Maryland of nearly \$5 million every year. The Upland Game Bird Project monitors population levels, develops hunting regulations, and conserves habitat that will keep these birds around for future generations.

A different and more daunting challenge faces the Upland Game Bird Project with bobwhite quail. Although the distinctive whistle of the bobwhite was once a common sound in Maryland's



Brushy thickets and weedy fields like this will need to be restored in order to reverse the decline of bobwhite quail.

agricultural areas, the number of quail is now less than 10% of what it was just 40 years ago. Despite widespread belief that foxes, hawks, or agricultural chemicals are to blame, the main culprit is simply loss of habitat. If the brushy thickets and grasslands that quail depend on are not restored, not only will their "bob-white" call be missed, but a treasured part of our hunting heritage and symbol of rural Maryland life will be gone forever. One of the greatest challenges of the Upland Game Bird Project is ensuring that these magnificent birds are here to stay. Habitat continues to be lost and farmers and landowners will need to make difficult

decisions about their land and how they use it if we hope to reverse the decline. We assist landowners to create habitat in their fields and forests, work within our agency to improve our network of public lands, and educate the public about what they can do to help.

As with quail, ruffed grouse need a specific type of habitat to survive. Grouse are restricted to the western mountainous counties and are primarily found in young forests. They inhabit areas that have been timbered or where wind or insect damage has created a mosaic of thick, brushy forests that have good cover and abundant food. These types of habitat are becoming increasingly rare in certain places, so the Upland Game Bird Project works to make sure that young forests remain a valuable component of our mountain landscapes.

WILD TURKEY

2008 Poults Production

Wild turkey reproductive success varies from year to year, largely dependent on weather conditions during the nesting and early brood rearing period. Ultimately, reproduction affects population growth rates, hunter success, and fall and spring harvests. For these reasons, it is important to monitor how many young turkeys, or poults, are produced each year. Turkey reproduction is monitored annually using a summer wild turkey observation survey. A total of 5,939 turkeys were recorded by the 104 individuals or groups that returned survey forms in 2008. In 2007, 5,008 turkeys were seen by 95 participants. However data from June and September were excluded in the summary this year.



The annual turkey observation survey is an effective method to monitor reproductive success annually.

This limited the sample 3,741 turkeys sighted in 504 observations. Statewide, the number of poults observed per hen was slightly below-average at 2.2 this year. However production appeared to be exceptionally variable throughout Maryland this year. Below is a summary of some of the highlights from each region. More detailed information can be found in Tables 1 and 2.

Western Region – Survey participants in the western region saw fewer poults per hen (2.7) than previous years. However turkey numbers remain strong in the mountains. Selected observers that also record mileage saw 13.3 turkeys per 1,000 miles, slightly higher than the 12.6 turkeys per 1,000 miles seen in 2007 and well above the long-term average of 9.8 turkeys per 1,000 miles. Nesting success appeared to be good with a large portion of the hens sighted with broods (83%). Although reproduction on a per-hen basis was slightly below-average, the high numbers of breeding hens in the region should mean that turkeys will remain abundant in the coming year.

Central Region – The productivity index in the central region was similar to the western region at 2.7 poults per hen. Poor reproduction seems to be typical in the region, and this year's modest estimate was the 2nd highest since 2003. Seventy-three percent of hens were sighted with broods,

suggesting moderate nesting success. Turkey populations in the region are low in most areas, but this year's increase in poult production should bolster numbers where suitable habitat is available.

Southern Region – Observers in the southern region saw excellent numbers of poults this year. The productivity index of 3.9 poults per hen was well above the previous 5-year average of 2.3. Although fewer participants in the region results in a smaller sample than some of the other regions, the data certainly suggest that turkeys fared well this summer. Over 90% of all hens observed had poults and number of poults per brood was also very high (9.3). Turkey numbers have been increasing to varying degrees in southern Maryland and this year's production should further help to boost local populations.

Upper Eastern Shore – The 2008 production index of 2.4 poults per hen in the upper shore counties is well below-average for the region. This region has seen steady population growth over the previous 4 years due to exceptionally high reproductive success. Harvest and anecdotal reports suggest turkeys have been booming and increasing their range into unoccupied areas. Although the decrease in production may limit the previously rapid growth of turkey populations in the region, there should not be a noticeable drop in turkey numbers.

Lower Eastern Shore – This was not a good year for turkeys in the lower 4 counties on the Eastern Shore. Participants only saw 1.4 poults per hen, lower than last year's estimate of 2.2 and well below the previous 5-year average. This is the 3rd year out of the last 6 that less than 2 poults per hen were observed. As a result, the high turkey populations enjoyed in the early 2000's have declined in most areas. However the drop in numbers has not been uniform. Based on anecdotal reports, it seems that some parts of the region still hold excellent populations, while others have experienced a substantial decline.

2008 Fall Season



Fall turkey hunters took advantage of seasonable weather and increased numbers of young turkeys during the 1-week season that ended on November 1, 2008. A total of 215 wild turkeys were reported harvested, up about 5% from the 2007 season harvest of 205. Fall turkey hunting is only permitted in the 3 westernmost counties.

Allegany County reported the highest harvest with 100 turkeys, followed by Garrett (80) and Washington (35). (Figure 1, Table 3). Long term declines in fall harvest are likely related to decreasing hunter participation. The most recent hunter mail survey estimates that fall hunter numbers have declined from 15,000 in 1975 to less than 2,000 currently.

Table 1. Wild turkey production indices (poults per hen), 2003-2008.

Region¹	2003	2004	2005	2006	2007	2008	Previous 5-yr Ave.
Western	3.1	4.4	3.7	3.6	3.4	2.7	3.6
Central	1.5	2.8	1.9	2.3	1.6	2.7	2.0
Southern	2.9	4.2	2.2	0.6	1.7	3.9	2.3
Upper Eastern Shore	3.1	4.1	4.7	3.7	4.6	2.4	4.1
Lower Eastern Shore	1.5	4.5	1.9	3.2	2.2	1.4	2.7
Statewide	2.1	4.3	2.7	3.2	2.7	2.2	3.0

¹Regions defined as:

Western – Garrett, Allegany, Washington

Central – Frederick, Carroll, Baltimore, Harford, Howard, Montgomery, Anne Arundel

Southern – Prince George's, Calvert, Charles, St. Mary's

Upper Eastern Shore – Cecil, Kent, Queen Anne's, Talbot, Caroline

Lower Eastern Shore – Dorchester, Wicomico, Worcester, Somerset

Table 2. 2008 Wild turkey observation survey data.

Region¹	No. of Observations	Hens	Poults	Gobblers	Unknown	Total	% Brood Hens²	Poults per Hen	Poults per Brood Hen	Poults per Brood
Western	188	398	1067	159	105	1729	83.4	2.7	3.2	9.2
Central	29	30	81	9	19	139	73.3	2.7	3.7	6.2
Southern	25	31	121	33	3	188	90.3	3.9	4.3	9.3
Upper ES	42	83	203	19	11	316	71.1	2.4	3.4	7.3
Lower ES	220	350	492	156	371	1369	48.6	1.4	2.9	6.7
Statewide	504	892	1964	376	509	3741	68.5	2.2	3.2	8.1

¹ Regions defined in Table 1 footnote.

² Brood hen = a hen observed with young.

Maryland Spring and Fall Wild Turkey Harvests, 1970-2008

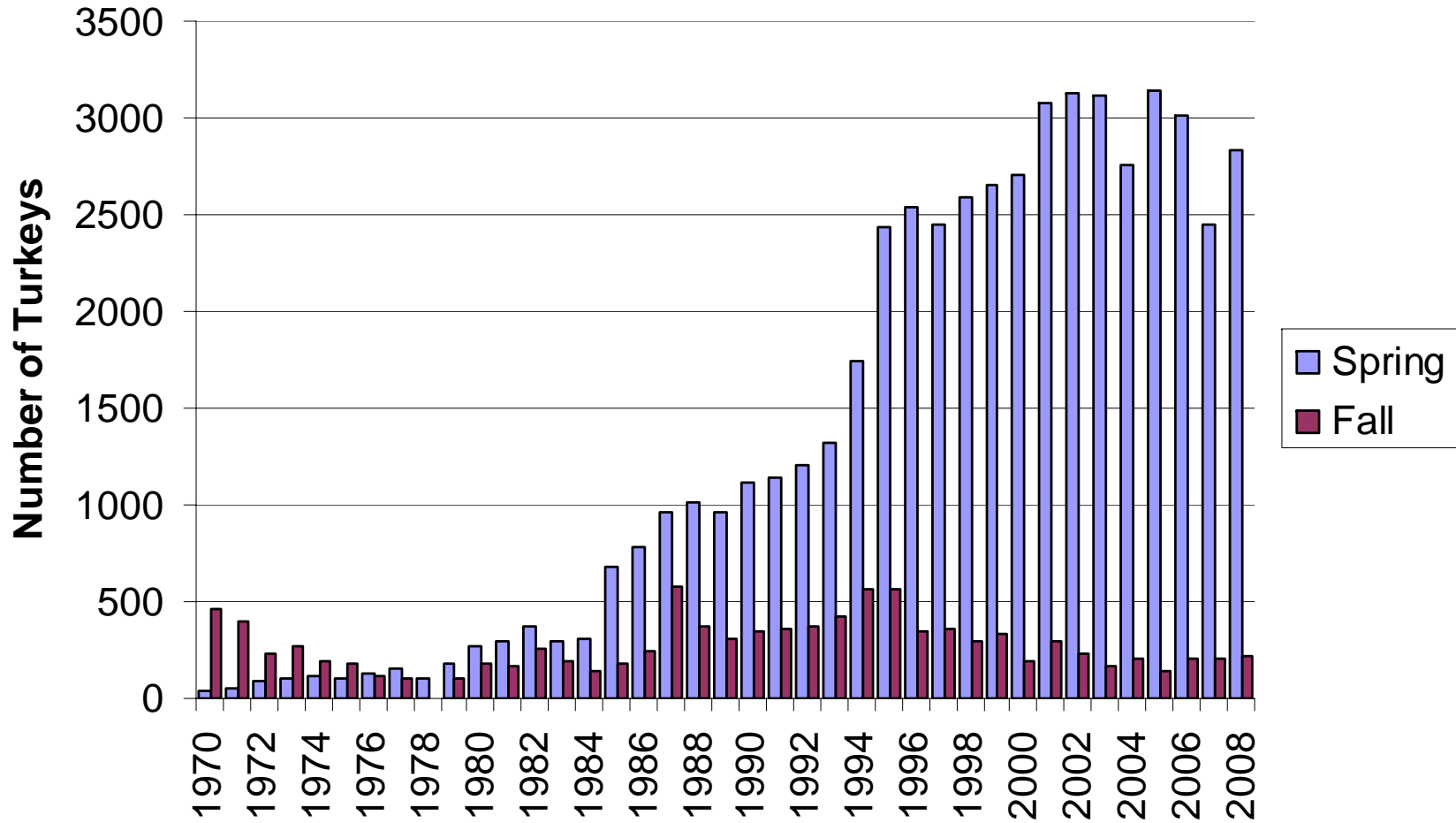


Table 3. Maryland's reported fall turkey season harvest.

County	2003	2004	2005	2006	2007	2008	%Change 2007-2008	10-year Average
Allegany	70	107	54	80	78	100	28.2	95
Garrett	59	67	46	80	88	80	-9.1	86
Washington	35	33	37	45	39	35	-10.3	38
Total	164	207	137	205	205	215	4.9	219

2008 Spring Season

Maryland's 2008 regular spring turkey season occurred April 18-May 23 and a 1-day youth hunt was held on April 12. Hunters reported taking 2,833 wild turkeys during the 2008 spring turkey season, a 15% increase from the 2007 harvest of 2,455 turkeys (Figure 1, Table 4). Nearly 1,200 turkeys were taken in the 1st week; 30% more than last year's opening week. Spring turkey hunters were greeted by excellent weather early in the season, providing ideal conditions to hear and call to gobblers. Harvest throughout the remainder of season was similar to previous years.

The harvest data agreed with brood surveys conducted by DNR in the last few summers, showing that young gobblers, called jakes, were less abundant in most regions this year. The number of jakes reported was below average, comprising only 22% of the harvest. Junior hunters took 134 turkeys during the 1 day youth hunt held on April 12, representing an increase of 24% over the 2007 youth day harvest. As in the past, the western mountain counties lead the state in harvest; Allegany reported 345 turkeys, followed closely by Garrett (327) and Washington (281). Dorchester (242), Worcester (206), and Charles (193) counties also reported good numbers.

Although spring turkey hunting in Maryland has grown tremendously in popularity since the 1970's, it appears that participation in this season has stabilized and possibly declined in the past several years. The most recent hunter mail survey estimated that about 10,000 spring turkey hunters hunted approximately 45,000 days. About 25% of spring gobbler hunters are successful in bagging a turkey.



Table 4. Spring turkey harvest statistics.

County	Spring Turkey Harvest							% Change 2007-2008	Breeding Density index	10-year Average
	2002	2003	2004	2005	2006	2007	2008			
Allegany	336	332	337	328	331	259	345	33.2	1.00	330
Anne Arundel	67	59	75	70	65	47	61	29.8	0.35	54
Baltimore	14	20	21	24	28	27	34	25.9	0.14	20
Calvert	94	110	64	53	59	40	53	32.5	0.47	81
Caroline	42	50	47	66	75	79	107	35.4	0.91	58
Carroll	17	13	10	28	24	15	20	33.3	0.19	16
Cecil	13	8	10	17	10	24	27	12.5	0.16	17
Charles	223	198	183	213	227	209	193	-7.7	0.78	191
Dorchester	322	325	289	332	265	205	242	18.0	1.34	292
Frederick	159	171	136	163	148	115	152	32.2	0.61	146
Garrett	490	431	325	365	342	303	327	7.9	0.76	419
Harford	26	37	44	47	59	37	61	64.9	0.36	38
Howard	3	2	5	3	7	1	2	100.0	0.05	3
Kent	41	39	36	44	50	47	62	31.9	0.74	39
Montgomery	44	40	31	56	56	50	37	-26.0	0.34	45
Prince George's	102	92	78	83	95	55	70	27.3	0.39	76
Queen Anne's	68	60	59	80	82	73	127	74.0	0.95	68
Somerset	201	230	169	215	204	137	132	-3.6	0.84	177
St. Mary's	45	43	61	96	62	59	59	0.0	0.56	50
Talbot	46	62	42	49	80	74	102	37.8	1.35	57
Washington	296	325	305	340	322	269	281	4.5	1.62	292
Wicomico	192	169	164	180	164	134	133	-0.7	1.00	167
Worcester	286	304	269	284	253	196	206	5.1	0.90	251
State	3127	3120	2760	3136	3008	2455	2833	15.4	0.72	2887

Population Status

A variety of data is used to monitor Maryland's wild turkey population. If seasons and bag limits are relatively constant, spring harvest has been shown to be an accurate method to estimate, or index, turkey densities and population trends. A Breeding Density Index (BDI) has been calculated for each county based on the spring harvest over the last 3 years (Table 4). The BDI provides a relative index to turkey densities by county.

The Western Region's vast forests have traditionally harbored the highest densities of turkeys in the state and are still a stronghold. Turkeys appear to be exceptionally abundant in Washington County. However, turkey densities in some areas of the Eastern Shore rival those of the western mountains. Large harvest increases in counties such as Caroline, Talbot, and Queen Anne's suggest turkey populations in portions of the Eastern Shore continue to expand and grow. Dorchester and Talbot counties lead the Eastern Shore in terms of turkeys harvested per square mile. Populations seem to have declined in the last few years on the Lower Eastern Shore counties such as Wicomico and Somerset, likely due to several consecutive years of poor reproduction. Turkeys continue to do well in portions of southern Maryland, with Charles county holding the highest densities. Generally, low to moderate densities are found in the central, more urbanized region of Maryland, but pockets of birds can be found if sufficient habitat is present.

RUFFED GROUSE

Population Status and Hunting

Ruffed grouse inhabit the forested mountains of Garrett, Allegany, Washington, and Frederick Counties. They have been a traditional staple for Western Region upland game bird hunters for decades. Data suggests that ruffed grouse populations in Maryland have remained somewhat stable since the mid-70s. However, the number of Maryland grouse hunters continues to decrease. This parallels the decline in participation of other small-game hunting, such as quail, squirrel, and rabbit. The DNR's Hunter Mail Survey for the 2006-2007 season reported an estimated 1,800 grouse hunters in Maryland. The typical grouse hunter spent average of 4 days afield and harvested about 1 grouse in the 2006-07 season. Although the number of grouse hunters has declined in recent years, success rates have remained stable or increased in the last few years. A grouse hunter survey was initiated in the 2008-09 hunting season. Cooperating hunters will record the number of grouse flushed and bagged per hour. This information should allow us to better estimate grouse population trends in the region.



Although ruffed grouse are limited to the Western mountains, they provide exciting hunting for many Maryland upland bird hunters

Appalachian Cooperative Grouse Research Project

From 1996-2002, Maryland DNR participated in the Appalachian Cooperative Grouse Research Project (ACGRP). This long-term research project included study areas in Maryland, Virginia, West Virginia, Ohio, Kentucky, North Carolina, Pennsylvania, and Rhode Island. The major objective of this cooperative research effort was to determine factors influencing ruffed grouse populations in the Appalachian region of the ruffed grouse range. Research included determining grouse survival rates, reproductive rates, and causes of mortality. An additional goal of the project was to determine the effect (if any) that late season grouse hunting may have on the population.

Final Appalachian Cooperative Grouse Research Project Report

Maryland Study Site (Mt. Nebo WMA) Data Summary

Overall, data were collected on 3,118 ruffed grouse captured on the 12 study sites from September 1996 through October 2002. General results indicated that the ecology of Appalachian ruffed grouse differs from northern ruffed grouse populations (i.e., Great Lake States) where aspen offers good food and aspen forest management creates an abundance of cover. Adult survival tended to be higher in the Appalachians, but reproductive success was lower. Within the Appalachians, grouse populations differed between areas dominated by mixed-mesophytic cover types and oak-hickory dominated sites.

Specific, significant findings of the ACGRP include:

- Spring pre-breeding diets in Great Lake States ruffed grouse were dominated by aspen buds whereas in the Appalachians diets were more variable, with oak mast, herbaceous and evergreen leaves, and flowers being most prevalent. Appalachian diets tended to be of lower nutritional quality than that of northern birds feeding on aspen.
- The nutritional condition of females in the Appalachians prior to nesting was quite variable, and body fat levels showed a strong relationship to acorn availability, with higher body fat being found where acorns were available. When female body fat was less than 11% chick survival was lower.
- Nest success ranged from 52% to 87% across the sites and years studied. Successful nests tended to be over 100 m from openings in pole-size timber stands with dense understories.
- Chick survival was extremely low compared to studies from other areas. Chick survival to 35 days averaged 22%. Chick survival was higher on mixed-mesophytic sites (35%) than on oak-hickory dominated sites (21%).
- A radio-telemetry study of chick survival found that mortality of 118 chicks was evenly distributed between exposure (44%) and predation (44%).
- Nest and re-nest rates were lower in oak-hickory areas (86% and 3.2%, respectively) than in mixed-mesophytic sites (100% and 45%, respectively).

- Overall adult survival was 43% across all sites and years. Annual survival rates were higher on oak-hickory sites (50%) than mixed-mesophytic sites (39%). Survival was higher in the spring-summer period and lower in fall-winter, and did not differ between age or sex classes.
- A hunting experiment was conducted on 7 sites over the 6-year study. Hunting mortality on these sites was compensatory. Hunting was only 12% of all mortality on average, and ranged from 0% to 35% across sites and years; we cannot conclude or infer that hunting would be compensatory at higher harvest rates.
- The primary cause of adult mortality was avian predation (44%) followed by mammalian predation (26%).
- Ruffed grouse generally selected early successional habitats, or sites that had the high stem densities characteristic of early successional habitats. Females with broods selected sites that had higher than average herbaceous cover and greater arthropod abundance than random sites.
- Home ranges were calculated for 1,054 grouse based on 67,814 telemetry locations. Adult and juvenile females and juvenile males had larger home ranges than adult males. Females with broods had larger home ranges (39 ha) than females whose broods failed (15 ha). In oak-hickory sites, both female and male home ranges increased following years of acorn failure (20 ha to 52 ha in females and 7 to 27 ha in males).

Management suggestions include:



Over 3,000 grouse were equipped with radio-transmitters for the ACGRP.

- Maintain current harvest levels and seasons; populations are not limited by current hunting levels.
- Increases in populations are most likely to come from habitat management. In mixed-mesophytic areas “traditional” early successional grouse management will likely be successful. This should emphasize using timber harvest techniques that will provide a diversity of young-aged stands interspersed among mature forests.
- In oak-hickory dominated sites, forest management should strive to provide both food (acorns) and cover (early successional habitat) needs of grouse in close proximity.
- Roads can be managed by gating and planting preferred herbaceous foods to supplement existing natural foods.

BOBWHITE QUAIL AND RING-NECKED PHEASANT

Population Status

Once a mainstay for upland game bird enthusiasts in much of the state, northern bobwhite (often called bobwhite quail) and ring-necked pheasant populations have declined significantly in the last few decades. Information on trends of quail and pheasant populations comes from two sources. The Breeding Bird Survey estimates quail and pheasant population trends and is coordinated by the United States Fish and Wildlife Service (USFWS). It also monitors the status of many other breeding birds. The Breeding Bird Survey estimates a population decline of nearly 5% per year for quail since the mid-1960s and an even steeper fall for pheasants. This equates to more than a 90% reduction in numbers of both species over the last 40 years. Quail populations have suffered most severely in central and western Maryland but less so on the lower Eastern Shore.



The sharp decline of quail and pheasants is not a problem specific to Maryland. Every Eastern state within their range has experienced similar drops. It is likely that a combination of factors have interacted to suppress these game birds. Without a doubt, habitat loss and fragmentation has been, and continues to be, the greatest detriment to upland game birds. Quail and pheasants are early-successional species, meaning they inhabit areas that have recently been disturbed. Fallowed fields, brushy fencerows, and recently cleared forests are examples of early-successional habitats. Throughout the middle part of the 1900s, this type of habitat was abundant. However, farming became more efficient and forests matured. Cleared hedgerows, fields that are tilled every year, suburbia, and old forests result in little suitable habitat for these species.

With fewer acres of habitat, predators, pesticides, and “clean-farming” methods become more detrimental to quail populations. As these birds become concentrated in smaller areas of habitat, predators become more efficient. Predators will always take their share of quail and eggs; but if the population is large, the effect is minimal. Increased use of herbicides and insecticides kill naturally occurring food sources that are required by upland birds to survive. Furthermore, advancements in farming technology allow farmers to harvest hay and other crops sooner, more quickly, and “cleaner” than in the past. These methods potentially destroy nests, kill birds, and leave little or no cover after crop harvest.



Nest predators can hunt more efficiently when habitat is limited. A camera at this Virginia quail nest documented these raccoons.

Habitat Incentives for Landowners

A variety of cost-share and incentive programs are now available to help landowners and farmers restore vital habitat. With these and other programs, landowners now have all the options they need to make their property ideal for quail and other wildlife. Much more habitat is needed, and anyone concerned about the possible loss of quail or pheasants from Maryland's landscape should educate others about the importance of providing habitat. Support for programs like the CRP is critical to the restoration of early-successional habitat and the wildlife it supports. Below is a brief summary of some of the state and federal initiatives currently available to help create and enhance quail habitat. **For information about any of these programs or quail management in general, please contact Bob Long, Maryland DNR's Upland Game Bird Project Manager, at blong@dnr.state.md.us or 410-221-8838, ext. 106.**

Incentive programs that can be used to establish and manage quail habitat on private lands:

Program	Requirements	Benefit to Quail	Type of assistance
"Bobwhite Buffers" program	Establish planted or fallow buffers along edges of crop fields	Nesting, brood rearing and feeding habitat; Year-round habitat if shrubs included	Cost-share for establishment + annual per-acre rental payments
Conservation Reserve Program (CRP)	Plant grasses, shrubs and/or trees on agricultural lands	Nesting, brood-rearing, or winter habitat depending on plantings	Cost-share for establishment + annual per-acre rental payments
Conservation Reserve Enhancement Program (CREP)	Establish grass, shrub and/or tree buffers on cropland near water bodies or wetlands	Nesting, brood-rearing, or winter habitat depending on plantings	Cost-share for establishment + annual per-acre rental payments + various other incentives
Wildlife Habitat Incentive Program (WHIP)	Various practices available including grass/shrub plantings, hedgerow restoration, and field edge feathering	Nesting, brood-rearing, or winter habitat depending on practice implemented	Cost-share for establishment or management