

2003 Survey of Game Lands Users in North Carolina



June 2009

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Executive Summary

Introduction

The North Carolina Wildlife Resources Commission (WRC) administers approximately 2 million acres in the Game Land Program. Game Lands (GLs) are principally managed for hunting and fishing, but are also open for other forms of outdoor recreation. In 2003, there were approximately 67 GLs in the GL program: 33 in the Coastal (Districts 1, 2, and 4), 20 in the Piedmont (Districts 3, 5, and 6, and 14 in the Mountain (Districts 7, 8, and 9) WRC regions of North Carolina. A portion of the funding for GL acquisition of GLs comes from North Carolina's Clean Water Management and Natural Heritage Trust Funds. Additional funding for GLs is provided Federal Aid in Wildlife Act monies and through other federal and state agencies. We conducted this study to gather information on GL user demographics, hunting and fishing behaviors, use of particular GLs, management priorities, and satisfactions.

Methods

Beginning in May 2003, we surveyed a random sample of 8,834 adults (≥ 16 years) that had licenses which allowed hunting and/or fishing on GLs. We used a modified version of the Tailored Design Method (Dillman 2000) and sent participants up to four mailings.

Selected Results

Note that many of these results are only representative of hunters and anglers who hunted or trout fished on GLs within the last three years. Other GL users (i.e., non-consumptive users) who are not hunters or anglers may have views which are quite different from those of hunters and anglers.

Respondents

A total of 3452 responded to the survey. The adjusted overall response rate for the survey (omitting addresses with errors and persons ineligible to respond) was 42%. Respondents ranged in age from 16 to 102 years (\bar{x} =46.8, median=45.0) and were older than the overall population of North Carolina (median=35.3, U.S. Census Bureau 2000). The proportion of respondents in many age groups was similar to the proportion of North Carolina resident hunters and anglers as determined by the 2001 National survey of fishing, hunting, and wildlife-associate recreation (USFWS 2001), while there was a much higher percentage of females in the 2001 survey of resident hunters and anglers (23%) than the percentage of female respondents to the GL survey (4%). Equal proportions of respondents lived in the Piedmont and Mountain regions of the state (38% for each region), while fewer lived in the Coastal region (18%) or were from out-of-state (6%).

Participation in wildlife and fisheries-related activities on GLs

Approximately 50% of respondents participated in non-consumptive (bird watching, camping, hiking, etc.) activities (51%) or deer hunting (49%) on GLs. Trout fishing (38%) and small game hunting (32%) were pursued by fewer respondents on GLs.

Over half (51%) of respondents indicated they had hunted and 38% reported fishing for trout on GLs within the last three years. Almost a third (31 %) had 'neither hunted nor trout fished.' Mountain residents (36%) were significantly more likely to have 'both hunted and trout fished' than expected, while Coastal (48%) and Piedmont (41%) residents were more likely than expected to have 'only hunted.' Significantly more out-of-state (66%) and Mountain (24%) residents than expected 'only trout fished.'

The most common reason for not hunting within the last three years was having ‘own lease’ or hunting ‘other lands’ (39%), followed by ‘do not hunt’ (29%). Seventeen percent of respondents who did not hunt were ‘not familiar with the GL program,’ 16% ‘felt unsafe hunting GLs,’ and over 10% said that ‘there are no GLs convenient to’ their home (13%) or ‘GLs are too crowded’ (12%). For those respondents who had not trout fished on GLs in the previous three years, the majority indicated that they ‘do not fish for trout’ (66%).

GLs used for hunting and trout fishing

Twenty two percent of respondents who hunted on one or more GLs in the past three years indicated having hunted on Uwharrie GL. Fewer had hunted on Pisgah (19%), Jordan (11%), Caswell (10%), Nantahala (10%), or Sandhills (10%) GLs. All of the remaining 63 GLs had been hunted by fewer than 10% of GL hunters. Over half (52%) of respondents who trout fished on one or more GLs in the past three years indicated having fished on Pisgah GL. Nantahala, Cherokee, and South Mountain GLs were also relatively popular, having been fished by 18% to 39% of GL trout anglers. Fewer than 15% of GL trout anglers fished on other GLs that offer trout waters.

Behaviors and preferences of GL hunters

Just over a third (35%) of GL hunters reported doing a majority of their NC hunting on GLs. A significantly higher proportion of Mountain (42%) and out-of-state residents (55%) did a majority of their NC hunting on GLs than expected.

Most GL hunters (78%) consider GL to be valuable because ‘hunting leases have become unaffordable.’ Mountain residents (82%) were more likely to believe that ‘GL is valuable because hunting leases have become unaffordable’ than expected; Coastal residents (74%) were significantly less likely than expected to believe that GLs were valuable for this reason. A strong majority (65%) of GL hunters said they would be ‘willing to pay higher fees to help the NCWRC provide and manage additional GLs for public hunting.’

Most GL hunters (58%) wanted deer to be supported for hunting on GLs. There were differences in preferences for game species to be supported by GLs based on region of GLs hunted. Mountain GL hunters (64%) were significantly more likely to favor deer and Coastal GL hunters (50%) were significantly less likely to favor deer than expected. Waterfowl was the preference by significantly more Coastal GL hunters (20%) than expected.

Both biological and social factors influence GL hunters’ enjoyment of hunting. Around a third of GL hunters (31%) indicated that ‘seeing lots of the species’ they are hunting had the greatest impact on enjoyment of GL hunting trips. Twenty percent of GL hunters said that ‘sharing the hunt with friends or family’ had the greatest impact on enjoyment. Only 12% of GL hunters indicated that the successful harvest of hunted species was the most important factor for enjoyment.

The Special Hunts Opportunities program (now called Permit Hunting Opportunities) is designed to offer hunters the opportunity to participate in hunts with low hunter densities. Roughly a third of GL hunters wanted to expand the Special Hunts Opportunities program (32%) or leave the program ‘as is’ (32%).

Some GLs only allow hunting three days per week. Three day hunts on ‘Thursday, Friday, and Saturday’ were preferred by GL hunters (39%) over ‘Monday, Wednesday, and Saturday’ (22%) and ‘Monday, Tuesday, and Wednesday’ (11%) hunts. However, 28% of GL hunters reported not hunting 3-day week GLs. Monday, Wednesday, and Saturday’ hunting was supported by significantly more Coastal GL hunters (28%) and hunters of GLs in two or more regions (29%) than expected.

Behaviors and preferences of GL trout anglers

About a quarter (26%) of GL anglers reported harvesting 0 to 2 trout on a typical trip to Hatchery Supported GLs waters. Half (50%) reported typically harvesting 3 to 7 trout per trip and 21% 'do not harvest trout.' GL trout anglers prefer Hatchery Supported (63%) to Delayed Harvest (33%) almost two to one for a Stocked Trout fishing program on GLs. Few GL anglers (4%) do not fish Stocked Trout Waters. For a trout stocking program on GLs, the 'current number and size of trout' was favored by 41% of GL anglers. Only 27% of GL anglers selected having 'fewer trout, but larger size' and 24% wanted 'more trout, but smaller size.' Nearly half (46%) of GL trout anglers wanted the number of special regulation trout streams on GLs (e.g., tackle restrictions, catch and release) to 'remain the same.' Fewer GL anglers wanted the number of special regulations to increase (27%) or decrease (18%). A plurality of GLs anglers (39%) favored increasing the number of Wild trout streams that allow the use of natural bait (i.e., Wild/Natural Bait) and nearly as many GL anglers (34%) wanted the number to 'remain the same.' A fifth (20%) wanted the number of such streams decreased. Wild Trout waters are not stocked by the NCWRC. Wild/Natural Bait designation (4 fish/day; 7" minimum size limit; no bait restrictions) was preferred by almost half (49%) of respondents.

Hunter and angler satisfaction with GL program

Over 68% of GL hunters and trout anglers indicated that they were 'satisfied' with 'roads/access,' 'level of disturbance by NCWRC employees,' and 'enforcement of wildlife/fisheries laws.' Similar proportions of GL hunters and anglers expressed being 'satisfied' (45%) as were 'dissatisfied' (42%) with the 'abundance of game/trout.' 'Level of disturbance by other GL users' had the highest proportion of 'dissatisfied' (42%) responses.

Significantly fewer hunters of Mountain GLs (65%) were satisfied with 'roads/access' than expected. A significantly lower number of Coastal GL hunters were dissatisfied (19%) with parking than expected. Satisfaction with proximity to home was significantly higher for Mountain GL hunters (71%) and significantly lower for GL hunters who hunted in two or more different regions (57%) than expected. Hunters of Coastal GLs (65%) were more likely to be satisfied and Mountain GL hunters (50%) were significantly less likely to be satisfied with management of habitat for species hunted on GLs than expected. Piedmont GL hunters (50%) were significantly more satisfied and Mountain GL hunters (37%) were significantly less satisfied than expected with the 'abundance of game/trout' on GLs. A significantly higher proportion of hunters who hunted on Mountain GLs (46%) and more than one GL (43%) were satisfied with 'camping availability' than expected.

'Abundance of game/trout' had, on average, the greatest importance in determining enjoyment for GL hunters and anglers. Management of habitat for hunted species, 'proximity to home,' 'level of disturbance by other GL users,' and 'number of other hunters/fishermen' were also fairly important. 'Level of disturbance by NCWRC employees' was by far the least important factor. 'Abundance of game/trout' was significantly more important for hunters of Mountain GLs than hunters on Coastal or Piedmont GLs. Proximity of GLs to home and disturbance by other GL users were both significantly more important in determining enjoyment for Piedmont GL hunters than Mountain GL hunters. Hunters on Coastal GLs believed that 'roads/access' was more important than did hunters on Piedmont GLs, Mountain GLs, or hunters who hunted on GLs in two or more different regions. 'Camping availability' was more important to hunters who hunted on Mountain GLs than Coastal or Piedmont GLs.

Over 84% of GL hunters and anglers were 'satisfied' (73%) or 'very satisfied' (12%) with the GL program in general. Only 11% were 'dissatisfied' (9%) or 'very dissatisfied' (2%). Hunters who hunted on Coastal GLs had significantly higher level of satisfaction than Mountain GL hunters. GL hunters and anglers who considered trout fishing to be more important were

more satisfied than those who thought trout fishing was less important. GL hunters and anglers who ranked management for hunted species as less important were more satisfied than those who ranked management as more important.

Views of GL hunters and anglers on GL management

We asked about management priorities of GL hunters and anglers. ‘Improving habitat for wildlife on existing GLs’ (45%) and ‘purchasing/acquiring new acreage for GLs’ (42%) were both popular. Few GL hunters and anglers (11%) indicated that ‘improving GL facilities/service’ was most important. Hunters who hunted on GLs in two or more different regions (49%) were significantly more likely than expected to support ‘purchasing/acquiring new acreage for GLs;’ a significantly higher proportion of Mountain GL hunters (50%) were in favor of ‘improving habitat for wildlife on existing GLs’ than expected.

The most important priorities for GL acquisition were to ‘acquire GLs that provide for all types of wildlife-associated recreation’ and the acquisition of ‘GLs that provide habitat for all types of wildlife.’ The acquisition of ‘more GLs regardless of location’ was the lowest priority for GL hunters and anglers. Acquiring ‘GLs that provide for all types of wildlife-associated recreation’ was significantly more important to hunters who hunted on Coastal GLs than those who hunted on Piedmont GLs or GLs in more than one region. Hunters of GLs in two or more regions ranked acquiring ‘GLs in more areas of the state’ as significantly more important than Coastal or Mountain GL hunters.

The top management priorities were managing GL ‘for a variety of hunting and fishing opportunities’ and management ‘with consideration for all wildlife/fish species present.’ Management to feature ‘small game’ or ‘waterfowl’ and ‘not interested in management’ had the lowest priority for GL hunters and anglers.

The highest priority for GL facilities and service improvements was ‘roads and trails’ improvements. ‘Improved maps’ was also a high priority. ‘Interpretive centers’ improvements were lower priority. ‘Roads and trails’ improvements were significantly more important for hunters of Coastal GLs than hunters of Piedmont GLs or hunters who hunted on GLs in more than one region. Camping facilities improvements were rated as significantly more important by hunters of GLs in more than one region than hunters on Coastal or Piedmont GLs. Parking improvements were rated by both Piedmont and Mountain GL hunters as significantly more important than by Coastal GL hunters.

Frequency of conflicts with other GL users for hunters and anglers

Most GL hunters and anglers (62%) ‘rarely’ or ‘never’ had conflicts with other GL users and few (9%) ‘frequently’ or ‘always’ had such conflicts. Of those GL hunters and anglers who had conflicts with other users, 28% had conflicts with hunters. Few GL hunters and anglers (<10%) had conflicts with any other GL user groups. Hunters of Coastal (49%) and Piedmont (44%) GLs were significantly more likely than expected to have conflicts with hunters, while a significantly higher proportion of hunters on Mountain GLs reported having conflicts with hikers (12%), ‘kayakers/tubers’ (5%), and campers (5%) than expected.

GL access for hunters and anglers

A third of GL hunters and anglers (33%) wanted the number of ‘roads and trails’ restricted. Fewer GL users wanted to provide more foot trails (24%), leave access unchanged (23%), or ‘increase vehicular access’ by improving road system (20%) on GLs. Hunters who hunted on Coastal GLs were significantly more likely (27%) to favor providing ‘more trails for foot travel on GLs’ and significantly less likely (24%) to support restricting roads and trails than expected.

Many GL hunters and anglers (68%) supported permanent GL road closures to ‘protect existing wildlife habitat.’ A majority of GL hunters and anglers supported permanently closing roads on GL ‘to protect water quality’ (54%) or ‘to limit wildlife disturbance’ (53%). While a majority of hunters of Mountain GLs (54%) and those who hunted on GLs in two or more regions (54%) supported road closures ‘to protect water quality,’ fewer than half of Coastal (37%) and Piedmont (44%) GL hunters supported closures for this reason. Forty-eight percent or more hunters of GLs in each region (48% of Coastal GL hunters to 54% of Mountain GL hunters) favored road closures ‘to limit wildlife disturbance.’ Most GL hunters and anglers (60%) are willing to walk ‘1 mile or greater’ from their vehicle to get to GL activity sites.

GL lodging for hunters and anglers

A majority (54%) of GL users report not staying overnight when they travel to GLs. Twenty-nine percent of GL hunters anglers indicated they camp when traveling to GLs and few use hotels (8%) or stay with friends or family (7%). Hunters of Piedmont GLs (74%) were significantly more likely to not stay overnight when traveling to GLs and those who hunted on GLs in two or more regions (39%) were significantly less likely to drive home when traveling to GLs than expected. Mountain GL hunters (30%) and hunters of GLs in multiple regions (40%) were significantly more likely to camp than expected. Almost half (49%) of GL hunters and anglers believe that having camping facilities on or adjacent to GLs is important.

Hunter and angler preferences for GL fees

GL hunters and anglers overwhelmingly supported (54%) an increase in GL Use Permit fees to pay for road and wildlife habitat improvements on GLs. Currently, most GL users who are not hunters, trappers, or trout anglers are not required to pay fees to use GLs. A majority of GL hunters and anglers prefer to ‘only license sportsmen, and prioritize the desires of sportsmen in GL management decisions’ (60%) over requiring ‘all users to purchase licenses, and incorporate the desires of all users into GL management decisions’ (33%).

Management Implications

Demographics

Efforts by the WRC to recruit women hunters and anglers (and promote the use of GLs) are warranted. Most-out-of state GL users exclusively trout fished. This could be because out-of-state hunters may be more willing/able to pay higher fees in order to hunt on corporate or private land and are less likely than North Carolina residents to hunt on GLs.

Reasons for not using GLs

A portion of those with GL privileges who did not hunt claim that they were ‘not familiar with the GL program.’ This indicates that communication with hunters about the GL program is essential. There is the perception among some potential GL hunters that GLs are unsafe. This may be another opportunity for better communication among the WRC and hunters and anglers about the actual safety risks on GLs and ongoing efforts by the WRC to improve safety (e.g., better law enforcement).

Importance of GLs and satisfaction with the GL program

The GL program apparently is important to GL hunters. The GL program may be even more important to hunters who are Mountain region residents as they were more likely than expected to use GLs for a majority of their hunting and to value GLs because of the difficulties in paying for hunting leases.

Generally, GL hunters and trout anglers were satisfied with the GL program. However, the results indicate that overall satisfaction could be improved by increasing satisfaction with the most important factors that contribute to overall satisfaction (e.g., ‘abundance of game/trout,’ proximity of GLs to home, habitat management for hunted species).

Abundance of game/trout

Abundance of hunted and fished species was important to GL hunters and trout anglers. Mountain GL hunters were particularly concerned about the abundance of game/trout and habitat management. The high importance placed on game/trout abundance by GL users may indicate an opportunity to communicate with hunters and anglers (particularly Mountain hunters and trout anglers) about changes in game/trout abundance and distribution and WRC efforts to improve the quality and abundance of hunted and fished species.

Management/acquisition priorities for GLs

GL hunters and trout anglers were closely divided on whether ‘improving habitat for wildlife and fisheries on existing GLs’ or ‘purchasing/acquiring new acreage for GLs’ was most important. Improving habitat on existing GLs was a priority for a majority (and significantly higher proportion than expected) of Mountain GL hunters, so WRC managers should consider prioritizing the improvement of habitat in Mountain GLs.

GL users favored strategies for management and acquisition of GL that emphasized providing habitat for a variety of species and providing opportunities for a variety of wildlife-related recreational activities.

Proximity of GLs to home and camping availability

Because proximity of GLs to home was more important to hunters of Piedmont GLs than those who hunt on Mountain GLs, because Piedmont GL hunters were more likely than expected to drive home instead of staying overnight at a GL, and because there is increasing urban and suburban development in the Piedmont, acquisition of new GL acreage throughout the Piedmont is important.

Mountain GL hunters were more likely to camp than expected. Mountain GL hunters also rated camping facilities improvements as more important than expected. Therefore, the WRC should evaluate improved camping facilities on or near GLs (especially those in the Mountain region).

GL access and road closure

Roads and trails improvements were relatively important for GL hunters and trout anglers (particularly hunters of Coastal GLs) and Coastal GL hunters had higher support for improving GL trails. GL users overall supported the permanent closure of roads in order to protect habitat, protect water quality, or to limit the disturbance of wildlife. However, road closures to protect water quality might be more acceptable in the mountains than in other areas of the state.

GL fees

GL hunters were ready to help pay for more public hunting areas as most were willing to pay higher fees to have additional GLs on which to hunt and over half supported increasing GL fees to improve roads and wildlife areas. However, we did not ask how much more they were willing to pay, so significant increases may or may not be met with opposition. The WRC should conduct a contingent valuation study to determine how much more hunters would be willing to pay for such improvements. However, the WRC should be careful to not increase fees to the point where it is prohibitive for less affluent hunters and anglers to use GLs. Two-thirds

of GL hunters and trout anglers wanted to ‘continue to license only sportsmen’ on GL and not require other users to pay fees to use GL.

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Introduction

Currently, only 6% of the land in North Carolina is available for hunting (Responsive Management 2003). As the population in North Carolina continues to rapidly grow (between 1990 and 2000, North Carolina's population increased by 21%, U.S. Census Bureau 2000), having adequate public hunting lands and trout streams is essential to insure that all North Carolina citizens have areas to hunt and fish.

In order to provide areas for hunting and fishing by the public lands, the North Carolina Wildlife Resources Commission (WRC) administers approximately 2 million acres in the Game Land Program. Game Lands (GLs) are principally managed for hunting and fishing, but are also open for other forms of outdoor recreation. In 2003, there were approximately 67 GLs in the GL program: 33 in the Coastal (Districts 1, 2, and 4), 20 in the Piedmont (Districts 3, 5, and 6, and 14 in the Mountain (Districts 7, 8, and 9) WRC regions of North Carolina. Individual GLs are either purchased by the WRC or leased from other state agencies, federal agencies, or private individuals/corporations. A portion of the funding for GL acquisition of GLs comes from North Carolina's Clean Water Management and Natural Heritage Trust Funds. Additional funding for GLs is provided Federal Aid in Wildlife Act monies and through other federal and state agencies.

Management and regulations pertaining to GLs can vary among tracts. For example, on some GLs only dove hunting is permitted, some are open to hunting only three days per week, some are open to hunting six days per week, and on some GLs a special permit is required to hunt or trap.

Since the GL program began in 1971, there have been three harvest studies of GL hunters (WRC 1972, WRC 1974, Betsill 1978). These studies focused on estimating hunter effort and success on individual GLs and on GLs statewide. Until this project began, there had not been an effort to determine hunter and angler satisfactions with the GL program, or to determine the characteristics of GL users (e.g., behaviors and demographic characteristics). Because, in 2003, 326,474 adults age sixteen years or older had licenses which allow hunting and/or fishing on GLs, understanding the behaviors and views of GL users is essential to managing GLs effectively. We conducted this study to gather information on GL user demographics, hunting and fishing behaviors, use of particular GLs, management priorities, and satisfactions.

Methods

Survey instrument design

Because of the broad range of species impacted by and WRC projects pertaining to the GL program, the survey was designed with input from WRC personnel in both the Wildlife Management and Inland Fisheries divisions. The survey instrument contained items pertaining to participation in wildlife-associated recreation, GLs hunted or trout fished, management priorities for the GL program, and satisfactions with experiences on GLs (Appendix A).

Survey implementation

Beginning in May 2003, we surveyed a random sample of 8,834 adults (≥ 16 years) that had licenses which allowed hunting and/or fishing on GLs. The sample was pulled from the WRC license database. We used a modified version of the Tailored Design Method (Dillman 2000) and sent participants up to four mailings (Appendix A). A pre-notice postcard was mailed on May 19, 2003 to inform participants that they would soon receive a survey. The first full survey mailing (survey instrument and postage paid return envelope) was mailed on May 27, and any nonrespondents were sent follow up mailings on June 18 and July 9 (if necessary). Survey

recipients had the option to complete and mail back a traditional paper survey or to complete an online web-based survey. All survey respondents were entered in a drawing for a chance to win a Lifetime Sportsman License.

Data analysis

All data were analyzed using SPSS 12.0.1. We used a principal component factor analysis using promax rotation for data reduction of GL activities participated in.

Respondents ranked the five most important factors in determining their enjoyment of the 'GL experiences' (1=most important, 5=least important). For each respondent, we assigned the unranked items a value of 8.5 (the mean rank for the remaining six items if all items were ranked). That way, items which were ranked by fewer respondents would have a lower mean rank than those items ranked by more respondents. Respondents who ranked only their top three or four choices were included in the analysis (we assigned a value of 8.5 for all missing values). The respondents who ranked only their top one or two choices were omitted from the analysis.

We coded responses for general GL satisfaction ('very satisfied'=4, 'satisfied'=3, 'dissatisfied'=2, 'very dissatisfied'=1, 'no opinion'=missing).

Respondents ranked the importance of their top three priorities for GL acquisition (1=most important, 3=least important). For each respondent, we assigned unranked items a value of 5 (the mean rank for the remaining three items if all items were ranked). Respondents who ranked only their top one or two choices were omitted from the analysis.

Respondents ranked their top three management priorities for GLs (1=most important, 3=least important). For each respondent, we assigned unranked items a value of 6 (the mean rank for the remaining five items if all items were ranked). Respondents who ranked only their top one or two choices were omitted from the analysis.

Respondents ranked their top three priorities for GL facilities and service improvements (1=most important, 3=least important). For each respondent, we assigned unranked items a value of 6 (the mean rank for the remaining five items if all items were ranked). Respondents who ranked only their top one or two choices were omitted from the analysis.

We coded responses for frequency of conflicts as: 'never'=1, 'rarely'=2, 'occasionally'=3, 'frequently'=4, and 'always'=5.

For bivariate comparisons, we used chi-square tests, linear regression, and *F* tests. Where applicable, we calculated adjusted residuals to determine which cells in a crosstabulation were significantly larger or smaller than expected values; any adjusted residual with an absolute value greater than 1.96 (≥ 2.0) is significant at the 95% confidence level.

Respondent demographic information was obtained from the WRC license database.

Results

Note that many of these results are only representative of hunters and anglers who hunted or trout fished on GLs within the last three years. Other GL users (i.e., non-consumptive users) who are not hunters or anglers may have views which are quite different from those of hunters and anglers.

Respondents

A total of 3452 responded to the survey. The adjusted overall response rate for the survey (omitting addresses with errors and persons ineligible to respond) was 42%. Eight percent (n=343) of respondents completed the online version of the survey. There was a small difference between the percentage of male (48%) and female (54%) respondents (Table 1). Those aged 55 to 64 (54%) and 45 to 54 (46%) were more likely to respond than other age

groups, while 16 to 17 year olds (31%), 18 to 24 year olds (27%), and 25 to 34 year olds (35%) were less likely to respond than other age groups (Table 2). North Carolina residents in all three Wildlife Resources Commission (WRC) regions (41% for the Coastal region, 43% for the Piedmont and Mountain region) were more likely than residents of other states (32%) to have responded (Table 3).

Table 1. Survey response by sex.

Survey response	Male	Female
Responded	48.4% (n=2084)	54.0% (n=87)
Did not Respond	51.6% (n=2225)	46.0% (n=74)

Table 2. Survey response by age.

Survey response	Age (years)						
	16-17	18-24	25-34	35-44	45-54	55-64	≥ 65
Responded	31.4% (n=37)	27.4% (n=196)	35.1% (n=586)	43.0% (n=838)	46.4% (n=713)	53.9% (n=564)	41.6% (n=508)
Did not Respond	68.6% (n=81)	72.6% (n=519)	64.9% (n=1084)	57.0% (n=1112)	53.6% (n=822)	46.1% (n=482)	58.4% (n=714)

Table 3. Survey response by WRC region of residence.

Survey response	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Responded	40.5% (n=627)	43.3% (n=1308)	42.7% (n=1309)	31.7% (n=208)
Did not Respond	59.5% (n=920)	56.7% (n=1713)	57.3% (n=1753)	68.3% (n=448)

Respondent demographics

Respondents ranged in age from 16 to 102 years (\bar{x} =46.8, SD=15.7, median=45.0) and were older than the overall population of North Carolina (median=35.3, U.S. Census Bureau 2000). The proportion of respondents in many age groups was similar to the proportion of North Carolina resident hunters and anglers as determined by the 2001 National survey of fishing, hunting, and wildlife-associate recreation (USFWS 2001), while there was a much higher percentage of females in the 2001 survey of resident hunters and anglers (23%) than the percentage of female respondents to the GL survey (4%) (Table 4, Table 5). Most respondents resided in North Carolina (94%) (Table 6). Equal proportions of respondents lived in the Piedmont and Mountain regions of the state (38% for each region), while fewer lived in the Coastal region (18%) or were from out-of-state (6%) (Table 7).

Table 4. Age of respondents and North Carolina resident hunters and anglers (2001 National survey of fishing, hunting, and wildlife-associated recreation).

Age group	2003 GL Survey Respondents	North Carolina Resident Hunters and Anglers (USFWS 2001)
16-17	1.1% (n=37)	-
18-24	5.7% (n=196)	8% (n=78k)
25-34	17.0% (n=586)	24% (n=232k)
35-44	24.3% (n=838)	23% (n=230k)
45-54	20.7% (n=713)	21% (n=209k)
55-64	16.4% (n=564)	12% (n=121k)
≥ 65	14.8% (n=508)	9% (n=86k)

Table 5. Sex of respondents and North Carolina resident hunters and anglers (2001 National survey of fishing, hunting, and wildlife-associated recreation).

	2003 GL Survey Respondents	North Carolina Resident Hunters and Anglers (USFWS 2001)
Male	96.0% (n=2084)	77% (n=757k)
Female	4.0% (n=87)	23% (n=224k)

Table 6. State of residence of respondents.

State of residence	Percent
NC	93.9% (n=3242)
SC	1.3% (n=45)
GA	1.3% (n=44)
VA	0.8% (n=27)
TN	0.7% (n=25)
FL	0.7% (n=23)
Other states ^a	1.3% (n=46)

^a There were respondents from 17 other states.

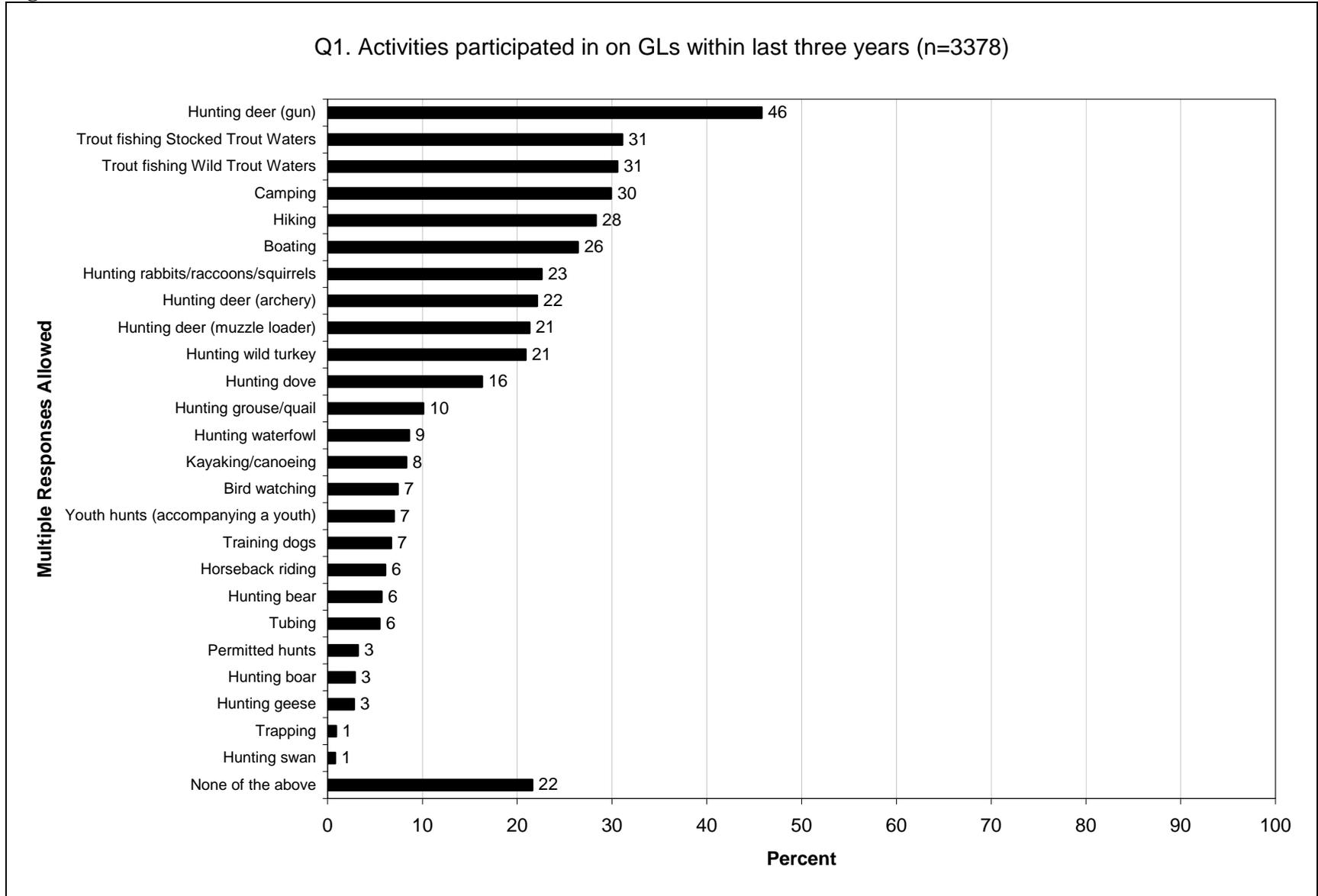
Table 7. WRC region of residence of respondents.

WRC Region of Residence	Percent
Coastal	18.3% (n=630)
Piedmont	38.4% (n=1325)
Mountain	37.3% (n=1287)
Out-of-state	6.1% (n=210)

Participation in wildlife and fisheries-related activities on GLs

The percentage of respondents who reported participating in various wildlife and fisheries-related activities ranged from 1% to 46% (Figure 1). The most popular activities were deer hunting with a gun (46%), trout fishing Stocked Trout Waters (31%), trout fishing Wild Trout Waters (31%), camping (30%), and hiking (28%). Few respondents reported swan hunting (1%), trapping (1%), goose hunting (3%), boar hunting (3%), or participation in Permitted Hunts (3%) on GLs. Twenty-two percent of respondents indicated they had done ‘none’ of the GL activities listed (i.e., 22% did not recreate on GLs, even though they had GL hunting/fishing privilege).

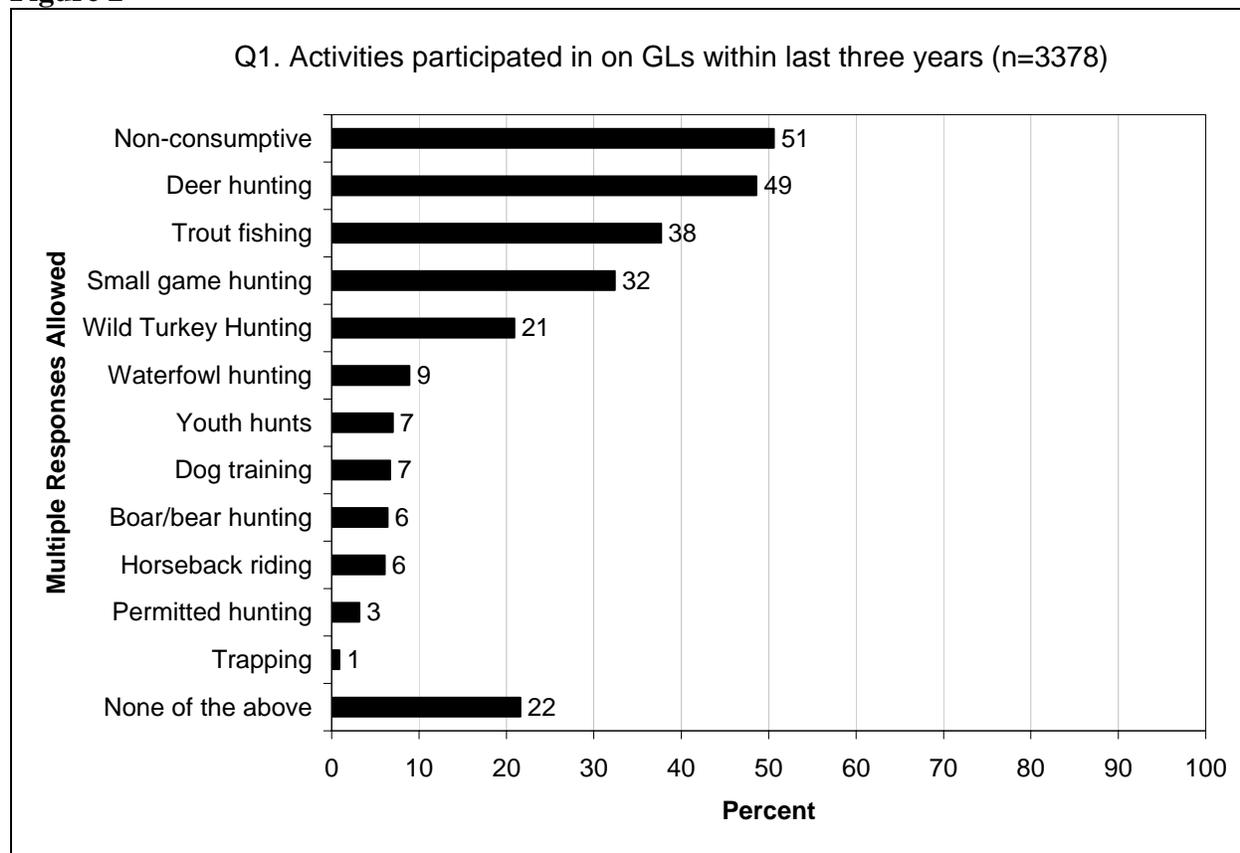
Figure 1



A factor analysis of all of the activities in Figure 1 (except ‘none of the above’) revealed that there were seven distinct factors that explained 54% of the variance between the items. The three deer hunting items and the ‘hunting wild turkey’ item formed the ‘Deer/turkey hunting’ factor; this factor explained 18% of the common variance. However, because of the large numbers of both deer and turkey hunters, deer hunting items were separated from the turkey hunting items for further analysis in order to explore possible differences between these groups (Figure 2). The ‘boar/bear hunting’ factor was comprised of the two boar and bear hunting items and explained 4% of the common variance. The ‘waterfowl hunting’ factor explained 6% of the variance between the items and was comprised of the three waterfowl, swan, and geese hunting items. ‘Hunting rabbits/raccoons/squirrels,’ ‘hunting grouse/quail,’ ‘hunting dove,’ and ‘training dogs’ loaded together as a component which explained 5% of the variance. However, because there are substantive differences between ‘training dogs’ and the hunting items, the former was not included in the ‘small game hunting’ variable. The ‘trapping’ item formed its own factor and explained 4% of the common variance. The two trout fishing items formed a factor that explained 7% of the variance. ‘Bird watching,’ ‘camping,’ ‘hiking,’ ‘boating,’ ‘kayaking/canoeing,’ and ‘tubing’ loaded to form the ‘non-consumptive wildlife-related recreation’ factor that explained 10% of the common variance. ‘Permitted hunting,’ ‘youth hunts,’ and ‘horseback riding’ did not load with any factors and were not combined with other variables. All of the newly formed variables were dichotomous (i.e., ‘did not participate in any of the activities’ versus ‘participated in one or more of the activities’).

Approximately 50% of respondents participated in non-consumptive activities (51%) or deer hunting (49%) on GLs. Trout fishing (38%) and small game hunting (32%) on GLs were pursued by fewer respondents. All other activities were pursued by fewer than 10% of respondents.

Figure 2



Hunting and fishing participation

When we asked specifically about hunting and fishing participation, over half (51%) of respondents indicated they had hunted and 38% reported fishing for trout on GLs within the last three years (Figure 3). Almost a third (31 %) had ‘neither hunted nor trout fished.’ There were significant male/female differences in hunting and fishing participation (Table 8). Male respondents (36%) were significantly more likely to have ‘only hunted’ than expected, and females (28%) were significantly more likely than expected (11%) to have ‘only trout fished.’ Respondents who were 16 to 24 (26%), 25 to 34 (25%) and 35 to 44 year olds (23%) were significantly more likely than expected to have ‘both hunted and trout fished’ on GLs within the last three years (Table 9). Those 55 to 64 (16%) and 65 years or older (12%) were significantly less likely than expected to have ‘both hunted and trout fished.’ Respondents aged 25 to 34 (34%) and 35 to 44 (35%) were significantly more likely expected to have ‘only hunted,’ while those who were at least 65 (20%) were significantly less likely than expected to have ‘only hunted.’ Significantly more 55 to 64 year olds (21%) ‘only trout fished’ than expected, while significantly fewer than expected of those who were 65 or older (13%) reported only trout fishing. A majority of respondents who were at least 65 (54%) indicated that they ‘neither hunted nor trout fished’ on GLs within the last three years. A significantly lower proportion than expected of respondents who were 25 to 34 (22%) and 35 to 44 (26%) reported that they ‘neither hunted nor trout fished.’ There were significant differences in hunting and fishing participation on GLs based on WRC region of residence (Table 10). Mountain residents (36%) were significantly more likely than expected to have ‘both hunted and trout fished,’ while Coastal (48%) and Piedmont (41%) residents were more likely than expected to have ‘only hunted.’ This

is not surprising because all GLs with trout streams are in the Mountain region. Out-of-state residents overwhelmingly (66%) ‘only trout fished,’ and significantly more out-of-state and Mountain (24%) residents than expected ‘only trout fished.’ Coastal (43%) and Piedmont (35%) residents were significantly more likely and Mountain (24%) and out-of-state residents (12%) significantly less likely than expected to have ‘neither hunted nor trout fished.’

The most common reason for not hunting within the last three years was having ‘own lease’ or hunting ‘other lands’ (39%), followed by ‘do not hunt’ (29%) (Figure 4). Seventeen percent of respondents who did not hunt were ‘not familiar with the GL program,’ 16% ‘felt unsafe hunting GLs,’ and over 10% said that ‘there are no GLs convenient to’ their home (13%) or ‘GLs are too crowded’ (12%). For males (51%), the most commonly given reason for not hunting on GLs within the last three years was ‘have own lease (or hunt other lands)’ while females (51%) were most likely to report that they ‘do not hunt’ (Table 11). A majority of 16 to 24 year olds (52%) gave ‘have own lease (or hunt other lands)’ as a reason for not hunting on GLs within the previous three years (Table 12). Fewer (26% of those 65 or older to 48% of 25 to 34 year olds) of those who did not hunt on GLs reported having their own lease or hunting on other lands. A third or fewer (18% of 16 to 24 year olds to 37% of those 65+) did not hunt. A majority of Coastal residents (54%) who did not hunt on GLs within the last three years reported having their own lease or hunting other lands, while a quarter (24%) of such Coastal residents were ‘not familiar with GL program’ (Table 13). Fewer Piedmont (47%), Mountain (31%), and out-of-state (18%) residents gave ‘have own lease (or hunt other lands)’ as the reason for not hunting on GLs. Forty-two percent of out-of-state respondents who did not hunt on GLs did so because they ‘do not hunt.’

For those respondents who had not trout fished on GLs in the previous three years, the majority indicated that they ‘do not fish for trout’ (66%) (Figure 5). Seven percent or fewer cited any of the other options (except ‘other’) as reasons for not trout fishing. A majority of both male (69%) and female (58%) respondents who did not trout fish on GLs within the last three years ‘do not fish for trout’ (Table 14). Most respondents who did not trout fish on GLs (63% of 45 to 54 year olds to 71% of 25 to 34 year olds) ‘do not fish for trout’ (Table 15). A slim majority of Mountain residents (52%) who did not trout fish on GLs ‘do not fish for trout,’ while 57% or more such respondents from other regions do not trout fish (Table 16).

Figure 3

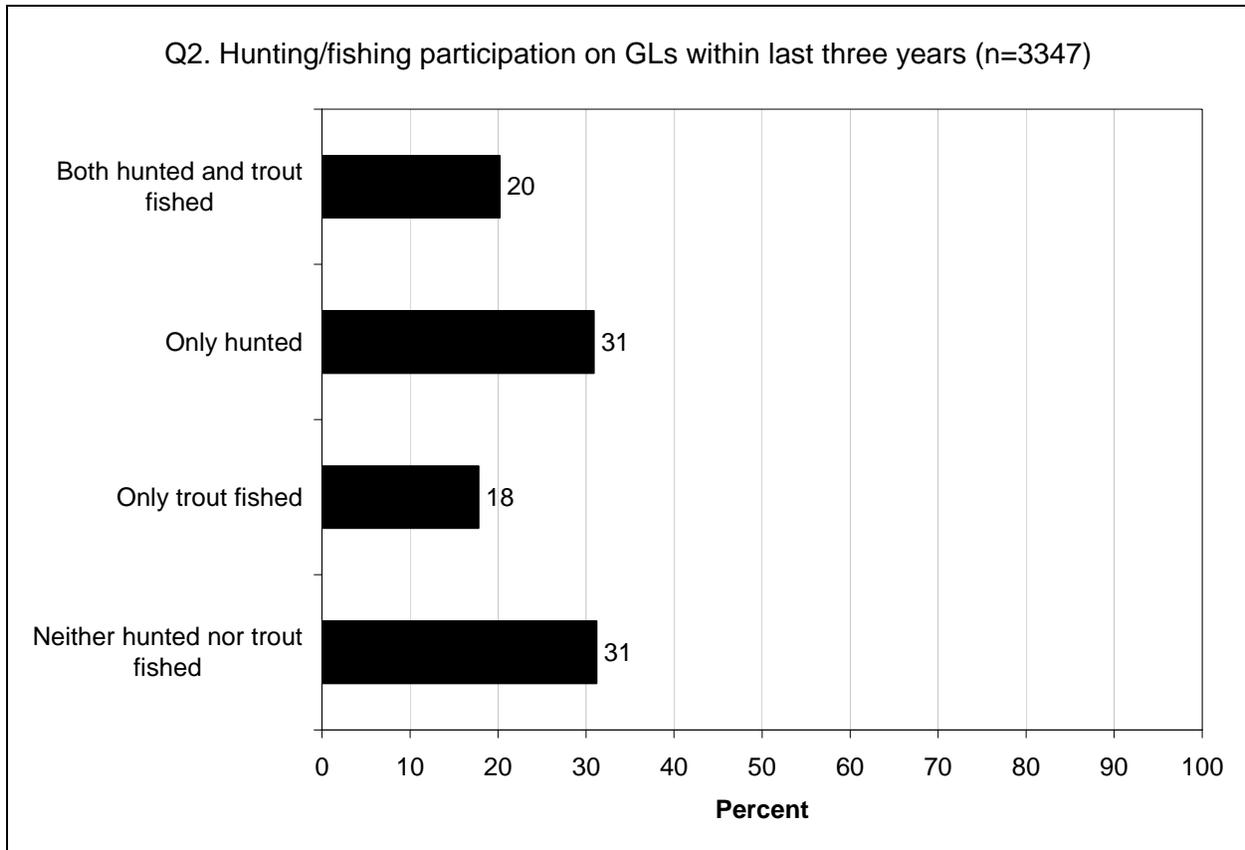


Table 8. Hunting and fishing participation on GLs within last three years (Q2) by sex.

Hunting/fishing participation	Male	Female
Both Hunted and Trout Fished	21.4% (n=434)	19.3% (n=16)
Only Hunted	36.0% ^a (n=729)	19.3% ^a (n=16)
Only Trout Fished	10.9% ^a (n=221)	27.7% ^a (n=23)
Neither Hunted Nor Trout Fished	31.7% (n=642)	33.7% (n=28)

$\chi^2=26.0$, $df=3$, $p<0.001$

^a Absolute value of adjusted residual ≥ 2.0 .

Table 9. Hunting and fishing participation on GLs within last three years (Q2) by age.

Hunting/fishing participation	Age (years)					
	16-24	25-34	35-44	45-54	55-64	≥ 65
Both Hunted and Trout Fished	26.1% ^a (n=60)	25.1% ^a (n=145)	22.9% ^a (n=190)	19.1% (n=134)	16.3% ^a (n=89)	12.3% ^a (n=56)
Only Hunted	28.7% (n=66)	34.3% ^a (n=198)	35.0% ^a (n=290)	31.4% (n=221)	29.7% (n=162)	20.3% ^a (n=92)
Only Trout Fished	14.3% (n=33)	18.7% (n=108)	16.4% (n=136)	20.1% (n=141)	21.3% ^a (n=116)	13.4% ^a (n=61)
Neither Hunted Nor Trout Fished	30.9% (n=71)	22.0% ^a (n=127)	25.6% ^a (n=212)	29.4% (n=207)	32.7% (n=178)	54.0% ^a (n=245)

$\chi^2=170.2$, $df=15$, $p\leq 0.001$

^a Absolute value of adjusted residual ≥ 2.0 .

Table 10. Hunting and fishing participation on GLs within last three years (Q2) by WRC region of residence.

Hunting/fishing participation	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Both Hunted and Trout Fished	5.7% ^a (n=35)	13.0% ^a (n=165)	36.3% ^a (n=457)	8.7% ^a (n=18)
Only Hunted	48.1% ^a (n=293)	41.4% ^a (n=526)	14.8% ^a (n=186)	13.5% ^a (n=28)
Only Trout Fished	3.0% ^a (n=18)	10.3% ^a (n=131)	24.6% ^a (n=310)	65.9% ^a (n=137)
Neither Hunted Nor Trout Fished	43.2% ^a (n=263)	35.4% ^a (n=450)	24.2% ^a (n=305)	12.0% ^a (n=25)

$\chi^2=999.6$, $df=9$, $p\leq 0.001$

^a Absolute value of adjusted residual ≥ 2.0 .

Figure 4

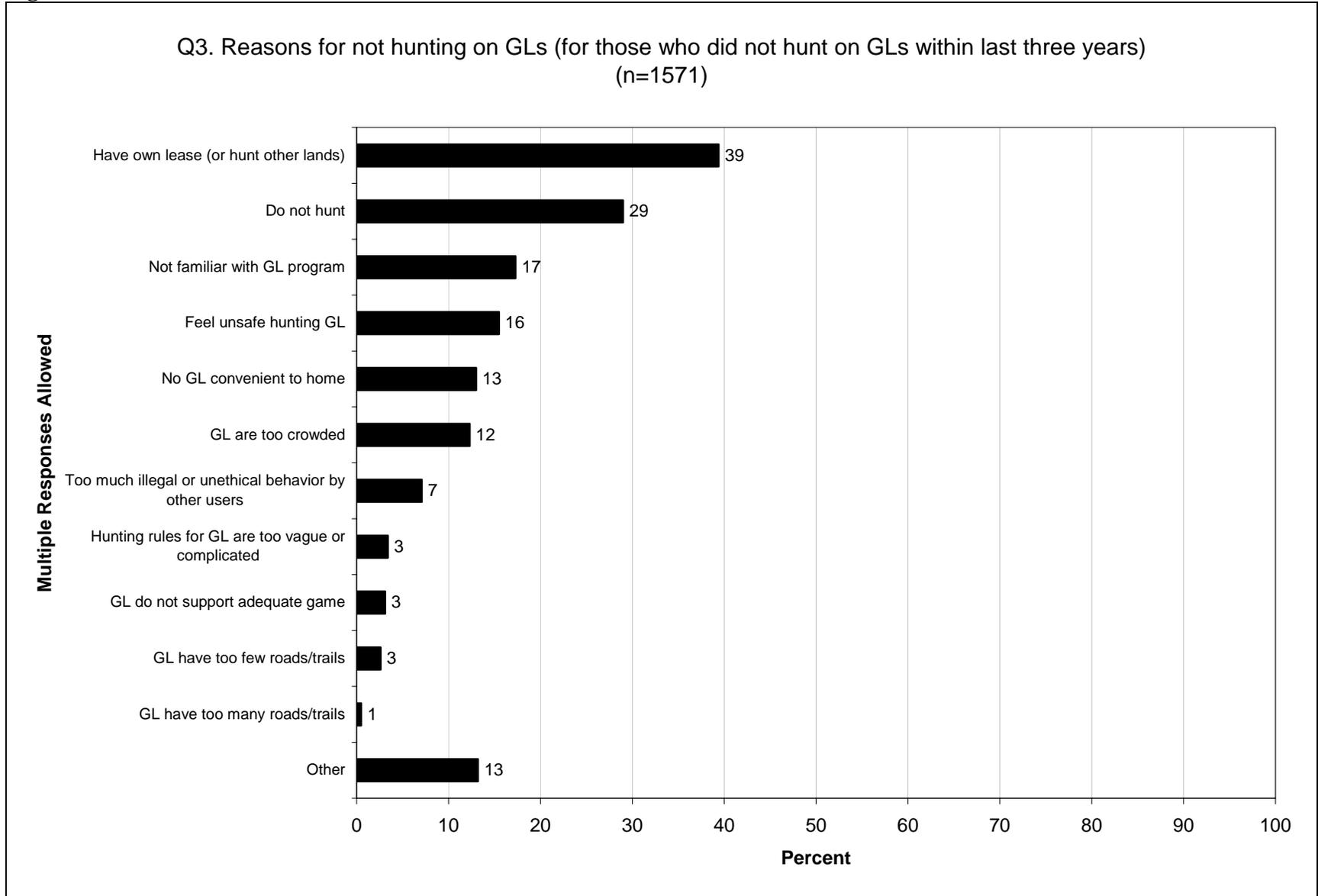


Table 11. Reasons for not hunting on GLs (Q3) (for those who did not hunt on GLs within last three years) by sex (multiple responses allowed).

Reasons for not hunting on GLs	Male	Female
Have Own Lease (Or Hunt Other Lands)	51.3% (n=424)	30.6% (n=15)
Do Not Hunt	20.1% (n=166)	51.0% (n=25)
Not Familiar With GL Program	17.9% (n=148)	8.2% (n=4)
Feel Unsafe Hunting GLs	19.8% (n=164)	12.2% (n=6)
No GLs Convenient To Home	15.2% (n=126)	6.1% (n=3)
GLs Are Too Crowded	16.7% (n=138)	6.1% (n=3)
Too Much Illegal Or Unethical Behavior By Other Users	9.1% (n=75)	8.2% (n=4)
Hunting Rules For GLs Are Too Vague Or Complicated	4.5% (n=37)	4.1% (n=2)
GLs Do Not Support Adequate Game	4.1% (n=34)	2.0% (n=1)
GLs Have Too Few Roads/Trails	3.6% (n=30)	2.0% (n=1)
GLs Have Too Many Roads/Trails	0.4% (n=3)	0.0% (n=0)
Other	11.0% (n=91)	16.3% (n=8)

Table 12. Reasons for not hunting on GLs (Q3) (for those who did not hunt on GLs within last three years) by age (multiple responses allowed).

Reasons for not hunting on GLs	Age (years)					
	16-24	25-34	35-44	45-54	55-64	≥ 65
Have Own Lease (or Hunt Other Lands)	52.4% (n=54)	47.8% (n=111)	44.3% (n=149)	41.3% (n=140)	31.8% (n=89)	26.3% (n=73)
Do Not Hunt	18.4% (n=19)	26.3% (n=61)	27.1% (n=91)	28.9% (n=98)	30.4% (n=85)	36.7% (n=102)
Not Familiar With GL Program	26.2% (n=27)	14.2% (n=33)	16.4% (n=55)	18.6% (n=63)	17.1% (n=48)	16.2% (n=45)
Feel Unsafe Hunting GLs	18.4% (n=19)	18.1% (n=42)	18.5% (n=62)	16.2% (n=55)	13.6% (n=38)	10.1% (n=28)
No GLs Convenient To Home	11.7% (n=12)	13.4% (n=31)	14.9% (n=50)	11.8% (n=40)	13.9% (n=39)	11.9% (n=33)
GLs Are Too Crowded	16.5% (n=17)	14.2% (n=33)	15.2% (n=51)	13.9% (n=47)	10.4% (n=29)	5.8% (n=16)
Too Much Illegal Or Unethical Behavior By Other Users	4.9% (n=5)	8.2% (n=19)	9.2% (n=31)	8.0% (n=27)	6.8% (n=19)	3.6% (n=10)
Hunting Rules for GLs are Too Vague or Complicated	4.9% (n=5)	3.0% (n=7)	3.0% (n=10)	3.5% (n=12)	5.4% (n=15)	1.4% (n=4)
GLs Do Not Support Adequate Game	2.9% (n=3)	3.4% (n=8)	3.0% (n=10)	2.9% (n=10)	2.9% (n=8)	3.2% (n=9)
GLs Have Too Few Roads/Trails	0.0% (n=0)	2.6% (n=6)	2.4% (n=8)	3.5% (n=12)	2.9% (n=8)	2.5% (n=7)
GLs Have Too Many Roads/Trails	1.0% (n=1)	0.0% (n=0)	0.6% (n=2)	0.9% (n=3)	0.4% (n=1)	0.4% (n=1)
Other	11.7% (n=12)	11.6% (n=27)	11.0% (n=37)	12.1% (n=41)	14.3% (n=40)	18.0% (n=50)

Table 13. Reasons for not hunting on GLs (Q3) (for those who did not hunt on GLs within last three years) by WRC region of residence (multiple responses allowed).

Reasons for not hunting on GLs	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Have Own Lease (Or Hunt Other Lands)	54.3% (n=145)	46.6% (n=262)	31.3% (n=184)	18.1% (n=28)
Do Not Hunt	16.9% (n=45)	25.3% (n=142)	34.8% (n=204)	41.9% (n=65)
Not Familiar With GL Program	24.0% (n=64)	15.3% (n=86)	17.2% (n=101)	12.9% (n=20)
Feel Unsafe Hunting GLs	12.7% (n=34)	20.8% (n=117)	13.6% (n=80)	8.4% (n=13)
No GLs Convenient To Home	14.2% (n=38)	14.4% (n=81)	11.8% (n=69)	11.0% (n=17)
GLs Are Too Crowded	11.2% (n=30)	15.3% (n=86)	11.9% (n=70)	4.5% (n=7)
Too Much Illegal Or Unethical Behavior By Other Users	6.0% (n=16)	7.5% (n=42)	8.5% (n=50)	1.9% (n=3)
Hunting Rules For GLs Are Too Vague Or Complicated	6.0% (n=16)	4.1% (n=23)	1.9% (n=11)	1.9% (n=3)
GLs Do Not Support Adequate Game	2.2% (n=6)	2.5% (n=14)	4.4% (n=26)	1.3% (n=2)
GLs Have Too Few Roads/Trails	4.5% (n=12)	2.5% (n=14)	2.4% (n=14)	0.6% (n=1)
GLs Have Too Many Roads/Trails	0.0% (n=0)	0.4% (n=2)	1.0% (n=6)	0.0% (n=0)
Other	10.5% (n=28)	13.0% (n=73)	12.4% (n=73)	21.3% (n=33)

Figure 5

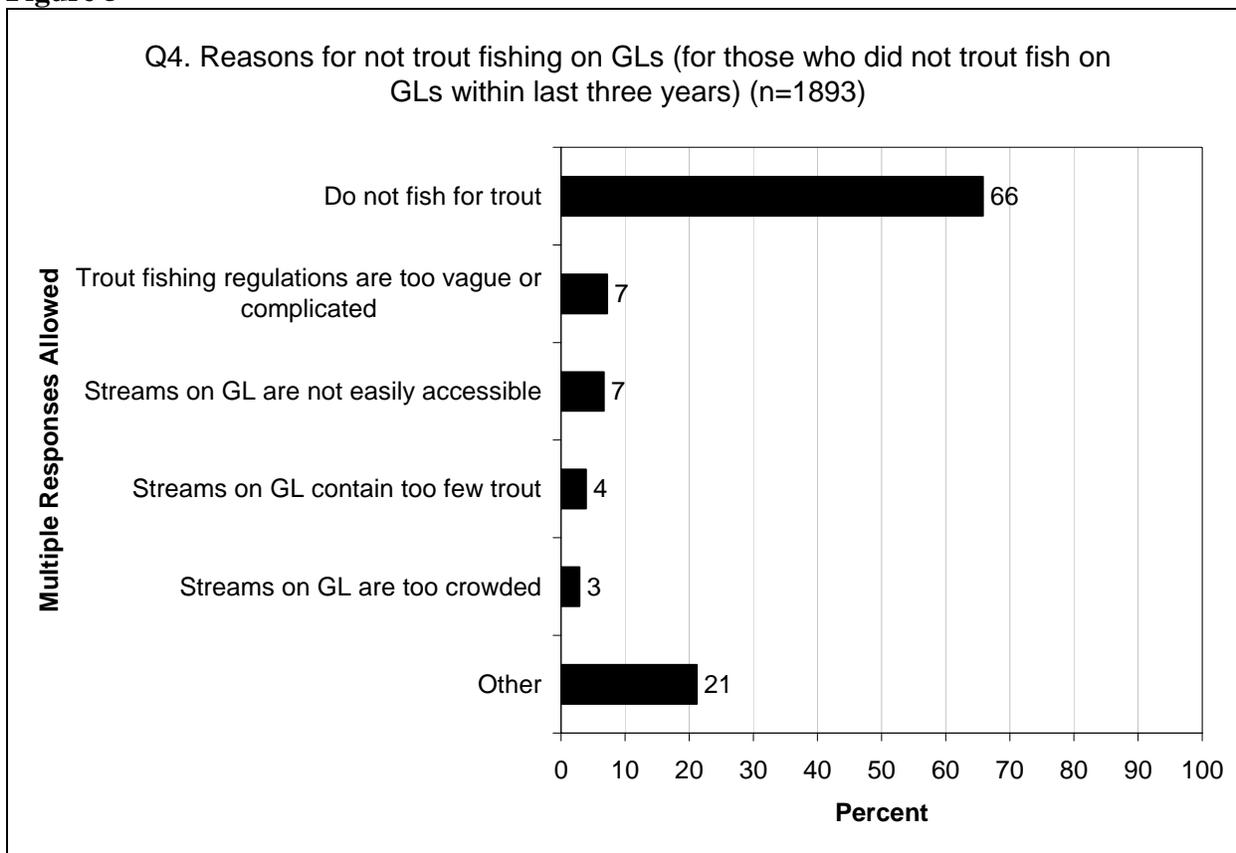


Table 14. Reasons for not trout fishing on GLs (Q4) (for those who did not trout fish on GLs within last three years) by sex (multiple responses allowed).

Reasons for not trout fishing on GLs	Male	Female
Do Not Fish For Trout	68.5% (n=866)	57.5% (n=23)
Trout Fishing Regulations Are Too Vague Or Complicated	7.9% (n=100)	5.0% (n=2)
Streams On GLs Are Not Easily Accessible	6.4% (n=81)	2.5% (n=1)
Streams On GLs Contain Too Few Trout	3.6% (n=46)	5.0% (n=2)
Streams On GLs Are Too Crowded	3.0% (n=38)	2.5% (n=1)
Other	18.4% (n=233)	37.5% (n=15)

Table 15. Reasons for not trout fishing on GLs (Q4) (for those who did not trout fish on GLs within last three years) by age (multiple responses allowed).

Reasons for not trout fishing on GLs	Age (years)					
	16-24	25-34	35-44	45-54	55-64	≥ 65
Do Not Fish For Trout	66.7% (n=84)	70.9% (n=217)	65.3% (n=307)	63.0% (n=243)	65.0% (n=199)	65.8% (n=192)
Trout Fishing Regulations Are Too Vague Or Complicated	2.4% (n=3)	3.9% (n=12)	8.5% (n=40)	6.7% (n=26)	9.2% (n=28)	8.9% (n=26)
Streams On GLs Are Not Easily Accessible	8.7% (n=11)	4.9% (n=15)	6.8% (n=32)	6.2% (n=24)	5.9% (n=18)	8.6% (n=25)
Streams On GLs Contain Too Few Trout	5.6% (n=7)	2.9% (n=9)	5.7% (n=27)	3.1% (n=12)	4.2% (n=13)	1.7% (n=5)
Streams On GLs Are Too Crowded	1.6% (n=2)	1.3% (n=4)	3.8% (n=18)	2.8% (n=11)	4.2% (n=13)	2.4% (n=7)
Other	19.8% (n=25)	21.2% (n=65)	19.4% (n=91)	24.9% (n=96)	21.6% (n=66)	19.5% (n=57)

Table 16. Reasons for not trout fishing on GLs (Q4) (for those who did not trout fish on GLs within last three years) by WRC region of residence (multiple responses allowed).

Reasons for not trout fishing on GLs	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Do Not Fish For Trout	70.0% (n=360)	70.5% (n=634)	52.0% (n=225)	57.4% (n=27)
Trout Fishing Regulations Are Too Vague Or Complicated	3.9% (n=20)	6.9% (n=62)	11.8% (n=51)	6.4% (n=3)
Streams On GLs Are Not Easily Accessible	7.2% (n=37)	4.8% (n=43)	9.9% (n=43)	6.4% (n=3)
Streams On GLs Contain Too Few Trout	2.5% (n=13)	3.3% (n=30)	6.5% (n=28)	4.3% (n=2)
Streams On GLs Are Too Crowded	1.2% (n=6)	1.9% (n=17)	7.2% (n=31)	2.1% (n=1)
Other	20.6% (n=106)	19.1% (n=172)	25.4% (n=110)	29.8% (n=14)

GLs used for hunting and trout fishing

Twenty two percent of respondents who hunted on one or more GLs in the past three years indicated having hunted on Uwharrie GL (Figure 6). Fewer had hunted on Pisgah (19%), Jordan (11%), Caswell (10%), Nantahala (10%), or Sandhills (10%) GLs. All of the remaining 63 GLs had been hunted by fewer than 10% of GL hunters, and 51 GLs (76%) were hunted by fewer than 5% of GL hunters. No GL hunters reported hunting on Yadkin GL. This is not surprising because Yadkin was a small GL that was removed from the GL program after the 1999/2000 hunting season.

GL hunters who hunted Mountain GLs (69%) or GLs in two or more regions (69%) were more likely to participate in non-consumptive activities on GLs than those who hunted on Coastal (44%) or Piedmont (54%) GLs (Table 17). Unsurprisingly, hunters of Mountain GLs (75%) were more likely than hunters of GLs in other regions (10% of Coastal GL hunters to 48% of hunters of GLs in two or more regions) to trout fish, and hunters of Coastal GLs (29%) were more likely to hunt waterfowl on GLs than hunters of GLs in other regions (4% of Mountain GL hunters to 25% of hunters who hunted GLs in two or more regions).

Over half (52%) of respondents who trout fished on one or more GLs in the past three years indicated having fished on Pisgah GL (Figure 7). Nantahala, Cherokee, and South Mountain GLs were also relatively popular, having been fished by 18% to 39% of GL trout anglers. Fewer than 15% of GL trout anglers fished on other GLs that offer trout waters.

Figure 6

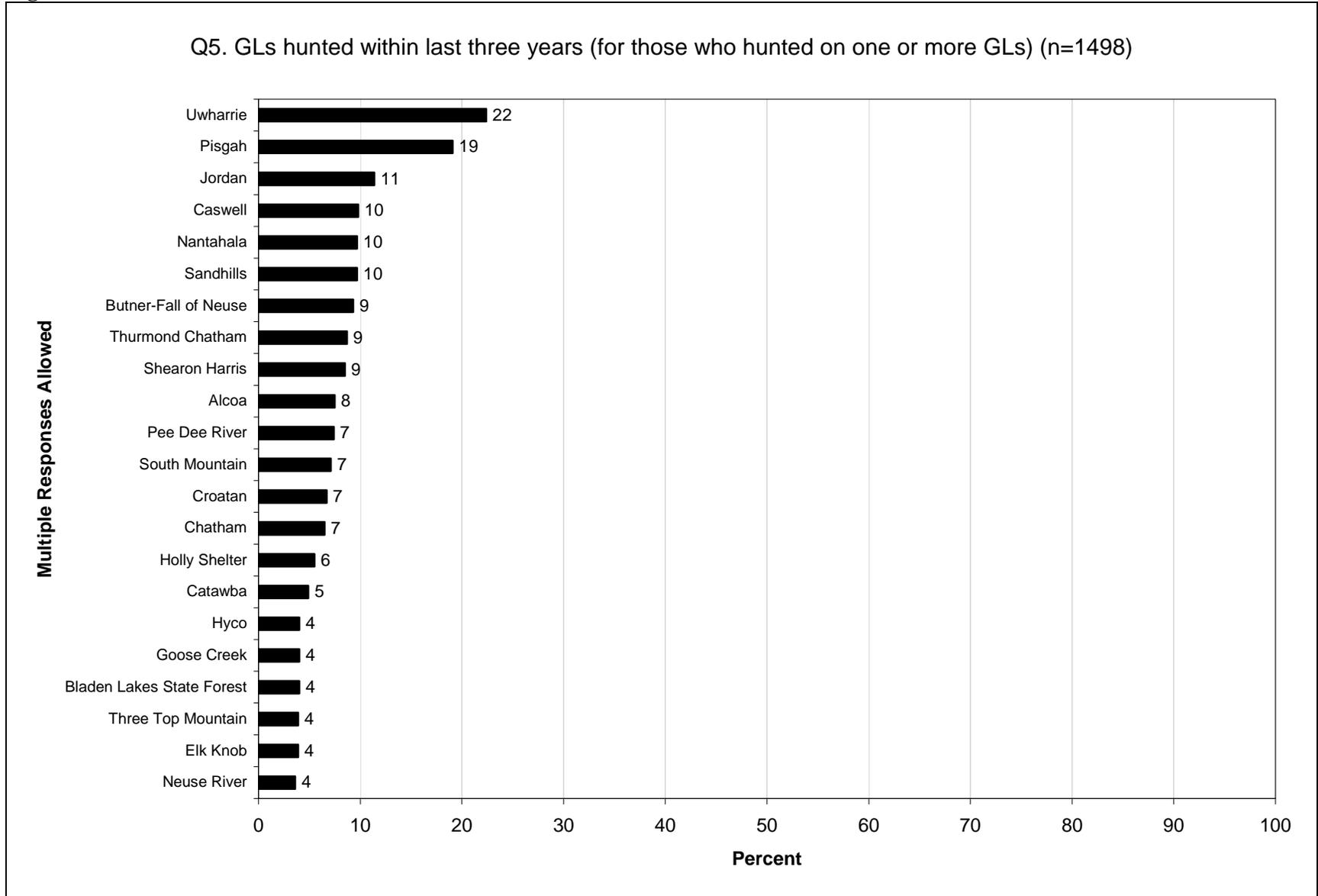


Figure 6 (continued)

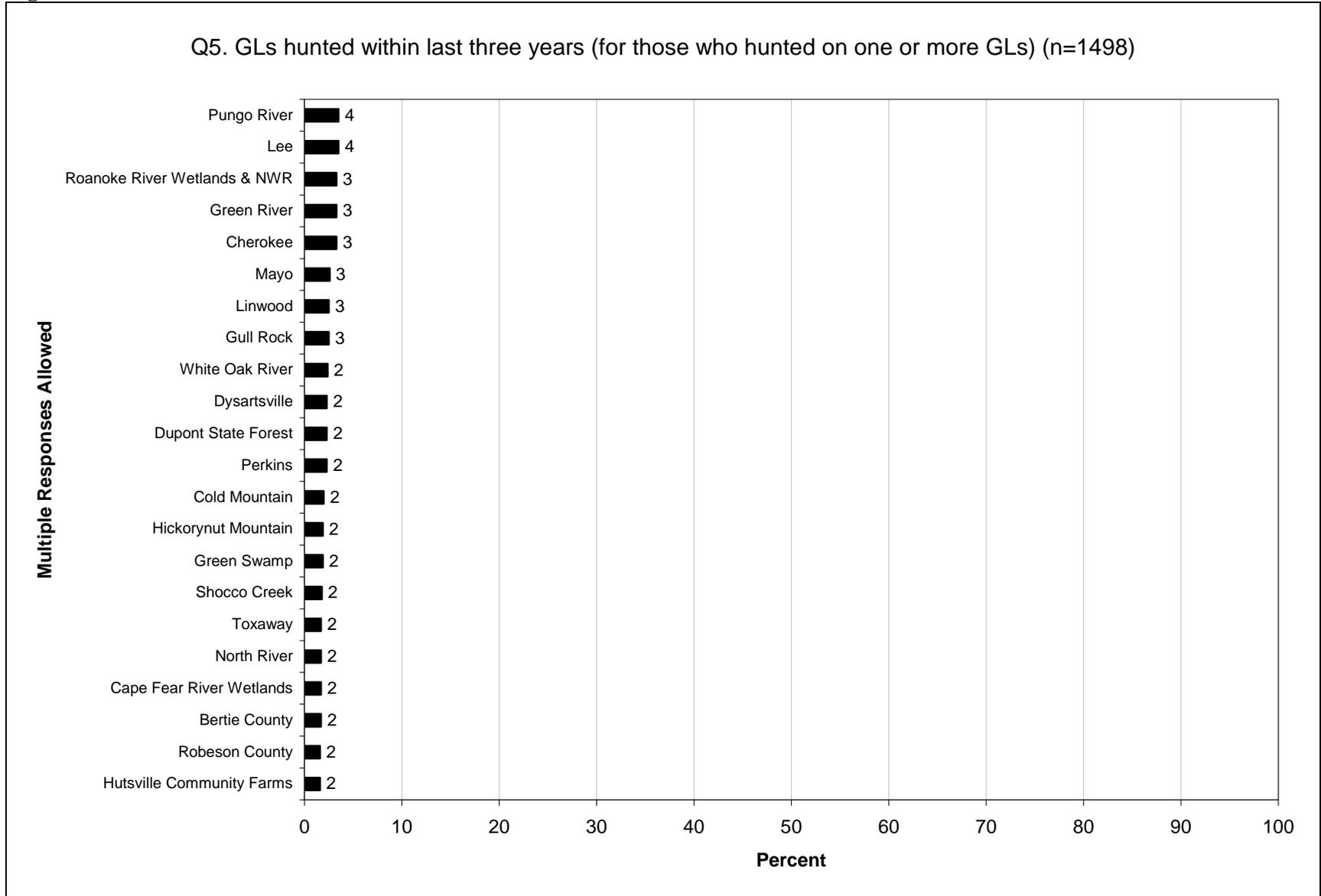


Figure 6 (continued)

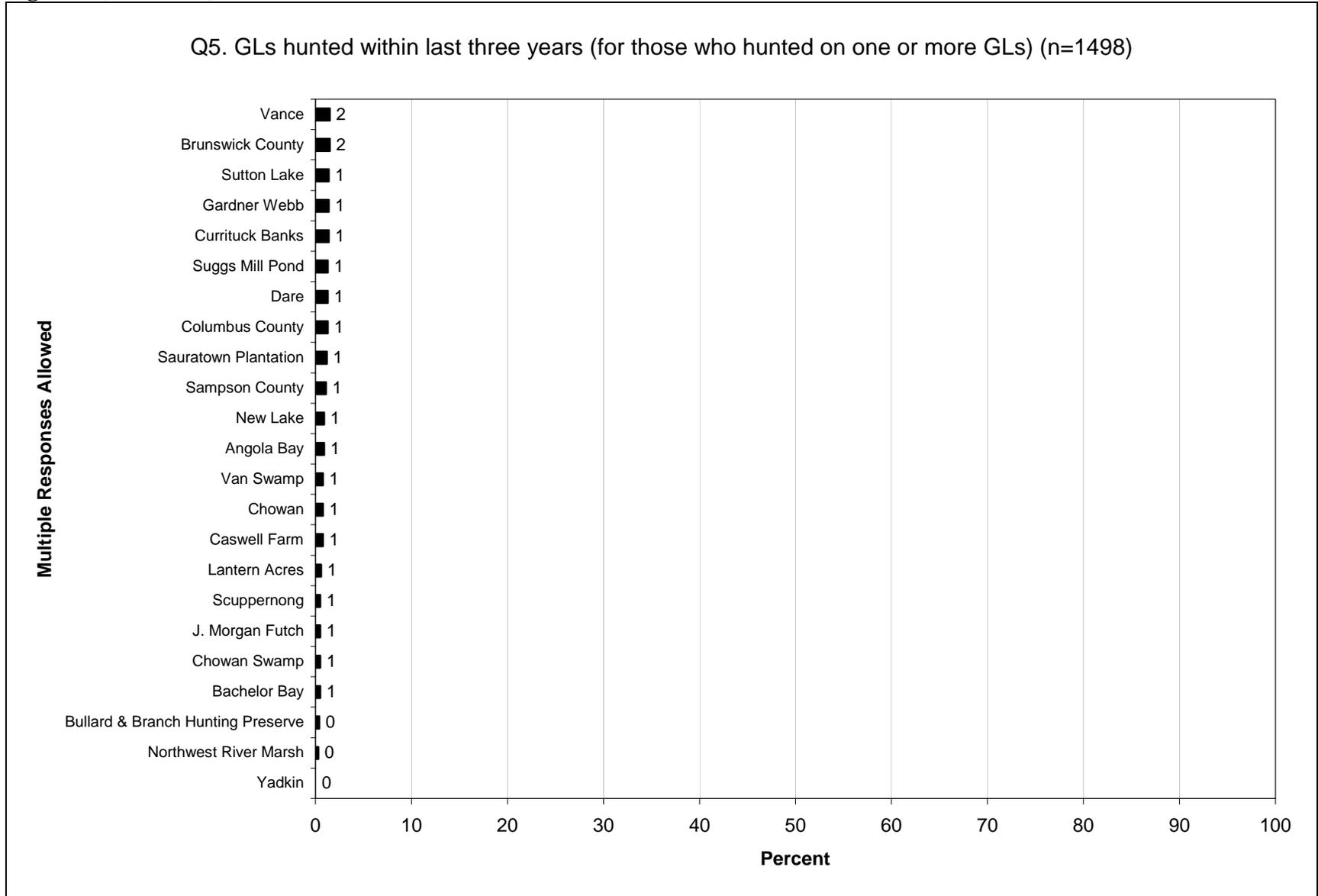
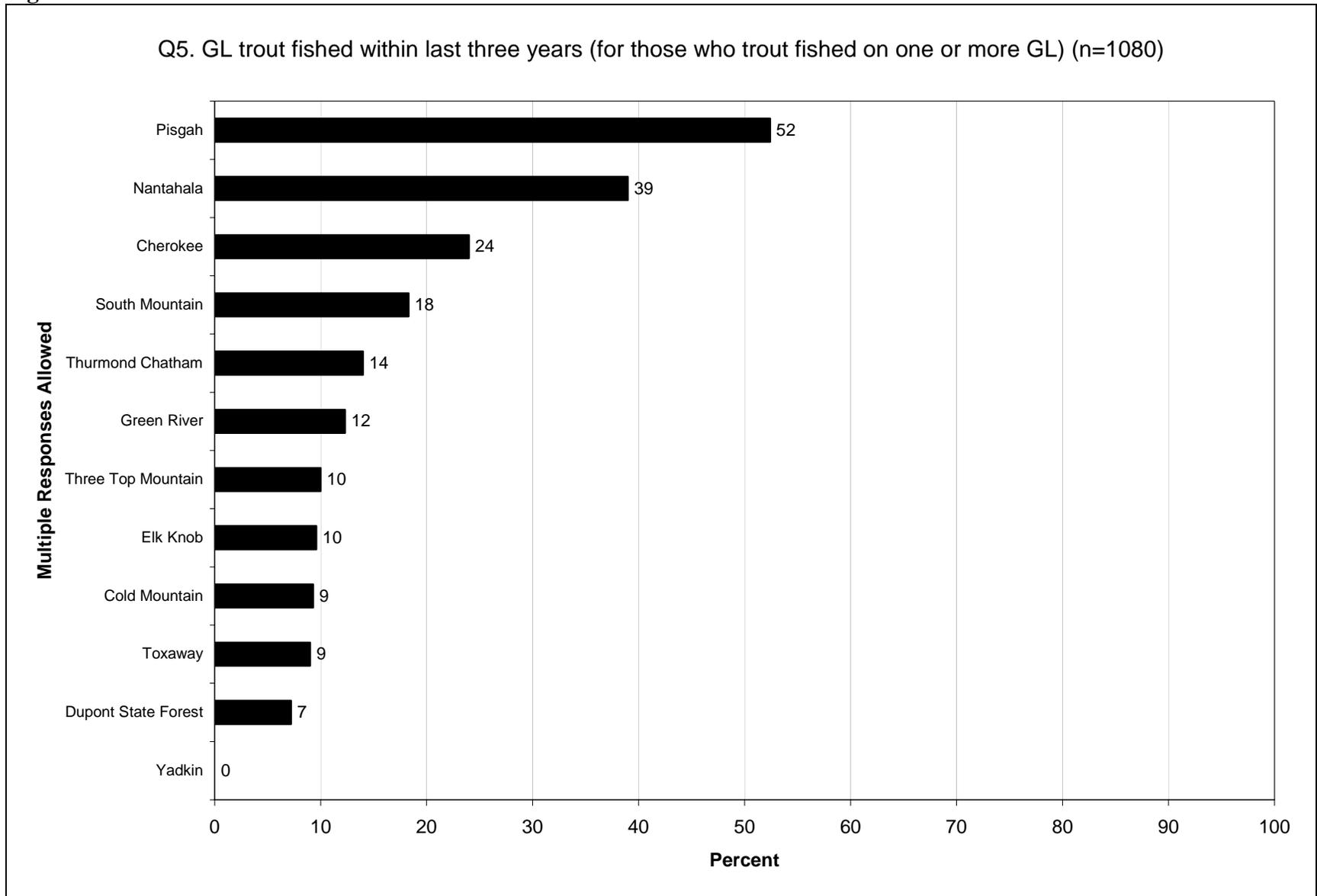


Table 17. Activities participated in by hunters on GLs in last three years (Q1) by WRC region hunted in last three years (Q5) (multiple responses allowed).

GL activities	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Non-Consumptive	44.3% (n=98)	53.7% (n=248)	69.4% (n=265)	68.7% (n=294)
Deer Hunting	75.6% (n=167)	85.7% (n=396)	87.4% (n=334)	90.2% (n=386)
Trout Fishing	10.0% (n=22)	14.1% (n=65)	74.6% (n=285)	47.9% (n=205)
Small Game Hunting	54.8% (n=121)	49.6% (n=229)	54.7% (n=209)	64.3% (n=275)
Wild Turkey Hunting	17.2% (n=38)	29.7% (n=137)	48.7% (n=186)	49.8% (n=213)
Waterfowl Hunting	28.5% (n=63)	12.3% (n=57)	3.7% (n=14)	24.8% (n=106)
Youth Hunts	11.8% (n=26)	8.4% (n=39)	12.8% (n=49)	14.7% (n=63)
Dog Training	15.8% (n=35)	9.5% (n=44)	10.2% (n=39)	13.3% (n=57)
Boar/Bear Hunting	14.9% (n=33)	0.4% (n=2)	19.9% (n=76)	15.7% (n=67)
Horseback Riding	4.1% (n=9)	4.5% (n=21)	8.6% (n=33)	8.6% (n=37)
Permitted Hunting	5.4% (n=12)	4.8% (n=22)	2.1% (n=8)	12.1% (n=52)
Trapping	1.8% (n=4)	0.4% (n=2)	2.1% (n=8)	1.6% (n=7)

Figure 7



Behaviors and preferences of GL hunters

Just over a third (35%) of GL hunters reported doing a majority of their NC hunting on GLs. A significantly higher proportion of Mountain (42%) and out-of-state residents (55%) did a majority of their NC hunting on GLs than expected (Table 18). There were also differences based on region hunted. GL hunters who hunted GLs in the Mountain region (43%) or two or more different regions (42%) were significantly more likely to use GLs for a majority of their NC hunting than expected (Table 19). Most GL hunters (67%) indicated that they did a majority of their NC hunting on private or corporate land. Piedmont residents (74%) were significantly more likely than expected to do the majority of their hunting on private or corporate land (Table 20). Hunters who hunted on Piedmont GLs (75%) were significantly more likely to do a majority of their hunting on private or corporate land than expected (Table 21).

There are indications that GLs are important to many GL hunters, even if a majority of their hunting in NC is not done on GLs. Many GL hunters (57%) ‘have experienced difficulty finding places in NC to hunt.’ Out-of-state residents who hunted GLs were significantly less likely (34%) to ‘have experienced difficulty finding places in NC to hunt’ than GL hunters who lived in other WRC regions (Table 22). A significantly higher percentage of GL hunters who have hunted two or more different regions (64%) ‘have experienced difficulty finding places in NC to hunt’ than hunters of the other regions (Table 23).

Most GL hunters (78%) consider GL to be valuable because ‘hunting leases have become unaffordable.’ Mountain residents (82%) were more likely than expected to believe that ‘GL is valuable because hunting leases have become unaffordable.’ Coastal residents (74%) were significantly less likely than expected to believe that GLs were valuable for this reason (Table 24). There was no significant difference in the value of GLs ‘because hunting leases have become unaffordable’ based on region of GLs hunted (Table 25).

A strong majority (65%) of GL hunters said they would be ‘willing to pay higher fees to help the NCWRC provide and manage additional GLs for public hunting’ (Figure 8). There was not a significant difference based on region of residence or region of GLs hunted in willingness to pay higher fees to facilitate additional GLs for public hunting (Table 26, Table 27).

Most GL hunters (58%) wanted deer to be supported for hunting on GLs (Figure 9). This is not surprising because deer hunting with a gun was the most popular GL activity. Fewer GL hunters ($\leq 12\%$) want other species supported for hunting. There were differences in preferences for game species to be supported by GLs based on region of GLs hunted (Table 28). Mountain GL hunters (64%) were significantly more likely to favor deer and Coastal GL hunters (50%) were significantly less likely to favor deer than expected. Waterfowl was the preference by significantly more Coastal GL hunters (20%) than expected.

Both biological and social factors influence GL hunters’ enjoyment of hunting (Figure 10). Around a third of GL hunters (31%) indicated that ‘seeing lots of the species’ they are hunting had the greatest impact on enjoyment of GL hunting trips. Twenty percent of GL hunters said that ‘sharing the hunt with friends or family’ had the greatest impact on enjoyment. Only 12% of GL hunters indicated that the successful harvest of hunted species was the most important factor for enjoyment. Due to low numbers of women in several categories, differences in ‘greatest impact on enjoyment’ based on sex could not be determined. Sixteen to 24 year olds (19%) were more likely than expected to report that ‘successfully harvesting species hunted’ had the greatest impact on GL hunting enjoyment (Table 29). ‘Having lots of days available to hunt a particular species’ had the greatest impact for a significantly higher proportion of those aged 55 to 64 (10%) and 65 or older (12%) than expected. ‘Spending time alone in the outdoors’ was important for a significantly higher proportion of hunters of Piedmont GLs (21%) and a

significantly lower proportion of hunters who hunted GL in two or more different regions (13%) than expected (Table 30).

The Special Hunts Opportunities program (now Permit Hunting Opportunities) is designed to offer hunters the opportunity to participate in hunts with low hunter densities. Roughly a third of GL hunters wanted to expand the Special Hunts Opportunities program (32%) or leave the program ‘as is’ (32%) (Figure 11). Very few GL hunters (4%) wanted to reduce opportunities for Special Hunts. The final third (32%) had ‘no opinion.’ There were small differences in preference for the Special Hunt Opportunities program based on region of GLs hunted, with a significantly lower percentage of Mountain GL hunters (27%) wanting to expand the program than expected (Table 31).

Some GLs only allow hunting three days per week. Three day hunts on ‘Thursday, Friday, and Saturday’ were preferred by GL hunters (39%) over ‘Monday, Wednesday, and Saturday’ (22%) and ‘Monday, Tuesday, and Wednesday’ (11%) hunts (Figure 12). However, 28% of GL hunters reported not hunting 3-day week GLs. Hunters who hunted on GLs in two or more regions (45%) had significantly higher preference than expected for ‘Thursday, Friday, and Saturday’ hunting on three-day week GLs (Table 32). ‘Monday, Wednesday, and Saturday’ hunting was supported by significantly more Coastal GL hunters (28%) and hunters of GLs in two or more regions (29%) than expected. Significantly more hunters of Mountain GLs (40%) ‘do not hunt three-day week GLs’ than expected.

Table 18. Do majority of NC hunting on GLs (Q36) by WRC region of residence (GL hunters).

Do majority of NC hunting on GLs	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Yes	31.7% (n=96)	29.0% ^a (n=189)	41.9% ^a (n=254)	54.8% ^a (n=23)
No	68.3% (n=207)	71.0% ^a (n=462)	58.1% ^a (n=352)	45.2% ^a (n=19)

.6, df=3, $p \leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 19. Do majority of NC hunting on GLs (Q36) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Do majority of NC hunting on GLs	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Yes	28.8% ^a (n=62)	25.9% ^a (n=117)	42.9% ^a (n=159)	42.2% ^a (n=176)
No	71.2% ^a (n=153)	74.1% ^a (n=335)	57.1% ^a (n=212)	57.8% ^a (n=241)

$\chi^2=39.4$, df=3, $p \leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 20. Do majority of NC hunting on private or corporate land (Q36) by WRC region of residence (GL hunters).

Do majority of NC hunting on private or corporate land	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Yes	66.6% (n=201)	74.1% ^a (n=476)	61.3% ^a (n=369)	51.2% ^a (n=21)
No	33.4% (n=101)	25.9% ^a (n=166)	38.7% ^a (n=233)	48.8% ^a (n=20)

$\chi^2=28.4$, df=3, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 21. Do majority of NC hunting on private or corporate land (Q36) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Do majority of NC hunting on private or corporate land	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Yes	69.3% (n=149)	75.4% ^a (n=334)	59.1% ^a (n=215)	61.9% ^a (n=257)
No	30.7% (n=66)	24.6% ^a (n=109)	40.9% ^a (n=149)	38.1% ^a (n=158)

$\chi^2=29.4$, df=3, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 22. Have experienced difficulty finding places in NC to hunt (Q36) by WRC region of residence (GL hunters).

Have experienced difficulty finding places in NC to hunt	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Yes	54.2% (n=161)	57.1% (n=368)	59.2% (n=353)	34.1% ^a (n=14)
No	45.8% (n=136)	42.9% (n=276)	40.8% (n=243)	65.9% ^a (n=27)

$\chi^2=10.8$, df=3, $p=0.013$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 23. Have experienced difficulty finding places in NC to hunt (Q36) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Have experienced difficulty finding places in NC to hunt	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Yes	50.7% ^a (n=107)	55.2% (n=246)	55.1% (n=199)	64.1% ^a (n=266)
No	49.3% ^a (n=104)	44.8% (n=200)	44.9% (n=162)	35.9% ^a (n=149)

$\chi^2=13.1$, df=3, $p=0.004$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 24. GL is valuable because hunting leases have become unaffordable (Q36) by WRC region of residence (GL hunters).

GL is valuable because hunting leases have become unaffordable	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Yes	73.6% ^a (n=220)	77.2% (n=498)	82.3% ^a (n=494)	75.0% (n=30)
No	26.4% ^a (n=79)	22.8% (n=147)	17.7% ^a (n=106)	25.0% (n=10)

$\chi^2=10.4$, df=3, $p=0.015$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 25. GL is valuable because hunting leases have become unaffordable (Q36) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

GL is valuable because hunting leases have become unaffordable	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Yes	73.1% ^a (n=155)	77.8% (n=346)	81.9% (n=298)	81.0% (n=336)
No	26.9% ^a (n=57)	22.2% (n=99)	18.1% (n=66)	19.0% (n=79)

^aAbsolute value of adjusted residual ≥ 2.0 .
 $\chi^2=7.6$, df=3, $p=0.054$

Figure 8

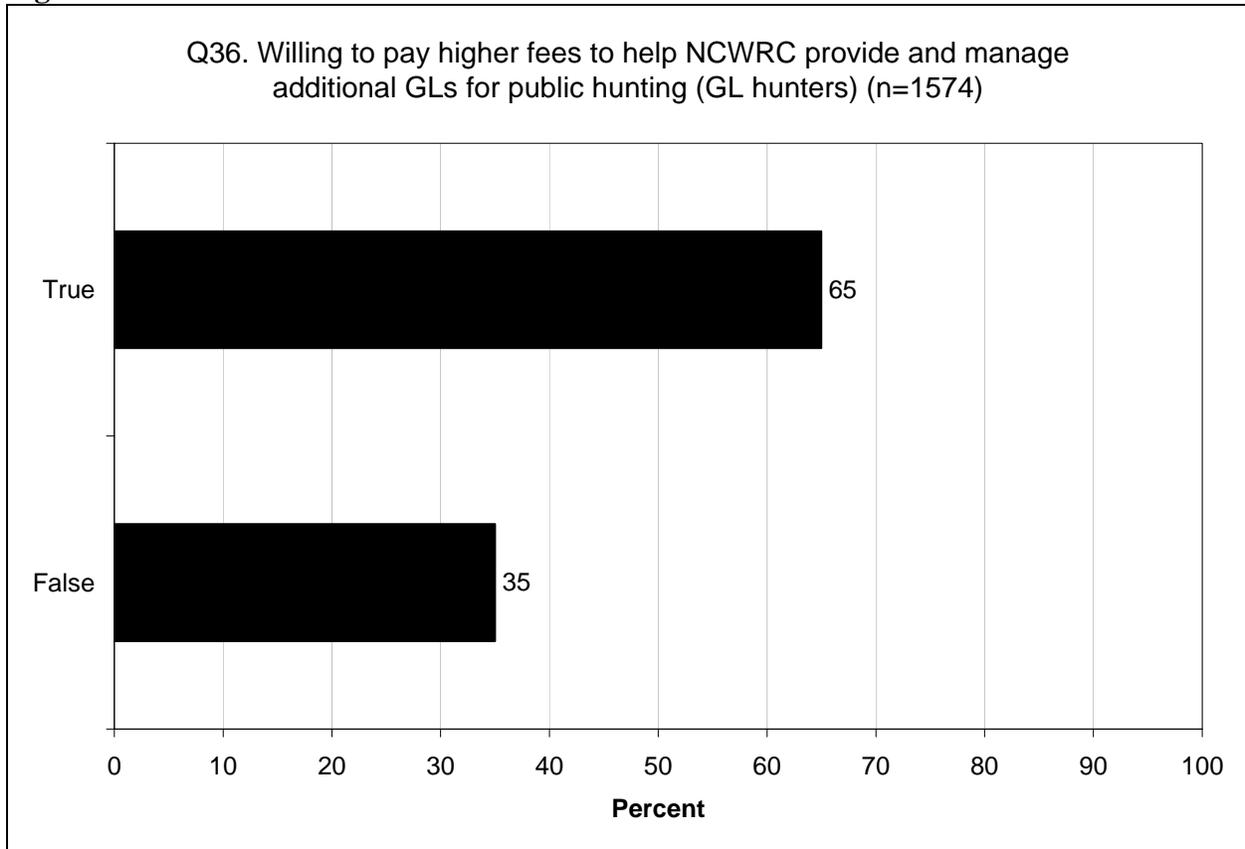


Table 26. Willing to pay higher fees to help NCWRC provide and manage additional GLs for public hunting (Q36) by WRC region of residence (GL hunters).

Willing to pay higher fees to help provide and manage additional GLs for public hunting	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Yes	66.7% (n=200)	64.2% (n=413)	65.1% (n=384)	63.4% (n=26)
No	33.3% (n=100)	35.8% (n=230)	34.9% (n=206)	36.6% (n=15)

$\chi^2=0.6, df=3, p=0.901$

Table 27. Willing to pay higher fees to help NCWRC provide and manage additional GLs for public hunting (Q36) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Willing to pay higher fees to help provide and manage additional GLs for public hunting	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Yes	67.8% (n=145)	66.6% (n=293)	61.5% (n=222)	66.6% (n=275)
No	32.2% (n=69)	33.4% (n=147)	38.5% (n=139)	33.4% (n=138)

$\chi^2=3.5, df=3, p=0.322$

Figure 9

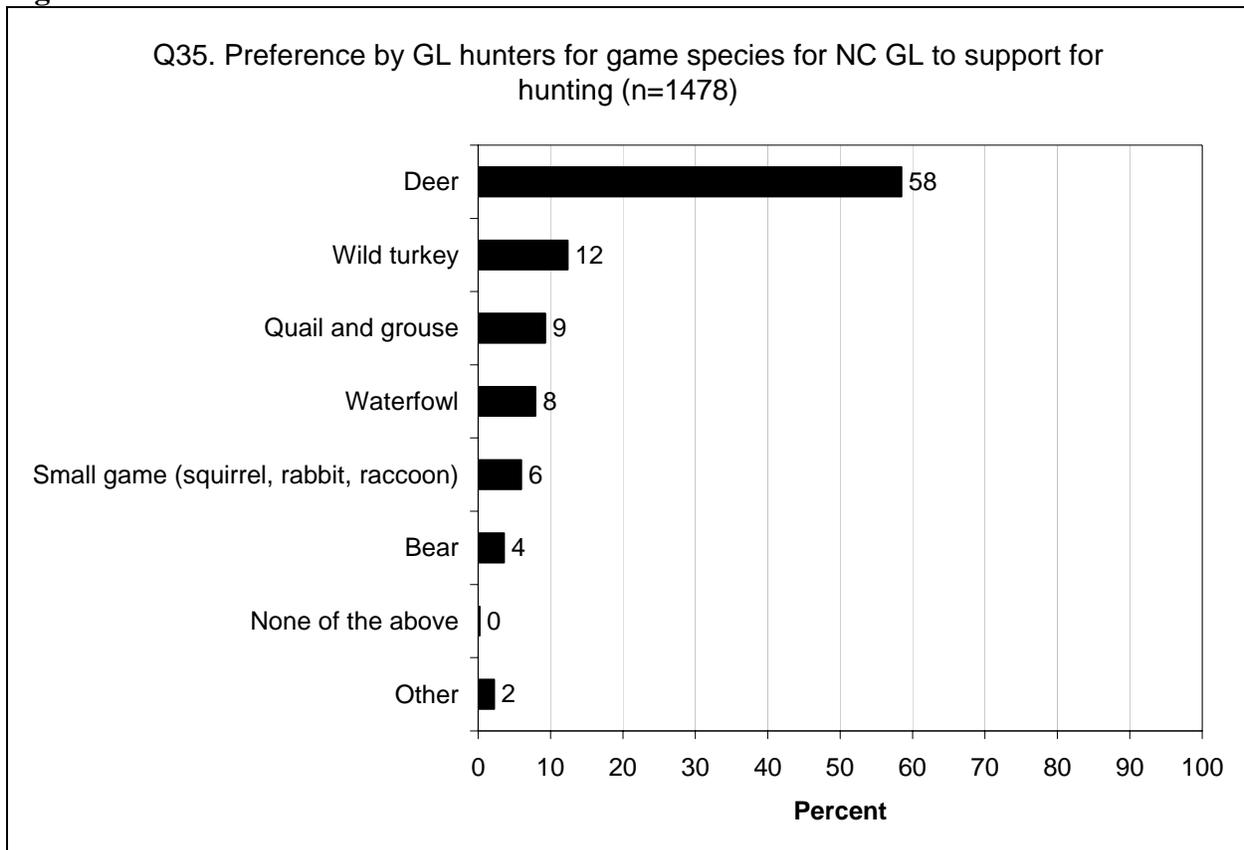


Table 28. Preferences of GL hunters for game species for NC GL to support for hunting (Q35) by WRC region of GLs hunted in last three years (Q5).

Preference for game species	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Deer	49.7% ^a (n=99)	59.4% (n=250)	64.2% ^a (n=222)	58.8% (n=227)
Wild turkey	10.1% (n=20)	12.8% (n=54)	13.9% (n=48)	11.9% (n=46)
Quail and Grouse	6.5% (n=13)	10.0% (n=42)	9.2% (n=32)	10.1% (n=39)
Waterfowl	19.6% ^a (n=39)	6.9% (n=29)	1.4% ^a (n=5)	9.6% (n=37)
Small Game	6.5% (n=13)	7.4% ^a (n=31)	4.6% (n=16)	3.1% ^a (n=12)
Bear	5.5% (n=11)	1.2% ^a (n=5)	5.2% (n=18)	4.1% (n=16)
None of the Above ^b	-	-	-	-
Other	2.0% (n=4)	2.4% (n=10)	1.4% (n=5)	2.3% (n=9)

$\chi^2=81.1, df=18, p\leq 0.001$

^a Absolute value of adjusted residual ≥ 2.0 .

^b Category not included in crosstabulation due to small numbers of respondents.

Figure 10

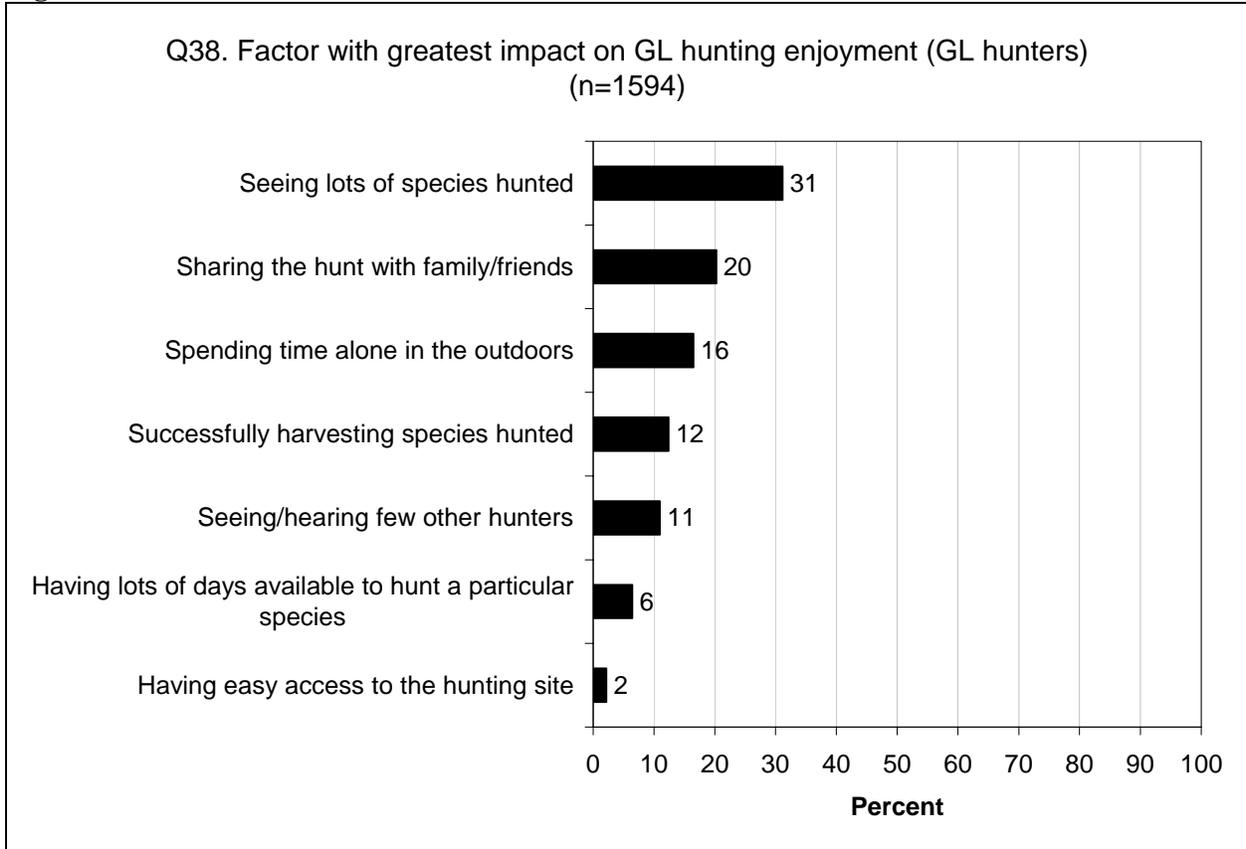


Table 29. Factor with greatest impact on GL hunting enjoyment (Q38) by age (GL hunters).

Greatest impact on GL hunting enjoyment	Age (years)					
	16-24	25-34	35-44	45-54	55-64	≥ 65
Seeing lots of species hunted	31.3% (n=36)	35.4% (n=114)	31.6% (n=144)	29.7% (n=98)	30.5% (n=72)	23.7% (n=31)
Sharing the hunt with family/friends	20.9% (n=24)	18.0% (n=58)	22.9% (n=104)	21.5% (n=71)	17.8% (n=42)	16.8% (n=22)
Spending time alone in the outdoors	13.9% (n=16)	18.3% (n=59)	13.6% ^a (n=62)	17.0% (n=56)	18.6% (n=44)	19.8% (n=26)
Successfully harvesting species hunted	19.1% ^a (n=22)	11.5% (n=37)	10.5% (n=48)	15.5% (n=51)	8.9% (n=21)	14.5% (n=19)
Seeing/hearing few other hunters	8.7% (n=10)	10.6% (n=34)	12.7% (n=58)	10.6% (n=35)	12.3% (n=29)	6.9% (n=9)
Having lots of days available to hunt a particular species	4.3% (n=5)	4.3% (n=14)	6.6% (n=30)	4.5% (n=15)	9.7% ^a (n=23)	12.2% ^a (n=16)
Having easy access to the hunting site	1.7% (n=2)	1.9% (n=6)	2.0% (n=9)	1.2% (n=4)	2.1% (n=5)	6.1% ^a (n=8)

$\chi^2=55.5$, $df=30$, $p=0.003$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 30. Factor with greatest impact on GL hunting enjoyment (Q38) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Greatest impact on GL hunting enjoyment	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Seeing lots of species hunted	27.9% (n=65)	31.6% (n=150)	32.0% (n=123)	31.9% (n=138)
Sharing the hunt with family/friends	23.2% (n=54)	17.7% (n=84)	18.2% (n=70)	22.6% (n=98)
Spending time alone in the outdoors	17.6% (n=41)	20.5% ^a (n=97)	17.7% (n=68)	12.5% ^a (n=54)
Successfully harvesting species hunted	10.7% (n=25)	8.2% ^a (n=39)	14.1% (n=54)	14.1% (n=61)
Seeing/hearing few other hunters	11.6% (n=27)	12.4% (n=59)	8.9% (n=34)	11.5% (n=50)
Having lots of days available to hunt a particular species	6.0% (n=14)	6.3% (n=30)	7.3% (n=28)	6.0% (n=26)
Having easy access to the hunting site	3.0% (n=7)	3.2% (n=15)	1.8% (n=7)	1.4% (n=6)
$\chi^2=30.4$, $df=18$, $p=0.034$				

^aAbsolute value of adjusted residual ≥ 2.0 .

Figure 11

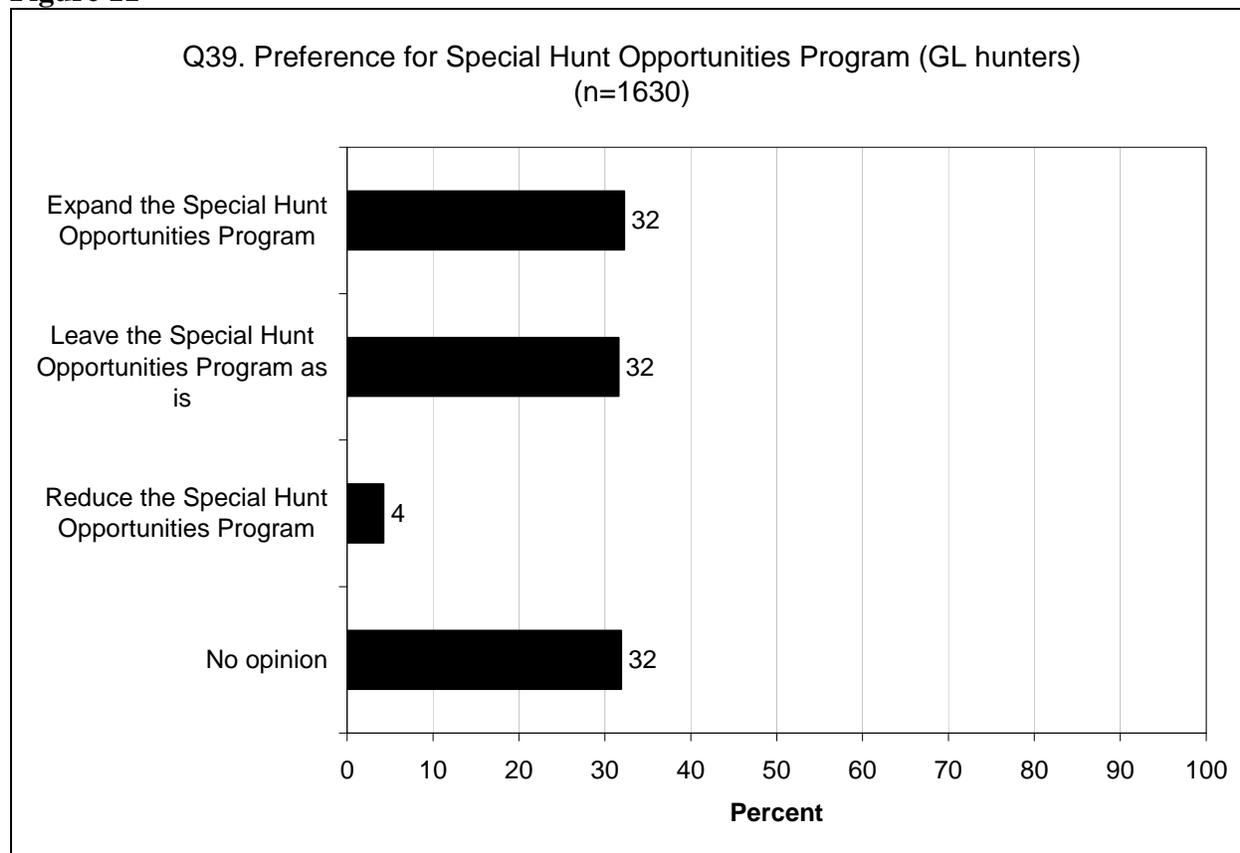


Table 31. Preference for Special Hunt Opportunities program (Q39) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Preference for Special Hunt Opportunities Program	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Expand the Special Hunt Opportunities Program	31.9% (n=69)	33.6% (n=154)	26.7% ^a (n=101)	34.8% (n=147)
Leave the Special Hunt Opportunities Program as is	38.0% (n=82)	28.4% ^a (n=130)	32.5% (n=123)	33.6% (n=142)
Reduce the Special Hunt Opportunities Program	2.3% (n=5)	3.3% (n=15)	5.3% (n=20)	5.0% (n=21)
No opinion	27.8% (n=60)	34.7% (n=159)	35.4% (n=134)	26.5% ^a (n=112)

$\chi^2=21.4$, df=9, $p=0.011$

^aAbsolute value of adjusted residual ≥ 2.0 .

Figure 12

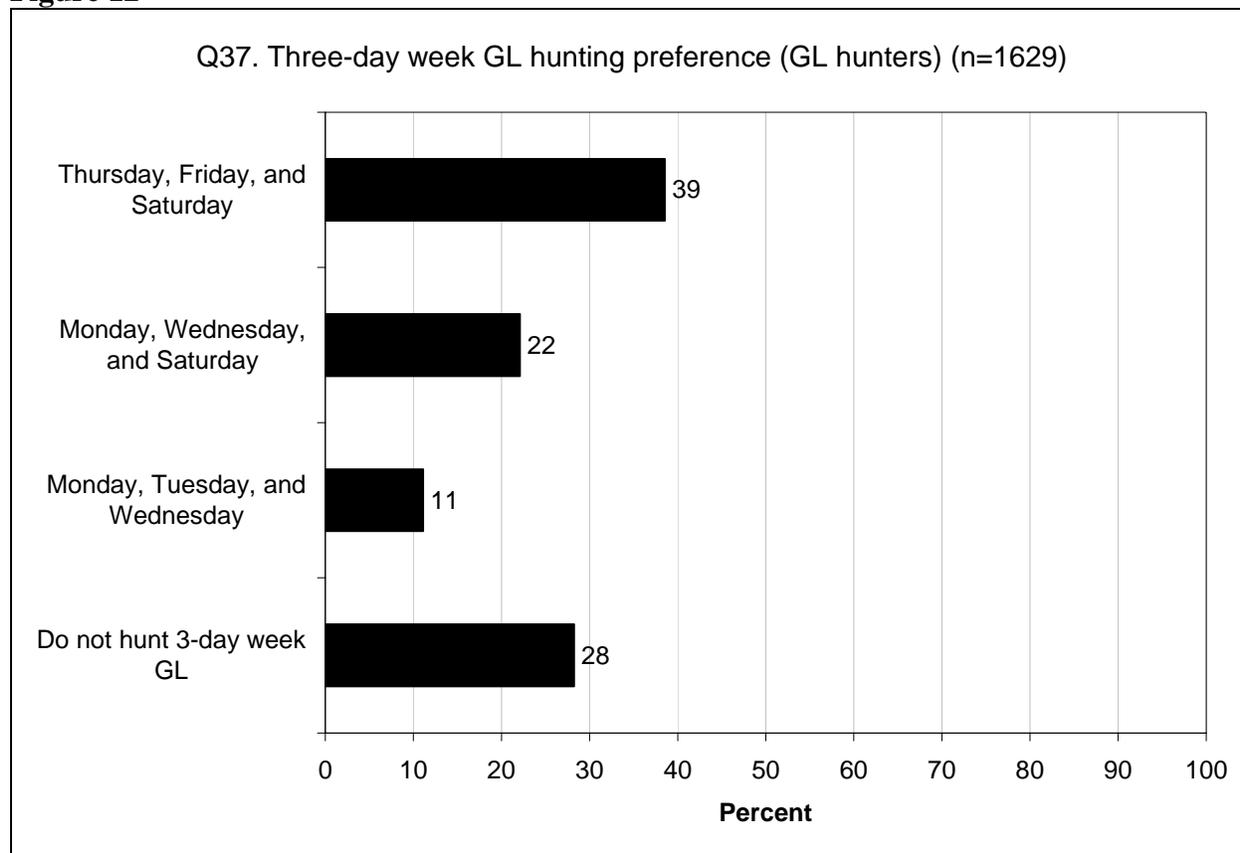


Table 32. Three-day week GL hunting preference (Q37) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Three-day week GL hunting preference	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Thursday, Friday, and Saturday	37.9% (n=81)	34.3% ^a (n=158)	37.7% (n=143)	44.6% ^a (n=187)
Monday, Wednesday, and Saturday	28.0% ^a (n=60)	24.1% (n=111)	10.0% ^a (n=38)	29.1% ^a (n=122)
Monday, Tuesday, and Wednesday	8.9% (n=19)	12.4% (n=57)	11.9% (n=45)	11.7% (n=49)
Do not hunt 3-Day Week GLs	25.2% (n=54)	29.3% (n=135)	40.4% ^a (n=153)	14.6% ^a (n=61)

$\chi^2=95.3$, $df=9$, $p \leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Behaviors and preferences of GL trout anglers

We asked those respondents who had trout fished on GLs within the previous 3 years about their fishing behaviors and trout management preferences. About a quarter (26%) of GL anglers reported harvesting 0 to 2 trout on a typical trip to Hatchery Supported GLs waters (Figure 13). Half (50%) reported typically harvesting 3 to 7 trout per trip and 21% ‘do not harvest trout.’

GL trout anglers prefer Hatchery Supported (63%) to Delayed Harvest (33%) almost two to one for a Stocked Trout fishing program on GLs (Figure 14). Few GL anglers (4%) do not fish Stocked Trout Waters.

For a trout stocking program on GLs, the ‘current number and size of trout’ was favored by 41% of GL anglers (Figure 15). Only 27% of GL anglers selected having ‘fewer trout, but larger size’ and 24% wanted ‘more trout, but smaller size.’

Nearly half (46%) of GL trout anglers wanted the number of special regulation trout streams on GLs (e.g., tackle restrictions, catch and release) to ‘remain the same’ (Figure 16). Fewer GL anglers wanted the number of special regulations to increase (27%) or decrease (18%).

A plurality of GLs anglers (39%) favored increasing the number of Wild trout streams that allow the use of natural bait (i.e., Wild/Natural Bait) and nearly as many GL anglers (34%) wanted the number to ‘remain the same’ (Figure 17). A fifth (20%) wanted the number of such streams decreased.

Wild Trout waters are not stocked by the NCWRC. Anglers were asked which type of regulations on Wild Trout waters they would most prefer (Figure 18). Wild/Natural Bait designation (4 fish/day; 7” minimum size limit; no bait restrictions) was preferred by almost half (49%) of respondents. Fewer GL trout anglers preferred Wild Trout (24%) (4 fish/day; 7” minimum size limit; artificial lures only), Catch & Release Artificial Fly Only (16%) (no harvest; artificial flies only), and Catch & Release Artificial Lure Only (8%) (no harvest; artificial lures only). Only 3% indicated that they did not fish Wild Trout Waters.

Figure 13

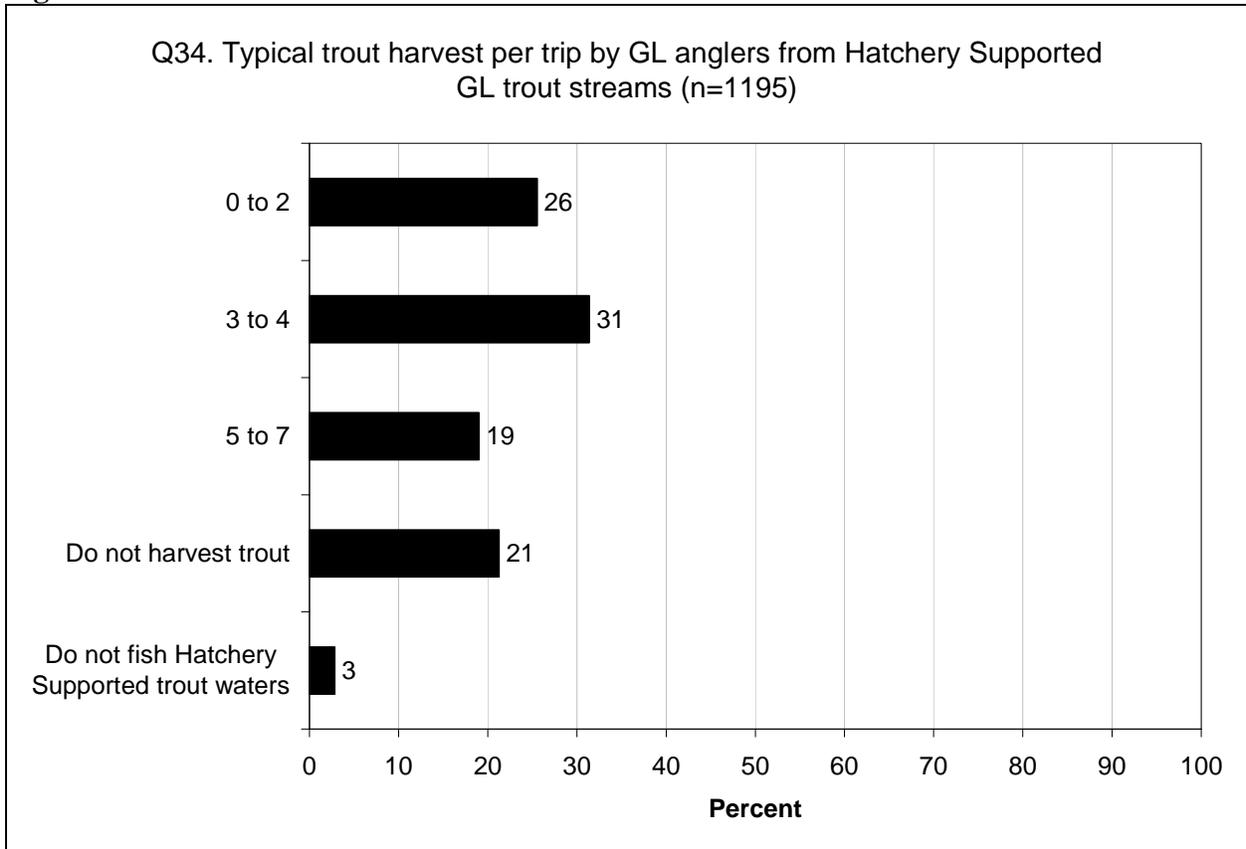


Figure 14

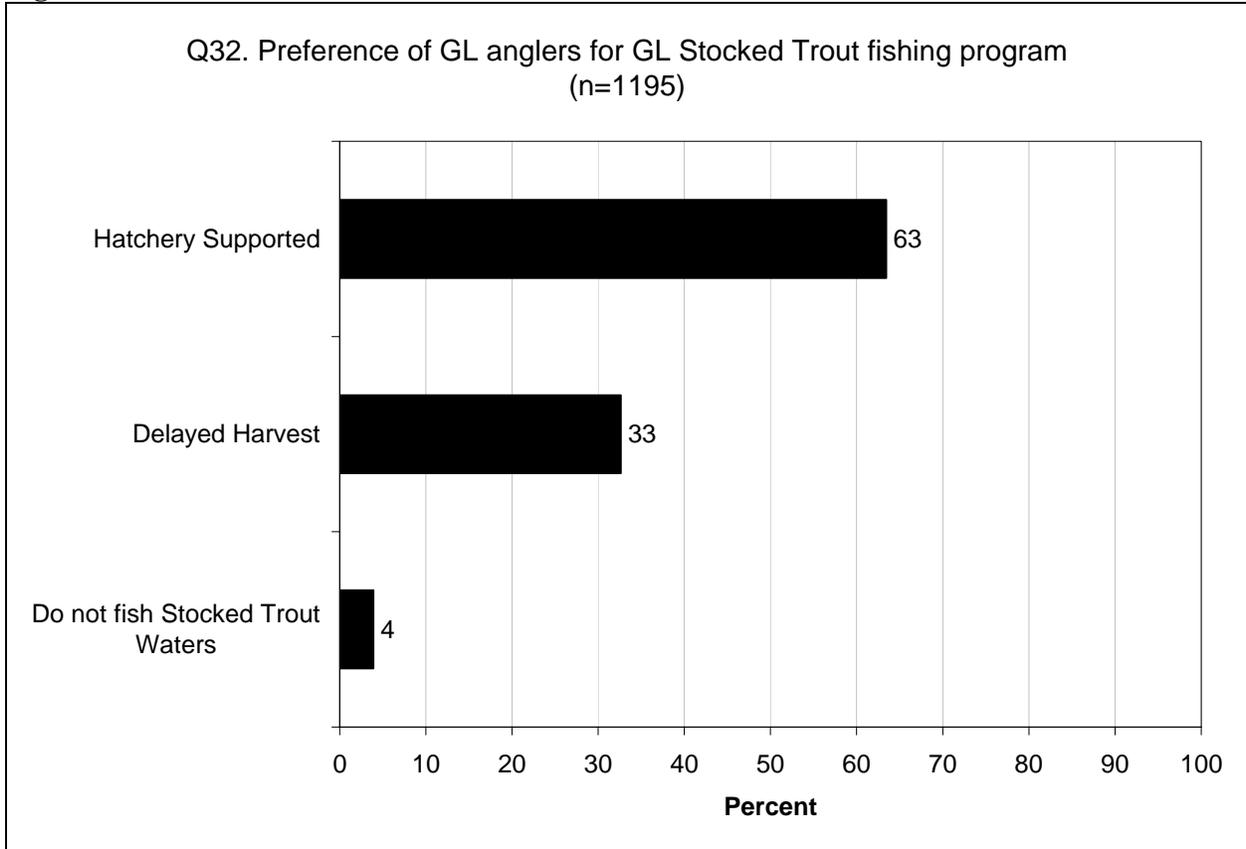


Figure 15

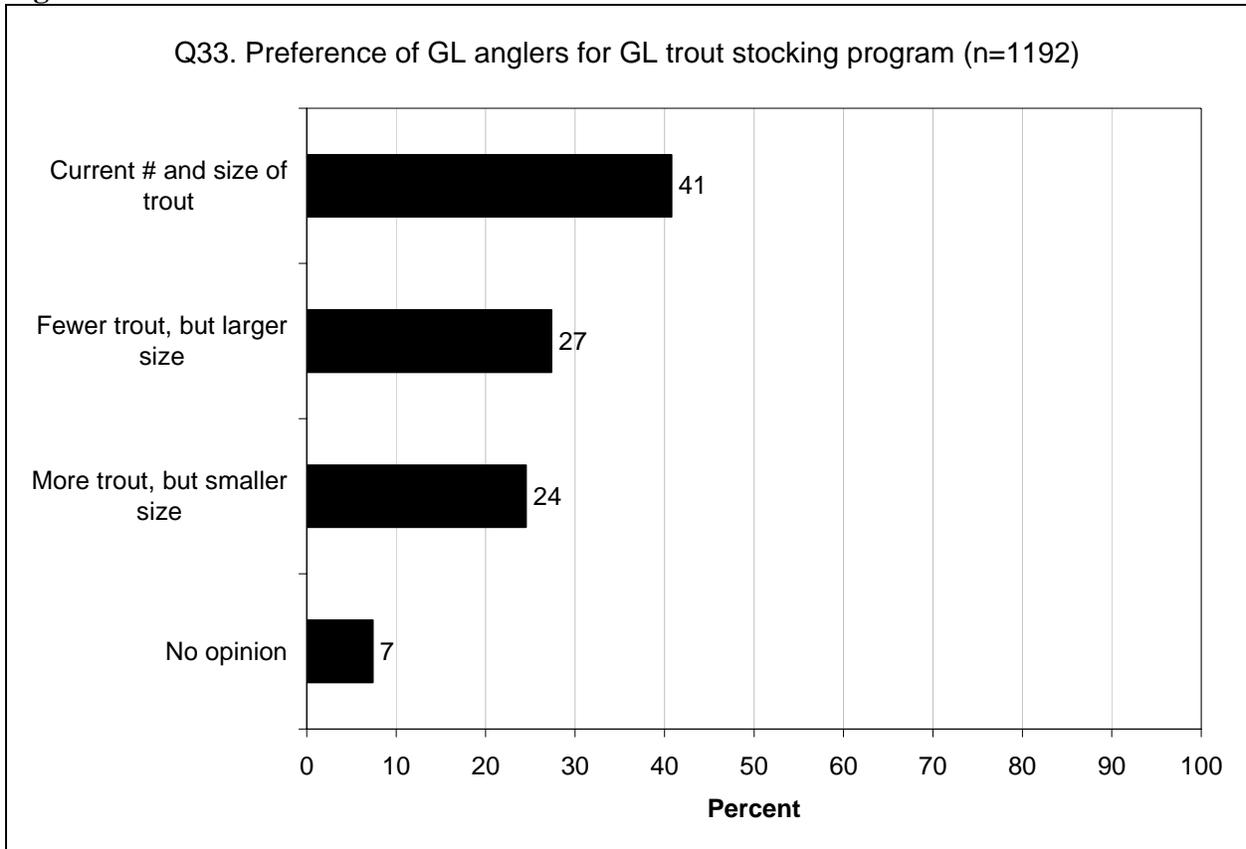


Figure 16

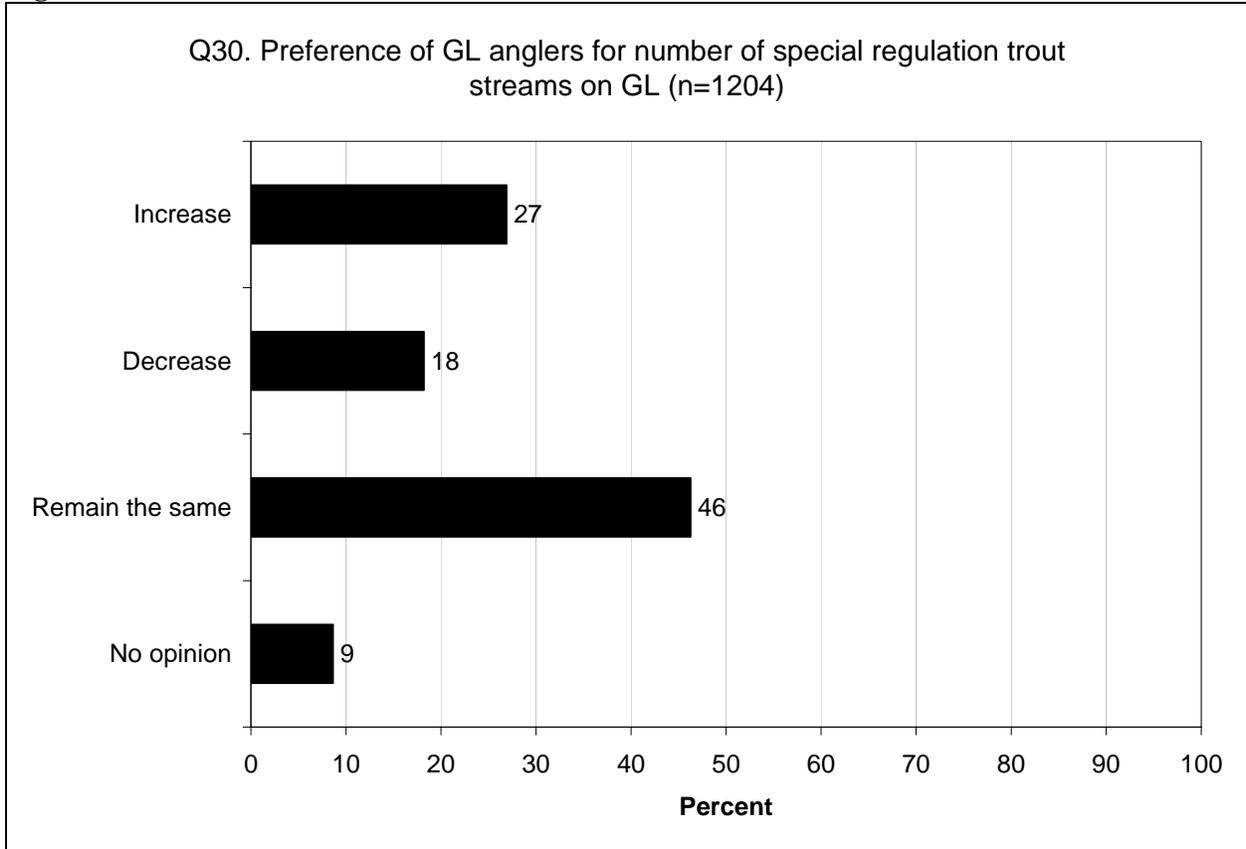


Figure 17

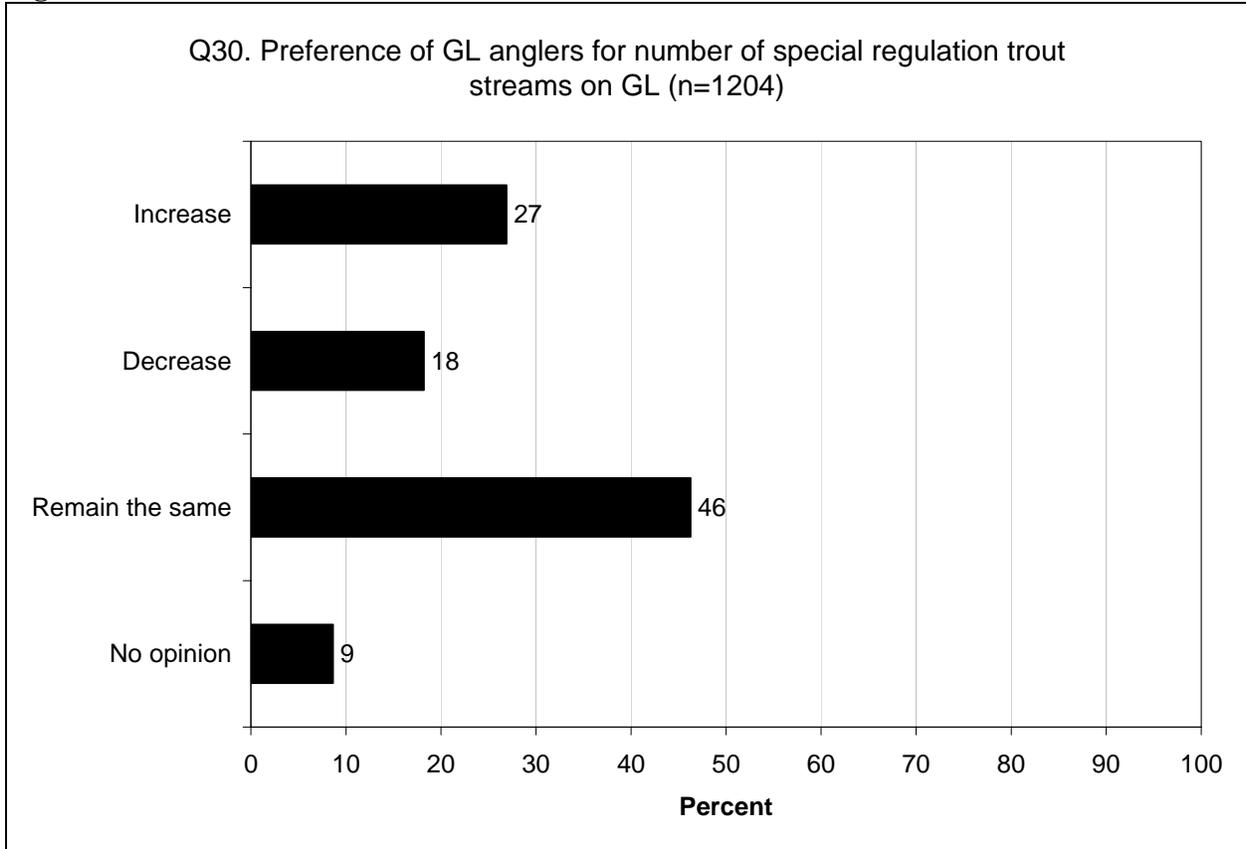
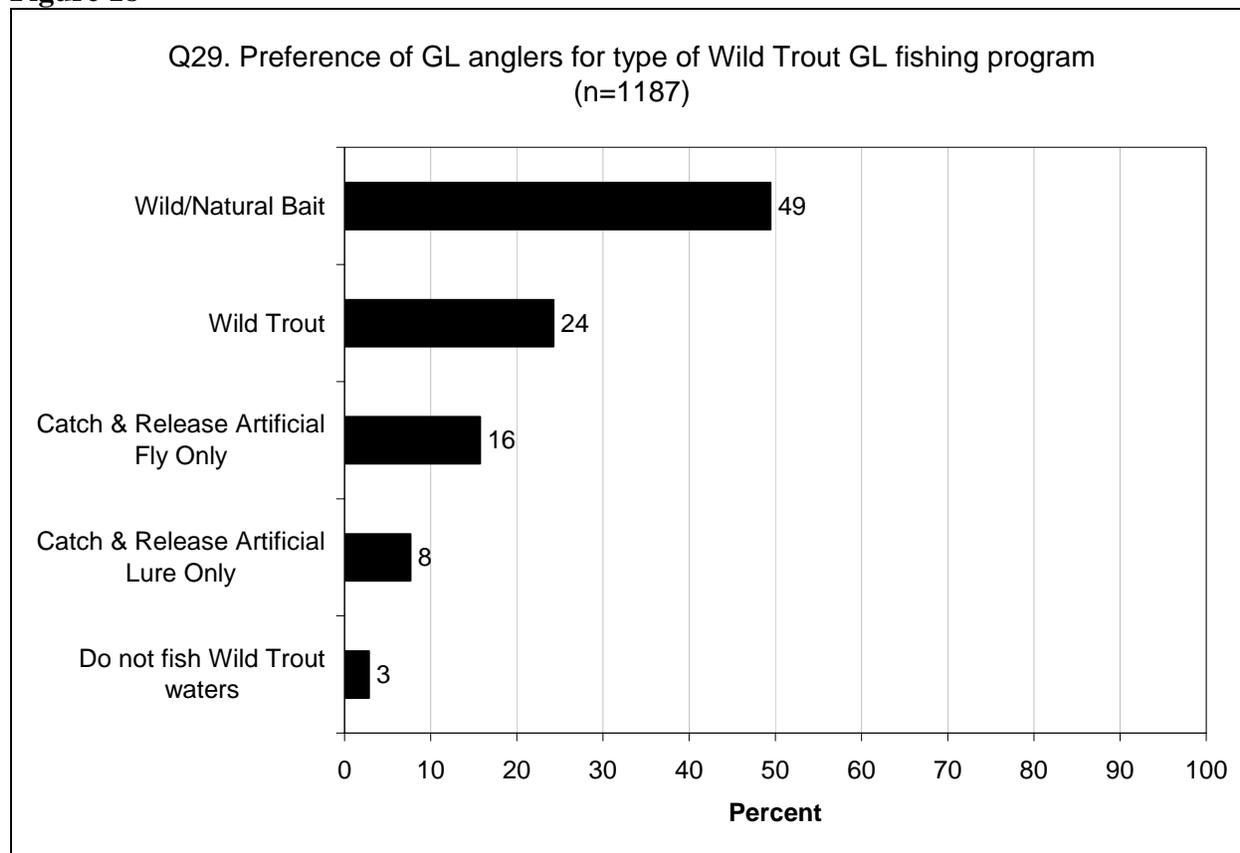


Figure 18



Hunter and angler satisfaction with GL program

We asked all respondents who hunted or trout fished on GLs in the past three years about their satisfaction with various factors related to the use of GLs (Figure 19). Over 68% of respondents indicated that they were ‘satisfied’ with ‘roads/access,’ ‘level of disturbance by NCWRC employees,’ and ‘enforcement of wildlife/fisheries laws.’ Similar proportions of GL hunters and anglers expressed being ‘satisfied’ (45%) as were ‘dissatisfied’ (42%) with the ‘abundance of game/trout.’ ‘Level of disturbance by other GL users’ had the highest proportion of ‘dissatisfied’ (42%) responses, which was slightly more than the proportion of GL hunters and anglers who were ‘satisfied’ (41%) with disturbance levels.

Significantly fewer hunters of Mountain GLs (65%) were satisfied with ‘roads/access’ than expected (Table 33). Mountain GL hunters (78%) were significantly more satisfied and Coastal GL hunters (29%) were more likely to have no opinion about the ‘level of disturbance by NCWRC employees’ than expected (Table 34). Hunters who hunted on GLs in more than one region were more satisfied (71%) and less likely to have no opinion (16%) about the ‘enforcement of wildlife/fisheries laws’ than expected (Table 35). Hunters of Mountain GLs (19%) were more dissatisfied with enforcement of laws than expected. A significantly higher number of Coastal GL hunters had no opinion (19%) about parking and a significantly lower number of Coastal GL hunters were dissatisfied (19%) with parking than expected (Table 36). Satisfaction with proximity to home was significantly higher for Mountain GL hunters (71%) and significantly lower for GL hunters who hunted in two or more different regions (57%) than expected (Table 37). There were significant differences in satisfaction with ‘number of other

hunters/fishermen' based on region of GLs hunted (Table 38). Hunters of Coastal GLs (65%) were more likely to be satisfied and Mountain GL hunters (50%) were significantly less likely to be satisfied with management of habitat for species hunted on GLs than expected (Table 39). Hunters of Mountain GLs (64%) were generally satisfied with experiences had trout fishing (Table 40). Piedmont GL hunters (50%) were significantly more satisfied and Mountain GL hunters (37%) were significantly less satisfied than expected with the 'abundance of game/trout' on GLs (Table 41). A significantly higher proportion of hunters who hunted on Mountain GLs (46%) and more than one GL (43%) were satisfied with 'camping availability' than expected, while significantly more Coastal (47%) and Piedmont (44%) GL hunters than expected had no opinion about the availability of camping (Table 42). There were no significant differences in satisfaction with 'level of disturbance by other GL users' based on region of GLs hunted (Table 43).

'Abundance of game/trout' had, on average, the greatest importance in determining enjoyment for GL hunters and anglers ($\bar{x}=4.0$, $SD=3.0$) (Figure 20). Management of habitat for hunted species ($\bar{x}=5.1$, $SD=3.0$), 'proximity to home' ($\bar{x}=5.3$, $SD=3.0$), 'level of disturbance by other GL users' ($\bar{x}=5.5$, $SD=2.9$), and 'number of other hunters/fishermen' ($\bar{x}=5.6$, $SD=2.8$) were also fairly important. 'Level of disturbance by NCWRC employees' ($\bar{x}=8.0$, $SD=1.5$) was by far the least important factor.

There were significant differences between regions of GLs hunted for several factors in determining enjoyment of GL experiences (Table 44). 'Abundance of game/trout' was significantly more important for hunters of Mountain GLs ($\bar{x}=3.6$, 95% C.I.=3.29-3.98) than hunters on Coastal ($\bar{x}=5.0$, 95% C.I.=4.53-5.45) or Piedmont ($\bar{x}=4.5$, 95% C.I.=4.16-4.78) GLs. Proximity of GLs to home and disturbance by other GL users were both significantly more important in determining enjoyment for Piedmont GL hunters (proximity: $\bar{x}=4.7$, 95% C.I.=4.40-5.00; disturbance: $\bar{x}=5.1$, 95% C.I.=4.76-5.36) than Mountain GL hunters (proximity: $\bar{x}=5.6$, 95% C.I.=5.30-6.00; disturbance: $\bar{x}=5.8$, 95% C.I.=5.43-6.07). Hunters on Coastal GLs ($\bar{x}=4.9$, 95% C.I.=4.46-5.36) believed that 'roads/access' was more important than did hunters on Piedmont GLs ($\bar{x}=5.8$, 95% C.I.=5.52-6.08), Mountain GLs ($\bar{x}=5.8$, 95% C.I.=5.46-6.10) or hunters who hunted on GLs in two or more different regions ($\bar{x}=5.9$, 95% C.I.=5.59-6.22). 'Camping availability' was more important to hunters who hunted on Mountain GLs ($\bar{x}=6.5$, 95% C.I.=6.18-6.82) than Coastal ($\bar{x}=7.3$, 95% C.I.=6.98-7.68) or Piedmont ($\bar{x}=7.2$, 95% C.I.=6.90-7.41) GLs.

Over 84% of GL hunters and anglers were 'satisfied' (73%) or 'very satisfied' (12%) with the GL program in general (Figure 21). Only 11% were 'dissatisfied' (9%) or 'very dissatisfied' (2%). The mean satisfaction score for GL hunters and anglers was 3.0 ($SD=0.5$). Hunters who hunted on Coastal GLs ($\bar{x}=3.1$, 95% C.I.=3.00-3.14) had significantly higher level of satisfaction than Mountain GL hunters ($\bar{x}=2.9$, 95% C.I.=2.85-2.97) (Table 45).

The only variables that had significant bivariate relationships to overall satisfaction with the GL program were: management for hunted species ($R=0.091$, $p\leq 0.001$) and experience had while trout fishing ($R=-0.082$, $p=0.001$) (Table 46). Both correlations were weak. Experience had while trout fishing was negatively correlated with overall satisfaction; this means that GL hunters and anglers who considered trout fishing to be more important were more satisfied than those who thought trout fishing was less important. Management for hunted species was positively correlated with overall satisfaction. GL hunters and anglers who ranked management for hunted species as less important were more satisfied than those who ranked management as more important. At the multivariate level, all dependent variables, except age, experience had while trout fishing, and level of disturbance by NCWRC employees, were significantly correlated with overall satisfaction. All of these statistically significant relationships were

positive and weak to moderate in strength (0.153 to 0.280). Therefore, when controlling for the other independent variables in the model, GL hunters and anglers who ranked the significant items as less important were more satisfied than GL hunters who ranked these same items as more important.

Figure 19

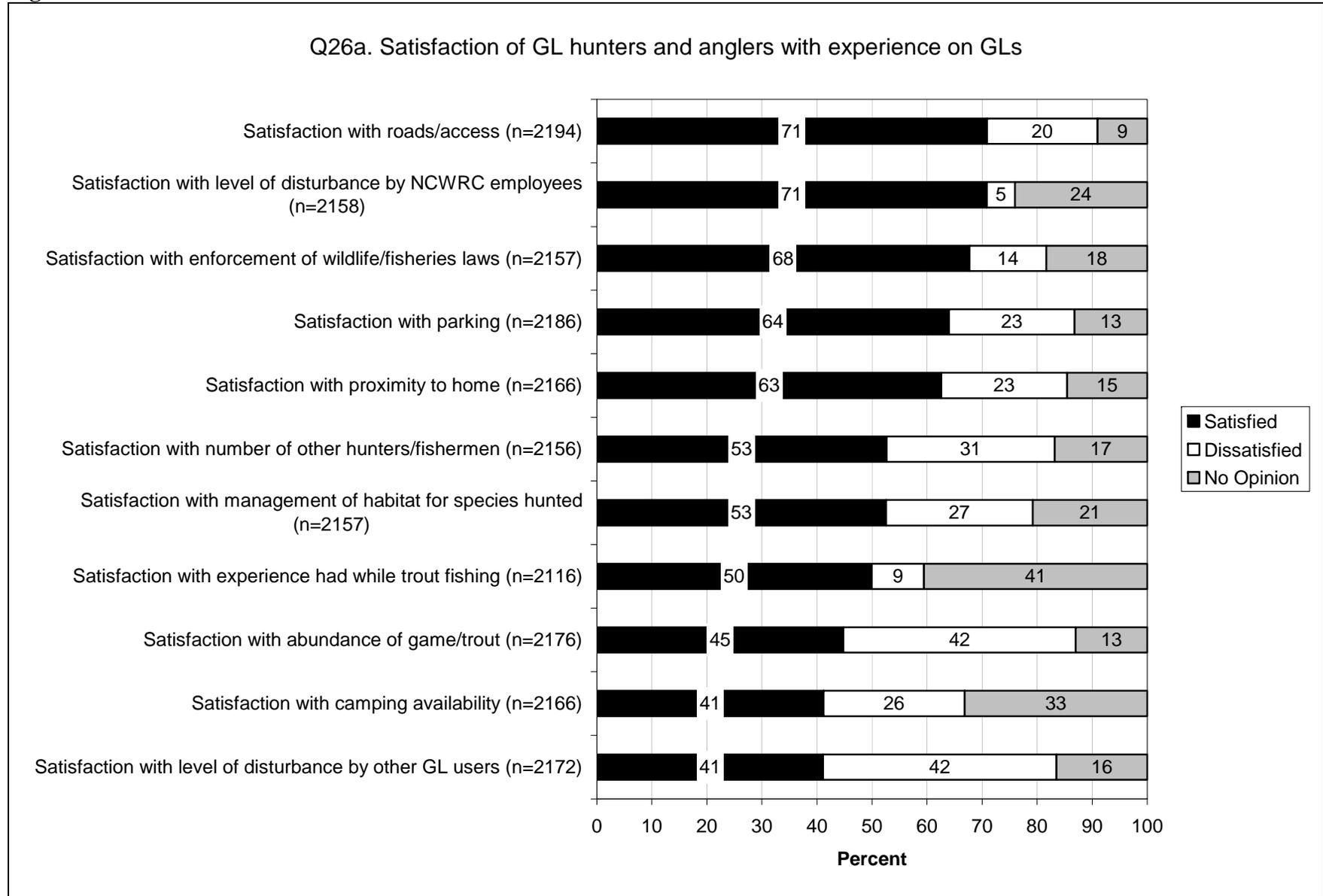


Table 33. Satisfaction of GL hunters with GL roads/access (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with GL roads/access	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Satisfied	67.9% (n=148)	71.4% (n=325)	65.4% ^a (n=244)	72.0% (n=306)
Dissatisfied	21.6% (n=47)	21.3% (n=97)	26.8% ^a (n=100)	22.4% (n=95)
No Opinion	10.6% (n=23)	7.3% (n=33)	7.8% (n=29)	5.6% (n=24)

$\chi^2=9.5$, $df=6$, $p=0.145$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 34. Satisfaction of GL hunters with level of disturbance by NCWRC employees on GLs (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with level of disturbance by NCWRC employees on GLs	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Satisfied	65.1% ^a (n=136)	72.2% (n=325)	77.6% ^a (n=284)	75.4% (n=319)
Dissatisfied	5.7% (n=12)	5.3% (n=24)	5.7% (n=21)	6.4% (n=27)
No Opinion	29.2% ^a (n=61)	22.4% (n=101)	16.7% ^a (n=61)	18.2% (n=77)

$\chi^2=15.7$, $df=6$, $p=0.016$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 35. Satisfaction of GL hunters with enforcement of wildlife/fisheries laws on GLs (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with enforcement of wildlife/fisheries laws on GLs	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Satisfied	66.7% (n=140)	61.7% ^a (n=275)	69.0% (n=256)	70.9% ^a (n=295)
Dissatisfied	9.5% (n=20)	11.2% (n=50)	18.9% ^a (n=70)	12.7% (n=53)
No Opinion	23.8% (n=50)	27.1% ^a (n=121)	12.1% ^a (n=45)	16.3% ^a (n=68)

$\chi^2=43.0$, $df=6$, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 36. Satisfaction of GL hunters with GL parking (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with GL parking	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	62.1% (n=133)	59.7% (n=273)	65.6% (n=244)	65.4% (n=276)
Dissatisfied	19.2% ^a (n=41)	27.6% (n=126)	23.7% (n=88)	26.1% (n=110)
No Opinion	18.7% ^a (n=40)	12.7% (n=58)	10.8% (n=40)	8.5% ^a (n=36)

$\chi^2=19.2$, df=6, $p=0.004$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 37. Satisfaction of GL hunters with proximity of GLs to home (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with proximity of GLs to home	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	64.8% (n=138)	66.2% (n=298)	71.1% ^a (n=261)	56.6% ^a (n=239)
Dissatisfied	16.9% ^a (n=36)	22.7% (n=102)	18.5% ^a (n=68)	31.8% ^a (n=134)
No Opinion	18.3% ^a (n=39)	11.1% (n=50)	10.4% (n=38)	11.6% (n=49)

$\chi^2=35.2$, df=6, $p=0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 38. Satisfaction of GL hunters with number of other hunters/fishermen on GLs (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with number of other hunters/fishermen on GLs	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	51.9% (n=110)	48.9% (n=220)	56.4% (n=207)	51.7% (n=214)
Dissatisfied	25.5% ^a (n=54)	34.9% (n=157)	28.9% (n=106)	35.5% (n=147)
No Opinion	22.6% ^a (n=48)	16.2% (n=73)	14.7% (n=54)	12.8% ^a (n=53)

$\chi^2=17.8$, df=6, $p=0.007$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 39. Satisfaction of GL hunters with management of habitat for species hunted on GLs (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with habitat management for species hunted on GLs	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	64.5% ^a (n=138)	58.9% (n=267)	49.7% ^a (n=186)	58.7% (n=247)
Dissatisfied	27.1% ^a (n=58)	30.7% (n=139)	41.7% ^a (n=156)	34.2% (n=144)
No Opinion	8.4% (n=18)	10.4% (n=47)	8.6% (n=32)	7.1% (n=30)

$\chi^2=19.7$, df=6, $p=0.003$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 40. Satisfaction of GL hunters with experience had while trout fishing on GLs (Q26a) by WRC region of GLs hunted (Q5).

Satisfaction with experience had while trout fishing on GLs	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	14.5% ^a (n=29)	16.3% ^a (n=70)	63.7% ^a (n=232)	47.5% ^a (n=192)
Dissatisfied	3.0% ^a (n=6)	3.3% ^a (n=14)	14.6% ^a (n=53)	8.4% (n=34)
No Opinion	82.5% ^a (n=165)	80.5% ^a (n=346)	21.7% ^a (n=79)	44.1% ^a (n=178)

$\chi^2=357.9$, df=6, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 41. Satisfaction of GL hunters with abundance of game/trout on GLs (Q26a) by WRC region of GLs hunted (Q5).

Satisfaction with abundance of game/trout on GLs	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	41.3% (n=88)	50.1% ^a (n=225)	37.0% ^a (n=137)	41.6% (n=173)
Dissatisfied	35.2% ^a (n=75)	32.7% ^a (n=147)	55.1% ^a (n=204)	46.6% (n=194)
No Opinion	23.5% ^a (n=50)	17.1% ^a (n=77)	7.8% ^a (n=29)	11.8% (n=49)

$\chi^2=64.7$, df=6, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 42. Satisfaction of GL hunters with camping availability on GLs (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with camping availability on GLs	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	30.5% ^a (n=64)	34.3% ^a (n=154)	45.6% ^a (n=169)	43.3% ^a (n=182)
Dissatisfied	22.9% (n=48)	21.4% ^a (n=96)	30.2% (n=112)	31.9% ^a (n=134)
No Opinion	46.7% ^a (n=98)	44.3% ^a (n=199)	24.3% ^a (n=90)	24.8% ^a (n=104)

$\chi^2=69.3$, df=6, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 43. Satisfaction of GL hunters with level of disturbance by other GL users (Q26a) by WRC region of GLs hunted in last three years (Q5).

Satisfaction with level of disturbance by other GL users	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Satisfied	44.6% (n=95)	39.5% (n=179)	44.5% (n=165)	38.4% (n=162)
Dissatisfied	39.9% (n=85)	47.7% (n=216)	42.3% (n=157)	48.8% (n=206)
No Opinion	15.5% (n=33)	12.8% (n=58)	13.2% (n=49)	12.8% (n=54)

$\chi^2=7.4$, df=6, $p=0.285$

Figure 20

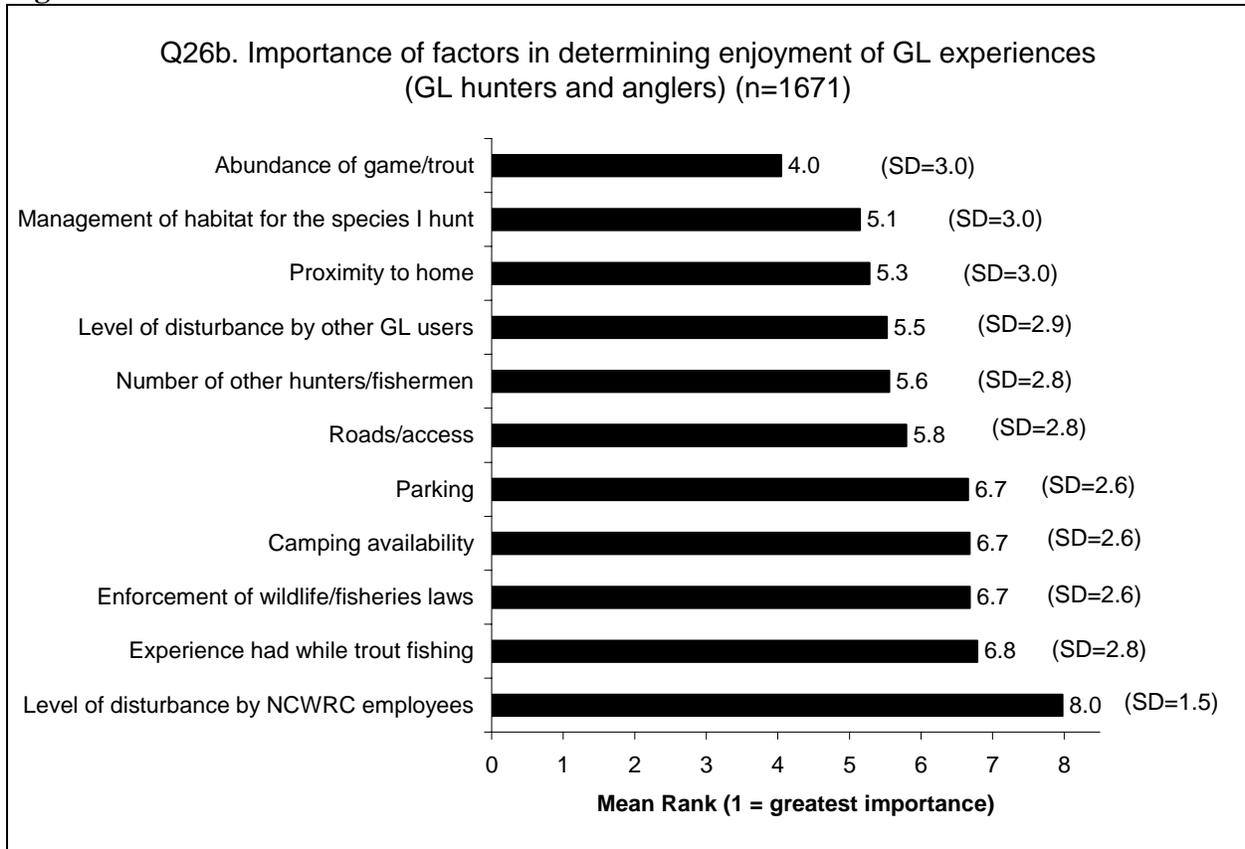


Table 44. Mean importance for GL hunters of factors in determining enjoyment of GL experiences (Q26b) by WRC region of GLs hunted in last three years (Q5).

Factor	WRC Region of GLs Hunted								ANOVA (df between groups=3, df within groups=1146)	
	Coastal (n=172)		Piedmont (n=364)		Mountain (n=285)		Two or More Different Regions (n=329)		F	p
	Mean ^a	95% C.I.	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.		
Abundance of Game/Trout	5.0	4.53-5.45	4.5	4.16-4.78	3.6	3.29-3.98	4.3	3.92-4.59	7.9	≤0.001
Management of Habitat for the Species I Hunt	4.4	3.96-4.79	4.3	3.97-4.53	4.8	4.45-5.14	4.4	4.14-4.74	2.1	0.101
Proximity to Home	4.9	4.42-5.33	4.7	4.40-5.00	5.6	5.30-6.00	5.2	4.90-5.54	5.9	0.001
Level of Disturbance by Other GL Users	5.3	4.87-5.73	5.1	4.76-5.36	5.8	5.43-6.07	5.2	4.89-5.53	3.2	0.021
Number of Other Hunters/Fishermen	5.8	5.34-6.19	5.4	5.08-5.66	5.7	5.35-6.01	5.5	5.15-5.76	1.1	0.338
Roads/Access	4.9	4.46-5.36	5.8	5.52-6.08	5.8	5.46-6.10	5.9	5.59-6.22	5.3	0.001
Parking	6.5	6.14-6.94	6.4	6.12-6.68	6.9	6.57-7.15	6.6	6.30-6.86	1.7	0.176
Camping Availability	7.3	6.98-7.68	7.2	6.90-7.41	6.5	6.18-6.82	6.6	6.35-6.92	6.3	≤0.001
Enforcement of Wildlife/Fisheries Laws	6.5	6.05-6.85	6.8	6.51-7.06	6.6	6.25-6.87	6.9	6.59-7.15	1.4	0.242
Experience Had While Trout Fishing	8.1	7.89-8.33	8.2	8.12-8.37	7.0	6.69-7.29	7.5	7.32-7.78	26.0	≤0.001
Level of Disturbance by WRC Employees	7.5	7.22-7.84	7.9	7.75-8.08	7.9	7.76-8.13	8.0	7.81-8.15	3.1	0.026

^a Mean rank (1=most important).

Figure 21

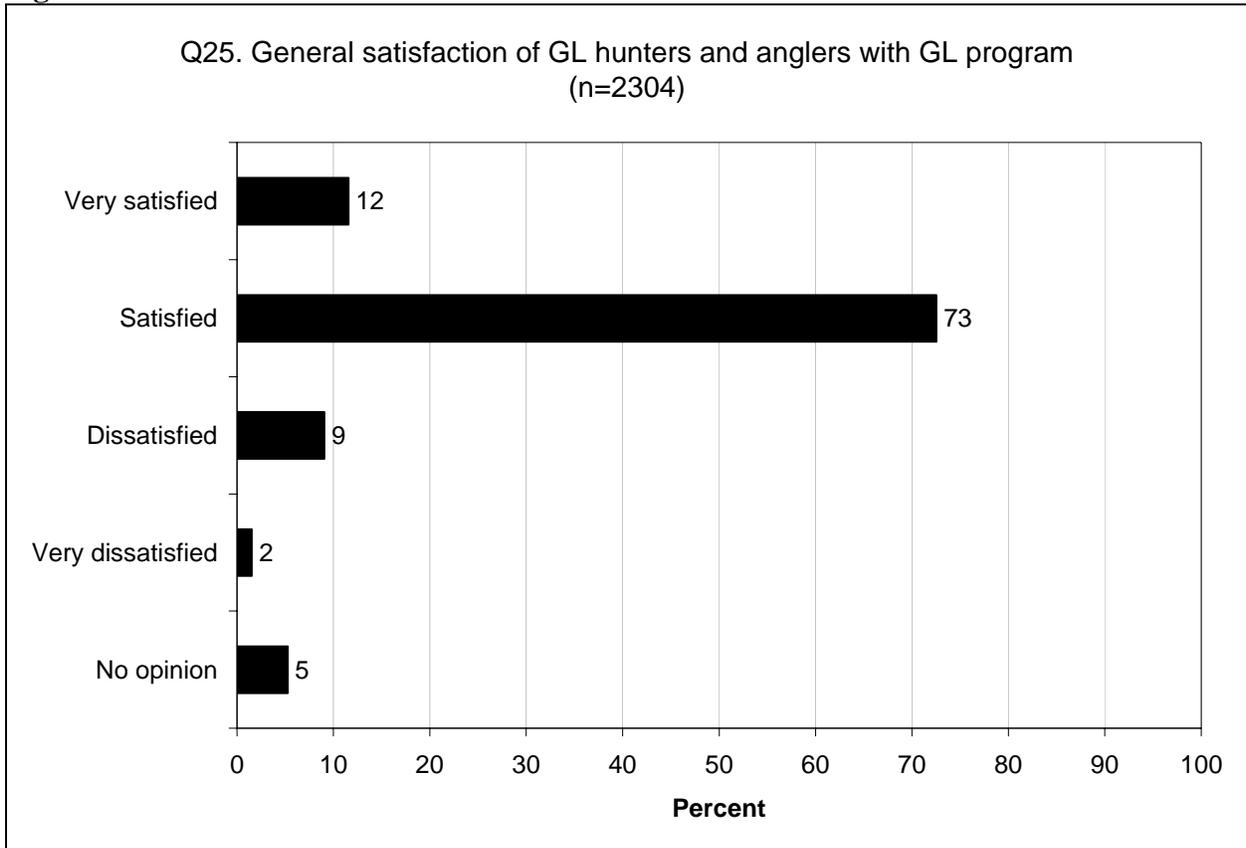


Table 45. Mean^a general satisfaction of GL hunters with GL program (Q25) by WRC region of GLs hunted in last three years (Q5).

WRC Region of GLs Hunted						Two or More Different Regions (<i>n</i> =412)		ANOVA (df between groups=3, df within groups=1415)	
Coastal (<i>n</i> =210)		Piedmont (<i>n</i> =437)		Mountain (<i>n</i> =360)		Mean	95% C.I.	<i>F</i>	<i>p</i>
Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.				
3.1	3.00-3.14	3.0	2.94-3.04	2.9	2.85-2.97	3.0	2.92-3.02	4.2	0.006

^a Mean satisfaction level (1=very dissatisfied; 4=very satisfied).

Table 46. Relationship of demographic variables and factors associated with GL enjoyment (Q26b) to general satisfaction^a (Q25) with the GL program (GL hunters and anglers) (n=1587).

Variable	Bivariate Regression		Multivariate Regression	
	Standardized Coefficient	<i>p</i>	Standardized Coefficient	<i>p</i>
Age	0.034	0.086	0.022	0.396
Abundance of Game/Trout ^b	0.035	0.084	0.252	0.002
Management of Habitat for the Species I Hunt ^b	0.091	≤0.001	0.280	0.000
Proximity to Home	-0.008	0.379	0.204	0.010
Level of Disturbance by Other GL Users ^b	0.043	0.045	0.233	0.002
Number of Other Hunters/Fishermen ^b	0.022	0.193	0.207	0.007
Roads/Access ^b	-0.014	0.282	0.207	0.006
Parking ^b	-0.035	0.084	0.153	0.029
Camping Availability ^b	-0.005	0.417	0.210	0.004
Enforcement of Wildlife/Fisheries Laws ^b	-0.013	0.298	0.170	0.016
Experience had While Trout Fishing ^b	-0.082	0.001	0.135	0.074
Level of Disturbance by NCWRC Employees ^b	-0.040	0.055	0.070	0.129

^a Mean satisfaction level (1=very dissatisfied; 4=very satisfied).

^b Mean rank (1=most important).

Views of GL hunters and anglers on GL management

Those respondents that indicated they had hunted or trout fished on GLs in the previous three years were asked about their views concerning management priorities (Figure 22). ‘Improving habitat for wildlife on existing GLs’ (45%) and ‘purchasing/acquiring new acreage for GLs’ (42%) were both popular. Few GL hunters and anglers (11%) indicated that ‘improving GL facilities/service’ was most important. Hunters who hunted on GLs in two or more different regions (49%) were significantly more likely to support ‘purchasing/acquiring new acreage for

GLs' than expected. A significantly higher proportion of Mountain GL hunters (50%) were in favor of 'improving habitat for wildlife on existing GLs' than expected (Table 47).

The most important priorities for GL acquisition were to 'acquire GLs that provide for all types of wildlife-associated recreation' ($\bar{x}=2.9$, $SD=1.6$) and the acquisition of 'GLs that provide habitat for all types of wildlife' ($\bar{x}=2.9$, $SD=1.5$) (Figure 23). The acquisition of 'more GLs regardless of location' ($\bar{x}=4.4$, $SD=1.2$) was the lowest priority for GL hunters and anglers. Acquiring 'GLs that provide for all types of wildlife-associated recreation' was significantly more important to hunters who hunted on Coastal GLs ($\bar{x}=2.7$, 95% C.I.=2.53-2.96) than those who hunted on Piedmont GLs ($\bar{x}=3.1$, 95% C.I.=2.97-3.28) or GLs in more than one region ($\bar{x}=3.2$, 95% C.I.=3.03-3.34) (Table 48). Hunters of GLs in two or more regions ($\bar{x}=3.4$, 95% C.I.=3.24-3.56) ranked acquiring 'GLs in more areas of the state' as significantly more important than Coastal ($\bar{x}=3.8$, 95% C.I.=3.60-4.05) or Mountain ($\bar{x}=3.8$, 95% C.I.=3.62-3.94) GL hunters.

The top management priorities were managing GL 'for a variety of hunting and fishing opportunities' ($\bar{x}=2.9$, $SD=1.9$) and management 'with consideration for all wildlife/fish species present' ($\bar{x}=3.1$, $SD=2.0$) (Figure 24). Management to feature 'small game' ($\bar{x}=5.4$, $SD=1.4$) or 'waterfowl' ($\bar{x}=5.6$, $SD=1.3$) and 'not interested in management' ($\bar{x}=5.7$, $SD=1.0$) had the lowest priority for GL hunters and anglers. There were few significant differences in GL management priorities based on region of GLs hunted (Table 49). Not surprisingly, hunters of Coastal GLs ($\bar{x}=5.0$, 95% C.I.=4.79-5.27) rated management 'to feature waterfowl' as significantly more important than hunters of Piedmont ($\bar{x}=5.5$, 95% C.I.=5.32-5.58) or Mountain ($\bar{x}=5.9$, 95% C.I.=5.80-5.95) GLs.

The highest priority for GL facilities and service improvements was 'roads and trails' improvements ($\bar{x}=2.8$, $SD=2.0$). 'Improved maps' ($\bar{x}=3.6$, $SD=2.1$) was also a high priority (Figure 25). 'Interpretive centers' improvements ($\bar{x}=5.6$, $SD=1.2$) were lower priority. 'Roads and trails' improvements were significantly more important for hunters of Coastal GLs ($\bar{x}=2.3$, 95% C.I.=2.01-2.53) than hunters of Piedmont GLs ($\bar{x}=3.0$, 95% C.I.=2.82-3.21) or hunters who hunted on GLs in more than one region ($\bar{x}=2.9$, 95% C.I.=2.66-3.05) (Table 50). Hunters of GLs in two or more different regions ($\bar{x}=3.3$, 95% C.I.=3.14-3.56) rated map improvements as significantly more important than Mountain GL hunters ($\bar{x}=3.8$, 95% C.I.=3.60-4.07). Camping facilities improvements were rated as significantly more important by hunters of GLs in more than one region ($\bar{x}=4.0$, 95% C.I.=3.78-4.19) than hunters on Coastal ($\bar{x}=4.6$, 95% C.I.=4.36-4.93) or Piedmont ($\bar{x}=4.4$, 95% C.I.=4.24-4.62) GLs. Parking improvements were rated by both Piedmont ($\bar{x}=4.0$, 95% C.I.=3.83-4.23) and Mountain ($\bar{x}=4.0$, 95% C.I.=3.81-4.26) GL hunters as significantly more important than by Coastal GL hunters ($\bar{x}=4.6$, 95% C.I.=4.31-4.83).

Figure 22

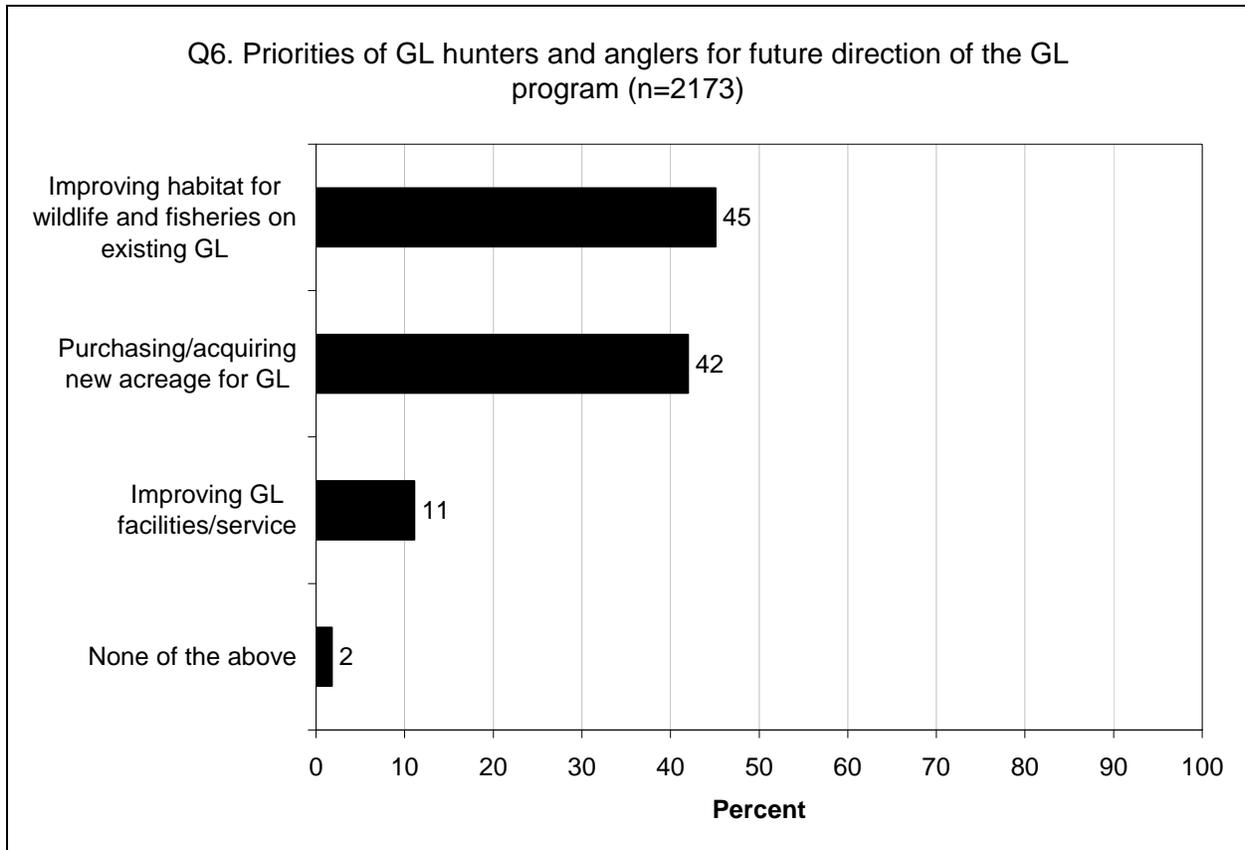


Table 47. Priorities of GL hunters for future direction of GL program (Q6) by WRC region of GLs hunted in last three years (Q5).

Priorities for future direction of GL program	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Improving Habitat for Wildlife and Fisheries on Existing GLs	39.6% (n=86)	39.1% (n=177)	50.3% ^a (n=186)	41.9% (n=173)
Purchasing/Acquiring New Acreage for GLs	45.2% (n=98)	45.7% (n=207)	37.0% ^a (n=137)	48.9% ^a (n=202)
Improving GL Facilities/ Service	13.8% (n=30)	13.9% (n=63)	10.8% (n=40)	8.2% ^a (n=34)
None of the Above	1.4% (n=3)	1.3% (n=6)	1.9% (n=7)	1.0% (n=4)

$\chi^2=22.0$, df=9, $p=0.009$

^aAbsolute value of adjusted residual ≥ 2.0 .

Figure 23

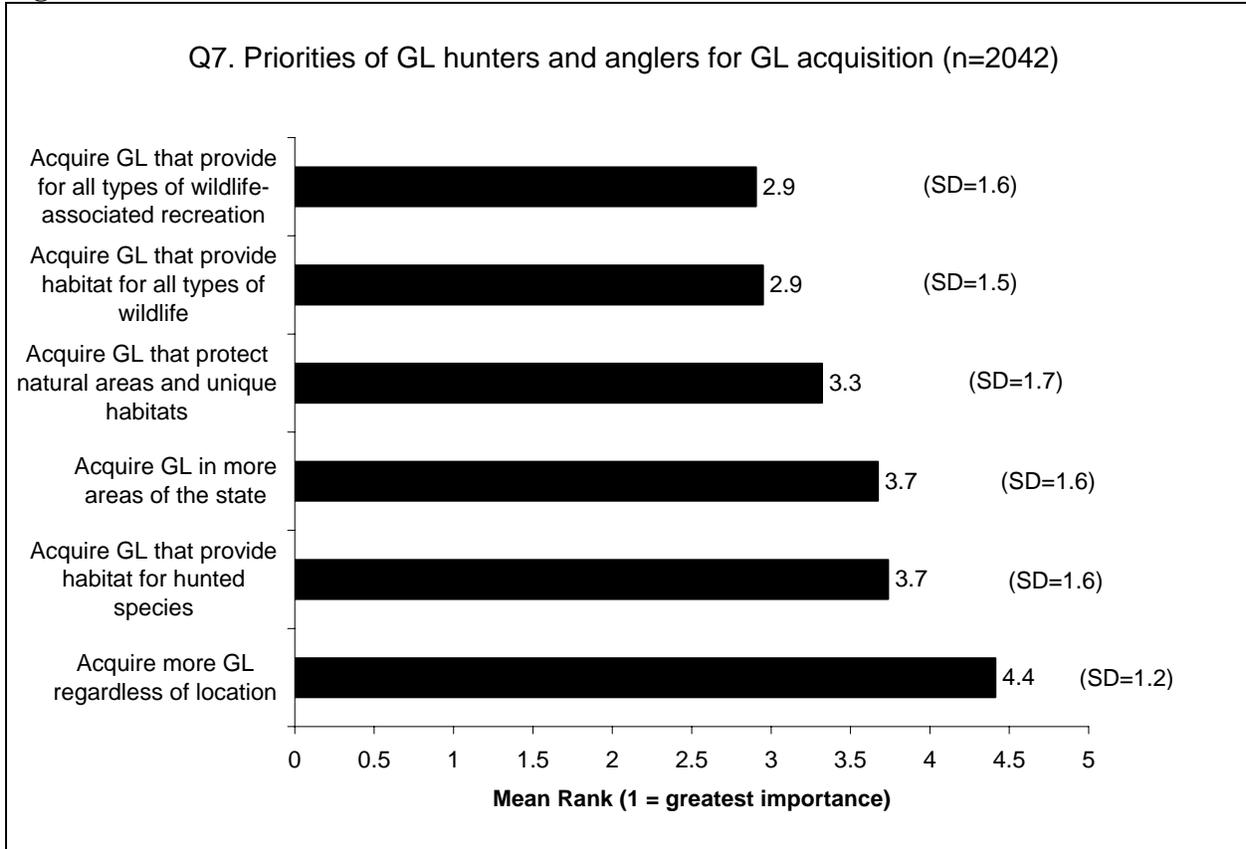


Table 48. Mean^a priorities of GL hunters for GL acquisition (Q7) by WRC region of GLs hunted in last three years (Q5).

Priorities for GL acquisition	WRC Region of GLs Hunted						Two or More Different Regions (n=403)		ANOVA (df between groups=3, df within groups=1388)	
	Coastal (n=203)		Piedmont (n=432)		Mountain (n=354)		Mean	95% C.I.	F	p
	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.				
Acquire GLs that Provide for all Types of Wildlife-Associated Recreation	2.7	2.53-2.96	3.1	2.97-3.28	2.9	2.75-3.08	3.2	3.03-3.34	4.6	0.003
Acquire GLs that Provide Habitat for all Types of Wildlife	2.9	2.68-3.07	3.0	2.82-3.10	2.9	2.71-3.03	3.0	2.81-3.11	0.4	0.789
Acquire GLs that Protect Natural Areas and Unique Habitats	3.5	3.25-3.71	3.5	3.36-3.67	3.7	3.55-3.88	3.6	3.47-3.79	1.4	0.245
Acquire GLs in More Areas of the State	3.8	3.60-4.05	3.4	3.29-3.60	3.8	3.62-3.94	3.4	3.24-3.56	6.0	≤0.001
Acquire GLs that Provide Habitat for Hunted Species	3.6	3.37-3.81	3.5	3.38-3.69	3.3	3.17-3.50	3.4	3.26-3.59	1.5	0.212
Acquire More GLs Regardless of Location	4.5	4.33-4.64	4.4	4.31-4.53	4.4	4.25-4.51	4.4	4.28-4.52	0.4	0.788

^a Mean rank (1=most important).

Figure 24

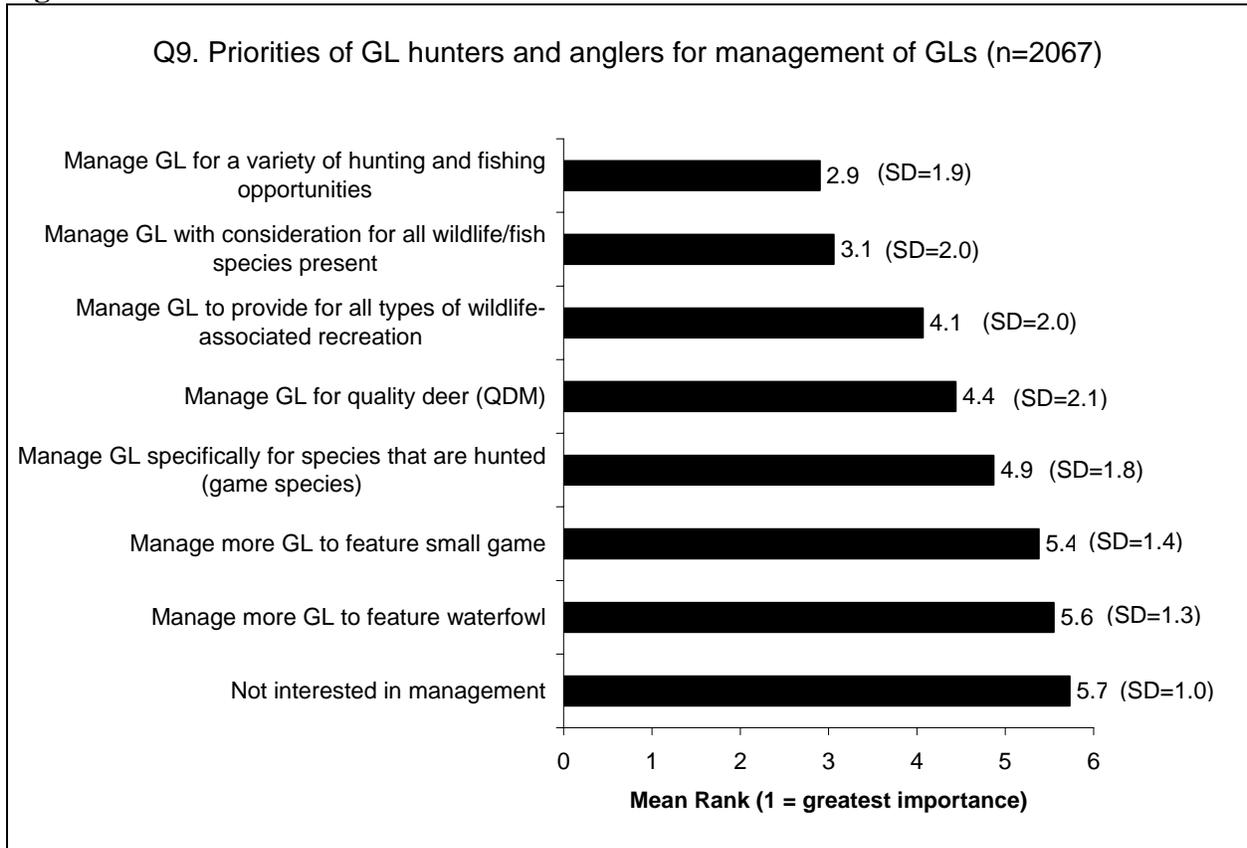


Table 49. Mean^a priorities of GL hunters for management of GLs (Q9) by WRC region of GLs hunted in last three years (Q5).

Priorities for management of GLs	WRC Region of GLs Hunted						Two or More Different Regions (n=403)		ANOVA (df between groups=3, df within groups=1404)	
	Coastal (n=203)		Piedmont (n=442)		Mountain (n=360)		Mean	95% C.I.	F	p
	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.				
Manage GL for a Variety of Hunting and Fishing Opportunities	3.1	2.83-3.39	3.1	2.88-3.24	3.0	2.76-3.16	3.2	2.99-3.38	0.8	0.471
Manage GL with Consideration for All Wildlife/Fish Species Present	3.3	3.07-3.62	3.4	3.25-3.63	3.3	3.04-3.46	3.3	3.12-3.52	0.6	0.633
Manage GL to Provide for All Types of Wildlife-Associated Recreation	4.3	3.99-4.54	4.5	4.32-4.68	4.3	4.14-4.54	4.4	4.26-4.63	0.9	0.451
Manage GL for Quality Deer (QDM)	4.4	4.07-4.66	4.0	3.80-4.21	4.0	3.74-4.19	4.0	3.79-4.21	1.8	0.152
Manage GL Specifically for Species that are Hunted (Game Species)	4.7	4.47-5.00	4.6	4.47-4.82	4.6	4.40-4.79	4.6	4.42-4.79	0.3	0.839
Manage More GL to Feature Small Game	5.3	5.13-5.53	5.1	4.93-5.25	5.3	5.19-5.49	5.4	5.22-5.51	2.9	0.036
Manage More GL to Feature Waterfowl	5.0	4.79-5.27	5.5	5.32-5.58	5.9	5.80-5.95	5.3	5.12-5.43	20.1	≤0.001
Not Interested in Management	5.8	5.70-5.93	5.8	5.73-5.89	5.7	5.56-5.79	5.8	5.73-5.89	2.0	0.108

^a Mean rank (1=most important).

Figure 25

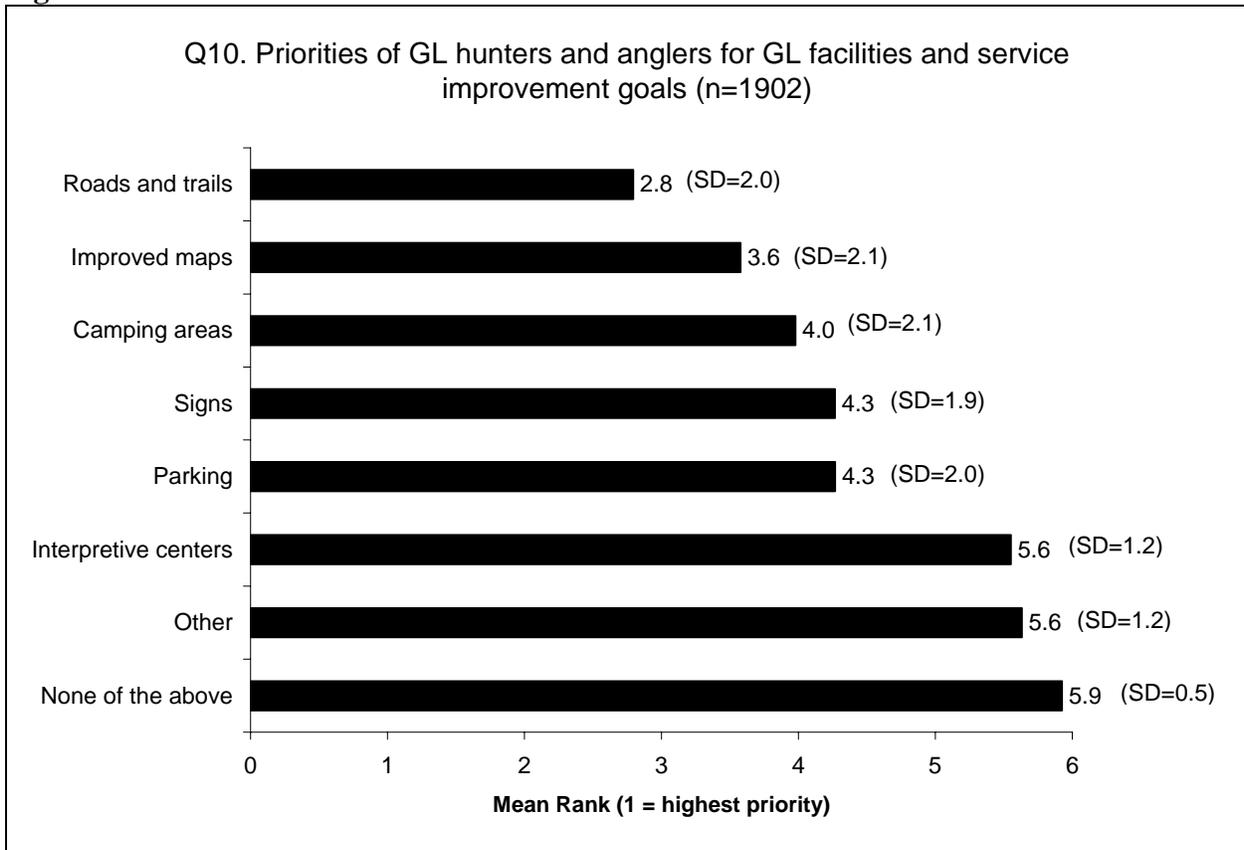


Table 50. Mean^a priorities of GL hunters for GL facilities and service improvements (Q10) by WRC region of GLs hunted in last three years (Q5).

Priorities for GL facilities and service improvements	WRC Region of GLs Hunted						Two or More Different Regions (<i>n</i> =376)		ANOVA (df between groups=3, df within groups=1282)	
	Coastal (<i>n</i> =186)		Piedmont (<i>n</i> =407)		Mountain (<i>n</i> =317)		Mean	95% C.I.	<i>F</i>	<i>p</i>
	Mean	95% C.I.	Mean	95% C.I.	Mean	95% C.I.				
Roads and Trails	2.3	2.01-2.53	3.0	2.82-3.21	2.6	2.41-2.84	2.9	2.66-3.05	7.1	≤0.001
Improved Maps	3.4	3.13-3.72	3.4	3.19-3.60	3.8	3.60-4.07	3.3	3.14-3.56	3.8	0.010
Camping Areas	4.6	4.36-4.93	4.4	4.24-4.62	3.8	3.60-4.05	4.0	3.78-4.19	9.9	≤0.001
Signs	4.1	3.77-4.34	4.1	3.94-4.32	4.5	4.25-4.67	4.3	4.09-4.50	2.4	0.065
Parking	4.6	4.31-4.83	4.0	3.83-4.23	4.0	3.81-4.26	4.3	4.07-4.47	3.9	0.009
Interpretive Centers	5.5	5.34-5.70	5.5	5.35-5.61	5.6	5.51-5.76	5.7	5.60-5.81	2.8	0.042
Other	5.6	5.47-5.80	5.6	5.47-5.72	5.7	5.53-5.78	5.6	5.49-5.73	0.2	0.924
None of the Above	5.9	5.79-5.98	5.9	5.87-5.98	5.9	5.87-5.99	5.9	5.88-5.98	0.4	0.760

^a Mean rank (1=most important).

Frequency of conflicts with other GL users for hunters and anglers

Most GL hunters and anglers (62%) ‘rarely’ or ‘never’ had conflicts with other GL users and few (9%) ‘frequently’ or ‘always’ had such conflicts (Figure 26). The mean conflict score for GL hunters and anglers was 2.2 (SD=1.0). There were no significant differences in levels of conflict based on region of GLs hunted (Table 51).

Twenty-eight percent of GL hunters and anglers had conflicts with hunters (Figure 27). Few GL hunters and anglers (<10%) had conflicts with any other GL user groups. More than a third (36%) of GL hunters and anglers reported not having conflicts with other GL users. Hunters of Coastal (49%) and Piedmont (44%) GLs were significantly more likely than expected to have conflicts with hunters, while a significantly higher proportion of hunters on Mountain GLs reported having conflicts with hikers (12%), ‘kayakers/tubers’ (5%), and campers (5%) than expected (Table 52).

Figure 26

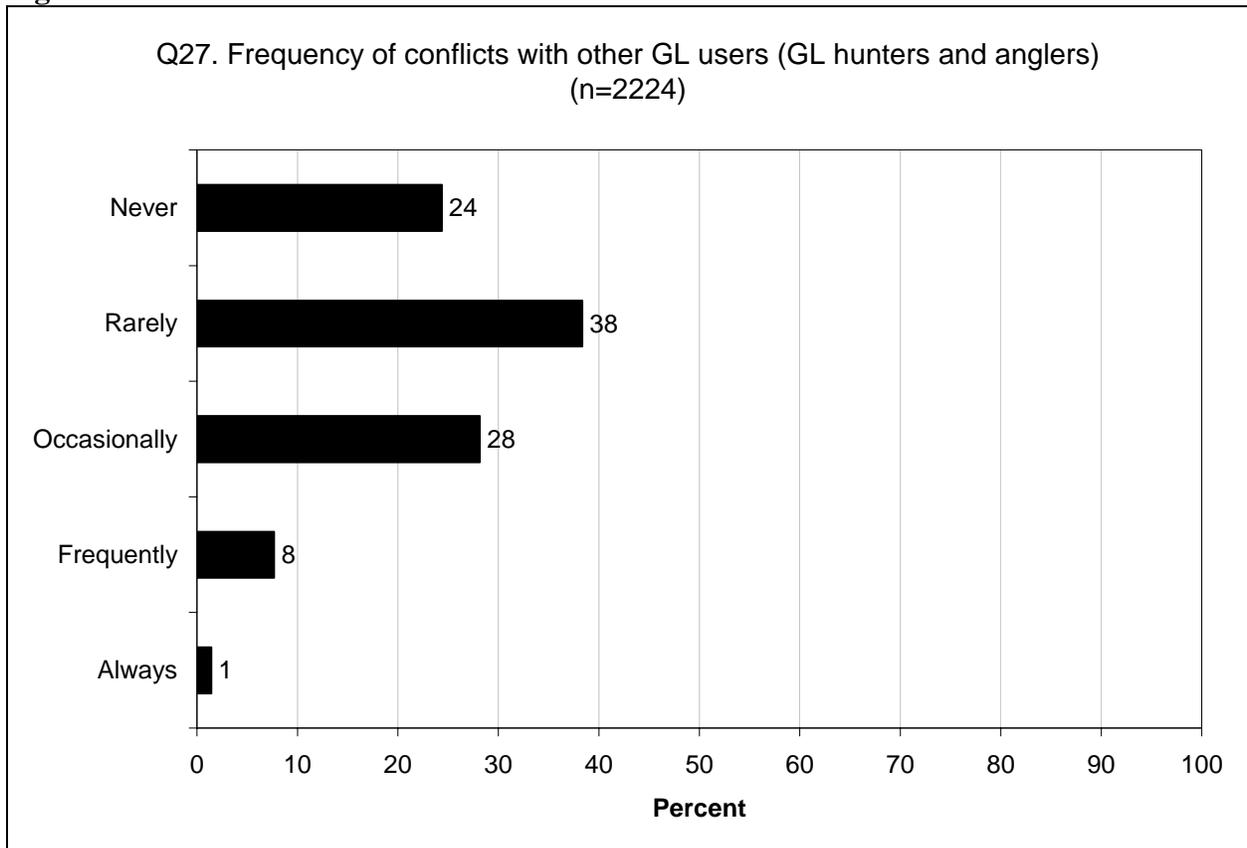


Table 51. Mean^a frequency of conflicts with other GL users (Q27) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

WRC Region of GLs Hunted						ANOVA (df between groups=3, df within groups=1478)			
Coastal (n=220)		Piedmont (n=460)		Mountain (n=381)		Two or More Different Regions (n=421)		F	p
\bar{x}	95% C.I.	\bar{x}	95% C.I.	\bar{x}	95% C.I.	\bar{x}	95% C.I.		
2.3	2.13-2.37	2.3	2.22-2.40	2.3	2.17-2.37	2.4	2.29-2.48	1.4	0.249

^a Mean frequency (1=never; 5=always).

Figure 27

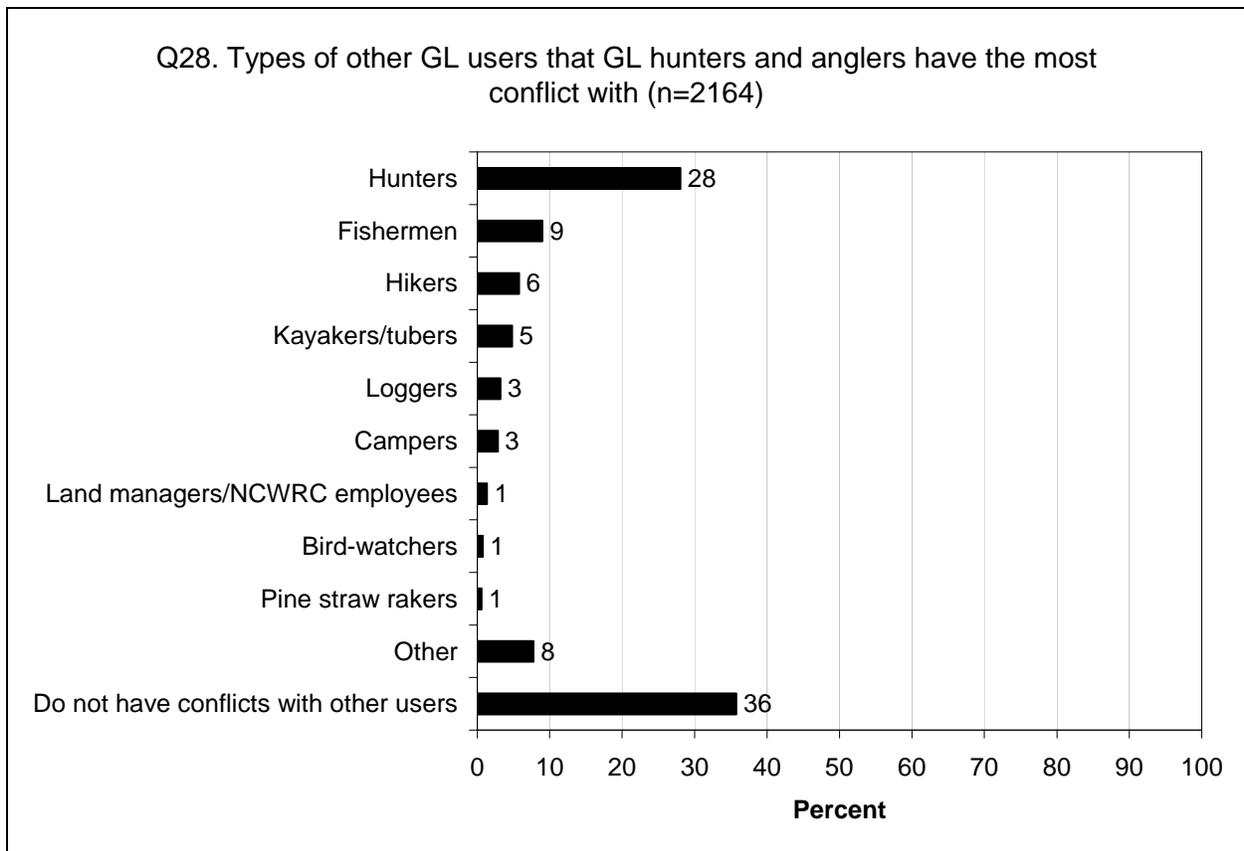


Table 52. Types of other GL users that GL hunters have the most conflicts with (Q28) by WRC region of GLs hunted in last three years (Q5).

Types of other GL users that have most conflicts with	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Hunters	48.8% ^a (n=103)	44.0% ^a (n=194)	23.1% ^a (n=84)	34.5% (n=139)
Fishermen	2.4% (n=5)	4.1% (n=18)	6.6% ^a (n=24)	4.7% (n=19)
Hikers	2.8% ^a (n=6)	3.4% ^a (n=15)	12.4% ^a (n=45)	8.2% (n=33)
Kayakers/Tubers	0.9% (n=2)	0.7% ^a (n=3)	4.7% ^a (n=17)	3.0% (n=12)
Loggers	3.8% (n=8)	3.6% (n=16)	1.7% ^a (n=6)	4.5% (n=18)
Campers	0.5% (n=1)	1.4% (n=6)	5.0% ^a (n=18)	2.0% (n=8)
Land Managers/ NCWRC Employees	1.9% (n=4)	0.9% (n=4)	1.1% (n=4)	0.7% (n=3)
Bird-watchers ^b	-	-	-	-
Pine Straw Rakers ^b	-	-	-	-
Other	6.2% (n=13)	7.9% (n=35)	11.3% (n=41)	10.9% (n=44)
Do not have conflicts with other users	32.7% (n=69)	34.0% (n=150)	34.2% (n=124)	31.5% (n=127)

$\chi^2=113.2, df=24, p\leq 0.001$

^a Absolute value of adjusted residual ≥ 2.0 .

^b Category not included in crosstabulation due to small numbers of respondents.

GL access for hunters and anglers

We examined the preference and modes of access for GL hunters and anglers (Figure 28). A third of GL hunters and anglers (33%) wanted the number of ‘roads and trails’ restricted. Fewer GL users wanted to provide more foot trails (24%), leave access unchanged (23%), or ‘increase vehicular access’ by improving road system (20%) on GLs. Hunters who hunted on Coastal GLs were significantly more likely (27%) to favor providing ‘more trails for foot travel on GLs’ and significantly less likely (24%) to support restricting roads and trails than expected (Table 53).

Many GL hunters and anglers (68%) support permanent GL road closures to ‘protect existing wildlife habitat’ (Figure 29). A majority of GL hunters and anglers support permanently closing roads on GL ‘to protect water quality’ (54%) or ‘to limit wildlife disturbance’ (53%). Permanent road closures on GL ‘to protect existing wildlife habitat’ were supported by hunters, regardless of the WRC region of the GLs they hunted (62% of Coastal GL hunters to 72% of hunters who hunted GLs in multiple regions) (Table 54). While a majority of hunters of

Mountain GLs (54%) and those who hunted on GLs in two or more regions (54%) supported road closures ‘to protect water quality,’ fewer than half of Coastal (37%) and Piedmont (44%) GL hunters supported closures for this reason. Forty-eight percent or more hunters of GLs in each region (48% of Coastal GL hunters to 54% of Mountain GL hunters) favored road closures ‘to limit wildlife disturbance.’ Most GL hunters and anglers (60%) are willing to walk ‘1 mile or greater’ from their vehicle to get to GL activity sites (Figure 30).

Figure 28

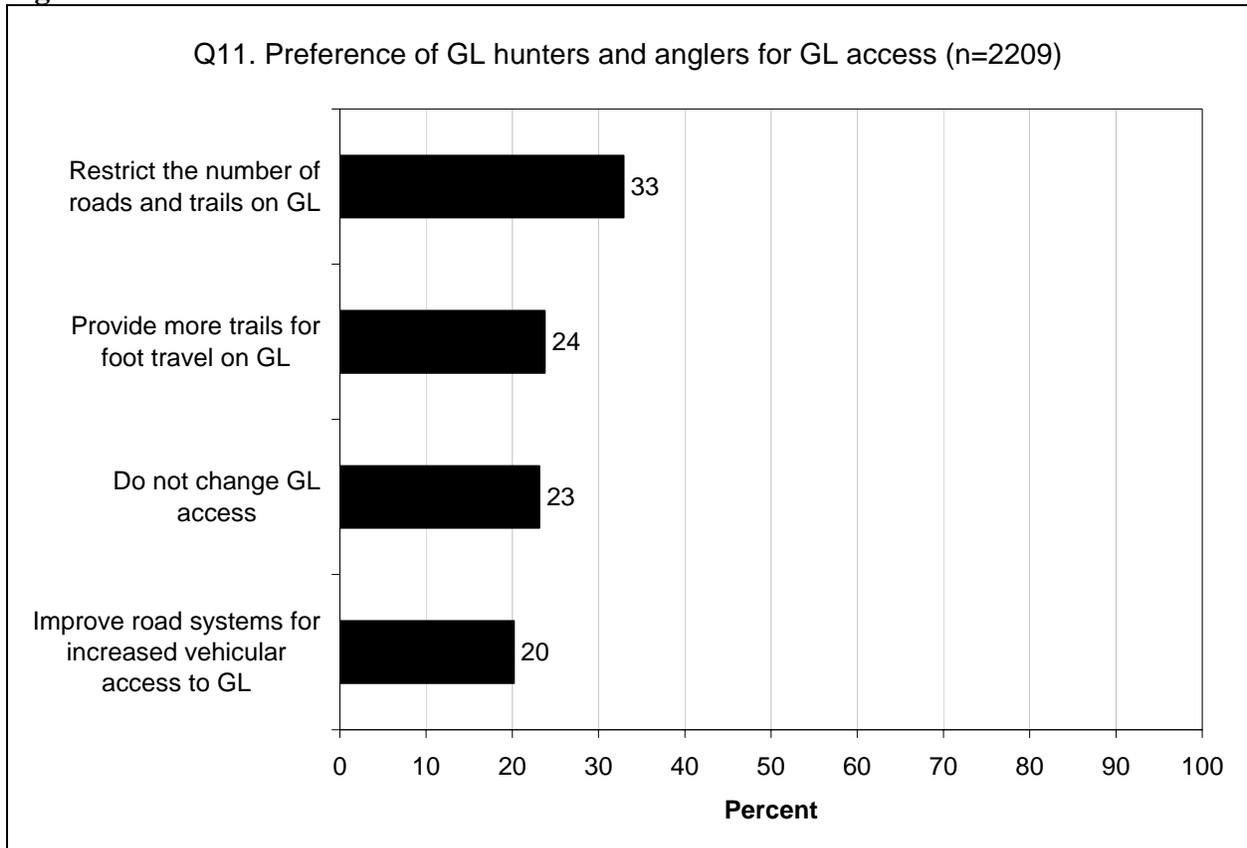


Table 53. Preference of GL hunters for GL access (Q11) by WRC region of GLs hunted in last three years (Q5).

Preference for GL access	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Restrict the number of roads and trails on GLs	23.7% ^a (n=52)	33.0% (n=152)	35.3% (n=134)	33.4% (n=141)
Provide more trails for foot travel on GLs	26.9% ^a (n=59)	17.6% ^a (n=81)	20.3% (n=77)	24.9% (n=105)
Do not change GL access	24.2% (n=53)	27.1% (n=125)	21.3% (n=81)	22.7% (n=96)
Improve road systems for increased vehicular access to GLs	25.1% (n=55)	22.3% (n=103)	23.2% (n=88)	19.0% (n=80)

^aAbsolute value of adjusted residual ≥ 2.0 .
 $\chi^2=21.2$, $df=9$, $p=0.012$

Figure 29

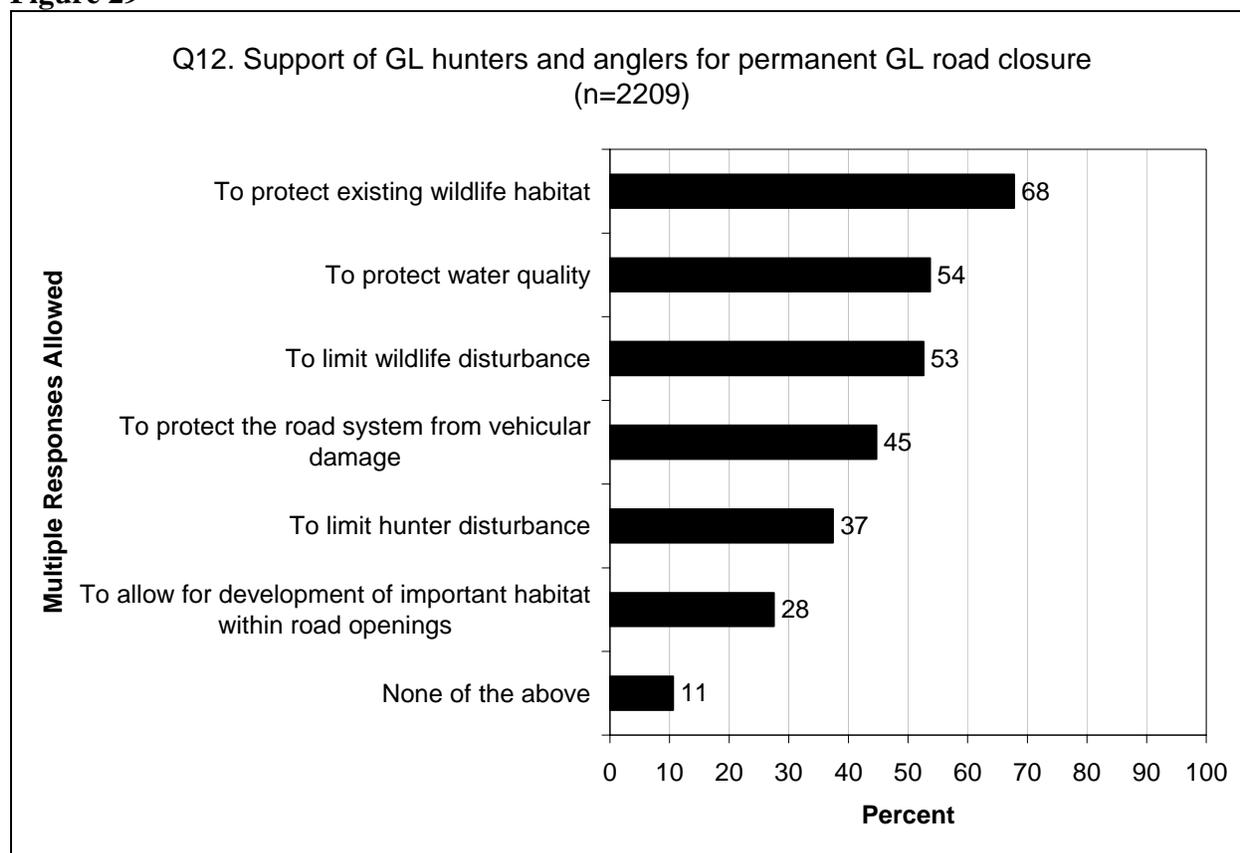
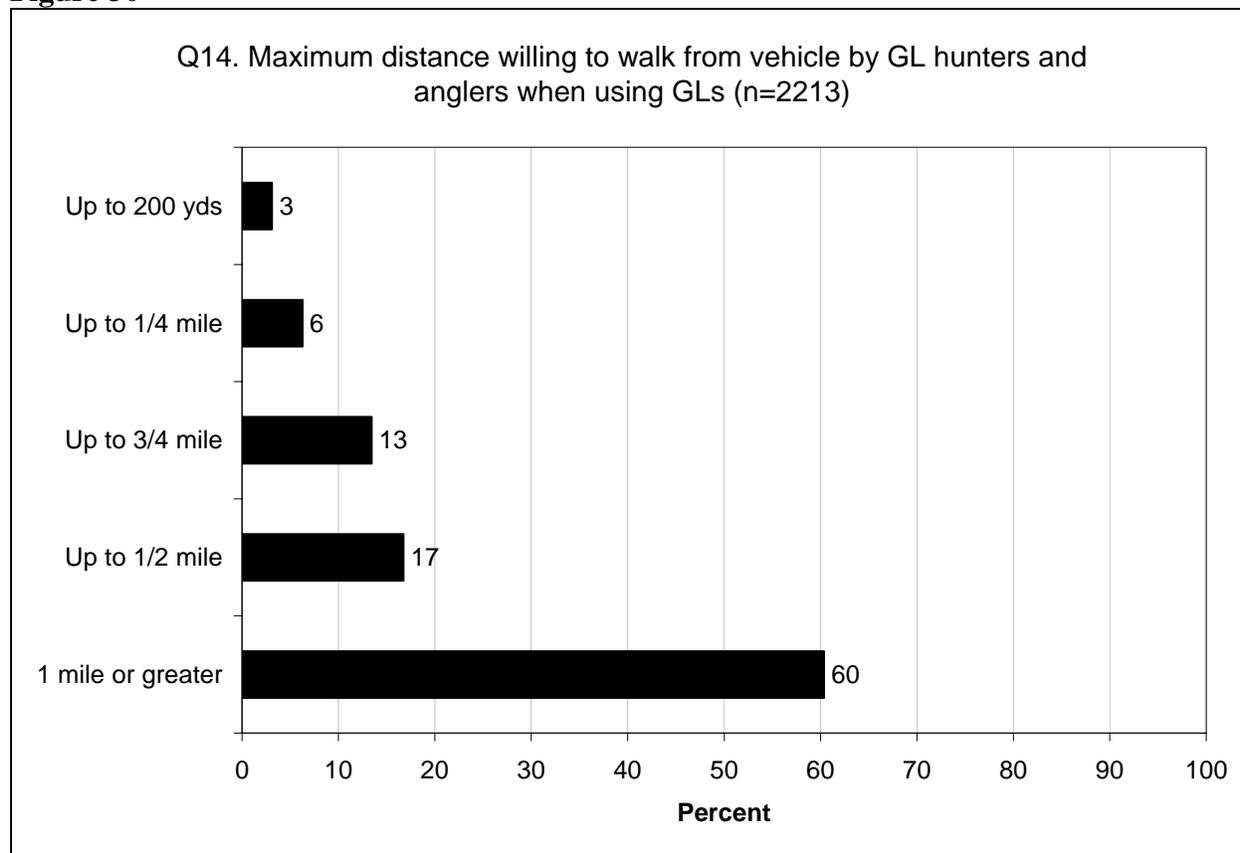


Table 54. Support of GL hunters for permanent GL road closure given various conditions (Q12) by WRC region of GLs hunted in last three years (Q5) (multiple responses allowed).

Conditions for permanent road closure	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
To Protect Existing Wildlife Habitat	62.2% (n=135)	65.3% (n=301)	65.5% (n=247)	71.7% (n=304)
To Protect Water Quality	36.9% (n=80)	43.6% (n=201)	54.1% (n=204)	54.0% (n=229)
To Limit Wildlife Disturbance	47.9% (n=104)	54.0% (n=249)	52.5% (n=198)	57.3% (n=243)
To Protect the Road System From Vehicular Damage	43.8% (n=95)	45.1% (n=208)	40.8% (n=154)	50.2% (n=213)
To Limit Hunter Disturbance	34.6% (n=75)	46.0% (n=212)	39.8% (n=150)	46.9% (n=199)
To Allow For Development of Important Habitat Within Road Openings	19.8% (n=43)	29.5% (n=136)	25.5% (n=96)	34.2% (n=145)
None of the Above	12.4% (n=27)	9.1% (n=42)	14.9% (n=56)	10.8% (n=46)

Figure 30



GL lodging for hunters and anglers

A majority (54%) of GL users report not staying overnight when they travel to GLs (Figure 31). Twenty-nine percent of GL hunters anglers indicated they camp when traveling to GLs and few use hotels (8%) or stay with friends or family (7%). Hunters of Piedmont GLs (74%) were significantly more likely to not stay overnight when traveling to GLs and those who hunted on GLs in two or more regions (39%) were significantly less likely to drive home when traveling to GLs than expected (Table 55). Mountain GL hunters (30%) and hunters of GLs in multiple regions (40%) were significantly more likely than expected to camp, and hunters of Coastal (15%) and Piedmont (14%) GLs significantly were less likely than expected to camp.

Even though over half of GL users do not usually stay overnight while traveling to GLs, almost half (49%) of GL hunters and anglers believe that having camping facilities on or adjacent to GLs is important. Significantly fewer hunters of Coastal (33%) and Piedmont (40%) GLs believed that having GL camping facilities was important than expected (Table 56).

Figure 31

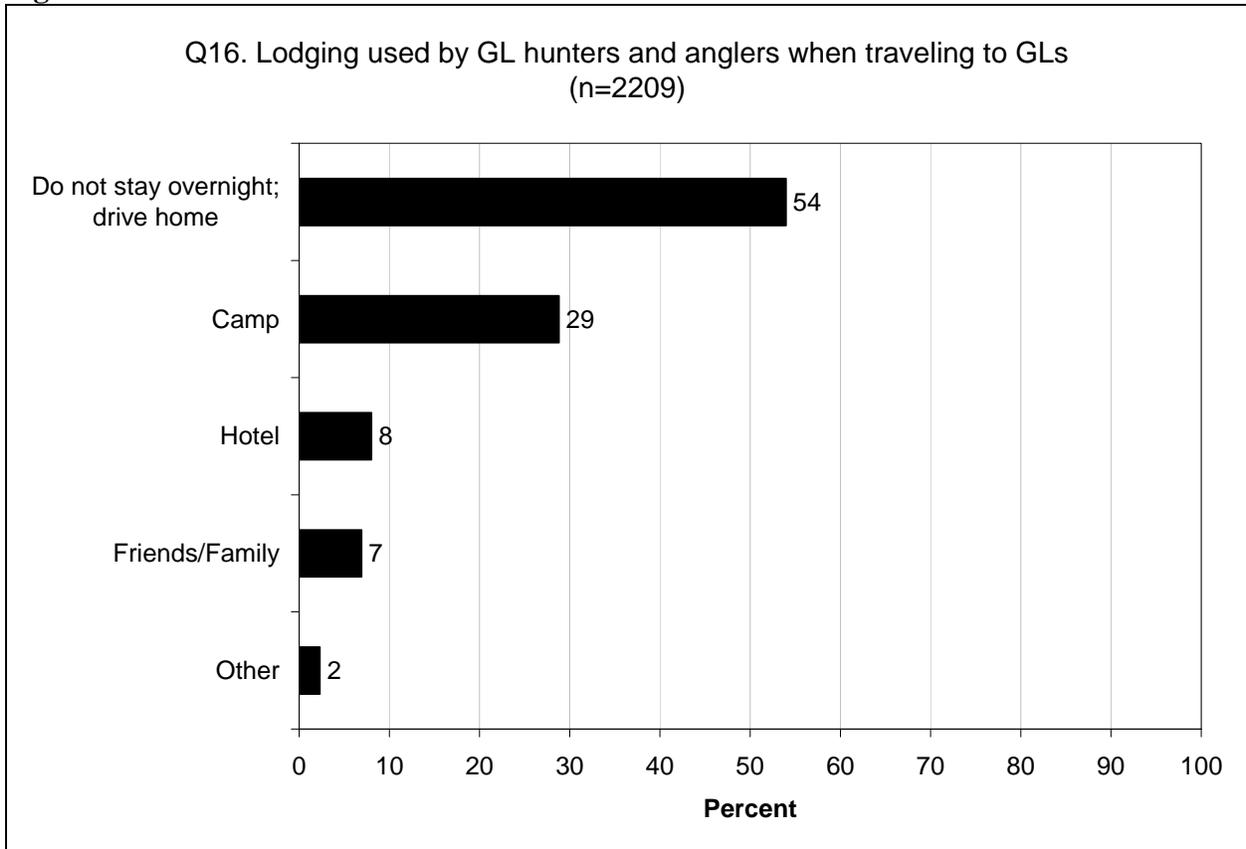


Table 55. Lodging used by GL hunters when traveling to GLs (Q16) by WRC region of GLs hunted in last three years (Q5).

Lodging used when traveling to GLs	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Do Not Stay Overnight; Drive Home	63.2% (n=139)	73.7% ^a (n=339)	59.0% (n=223)	39.4% ^a (n=165)
Camp	14.5% ^a (n=32)	13.9% ^a (n=64)	29.6% ^a (n=112)	39.9% ^a (n=167)
Hotel	9.5% (n=21)	5.4% ^a (n=25)	3.7% ^a (n=14)	11.9% ^a (n=50)
Friends/Family	10.5% ^a (n=23)	4.8% (n=22)	5.8% (n=22)	7.2% (n=30)
Other	2.3% (n=5)	2.2% (n=10)	1.9% (n=7)	1.7% (n=7)

$\chi^2=146.8$, $df=12$, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 56. Importance for GL hunters that camping facilities be on or adjacent to GLs (Q15) by WRC region of GLs hunted in last three years (Q5).

Important that camping facilities be on or adjacent to GLs	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Yes	33.0% ^a (n=73)	40.0% ^a (n=185)	48.9% (n=186)	56.1% ^a (n=239)
No	67.0% ^a (n=148)	60.0% ^a (n=277)	51.1% (n=194)	43.9% ^a (n=187)

$\chi^2=40.4$, $df=3$, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Maps and other GL information used by GL hunters and anglers

Until 2006, the WRC annually printed books, available for free, with maps of all GLs. Beginning in 2007, the WRC began charging \$10 for these books. Also beginning in 2007, the WRC has maintained an interactive GL mapping tool, where maps can be downloaded and printed, on the WRC internet site. PDF versions of the maps in the printed map book are also available for download for free at the WRC internet site. Since 2004-05, the map books have had more colors and more roads and landmarks labeled than previous versions; the more recent maps have also included contour lines. A plurality of GL hunters and anglers (40%) were satisfied with the 2003 GLs map book, although a third (32%) had not seen the map book (Figure 32). A significantly higher percentage of Mountain GL hunters (29%) reported having not seen the current GLs map book than expected (Table 57).

The most popular improvement for the GLs map book was to add road names (supported by 38% of GL hunters and anglers), followed by providing larger individual maps, which was supported by 30% of GL users (Figure 33). There were only minor differences between regions of GLs hunted in suggested improvements for the GLs map book (Table 58). Most GL hunters (58%) would be willing to pay one to five dollars for detailed maps of specific GLs, and a quarter (25%) indicated they would pay six to ten dollars for such maps (Figure 34). Thirty-eight percent of GL hunters and anglers would be willing to pay five to ten dollars for an atlas of more detailed maps of all GLs (Figure 35). Forty-five percent of GL users indicated they would pay \$11 or more for a detailed GLs atlas.

Almost three-quarters (72%) of GL hunters and anglers had regular internet access. There were no significant male/female differences in internet access (Table 59). There were significant differences in internet access based on age (Table 60). Twenty-five to 34 year olds (79%) and 35 to 44 year olds (80%) were significantly more likely to have internet access than expected, while 55 to 64 year olds (66%) and those 65 or older (40%) were significantly less likely to have access to the internet than expected. Significantly more Piedmont (76%) and out-of-state (85%) residents had regular access to the internet than expected, and significantly fewer Mountain residents (66%) had access to the internet than expected (Table 61). Despite the high rate of internet access, only a third (34%) of GL users had used the WRC website to access maps, regulation updates, or other information. Piedmont residents (38%) were significantly more likely than expected to have used the WRC website (Table 62). Mountain residents (30%) were significantly less likely than expected to have accessed the WRC website. Over half (54%) of GL hunters and anglers indicated they would use aerial photography of specific GLs if they were available online, 15% would not use online aerial photography, and 31% might use online aerial photography (Figure 36).

When given the option of creating personalized maps of GL (being able to choose displayed characteristics, such as vegetation or contours) or purchasing pre-printed maps, a majority (54%) of GL users preferred purchasing pre-printed maps (Figure 37).

Figure 32

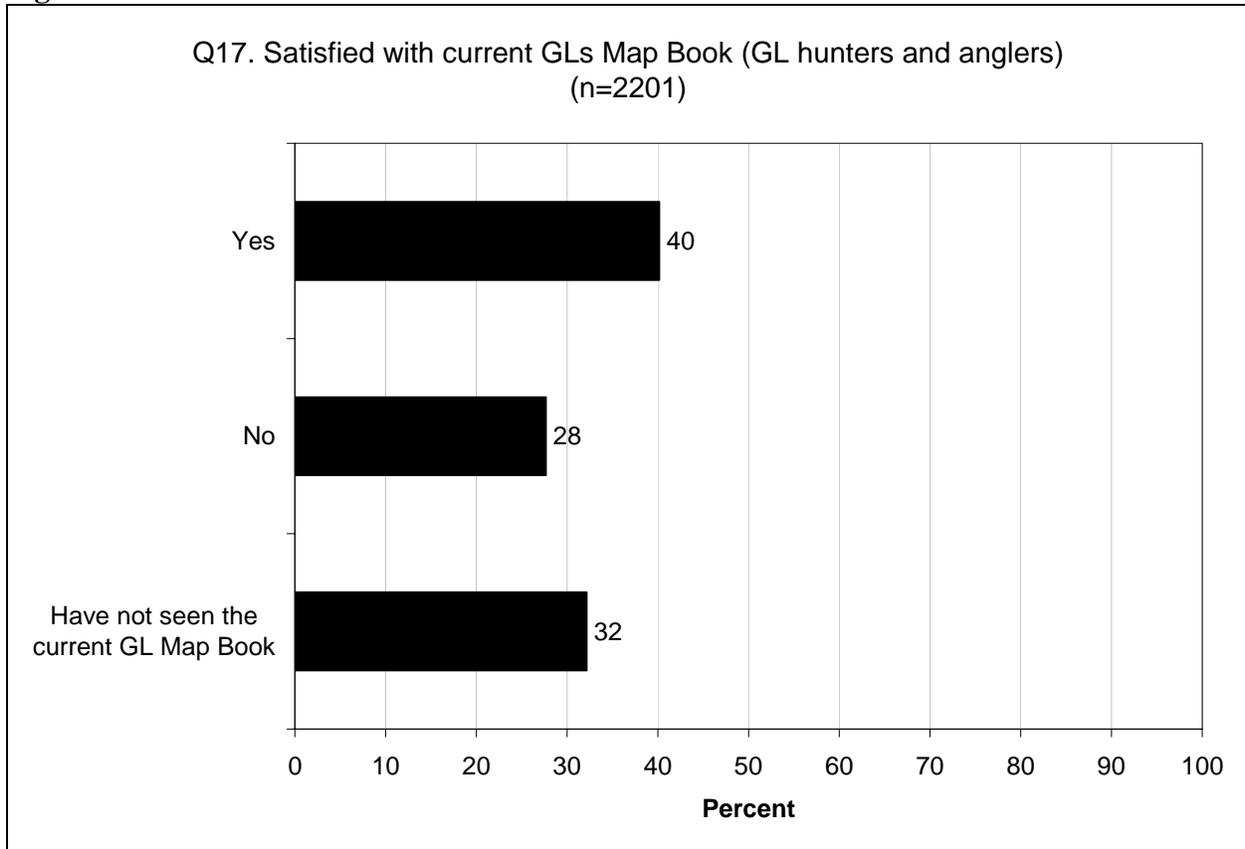


Table 57. Satisfaction of GL hunters with current GLs Map Book (Q17) by WRC region of GLs hunted in last three years (Q5).

Satisfied with current GLs Map Book	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Yes	43.9% (n=97)	47.2% (n=216)	42.6% (n=160)	45.9% (n=192)
No	32.6% (n=72)	31.0% (n=142)	28.2% ^a (n=106)	38.0% ^a (n=159)
Have Not Seen the Current GLs Map Book	23.5% (n=52)	21.8% (n=100)	29.3% ^a (n=110)	16.0% ^a (n=67)

$\chi^2=23.2$, $df=6$, $p=0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Figure 33

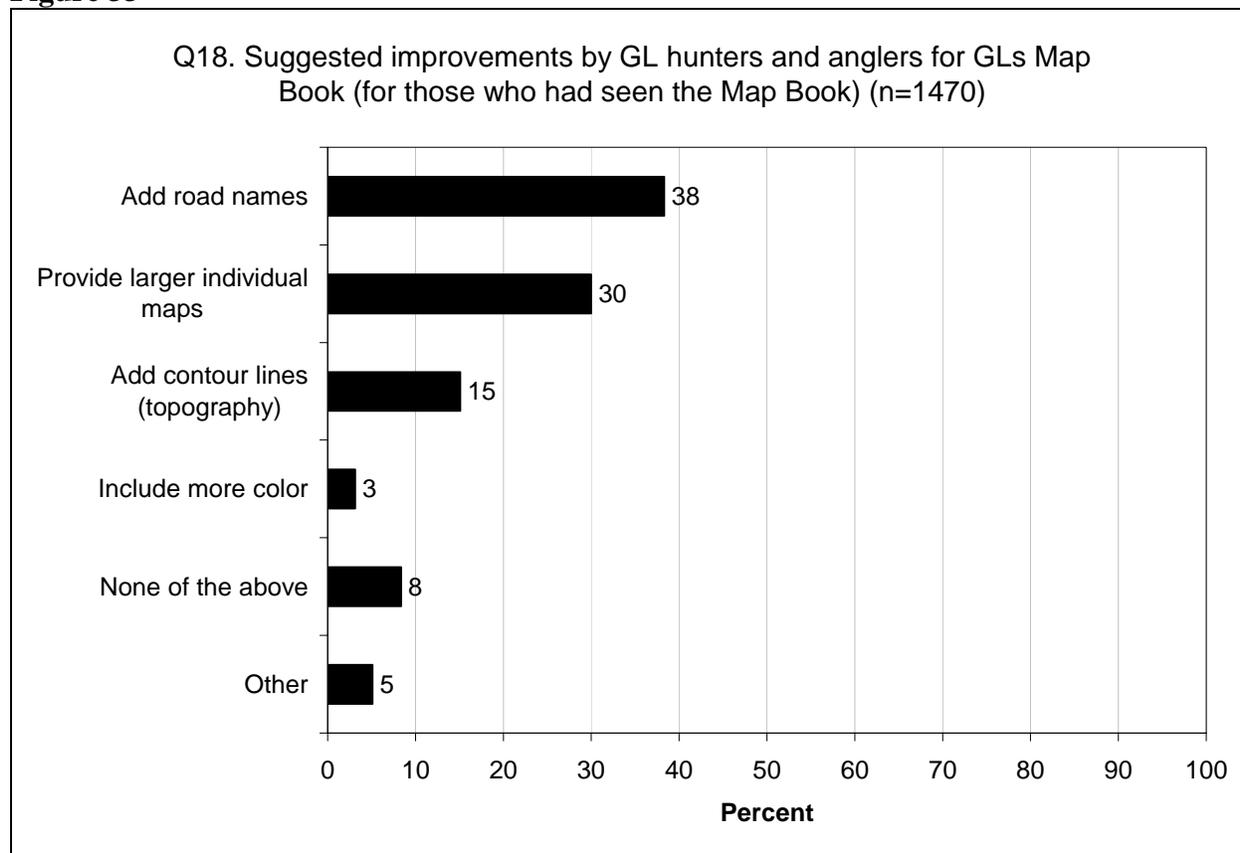


Table 58. Suggested improvements for GLs Map Book (Q18) by WRC region of GLs hunted in last three years (Q5) (GL hunters who had seen the Map Book).

Suggested improvements for GLs Map Book	WRC Region of GLs Hunted			Two or More Different Regions
	Coastal	Piedmont	Mountain	
Add Road Names	34.4% (n=56)	37.6% (n=131)	38.5% (n=99)	39.8% (n=139)
Provide Larger Individual Maps	31.9% (n=52)	29.9% (n=104)	29.2% (n=75)	31.8% (n=111)
Add Contour Lines (Topography)	14.7% (n=24)	15.2% (n=53)	16.0% (n=41)	13.2% (n=46)
Include More Color	4.9% (n=8)	3.2% (n=11)	5.1% (n=13)	1.7% ^a (n=6)
None of the Above	9.8% (n=16)	9.2% (n=32)	6.6% (n=17)	7.4% (n=26)
Other	4.3% (n=7)	4.9% (n=17)	4.7% (n=12)	6.0% (n=21)

^aAbsolute value of adjusted residual ≥ 2.0 .
 $\chi^2=11.3$, $df=15$, $p=0.732$

Figure 34

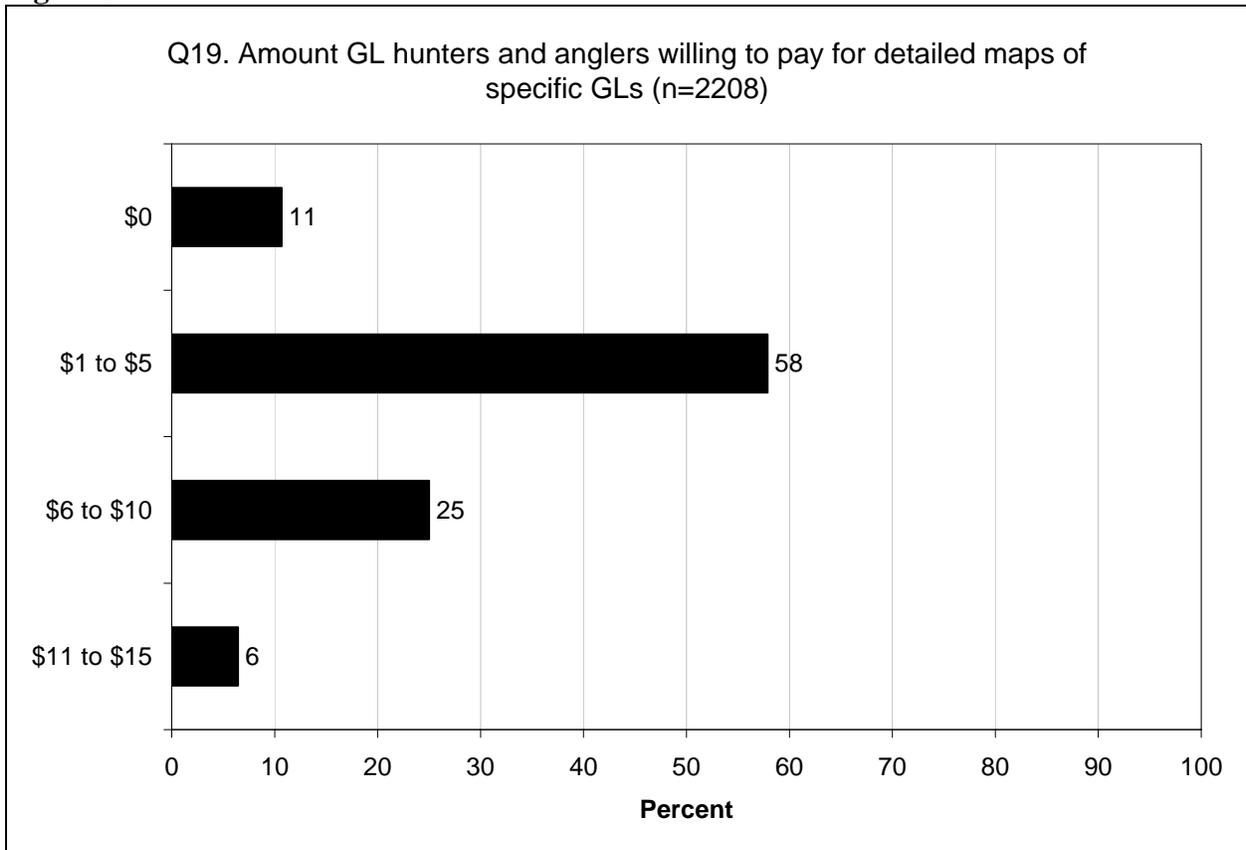


Figure 35

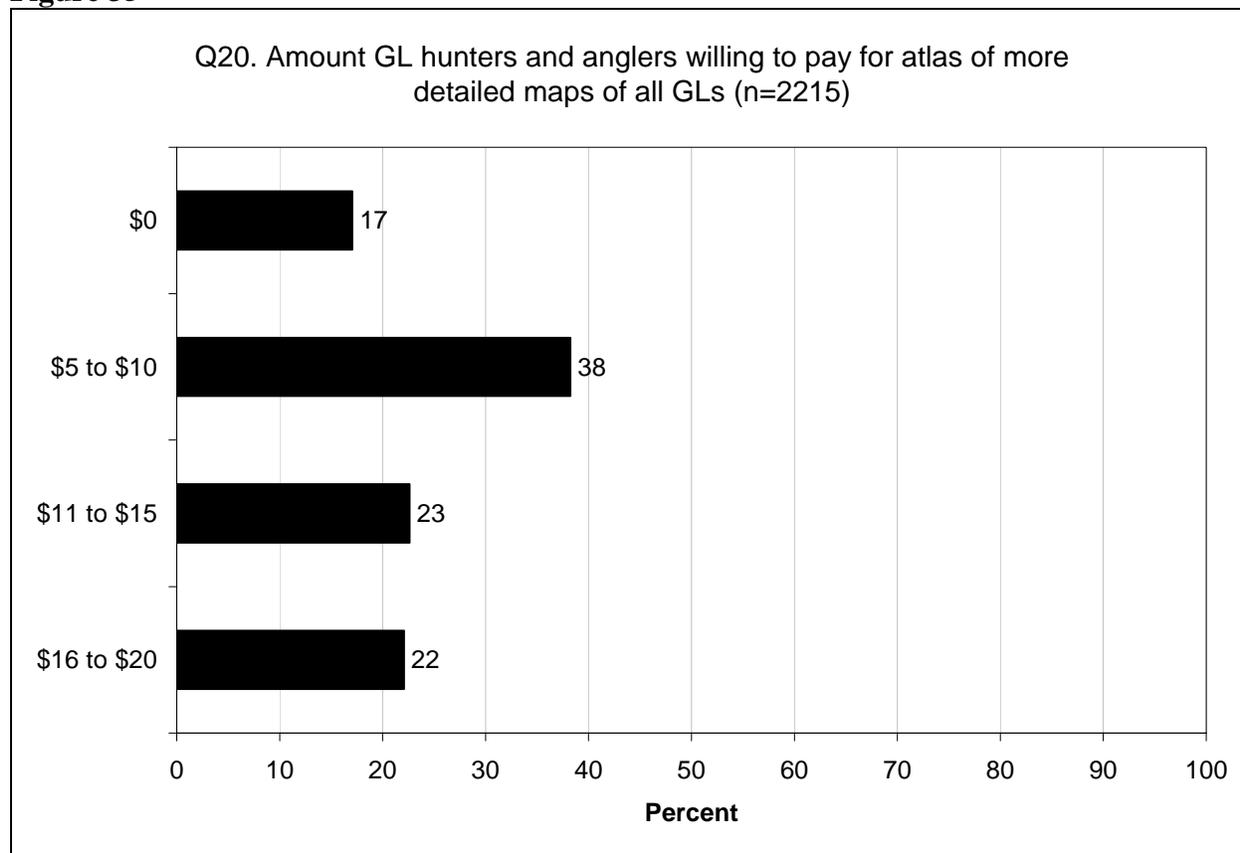


Table 59. Internet access for GL hunters and anglers (Q21) by sex.

Have regular Internet access	Male	Female
Yes	70.8% (n=944)	70.4% (n=38)
No	29.2% (n=389)	29.6% (n=16)

$\chi^2=0.0$, $df=1$, $p=0.943$

Table 60. Internet access for GL hunters and anglers (Q21) by age.

	Age (years)					
	16-24	25-34	35-44	45-54	55-64	≥ 65
Yes	73.4% (n=113)	79.0% ^a (n=346)	79.9% ^a (n=481)	74.5% (n=356)	65.5% ^a (n=232)	39.6% ^a (n=76)
No	26.6% (n=41)	21.0% ^a (n=92)	20.1% ^a (n=121)	25.5% (n=122)	34.5% ^a (n=122)	60.4% ^a (n=116)

$\chi^2=139.1$, $df=5$, $p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 61. Internet access for GL hunters and anglers (Q21) by WRC region of residence.

Have regular Internet access	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Yes	76.4% (n=253)	75.6% ^a (n=598)	65.6% ^a (n=607)	85.3% ^a (n=151)
No	23.6% (n=78)	24.4% ^a (n=193)	34.4% ^a (n=318)	14.7% ^a (n=26)

$\chi^2=42.7, df=3, p\leq 0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Table 62. Use by GL hunters and anglers of NCWRC website to access GLs maps, regulations updates, and other information (Q22) by WRC region of residence.

Have used NCWRC website	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Out-of-state
Yes	37.9% (n=125)	38.0% ^a (n=300)	29.6% ^a (n=274)	34.7% (n=61)
No	62.1% (n=205)	62.0% ^a (n=489)	70.4% ^a (n=651)	65.3% (n=115)

$\chi^2=15.7, df=3, p=0.001$

^aAbsolute value of adjusted residual ≥ 2.0 .

Figure 36

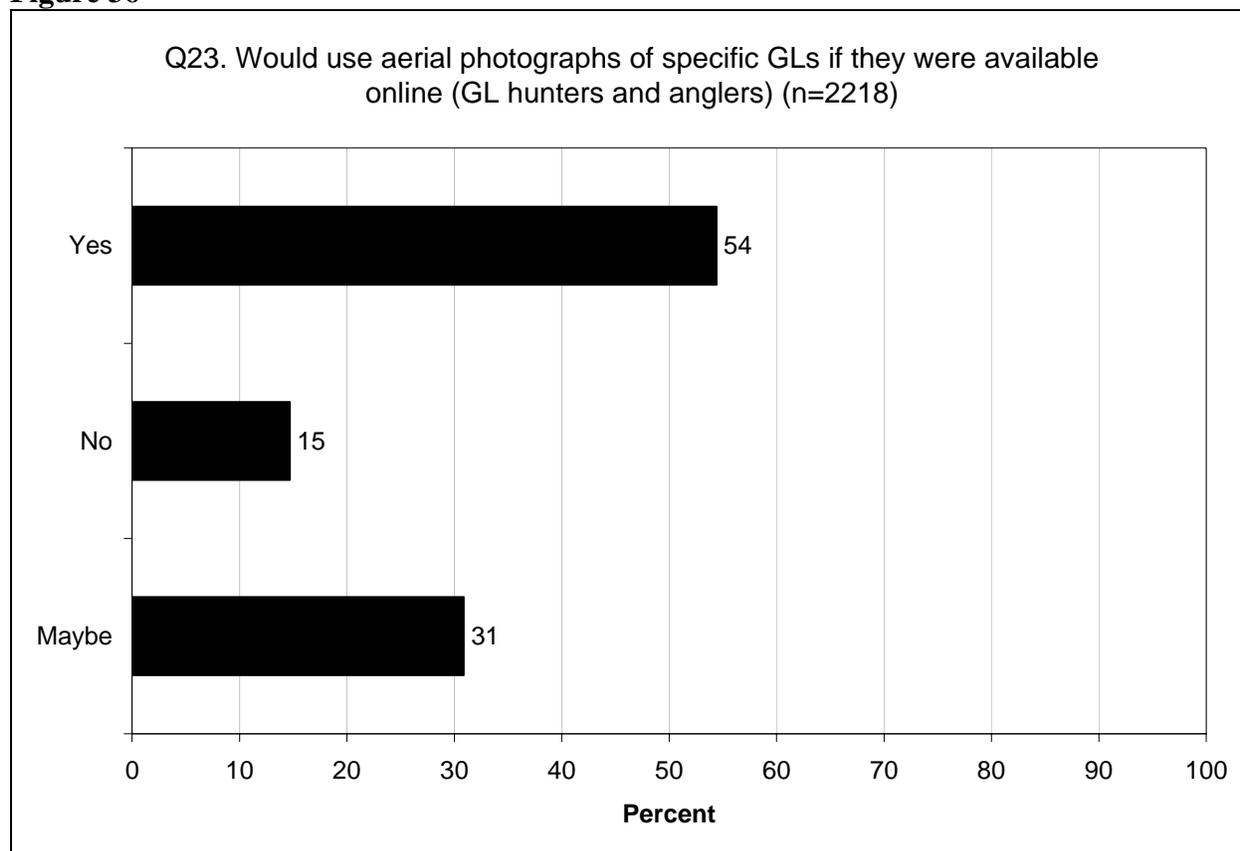
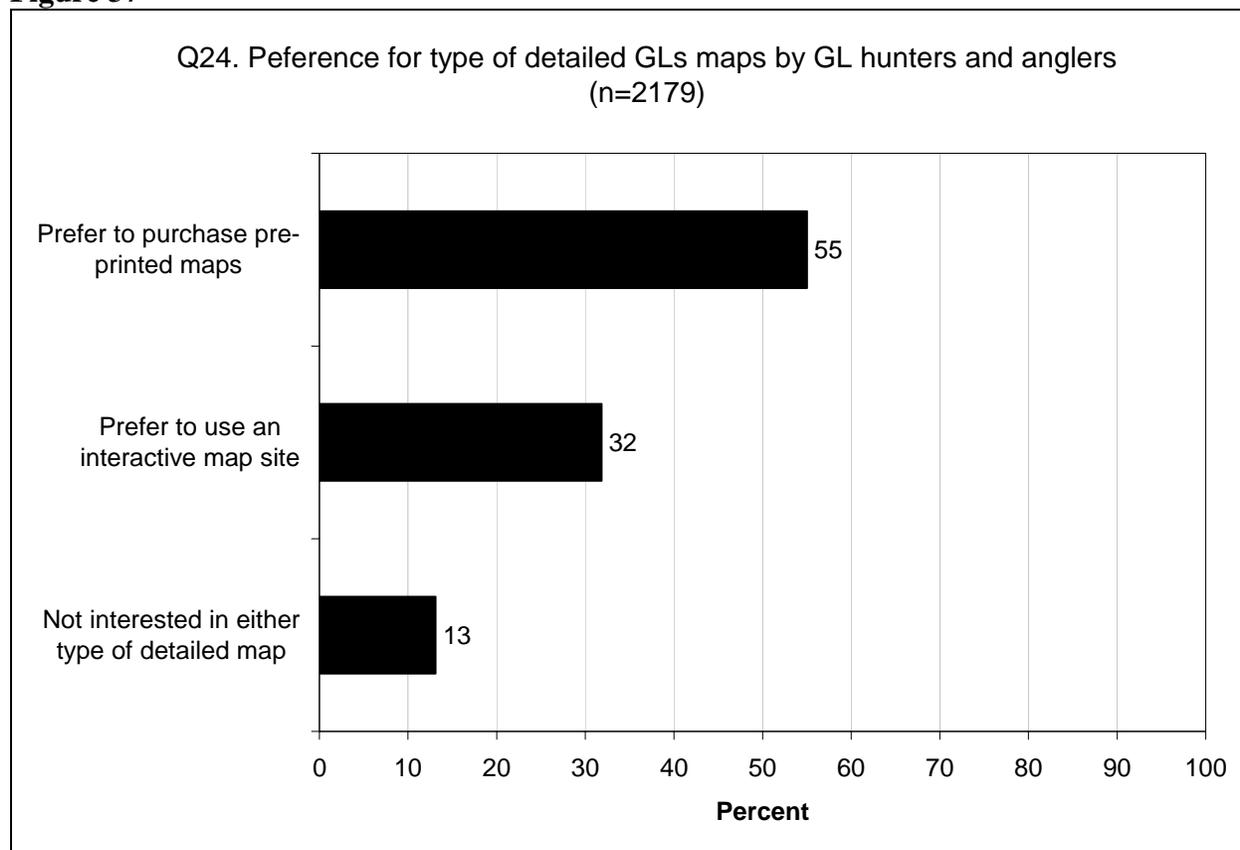


Figure 37



Hunter and angler preferences for GL fees

All hunters and anglers are currently required to pay fees (either included in or in addition to their hunting and fishing licenses) in order to hunt or fish on GLs. GL hunters and anglers overwhelmingly supported (54%) an increase in GL Use Permit fees to pay for road and wildlife habitat improvements on GLs (Figure 38). There were no significant differences in support for increasing GL Use Permit fees based on region of GLs hunted (Table 63).

Currently, most GL users who are not hunters, trappers, or trout anglers are not required to pay fees to use GLs. A majority of GL hunters and anglers prefer to ‘only license sportsmen, and prioritize the desires of sportsmen in GL management decisions’ (60%) over requiring ‘all users to purchase licenses, and incorporate the desires of all users into GL management decisions’ (33%) (Figure 39). GL hunters and anglers who held Sportsman (65%) or Resident Sportsman Adult (68%) licenses were significantly more likely and Resident Lifetime Age 70 Sportsman (44%) license holders significantly less likely to support continuing to ‘license only sportsmen’ than expected (Table 64). There were no significant differences in support for sportsmen and non-sportsmen fees based on sex (Table 65). GL hunters and anglers 16 to 24 years old (51%) and 65 or older (52%) were significantly less likely to support continuing to ‘license only sportsmen’ than expected (Table 66). There were no significant differences in support for sportsmen and non-sportsmen fees based on WRC region of GLs hunted (Table 67).

Figure 38

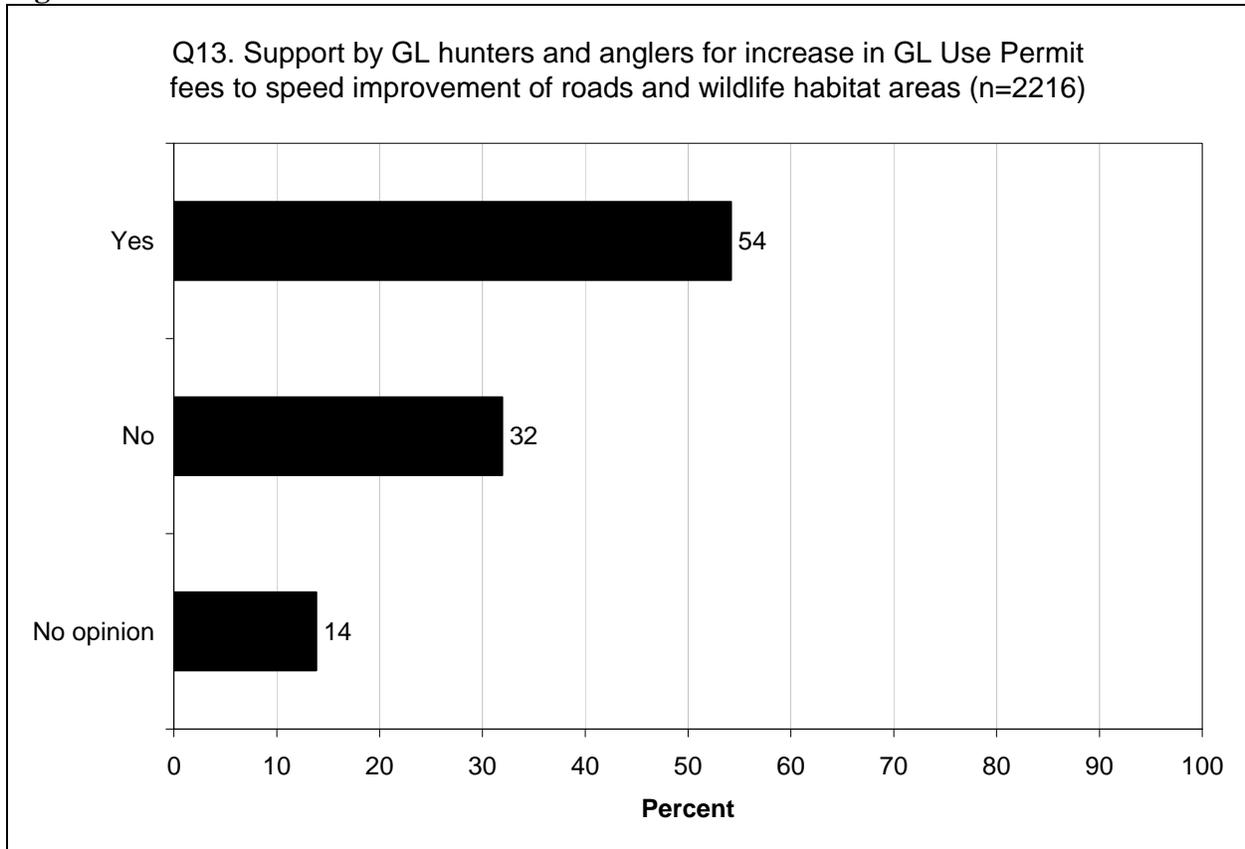


Table 63. Support for increase in GL Use Permit fees to speed the improvement of GL roads and wildlife habitat areas (Q13) by WRC region of GLs hunted in last three years (Q5) (GL hunters).

Support for increase in GL Use Permit fees	WRC Region of Residence			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Yes	56.6% (n=124)	53.3% (n=245)	53.3% (n=203)	54.7% (n=231)
No	34.7% (n=76)	31.1% (n=143)	32.8% (n=125)	32.5% (n=137)
No Opinion	8.7% ^a (n=19)	15.7% (n=72)	13.9% (n=53)	12.8% (n=54)

$\chi^2=6.6$, $df=6$, $p=0.359$

^aAbsolute value of adjusted residual ≥ 2.0 .

Figure 39

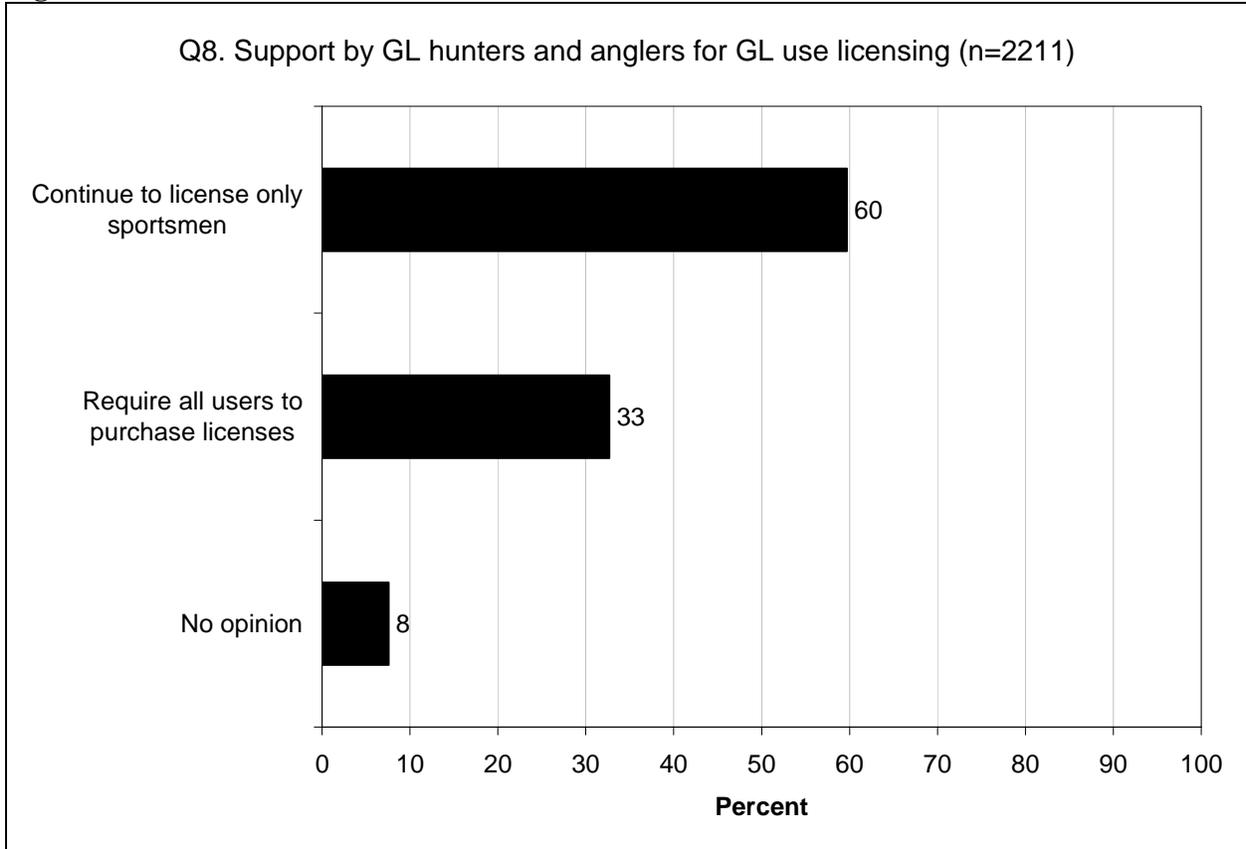


Table 64. Support by GL hunters and anglers for GL use licensing (Q8) by license type (GL hunters and anglers).

Licensing Approach	ALVIN Item Types						
	Comprehensive Hunt	Lifetime Comprehensive Hunt	Comprehensive Fish	Lifetime Comprehensive Fish	Perm Disabled State Fish	Sportsman	Resident Sportsman Adult
Continue to License Only Sportsmen	63.4% (n=26)	52.4% (n=11)	61.9% (n=192)	55.0% (n=11)	63.6% (n=7)	65.3% ^a (n=725)	67.8% ^a (n=257)
Require All Users to Purchase Licenses	36.6% (n=15)	47.6% (n=10)	38.1% (n=118)	45.0% (n=9)	36.4% (n=4)	34.7% ^a (n=386)	32.2% ^a (n=122)
No Opinion ^b	-	-	-	-	-	-	-
$\chi^2=30.3, df=12, p=0.003$							

^aAbsolute value of adjusted residual ≥ 2.0 .

^bCategory not included in crosstabulation due to small numbers of respondents.

Table 64 (continued). Support by GL hunters and anglers for GL use licensing (Q8) by license type (GL hunters and anglers).

Licensing Approach	ALVIN Item Types						
	Sportsman Youth	Nonresident Sportsman Adult ^a	Sportsman Infant	Resident Lifetime Age 70 Sportsman	Perm Disabled Combo H/F	Disabled Sportsman	Special Trout Fishing
Continue to License Only Sportsmen	60.0% (n=24)	-	40.0% (n=6)	44.2% ^b (n=50)	60.4% (n=29)	56.0% (n=14)	59.0% (n=92)
Require All Users to Purchase Licenses	40.0% (n=16)	-	60.0% (n=9)	55.8% ^b (n=63)	39.6% (n=19)	44.0% (n=11)	41.0% (n=64)
No Opinion ^a	-	-	-	-	-	-	-
$\chi^2=30.3, df=12, p=0.003$							

^aCategory not included in crosstabulation due to small numbers of respondents.

^bAbsolute value of adjusted residual ≥ 2.0 .

Table 65. Support by GL hunters and anglers for GL use licensing (Q8) by sex.

Licensing Approach	Male	Female
Continue to License Only Sportsmen	61.3% (n=813)	62.3% (n=33)
Require All Users to Purchase Licenses	32.3% (n=429)	24.5% (n=13)
No Opinion	6.4% (n=85)	13.2% (n=7)

$\chi^2=4.5$, $df=2$, $p=0.105$

Table 66. Support by GL hunters and anglers for GL use licensing (Q8) by age.

Licensing Approach	Age (years)					
	16-24	25-34	35-44	45-54	55-64	≥ 65
Continue to License Only Sportsmen	51.0% ^a (n=78)	63.5% (n=275)	60.4% (n=362)	62.2% (n=296)	58.0% (n=206)	52.4% ^a (n=99)
Require All Users to Purchase Licenses	39.2% (n=60)	29.1% (n=126)	32.4% (n=194)	31.7% (n=151)	34.1% (n=121)	36.5% (n=69)
No Opinion	9.8% (n=15)	7.4% (n=32)	7.2% (n=43)	6.1% (n=29)	7.9% (n=28)	11.1% (n=21)

$\chi^2=16.0$, $df=10$, $p=0.100$

^aAbsolute value of adjusted residual ≥ 2.0.

Table 67. Support by GL hunters for GL use licensing (Q8) by WRC region of GLs hunted in the last three years (Q5).

Licensing Approach	WRC Region of GLs Hunted			
	Coastal	Piedmont	Mountain	Two or More Different Regions
Continue to License Only Sportsmen	65.1% (n=142)	61.8% (n=286)	59.9% (n=226)	62.1% (n=261)
Require All Users to Purchase Licenses	27.5% (n=60)	30.2% (n=140)	33.2% (n=125)	32.6% (n=137)
No Opinion	7.3% (n=16)	8.0% (n=37)	6.9% (n=26)	5.2% (n=22)

$\chi^2=5.0$, $df=6$, $p=0.547$

Management Implications

Demographics

Efforts by the WRC to recruit women hunters and anglers (and promote the use of GLs) are warranted. Most-out-of state GL users exclusively trout fished. This could be because out-of-state hunters may be more willing/able to pay higher fees in order to hunt on corporate or private land and are less likely than North Carolina residents to hunt on GLs.

Reasons for not using GLs

A portion of those with GL privileges who did not hunt claim that they were ‘not familiar with the GL program.’ This indicates that communication with hunters about the GL program is essential. There is the perception among some potential GL hunters that GLs are unsafe. This may be another opportunity for better communication among the WRC and hunters and anglers about the actual safety risks on GLs and ongoing efforts by the WRC to improve safety (e.g., better law enforcement).

Importance of GLs and satisfaction with the GL program

The GL program apparently is important to GL hunters. The GL program may be even more important to hunters who are Mountain region residents as they were more likely than expected to use GLs for a majority of their hunting and to value GLs because of the difficulties in paying for hunting leases.

Generally, GL hunters and trout anglers were satisfied with the GL program. However, the results indicate that overall satisfaction could be improved by increasing satisfaction with the most important factors that contribute to overall satisfaction (e.g., ‘abundance of game/trout,’ proximity of GLs to home, habitat management for hunted species).

Abundance of game/trout

Abundance of hunted and fished species was important to GL hunters and trout anglers. Mountain GL hunters were particularly concerned about the abundance of game/trout and habitat management. The high importance placed on game/trout abundance by GL users may indicate an opportunity to communicate with hunters and anglers (particularly Mountain hunters and trout anglers) about changes in game/trout abundance and distribution and WRC efforts to improve the quality and abundance of hunted and fished species.

Management/acquisition priorities for GLs

GL hunters and trout anglers were closely divided on whether ‘improving habitat for wildlife and fisheries on existing GLs’ or ‘purchasing/acquiring new acreage for GLs’ was most important. Improving habitat on existing GLs was a priority for a majority (and significantly higher proportion than expected) of Mountain GL hunters, so WRC managers should consider prioritizing the improvement of habitat in Mountain GLs.

GL users favored strategies for management and acquisition of GL that emphasized providing habitat for a variety of species and providing opportunities for a variety of wildlife-related recreational activities.

Proximity of GLs to home and camping availability

Because proximity of GLs to home was more important to hunters of Piedmont GLs than those who hunt on Mountain GLs, because Piedmont GL hunters were more likely than expected to drive home instead of staying overnight at a GL, and because there is increasing urban and suburban development in the Piedmont, acquisition of new GL acreage throughout the Piedmont is important.

Mountain GL hunters were more likely to camp than expected. Mountain GL hunters also rated camping facilities improvements as more important than expected. Therefore, the WRC should evaluate improved camping facilities on or near GLs (especially those in the Mountain region).

GL access and road closure

Roads and trails improvements were relatively important for GL hunters and trout anglers (particularly hunters of Coastal GLs) and Coastal GL hunters had higher support for improving GL trails. GL users overall supported the permanent closure of roads in order to protect habitat, protect water quality, or to limit the disturbance of wildlife. However, road closures to protect water quality might be more acceptable in the mountains than in other areas of the state.

GL fees

GL hunters were ready to help pay for more public hunting areas as most were willing to pay higher fees to have additional GLs on which to hunt and over half supported increasing GL fees to improve roads and wildlife areas. However, we did not ask how much more they were willing to pay, so significant increases may or may not be met with opposition. The WRC should conduct a contingent valuation study to determine how much more hunters would be willing to pay for such improvements. However, the WRC should be careful to not increase fees to the point where it is prohibitive for less affluent hunters and anglers to use GLs. Two-thirds of GL hunters and trout anglers wanted to ‘continue to license only sportsmen’ on GL and not require other users to pay fees to use GL.

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Appendix A: GL Survey Materials

Dear North Carolina license holder,

We at the North Carolina Wildlife Resources Commission (NCWRC) need to know your opinions of our Game Land Program and your suggestions for improving your hunting and fishing experiences on NCWRC-owned Game Lands.

Because you currently hold a license that allows you to access our Game Lands, you were selected to receive the following survey. This survey is being sent to only a small sample of our sportsmen and women, therefore **your response is critical** if the survey results are to accurately represent the opinions of all those that use North Carolina's Game Lands. Your response will have a profound impact because we will use it in combination with biological data to help us determine the management options that best serve North Carolina's wildlife and its sportsmen and women.

Please complete the following survey questionnaire and return it to us in the enclosed postage-paid envelope immediately. **You may even complete this survey online** at www.ncwildlife.org by entering your survey ID number from the address block on the back of this survey.

Best of all, if we receive your response (on paper or online) **by July 31st**, your name will be entered in a random drawing to **receive a free Lifetime Sportsman License** for the sportsman of your choice!

Thank you for your participation and for taking an active role in the management of **your** North Carolina Game Lands!

Game Land Program Survey Questionnaire:

*Please answer ALL applicable questions and return to the NCWRC
or complete this survey online at www.ncwildlife.org/survey*

1. Regarding only your experience on North Carolina Game Lands, in which of the following activities/seasons did you participate on **Game Lands** in the last three years? (**Check all that apply**)

- Hunting deer (archery)
- Hunting deer (muzzle loader)
- Hunting deer (gun)
- Hunting wild turkey
- Hunting boar
- Hunting bear
- Hunting waterfowl
- Hunting rabbits/raccoons/squirrels
- Hunting grouse/quail
- Hunting dove
- Hunting swan
- Hunting geese
- Permitted hunts
- Youth hunts (accompanying a youth)
- Trapping
- Trout fishing in designated Wild Trout Waters (Wild, Wild/Natural Bait, Catch & Release (C&R) Artificial Fly Only, C&R Artificial Lure Only)
- Trout fishing in Stocked Trout Waters (Hatchery Supported, Delayed Harvest)
- Training dogs
- Bird watching
- Camping
- Hiking
- Boating
- Tubing
- Horseback riding
- None of the above

2. During the last three years did you fish for trout or hunt on any of the North Carolina Game Lands? (**Check ONE**)

- I only hunted (Skip to question 4)
- I only trout fished (Continue to question 3)
- I both hunted and trout fished (Skip to question 5)
- I neither hunted nor trout fished (Continue to question 3)

3. If you **have not hunted** on a North Carolina Game Land in the last three years, which of the following describe why? (**Check all that apply**)

- I do not hunt.
- I have my own lease (or hunt other lands).
- There are no Game Lands convenient to my home.
- Game Lands are too crowded.
- There is too much illegal or unethical behavior on Game Lands by other users.
- The published hunting rules for Game Lands are too vague or complicated.
- I feel unsafe hunting Game Lands.
- Game Lands do not support adequate game for my hunting preference.
- Game Lands have too few roads/trails for vehicular or foot travel access.
- Game Lands have too many roads/trails for vehicular or foot travel access.
- I am not familiar with the Game Land program.
- Other (specify) _____

(Continue to question 4 if you did not fish on Game Lands in the last three years. Skip to question 5 if you did fish on Game Lands)

4. If you **have not fished** for trout on a North Carolina Game Land in the last three years, which of the following describe why? (**Check all that apply**)

- I do not fish for trout.
- Streams on Game Lands are too crowded.
- Streams on Game Lands contain too few trout.
- Streams on Game Lands are not easily accessible.
- Trout fishing regulations are too vague or complicated.
- Other (specify) _____

If you neither hunted nor fished on Game Lands in the last three years, please stop here and return the survey to us in the enclosed postage-paid envelope. Your response is very important even if you did not use North Carolina Game Lands. Good Luck in the drawing for the free Lifetime Sportsman's License!

If you did hunt and/or fish for trout on Game Lands in the last three years, continue answering with question 5.

5. Map Page

Game Lands Users – June 2009

6. Of the following potential actions of the NCWRC, which do you believe is the **most** important for the future direction of the Game Lands Program? (**Check ONE**)

- Purchasing/acquiring new acreage for Game Lands
- Improving habitat for wildlife and fisheries on existing Game Lands
- Improving Game Land facilities/service (roads, parking, interpretive centers, maps)
- None of the above

7. Of the following reasons for acquiring Game Land, please rank your top three priorities by designating the most important priority as “1”, the second most important as “2”, and the third most important as “3.” (**Rank TOP THREE**)

- ___ Acquire Game Lands in more areas of the state.
- ___ Acquire more Game Lands regardless of location.
- ___ Acquire Game Lands that protect natural areas and unique habitats.
- ___ Acquire Game Lands that provide habitat for all types of wildlife.
- ___ Acquire Game Lands that provide habitat for hunted species.
- ___ Acquire Game Lands that provide for all types of wildlife-associated recreation (hunting, trapping, fishing, birding, and wildlife viewing).

8. Currently on some Game Lands, only sportsmen and women (hunters, trappers, and fishermen) are required to purchase licenses that allow them to use Game Lands (Lifetime Licenses, Game Lands Permits, Trout Permits, etc.). As one of the primary purposes of the Game Lands Program is to provide the public with areas for fishing and hunting, the NCWRC tailors its Game Lands program primarily to meet the needs and desires of North Carolina sportsmen. Some Game Lands users have proposed that all Game Lands users (birdwatchers, kayakers, field trial participants, horseback riders, campers, etc.) be required to purchase licenses allowing access to Game Lands. This change could increase the amount of license revenue available for further Game Land acquisition and management, but it could also mean that the desires of non-sportsmen would hold increased weight in Game Land management decisions. Given this and other potential trade-offs, which of the following would you prefer? (**Check ONE**)

- Continue to license only sportsmen, and prioritize the desires of sportsmen in Game Land management decisions.
- Require ALL users to purchase licenses, and incorporate the desires of ALL users into Game Land management decisions.
- I have no opinion.

9. Please rank your top three priorities for managing wildlife and habitats on Game Lands by designating the most important priority as “1”, the second most important as “2”, and the third most important as “3.” (**Rank TOP THREE**)

- ___ Manage Game Land with consideration for all wildlife/fish species present.
- ___ Manage Game Land specifically for species that are hunted (game species).
- ___ Manage Game Land for Quality Deer (Quality Deer Management or QDM).
- ___ Manage more Game Land to feature small game.
- ___ Manage more Game Land to feature waterfowl.
- ___ Manage Game Land for a variety of hunting and fishing opportunities based on the potential of the individual area.
- ___ Manage Game Land to provide for all types of wildlife-associated recreation (hunting, trapping, fishing, birding, and wildlife viewing).
- ___ I am not interested in management; just provide me with woods and fields to hunt, and streams to fish.

10. Please rank your top three priorities for Game Land facilities and service improvement goals by designating the most important priority as “1”, the second most important as “2”, and the third most important as “3.” (**Rank TOP THREE**)

- Roads and trails
- Parking
- Interpretive centers
- Improved maps
- Camping areas
- Signs
- Other (specify) _____
- None of the above

11. Which of the following describes your preference for access on Game Lands? (**Check ONE**)

- Provide more trails for foot travel on Game Lands
- Improve road systems for increased vehicular access to Game Lands
- Restrict the number of roads and trails on Game Lands (to provide primitive areas)
- I like the Game Land access we currently have. Do not change it.

12. Preparation of new Game Lands for public use requires many man-hours and many dollars of designated wildlife funds toward roads, gates, and parking areas. If new game lands are opened without proper preparation, the road system may experience extensive damage, valuable wildlife habitat may be lost, water quality can be diminished and user safety is often compromised. Land Managers have several options available to them when controlling access on game lands that can limit damage, maintenance costs, habitat loss and unsafe conditions for users; however, in most cases vehicular traffic must be limited to accomplish these goals. Under which of the following conditions would you be willing to support permanently limiting motorized vehicular access on Game Land by designating certain roads “foot travel only”? (**Check all that apply**)

- To protect the road system from extensive vehicular damage.
- To protect water quality.
- To protect existing wildlife habitat.
- To allow for the development of important habitat within road openings.
- To limit wildlife disturbance.
- To limit hunter disturbance.
- I would not support permanently limiting access under any of the above conditions.

13. Would you support an increase in Game Land Use Permit fees to speed the improvement of Game Land roads and wildlife habitat areas? (**Check ONE**)

- Yes
- No
- I have no opinion

14. When using a North Carolina Game Land, what is the maximum distance you are willing to walk from your vehicle to the site of your activity? (**Check ONE**)

- 1 mile or greater
- up to ¾ mile
- up to ½ mile
- up to ¼ mile
- up to 200 yds

15. Is it important to you that there be camping facilities on or adjacent to the Game Lands that you use? (*Check ONE*)

- Yes
- No

16. When you travel to a Game Land, where do you stay while using this Game Land? (*Check ONE*)

- Hotel
- Friends/Family
- Camp
- I do not stay overnight; I drive home
- Other (specify) _____

17. Are you satisfied with the current Game Lands Map Book? (*Check ONE*)

- Yes
- No
- I have not seen the current Game Lands Map book (skip to 19)

18. How could we best improve the current Game Lands Map Book? (*Check ONE*)

- Add road names
- Add contour lines (topography) to indicate elevation
- Include more color
- Provide larger individual maps
- Other (specify) _____
- None of the above

19. How much would you be willing to pay to purchase detailed maps of a specific Game Land? (*Check ONE*)

- \$0.00 (I would not be interested in purchasing detailed maps of a Game Land.)
- \$1.00 to \$5.00
- \$6.00 to \$10.00
- \$11.00 to \$15.00

20. How much would you be willing to pay to purchase an atlas containing more detailed maps of all the North Carolina Game Lands? (*Check ONE*)

- \$0.00 (I would not be interested in purchasing a Game Lands atlas.)
- \$5.00 to \$10.00
- \$11.00 to \$15.00
- \$16.00 to \$20.00

21. Do you have access to the Internet? (*Check ONE*)

- Yes
- No

22. Have you used the NCWRC website (www.ncwildlife.org) to access Game Land maps, regulations updates, and other information? (*Check ONE*)

- Yes
- No

23. Would you utilize aerial photography of a specific Game Land if these photographs were available on the NCWRC Internet site? (*Check ONE*)

- Yes
- No
- Maybe

24. Interactive map sites exist on the Internet where users can create a personalized map of an area by adding characteristics that they choose (such as aerial photographs, roads, streams, forest types, land contours, etc). Would you be interested in using one of these Internet interactive map sites to create your own map of a Game Land or would you rather purchase pre-printed detailed maps (either individual Game Land maps or an atlas of all Game Lands)? (*Check ONE*)

- I would prefer to use an Interactive Map Site
- I would prefer to purchase pre-printed maps.
- I would not be interested in either type of detailed map.

25. In general how would you rate your satisfaction with the Game Land program in NC? (*Check ONE*)

- Very satisfied
- Satisfied
- Dissatisfied
- Very dissatisfied
- I have no opinion

26a. Please indicate in the **right**-hand columns below whether you are satisfied with, dissatisfied with or have no opinion about the way **each factor listed** has affected your Game Land experiences. (*Instructions continue in Question 26b*).

Rank	Factor	Satisfied	Dissatisfied	No Opinion
___	Parking.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Roads/Access.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Camping availability.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Proximity to my home.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Level of disturbance by other GL users.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Level of disturbance by WRC employees.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Management of habitat for the species I hunt...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Trout fishing experience.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Enforcement of wildlife/fisheries laws.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Numbers of other hunters/fishermen.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
___	Abundance of game/trout	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26b. Now please indicate which of the above factors you believe play the greatest role in determining your enjoyment of your Game Land experiences by choosing the five most important factors and ranking them 1-5 **in the left-hand column** (with “1” being the most important, “2” the second most important, etc....and “5” being the fifth most important factor in determining your enjoyment of your Game Land experience).

27. When using North Carolina Game Lands, how often do you run into conflicts with other users? (**Check ONE**)

- Never
- Rarely
- Occasionally
- Frequently
- Always

28. With which types of other Game Land users do you have the most conflict? (**Check ONE**)

- Hunters
- Fishermen
- Loggers
- Pine Straw Rakers
- Kayakers/Tubers
- Hikers
- Bird-watchers
- Campers
- Land Managers/ NCWRC Employees
- Other _____
- I do not have conflicts with other users

If you fished for trout on Game Land in the last three years, please continue with Question 29. If you did not fish for trout on Game Land, please skip to Question 35.

29. What type of Wild Trout fishing program on Game Lands would you most prefer? (**Check ONE**)

- Wild Trout (4 fish/day; 7 in. minimum size limit; artificial lures only)
- Wild/Natural Bait (4 fish/day; 7 in. minimum size limit; no bait restrictions)
- Catch & Release Artificial Lure Only (no harvest; artificial lures only)
- Catch & Release Artificial Fly Only (no harvest; artificial flies only)
- I do not fish Wild Trout Waters

30. Should the number of special regulation trout streams on Game Lands (i.e., tackle restrictions, catch and release, etc.) be increased, decreased, or remain the same? (**Check ONE**)

- Increased
- Decreased
- Remain the same
- I have no opinion

31. Should the number of Wild trout streams on Game Lands that allow the use of natural bait (i.e. Wild/Natural Bait) be increased, decreased, or remain the same? (**Check ONE**)

- Increased
- Decreased
- Remain the Same
- I have no opinion

32. What type of Stocked Trout fishing program on Game Lands would you most prefer? (*Check ONE*)

- Hatchery Supported
- Delayed Harvest
- I do not fish Stocked Trout Waters

33. Would you prefer that our trout stocking program on Game Lands provide more trout of a smaller size, fewer trout of a larger size, or the current numbers and sizes of trout on Game Lands? (*Check ONE*)

- More trout, but smaller size
- Fewer trout, but larger size
- Current number and size of trout
- I have no opinion

34. How many trout do you typically harvest **per trip** from Hatchery Supported trout streams on Game Lands? (*Check ONE*)

- 0 - 2
- 3 - 4
- 5 - 7
- I do not harvest trout
- I do not fish Hatchery Supported trout waters

If you hunted on Game Lands in the last three years, please continue with Question 35. If you did not hunt on Game Land, please skip to Question 40.

35. Which of the following game species would you most like North Carolina Game Lands to support for your hunting? (*Check ONE*)

- Deer
- Wild Turkey
- Quail and Grouse
- Bear
- Small Game (squirrel, rabbit, raccoon)
- Waterfowl
- Other (specify) _____
- None of the above

36. Please indicate whether the following statements are true or false by checking the appropriate box. (*Check "True" or "False" for each*)

True False

- I do the majority of my North Carolina hunting on Game Land.
- I do the majority of my North Carolina hunting on land owned by corporations or private citizens.
- I have experienced difficulty finding places in North Carolina to hunt.
- Game Land is valuable to me because hunting leases have become unaffordable.
- I would be willing to pay higher fees to help the NCWRC provide and manage additional Game Land for public hunting.

37. When hunting on a three-day week Game Land, which would you prefer those days to be? (*Check ONE*)

- Monday, Wednesday, and Saturday
- Thursday, Friday, and Saturday
- Monday, Tuesday, and Wednesday
- I do not hunt 3-day week Game Lands

38. Which of the following has the greatest impact on your enjoyment of hunting trips on Game Lands? (*Check ONE*)

- Seeing lots of the species I am hunting
- Successfully harvesting the species I am hunting
- Having lots of days available to hunt a particular species
- Seeing/hearing few other hunters while hunting
- Having easy access to the hunting site
- Sharing the hunt with my friends/family
- Spending time alone in the outdoors

39. The NCWRC operates the Special Hunt Opportunities Program that issues a limited number of permits for hunting on certain Game Lands where unrestricted access to the area could cause detrimental impacts to the wildlife resource, result in unsafe conditions, or create an undesirable or low quality hunting experience. Related to the Special Hunt Opportunities Program on Game Lands, which of the following would you prefer? (*Check ONE*)

- Expand the Special Hunt Opportunities Program.
- Leave the Special Hunt Opportunities Program as it is.
- Reduce the Special Hunt Opportunities Program.
- I have no opinion

40. Thank you for your participation. Please return the completed survey to us in the enclosed postage-paid envelope. If we receive your response **by July 31st**, your name will be entered in the random drawing to receive a **free Lifetime Sportsman License** for the sportsman of your choice!