An Evaluation of Georgia's Public Mourning Dove Hunting Demand and Opportunity

Gregory D. Balkcom, *Georgia Wildlife Resources Division, Game Management Section, 1014 M. L. King Jr. Drive, Fort Valley, GA 31030*

Bobby T. Bond, *Georgia Wildlife Resources Division, Game Management Section, 1014 M. L. King Jr. Drive, Fort Valley, GA 31030*

Abstract: Georgia's Wildlife Resources Division (WRD) provides managed dove fields that are open for public dove hunting. Our goal was to examine public mourning dove hunting demand and opportunity in Georgia along with the spatial and temporal distribution of each. We defined public fields as fields owned or operated by WRD and open to any properly licensed hunter, and we defined public demand as the number of hunters that utilized those fields. We used a hunter survey to estimate the number of public dove hunters, their county of residence, the average number of days afield, and the timing of their hunting activities. We estimated opportunity provided by WRD dove fields in hunter-days for the entire season, by season segment, and by county. In 2015–16, Georgia had 54,679 total dove hunters who averaged 4.43 days afield or 242,226 hunter-days of total demand. Public demand accounted for 33,912 hunter-days, or 14% of total demand. WRD public dove fields provided 201,957 hunter-days of mourning dove hunting opportunity, which more than exceeded public hunting demand. However, temporal demand was not met on opening day, and spatial demand was not met in 90 counties on opening day or in 77 counties during the September segment. Agencies should consider both temporal and spatial demand when assessing public dove hunting opportunity and should emphasize opening day and early season opportunities near urban areas when possible.

Key words: Georgia, hunting, mourning dove, opportunity, *Zenaida macroura*

Journal of the Southeast. Association of Fish and Wildlife Agencies 4:73–79

The mourning dove (*Zenaida macroura*) is the leading game bird species in North America (Baskett and Sayre 1993). During the 2014–2015 hunting season, nearly 840,000 dove hunters harvested 13.8 million doves in the United States (Raftovich et al. 2015). Mourning doves are hunted across the country, but perhaps nowhere more intensely than in the south (Russell 1993). Madson (1978) stated that dove hunting in the south is both a tradition and an institution.

Mourning dove hunting is Georgia's most popular type of small game hunting (Responsive Management/WRD 2016). Georgia's Wildlife Resources Division (WRD) provides public dove hunting opportunity through managed dove fields on our Wildlife Management Areas (WMA) across the state. Mourning doves fall under the jurisdiction of the U.S. Fish and Wildlife Service who determines the framework for all dove hunting regulations, including opening and closing date ranges, season length, bag limit, and possession limits. State wildlife agencies then select their specific dove season regulations within those federal frameworks. In 2015–16, Georgia had a 90-day mourning dove hunting season that was broken into three segments, September, October, and late season. The dates for each season segment were September 5–20, 2015, October 10–November 1, 2015, and November 26, 2015–January 15, 2016.

Beginning in 2013, Georgia WRD made an effort to increase public mourning dove hunting opportunity, in part, through the use of a Voluntary Public Access and Habitat Incentive Program grant (VPA; USDA 2014). A portion of this grant money was used to lease fields from private landowners and open them to public dove hunting. Increasing the amount of public land or increasing public access to private lands was suggested by Poudyal at al. (2008) as a means of retaining hunters. The VPA program also meets the suggestions of Schulz et al. (2003) that dove fields, especially near urban areas, can provide opportunities to recruit new hunters. In addition to recruiting new hunters, the VPA fields were an agency effort to meet hunter demand for public dove hunting opportunity because hunters are finding it increasingly difficult to find places to hunt doves (Braun et al. 1993).

Our goal was to examine public mourning dove hunting demand and opportunity in Georgia along with the spatial and temporal distribution of each. We defined public fields as fields owned or operated by WRD and open to any properly licensed hunter, and we defined public demand as the number of hunters that utilized those fields. Specifically, we calculated the demand for public dove hunting in Georgia by estimating the number of hunters, average days afield, spatial distribution of hunters, and the timing of demand. We then calculated the available dove hunting opportunity by summing the number of fields, hectares of fields, days open to hunting, spatial distribution of fields, and timing of open days. Comparing these values allowed us to assess whether or not Georgia's public dove hunting opportunity was meeting demand.

Methods

Georgia WRD operates WMAs across the state and in all five physiographic regions. Habitat management for many species of

wildlife occurs on these WMAs, including the management of fields for mourning doves and dove hunting. For this analysis, we included only fields that we considered to be managed dove fields. These were planted in common agricultural crops and manipulated by mowing, disking, and/or burning prior to hunting. Most fields were planted with more than one crop, and the most common crops planted were millets (*Urochloa ramosa*, *Panicum miliaceum*, or *Pennisetum glaucum*), winter wheat (*Triticum aestivum*), sunflower (*Helianthus annuus*), and sorghum (*Sorghum bicolor*). We did not include areas surrounding openings that may have been pasture or other unmanaged open areas.

Assessing Demand

We used the results of our 2015 small game hunter survey to estimate public dove hunter demand (Responsive Management/WRD 2016). This was a telephone survey of licensed Georgia resident hunters. We estimated the total number of mourning dove hunters in Georgia and their number of days afield. Hunters were asked if they hunted doves on private fields, public fields, or both. We estimated the number of public mourning dove hunters by multiplying the total number of mourning dove hunters times the percent that utilize public dove fields. We calculated total public demand in terms of hunter-days by multiplying the percent of public land dove hunters times the number of days afield. We realize that this may be a conservative estimate of demand because this survey only includes hunters who actually hunted doves and does not include hunters who may have applied for quota dove hunts and were not selected and would have answered "no" to their use of public dove fields. Without knowing how many non-selected applicants may have hunted on other, non-quota fields, we thought it best to exclude the quota database in our estimation.

We determined temporal and spatial distribution of demand by asking hunters what county they lived in, how far they would be willing to drive to a dove field, and which season segment they typically hunted: 1) Opening day only, 2) September, 3) October, 4) Late season, or 5) All season. We calculated public demand in hunter-days per season segment using a multi-step process. First we recorded the percent of public dove hunters who hunt in each of these four categories: opening day only, September, October, and late season. For the public dove hunters who selected "all season" or "don't know" as the response that best described when they hunt, we distributed that percentage of hunters across the other four categories based on the proportion of hunters already in those categories. For opening day, we used the percent of hunters who selected "Opening day only" as their answer plus the percent of hunters who selected "September" as their answer, assuming that they hunted opening day as well as other days in September. We then multiplied the percent of public dove hunters that hunt in each season segment by the total number of public dove hunters to get the number of public dove hunters in each season segment.

Using the number of hunters in each season segment and the average number of days afield, we could estimate demand in hunter-days on a temporal scale. Because there is only one opening day, the number of hunters in the field equaled the number of hunter-days of demand for that day. To calculate hunter-days of public demand for each of the remaining season segments, we used a three-step process: 1) we subtracted the hunter-days of public demand on opening day from the total hunter-days of public demand to estimate hunter-days of demand for the remainder of the season, 2) we divided the remaining number of hunter-days by the number of dove hunters who utilized the remainder of the season to estimate the average number of days afield, and 3) for each remaining season segment, we multiplied the number of public dove hunters per season segment times the average number of days afield to estimate hunter-days of public demand per segment.

To estimate demand on a spatial scale, we first summarized the percent of public dove hunters per county. Using our estimate of hunter-days of public demand per season segment, we calculated public demand in hunter-days per county by multiplying public demand in hunter-days with percentage of public dove hunters in each county. This calculation was completed for opening day and for all three remaining season segments.

Assessing Opportunity

We tabulated number of WRDs managed dove fields, hectares of dove fields, days open for hunting, timing of open days, and spatial distribution of dove fields. Type of dove hunting opportunity varied and included quota, adult-child, and general hunts. Quota hunters had to apply prior to the season and be selected to hunt. Adult-child hunts were limited to adults accompanying children under age 18. General hunts were open to any properly licensed hunter. We calculated opportunity in terms of hunter-days for each managed dove field by multiplying the size of the field in hectares times the number of hunters it could support times the number of days the field was open for hunting. We then summed all fields to estimate total opportunity. We assumed two hunters per 0.405 ha on non-quota fields and used the quota number for quota fields.

We assessed temporal distribution of opportunity by summing the number of days and hunter-days that the fields were open in each of the following season segments: 1) Opening day, 2) September, 3) October, and 4) Late Season.

We analyzed spatial distribution of opportunity using Arc GIS 10.0 (ESRI 2011). We created a GIS point coverage of all public dove fields. We created a buffer around each field and distributed the

hunter-days of opportunity into surrounding counties. The width of the buffer was equal to the distance that hunters responded they were willing to drive to hunt at a managed dove field. Because straight line distances as used to create buffers are different than road km which contain curves, we generated a correction factor to equate road km to straight line distance. Using ArcGIS, we randomly selected 19 routes across 5 physiographic regions and measured road km between two locations, and then measured straight line km between the same two locations. Road distance (km) divided by the straight line distance (km) gave us the correction factor to create buffer distances based on kilometers of road.

The number of hunter-days for each field was spread throughout the buffered area and assigned to counties within the buffer based on the percent of the buffer occupied by each county. Where buffers overlapped, we summed the number of hunter-days available across buffered areas. Finally, we tallied the number of hunter-days in each county, and we compared county-level hunter-days of opportunity to county-level demand. Because fields are open at various times of the season and for varying numbers of days, these results change for each season segment. We completed this analysis for opening day and all three remaining season segments.

Comparing Demand and Opportunity

We compared the actual number of hunter-days of demand with hunter-days of opportunity on a statewide basis. We used a chi-square analysis to determine if the distribution of days when WMA or VPA fields were open was similar to the distribution of days within the statewide season. We used a chi-square analysis to determine if the temporal distribution of hunter-days of opportunity by season segment was similar to the temporal distribution of hunter-days of demand by season segment. We used GIS analysis to map hunter-days of demand and opportunity by county and season segment, and then determined which counties had a surplus or deficit of public dove hunting opportunity by season segment.

Results

Assessing Demand

Survey results indicate there were 54,679 ± 1609 ($\bar{x}$ ± 95% C.I.) total mourning dove hunters in Georgia who spent 242,226 ± 6276 days afield in 2015–16, or about 4.43 days afield per hunter (Responsive Management/WRD 2016). Of all dove hunters, only 14% hunted on public land for a total of 7655 public mourning dove hunters. Assuming that public and private land dove hunters spend the same amount of time afield, there are 33,912 hunter-days of public dove hunting demand in Georgia.

When asked to choose the timeframe that best described when they hunted, dove hunters responded as follows: Opening Day Only 34%, September 22%, October 4%, Late Season 9%, All Season 30%, and Don't Know 1%. Redistributing the 30% that selected "All Season" and the one percent that responded "Don't Know" into the three remaining categories based on the current proportion in each category leads to a revised distribution of Opening Day Only 34%, September 41.5%, October 7.5%, and Late Season 17%. Assuming that September hunters would also hunt on opening day, we estimated hunter-days of demand in each season segment as follows: Opening Day 5779; September 16,504; October 3578; and Late Season 8051 (Table 1).

The 7655 public dove hunters are distributed across the state, and are typically associated with metropolitan areas (Figure 1). Public demand in hunter-days by county ranged from 496 in Cobb County

Table 1. Temporal distribution of public mourning dove hunting demand in Georgia, 2015–16.

	Opening Day	September	October	Late
Hunters (%)	75.5	41.5	7.5	17.0
Hunters (*n*)	5779	3176	577	1299
Days afield	1	5.2*	6.2	6.2
Hunter-days	5779	16,504	3578	8051

* = September days afield are different than October and Late Season because one day from September is applied to opening day.

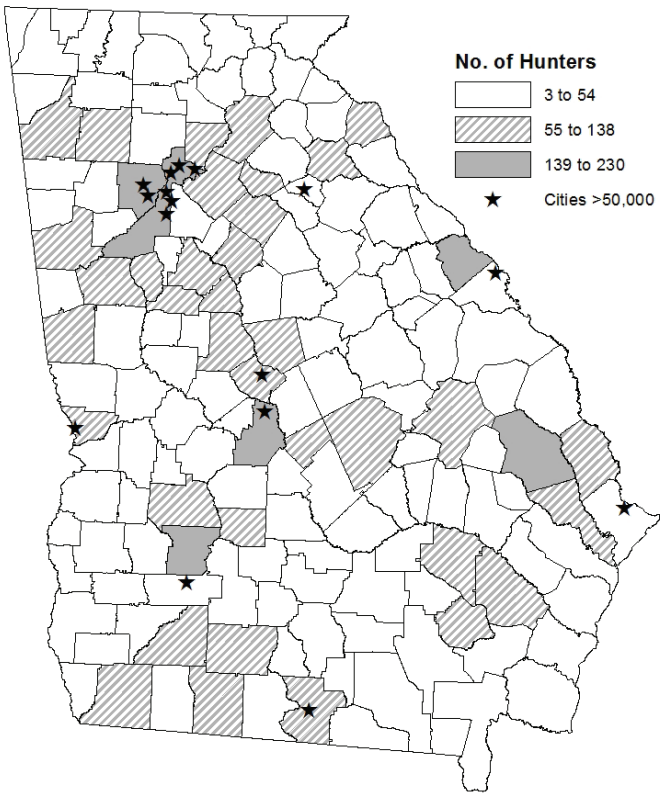

Figure 1. Number of public mourning dove hunters by county and location of cities with a population greater than 50,000 in Georgia, 2015–16.

during the September segment to one hunter-day in Towns County during the October segment.

Assessing Opportunity

In 2015, there were 47 public dove fields open for hunting either on WMAs or VPAs. The fields averaged 25.5 ha each for a total of 1200.3 ha. Across all seasons the fields were open an average of 45.5 days each and could sustain up to 5674 hunters at any given time except opening day, when many fields were governed by quotas and limited to 4630 hunters. The fields provided 201,957 hunter-days of mourning dove hunting opportunity across the entire season (Table 2). This total is not the simple combination of 47 fields x 25.5 ha x 2 hunters $ha^{-0.405}$ x 45.5 days (total 269,879 hunter-days) because fields of different sizes were open for varying numbers of days, and some fields had quotas less than 2 hunters $ha^{-0.405}$.

Temporally, Georgia's 90-day statewide mourning dove hunting season in 2015–16 was broken into three segments of 16, 23, and 51 days respectively. The initial 16 days can then be separated into opening day and the 15 days thereafter. Therefore, the four season segments were 1, 15, 23, and 51 days in length. Of the 90-day total season length, the percent days of opportunity allowed in each respective statewide segment was as follows: Opening day 1.1%, September 16.7%, October 25.6%, and Late Season 56.7%. The percent days of opportunity on our public dove fields by season segment was as follows: Opening day 1.9%, September 7.9%, October 25.1%, and Late Season 65.1%. The percent hunter-days of opportunity on our public dove fields by season segment was as follows: Opening day 2.3%, September 8.6%, October 25.6%, and Late Season 63.5%.

For the spatial distribution of opportunity, an 80.47 km buffer was used around each field. The buffer correction factor was 1.18 road km per one km of straight line distance. Hunters were willing to drive 95.11 km, which equated to a straight line distance of 80.47 km. Hunter-days of opportunity from each public dove field were distributed across every county in Georgia. Total public opportunity in hunter-days by county ranged from 2177 in Meriwether County in the late segment to two in Towns County on opening day.

Comparing Demand and Opportunity

In total number of hunter-days of public dove hunting, Georgia's opportunity of 201,957 hunter-days exceeds public demand of 33,912 hunter-days. The distribution of days when hunting is allowed on WMAs does not differ from the distribution of days within the overall statewide season ($\chi^2 = 6.43$, df = 3, $P = 0.0923$). While not statistically significant, there was less opportunity offered in September, and more opportunity offered in the late season when compared to the distribution of days in the statewide season. The distribution of hunter-days of opportunity on WMAs differs significantly from the distribution of hunter-days of demand ($\chi^2 = 133.79$, df = 3, $P < 0.01$; Table 3). There was a higher percentage of demand than opportunity early in the season, and a higher percentage of opportunity than demand later in the season. However, the actual opportunity provided by WRD in terms of hunter-days exceeded demand in each season segment except opening day (Table 3).

Table 2. Temporal distribution of mourning dove hunting opportunities on Georgia's managed public dove fields, 2015–16.

	Opening Day	September	October	Late
Fields (*n*)	44	44	35	36
Hectares	1049.3	1065.5	710.6	750.3
Hunters (*n*)	4630	4432	3174	3203
Days open	1	4.05	16.31	40.05
Hunter-days	4630	17,299	51,762	128,266

Table 3. Temporal comparison of public mourning dove hunter-day (%) demands and opportunities on Wildlife Management Areas (WMAs) in Georgia, 2015–16.

	Demand by hunters	Opportunity on WMAs
Opening Day	5779 (17.0)	4630 (2.3)
September	16,504 (48.7)	17,299 (8.6)
October	3578 (10.6)	51,762 (25.6)
Late	8051 (23.7)	128,266 (63.5)
Total	33,912 (100)	201,957 (100)

Spatial analysis for each season segment indicated that there were both deficits and surpluses of hunter-days of opportunity by county (Figures 2–5). On opening day, 90 out of Georgia's 159 counties had a deficit of opportunity of up to 160 hunter-days, and 64 counties had a surplus of opportunity of up to 90 hunter-days (Figures 2 and 3). During the September segment, 77 counties had a deficit of opportunity of up to 409 hunter-days, and 82 counties had a surplus of up to 530 hunter-days (Figures 4 and 5). During the October segment, opportunity exceeded demand in all counties except Stephens and Cook Counties with deficits of five and one hunter-days, respectively. During the Late segment, opportunity exceeded demand in all counties except Cook County with a deficit of seven hunter-days.

Discussion

Mourning dove hunting was Georgia's most popular small game hunting activity; however, a surprisingly small proportion of those hunters used public dove fields. Our finding that 14% of Georgia dove hunters used public dove fields during the 2015–16 hunting season (Responsive Management/WRD 2016) was similar to 16% of dove hunters in North Carolina indicating they had hunted on

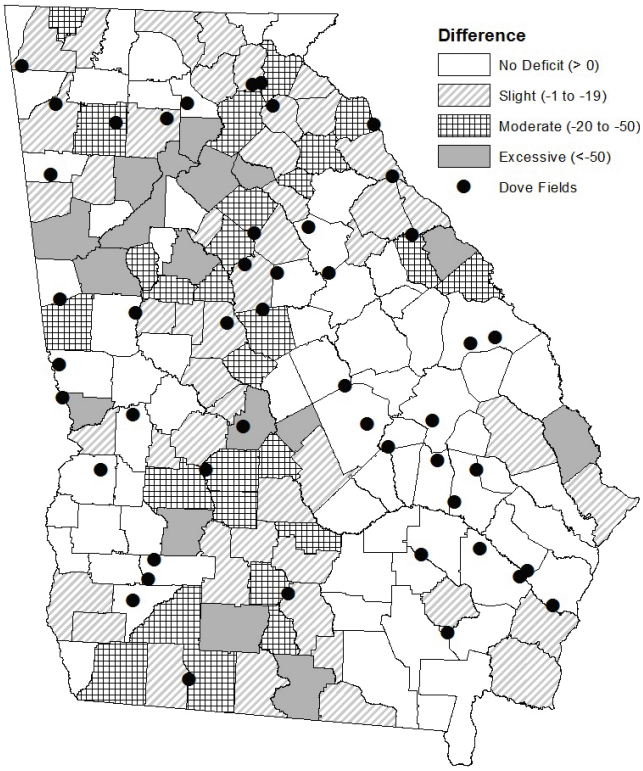

Figure 2. Deficit of public mourning dove hunting opportunity (difference of opportunity minus demand) by county on opening day of dove season and dove field locations in Georgia, 2015–16.

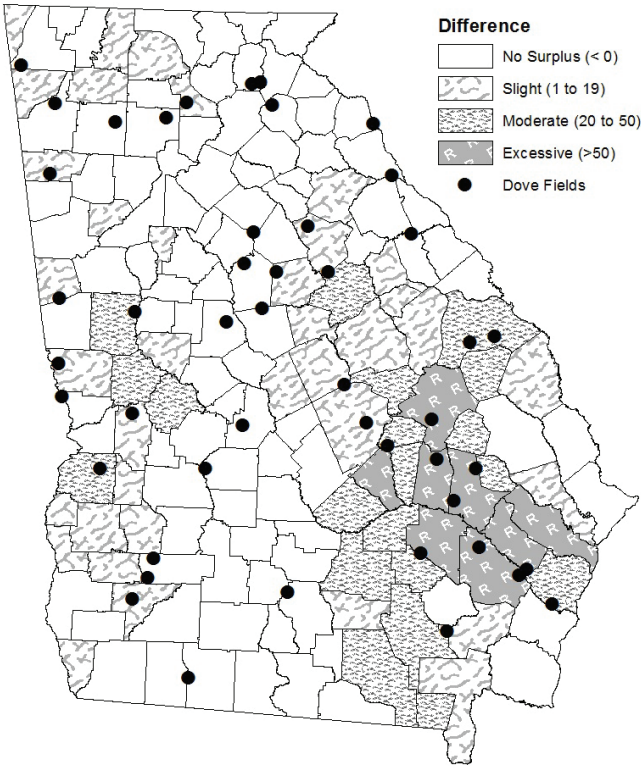

Figure 3. Surplus of public mourning dove hunting opportunity (difference of opportunity minus demand) by county on opening day of dove season and dove field locations in Georgia, 2015–16.

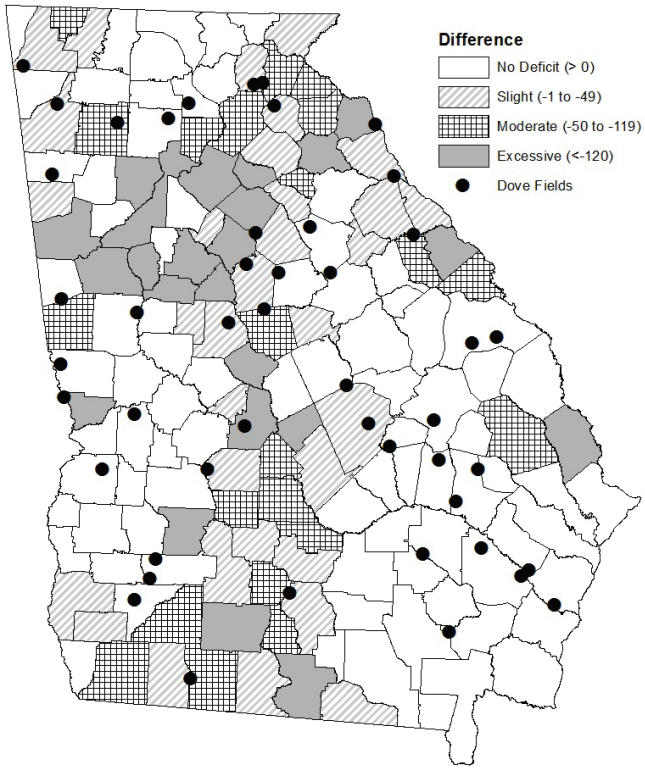

Figure 4. Deficit of public mourning dove hunting opportunity (difference of opportunity minus demand) by county during the September segment of dove season and dove field locations in Georgia, 2015–16.

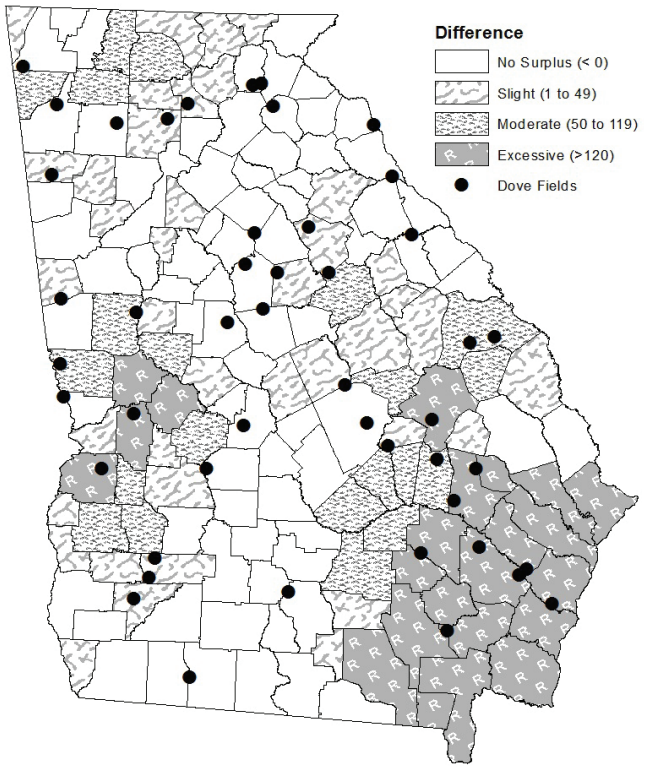

Figure 5. Surplus of public mourning dove hunting opportunity (difference of opportunity minus demand) by county during the September segment of dove season and dove field locations in Georgia, 2015–16.

NCWRC game lands (Fuller et al. 2012). Baskett (1993) reported results of a multi-state survey of agency biologists in 1987 that indicated little use of public land in southern states by dove hunters.

In terms of statewide, season-long, hunter-days of opportunity, public dove hunting opportunity provided by WRD's managed dove fields far exceeded public demand, and nearly met statewide total demand (both public and private). However, timing and location of that opportunity may need to be improved to meet local demand at different times of the hunting season.

The distribution of the number of days the fields are open did not differ from the distribution of days within the statewide season. However, in terms of hunter-days, there was a difference in the timing of opportunity compared to demand. Most hunters preferred to hunt the early season segment but most of the opportunity was in the late season segment. In a survey of North Carolina dove hunters, 85% of their hunting effort was in the first two weeks of the season and 70% of the hunters did not hunt in either the second or third segment of the season (Fuller et al. 2012), which closely matches our result showing that only about 25% of hunters utilized the last 2 season segments. One reason for limited opportunity in Georgia during the early segment was WRD's philosophy of providing quality opportunity as well as quantity of opportunity. Manfredo et al. (2004) reported that providing a broad range of hunting opportunities would result in a broader range of benefits to the hunting public. Some of these fields are quota only, and past surveys have shown that hunters rate the lottery system as either a very appropriate or an appropriate way to allocate limited hunting opportunities (Glass and More 1992). Forty-five percent of North Carolina's dove hunters felt that public dove hunting areas were too crowded (Fuller et al. 2012). By limiting access to some fields by using quota regulations, WRD was attempting to alleviate similar concerns from Georgia hunters. WRD provided various types of opportunity across it's dove fields during the early portion of the season by making some of the fields open on a quota basis, some open only on Saturdays, and others open every day during the statewide season. By limiting access through quotas and closed days, hunt quality may have been improved on those fields, but hunter opportunity in terms of total hunter-days was limited on opening day and during the September segment.

Spatially, many of the public dove hunters in Georgia were located in counties near or around Atlanta where 55% of Georgia's residents live (U.S. Census Bureau 2014; Figure 1). Other large cities such as Albany, Athens, Augusta, Columbus, Macon, Savannah, Valdosta, and Warner Robins also had many public dove hunters either in the same county or in the suburbs in a nearby county (Figure 1). These areas typically had the highest number of hunters and the highest deficits in terms of hunter-days of opportunity. Conversely, many of WRD's public dove fields were in rural or agricultural areas because our WMAs are typically rural, and VPA fields are easier to acquire in agricultural landscapes. The availability of several VPA fields in southeastern Georgia led to a surplus of opportunity, especially in the October and Late segments in this geographic area.

WRD provided an ample number of hunter-days of public dove hunting opportunity to meet the overall demand for public dove hunting in Georgia, but there appeared to be some improvements that could be made in the spatial and temporal distribution of that opportunity to more completely satisfy the demand. This spatial analysis could be used as a decision support tool to assist WRD in targeting specific locations for additional public dove fields, either on existing WMAs or through the VPA program.

Management Implications

Based on this analysis, there seemed to be four main points to consider when assessing public mourning dove hunting opportunity. (1) Agencies should consider both the temporal and spatial opportunity and demand in addition to overall statewide demand. Simply estimating the number of public dove hunters in your state and how many days they go afield will not provide an accurate picture of their hunting demand. Temporal and spatial information are a necessity. (2) Agencies should focus resources (e.g. time and money) on fields that will be available to hunters on opening day or the remainder of the September segment because that is when demand is highest, but also provide some late season opportunity for those who choose to hunt later and want quality fields to utilize. (3) Agencies should strive to increase the hectares of available fields in close proximity to population centers where demand is highest (Poudyal et al. 2008, Schulz et al. 2003). Suburban counties around major metropolitan areas appear to have the largest hunter numbers; therefore, managed dove fields should be located within driving distance of these population centers. (4) Agencies should consider having more days open on existing fields during the early segment when demand is highest, as was suggested by Douglass et al. (2014). Opening dove fields for more days during the early segment would provide more hunter-days at no additional monetary cost to the agency; however, there may be costs in hunt quality.

Acknowledgments

We thank all of current and former Georgia Wildlife Resources Division staff who worked on managed dove fields across the state. We thank J. Bowers for reviewing an earlier draft of this manuscript. Project funding was provided by the Wildlife Restoration Program and the Georgia Wildlife Resources Division. The findings and conclusions in this article are those of the authors and do

not necessarily represent the views of the Georgia Department of Natural Resources.

Literature Cited

Baskett, R. K. 1993. Hunting in the midwest. Pages 485–494 in T. S. Baskett, M. W. Sayre, R. E. Tomlinson, and R. E. Mirarchi, editors. Ecology and management of the mourning dove. Stackpole Books, Harrisburg, Pennsylvania.

Baskett, T. S. and M. W. Sayre. 1993. Characteristics and importance. Pages 1–6 in T. S. Baskett, M. W. Sayre, R. E. Tomlinson, and R. E. Mirarchi, editors. Ecology and management of the mourning dove. Stackpole Books, Harrisburg, Pennsylvania.

Braun, C. E., N. J. Silvy, T. S. Baskett, and R. E. Tomlinson. 1993. Research and management needs. Pages 507–513 in T. S. Baskett, M. W. Sayre, R. E. Tomlinson, and R. E. Mirarchi, editors. Ecology and management of the mourning dove. Stackpole Books, Harrisburg, Pennsylvania.

Douglass, K. E., D. T. Cobb, and P. D. Doerr. 2014. Hunter use of publicly managed mourning dove fields. Journal of the Southeastern Association of Fish and Wildlife Agencies 1:150–155.

ESRI. 2011. ArcGIS Desktop: Release 10. Environmental Systems Research Institute, Redlands, California.

Fuller, J., D. Palmer, C. Baranski, R. Jacobs, M. Jones, and K. Knight. 2012. 2011–12 North Carolina dove hunter survey. North Carolina Wildlife Resources Commission, Raleigh, North Carolina.

Glass, R. J. and T. A. More. 1992. Satisfaction, valuation, and views toward allocation of Vermont goose hunting opportunities. Research Paper NE-668. U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station, Radnor, Pennsylvania.

Madson, J. 1978. The mourning dove. Winchester Press, East Alton, Illinois.

Manfredo, M. J., P. J. Fix, T. L. Teel, J. Smeltzer, and R. Kahn. 2004. Assessing demand for big-game hunting opportunities: applying the multiple-satisfaction concept. Wildlife Society Bulletin 32:1147–1155.

Poudyal, N., S. H. Cho, and J. M. Bowker. 2008. Demand for resident hunting in the southeastern United States. Human Dimensions of Wildlife 13:158–174.

Raftovich, R. V., S. C. Chandler, and K. A. Wilkins. 2015. Migratory bird hunting activity and harvest during the 2013–14 and 2014–15 hunting seasons. U.S. Fish and Wildlife Service, Laurel, Maryland.

Responsive Management/Georgia Wildlife Resources Division. 2016. Harvest of small game in Georgia. Georgia Department of Natural Resources, Wildlife Resources Division, Social Circle, Georgia.

Russell, D. M. 1993. Hunting in the south. Pages 475–484 in T. S. Baskett, M. W. Sayre, R. E. Tomlinson, and R. E. Mirarchi, editors. Ecology and management of the mourning dove. Stackpole Books, Harrisburg, Pennsylvania.

Schulz, J. H., J. J. Millspaugh, D. T. Zekor, and B. E. Washburn. 2003. Enhancing sport-hunting opportunities for urbanites. Wildlife Society Bulletin 31: 565–573.

U.S. Census Bureau, Population Division. 2014. Annual estimates of the resident population: April 1, 2010 to July 1, 2014. <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>. Accessed 23 March 2016.

U.S. Department of Agriculture. 2014. Voluntary public access and habitat incentive program. < http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/farmbill/?cid=stelprdb1242739>. Accessed 24 March 2016.