

## Statewide Small Game Hunter Survey, 2012

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**Cover Photo:** Harvested spruce grouse *Falcapennis canadensis* in Southcentral Alaska. ©2012 ADF&G, photo by Richard Merizon.

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## Abstract

Alaska's small game populations (species of grouse, ptarmigan, and hare) have long been popular sport and subsistence resources for residents and nonresidents alike. Since statehood in 1959, the Alaska Department of Fish and Game (ADF&G) has made attempts to understand harvest, location, and hunter effort relative to small game hunting. However, most of these attempts have been focused in localized areas; there was no formal statewide collection or analysis of small game hunting data. Beginning in April 2012, ADF&G created the first comprehensive statewide small game hunter survey. Postcards were mailed out to 9,539 individual households on 2 April 2012. Respondents were asked to complete an online hunter survey for the portion of the regular small game hunting season from 1 December 2011 through the close of the grouse and ptarmigan season. Respondents were asked questions relative to the entire household about species hunted, numbers harvested, hunt locations, hunting effort, number of small game hunters in the household that were under 16 years of age, and whether or not they harvested small game opportunistically. We received an 11.2% response rate. An estimated 66,423 individuals hunted small game in Alaska during the reporting period. An estimated 12,349 hunters were 16 and younger. The majority of hunters harvested small game opportunistically as well as through targeted hunts. Highway and off-road vehicles, as well as walking, were the primary means of transportation for small game hunters in the Southcentral and Interior areas. However, snowmachines were the primary means of transportation in the Western rural area. Spruce grouse (*Falci pennis canadensis*), snowshoe hare (*Lepus americanus*), and ptarmigan (*Lagopus* spp.) were the most hunted species. Since this is our first attempt at a statewide small game hunter survey, we hope to learn from this experience and improve the efficiency and value of future efforts.

*Key words:* small game, grouse, ptarmigan, hare, hunt, survey, household.



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## Introduction

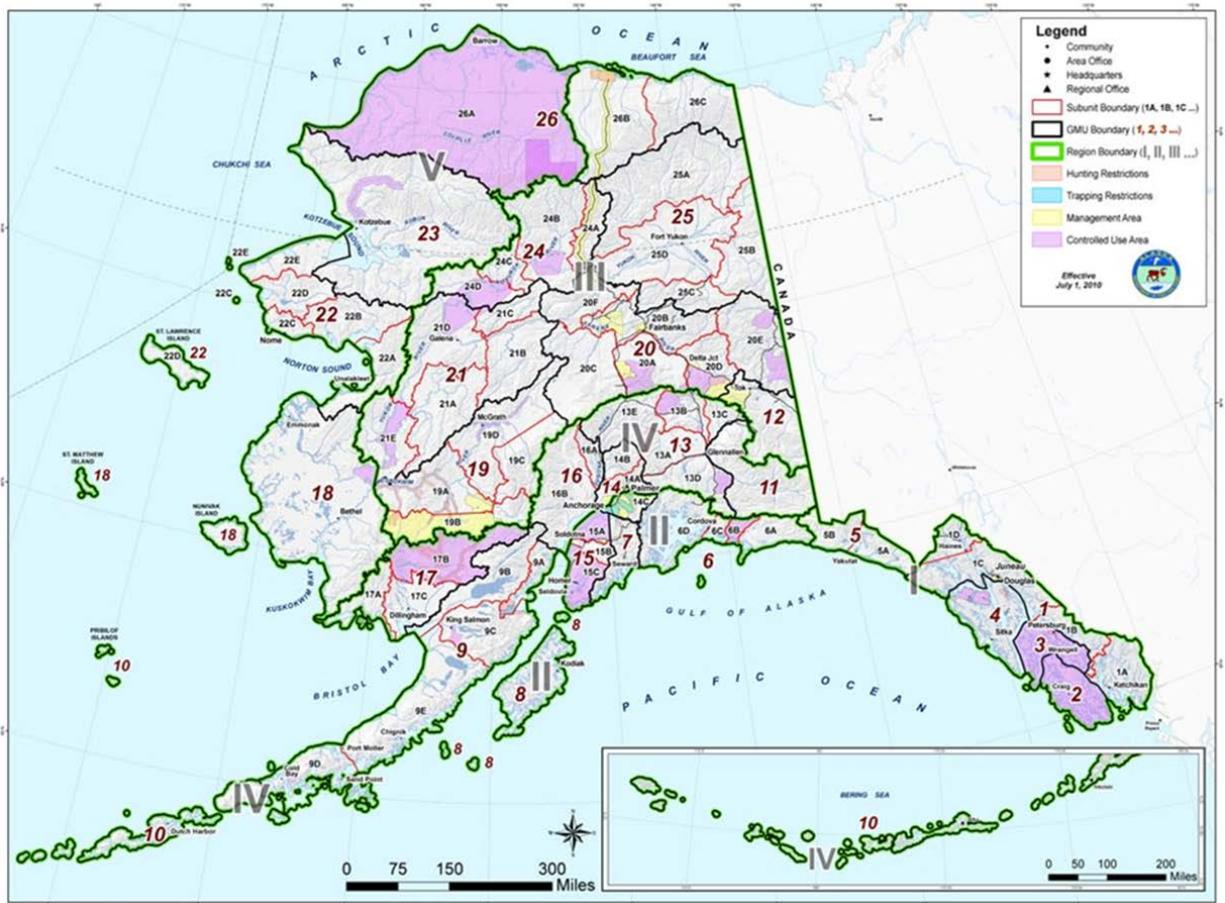
Alaska is fortunate to have a wide diversity of small game species, including grouse, ptarmigan, and hare. There are four species of grouse: ruffed (*Bonasa umbellus*), spruce (*Falci pennis canadensis*), sharp-tailed (*Tympanuchus phasianellus*), and sooty grouse (*Dendragapus fuliginosus*). In addition, Alaska is home to willow (*Lagopus lagopus*), rock (*L. muta*), and white-tailed ptarmigan (*L. leucurus*). There are two species of hare, snowshoe (*Lepus americanus*) and Alaska hare (*L. othus*). Typically, an Alaska small game hunter can pursue at least one of these species wherever they reside in the state. In regulatory year 2011 (RY11; 1 July 2011–30 June 30), all 9 of these species could be legally harvested under sport hunting regulations.

Despite its reputation as a big game mecca, Alaska has a long and storied history as an excellent location to pursue small game. The abundance and diversity of small game populations in Alaska compare favorably with other states. Resident and nonresident hunters in Alaska have enjoyed pursuing small game for many decades. Native subsistence hunters have long supplemented their yearly diets with seasonally abundant species of small game. In addition, recreational hunting of small game continues to remain very popular for many rural and urban hunters alike.

Despite the popularity of small game, few attempts have been made to estimate harvest effects on specific species populations or document who hunts small game and where hunting occurs. Buckley (1954) outlined a brief description of Alaska grouse and ptarmigan harvest trends from 1925 to 1952. The periods from 1932 to 1935 and 1942 to 1944 were reported to have been good hunt periods for grouse and ptarmigan hunters in Alaska. Beginning in 1951 another upward trend was observed by hunters; however, very little was done to document those observations. In the 1960s and early 1970s, the Alaska Department of Fish and Game (ADF&G) completed the first regional hunter questionnaires to document Interior grouse, ptarmigan, and hare population trends observed during the hunting season (Weeden 1965; McGowan and Weeden 1968; Ernest 1976, 1978). However, sample sizes were generally small and not all regions of the state were adequately represented. Beginning in 1978 and continuing until 1985, the hunter questionnaires began asking hunters about harvest (McGowan 1980, 1985, 1986). In the Interior, spruce grouse were the most frequently harvested game bird, followed by ruffed grouse. It was widely believed that small game populations fluctuated and harvest mortality had little effect on population status. Since 1985, ADF&G has not conducted a regional small game hunter surveys. However, there have been sporadic species- and location-focused hunter surveys. In 1992, an informal ptarmigan hunter survey was conducted by State of Alaska Fish and Wildlife Troopers in game management unit (GMU) 13 (Fig. 1). This survey was initiated due to concern about low ptarmigan abundance and a proposal to the Alaska Board of Game (BOG) to reopen the April ptarmigan season in GMU 13 (Taylor 1992, 1994, 2000). These data were collected by direct contact with hunters in the field. A total of 171 hunters were contacted who had harvested a total of 653 ptarmigan.

Alaska has changed since ADF&G last surveyed the small game hunter population. For example ADF&G does not have a strong understanding of who hunts small game, which species are most often hunted, what locations hunters utilize most frequently, and how these areas are accessed. Since the agency's last attempt to survey a group of small game hunters in 1985, Alaska has undergone significant change. Since 1980, the human population has grown from 401,000 to

722,700 (U.S. Census Bureau 2011), numbers of locations where hunters can access the field has remain unchanged, and pursuing big game has become more competitive and expensive placing more pressure on less competitive and more affordable small game hunting opportunities along the road system. Alaska’s small game populations have become exposed to this demographic and social shift, but exactly what the effect has been is unknown.



**Figure 1. Game management units in Alaska.**

Beginning in fall 2011, ADF&G began developing a survey method to begin to answer important questions relative to small game, how many people hunt small game, and overall effort. Throughout the winter of 2011–2012, ADF&G biologists developed an online application that would be the tool through which ADF&G would begin to capture the metrics of the state’s small game hunting public. Despite the challenges with online surveys (Duda and Nobile 2010; Vaske 2011) it was felt this effort would allow us to learn and better plan future survey efforts. In early April 2012, postcards were sent to select households requesting they complete this brief survey.

The objectives of this survey were as follows:

- 1) Estimate the total number of small game hunters statewide,
- 2) Estimate the number of small game hunters under the age of 16,
- 3) Estimate the proportion of hunters that pursue small game opportunistically versus those that target small game,

- 
- 4) Estimate small game hunting effort among the various license types,
  - 5) Estimate the most frequently used transportation method used in 10 discrete geographic areas of the state, and
  - 6) Estimate the most frequently targeted species within 10 discrete geographic areas of the state.

## Methods

### SURVEY DESIGN

A stratified, random sample household survey was conducted to estimate small game hunter participation, harvest, effort, targeted and harvested species, and location of effort for the time period from 1 December 2011 through the end of the 2012 grouse and ptarmigan season. Due to the total length of the small game hunting season throughout Alaska (7–9 months, depending on location) we designed a split survey. The intention was to follow the initial survey up with one that focused on the early season (August 2012 through 30 November 2012) in hopes of more accurately reflecting hunter harvest, effort, and location information for a shorter time period. However, due to complexities outlined in this report this effort was canceled. A postcard was mailed to survey recipients and asked them to complete the online questionnaire describing the hunting activities of all members of the household, including hunters under the age of 16.

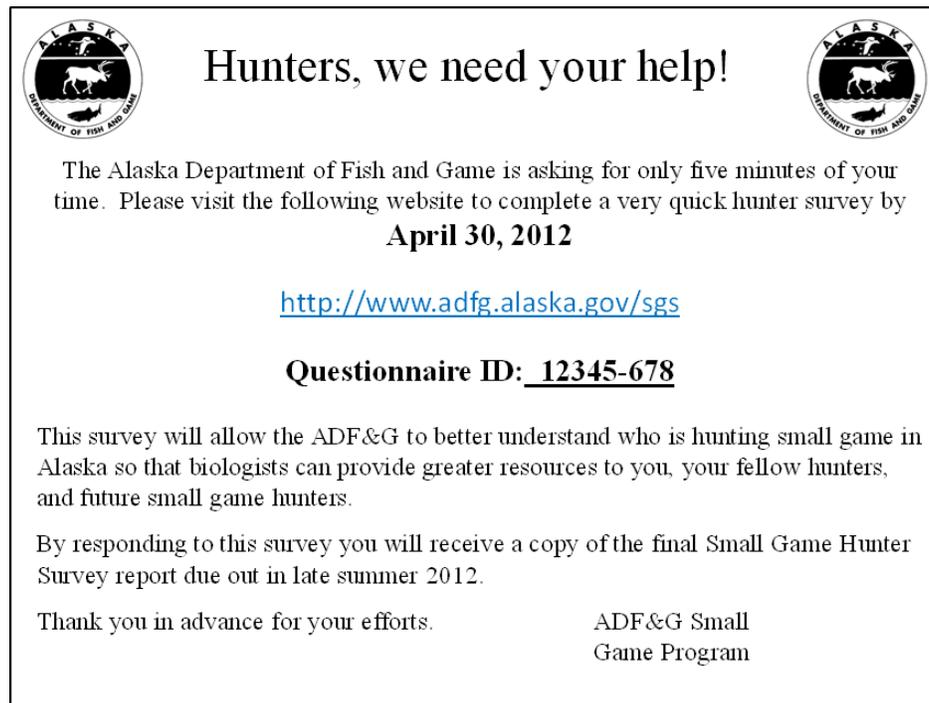
This survey was focused on better understanding small game hunting. However, in Alaska there is no easy way to query the small game hunter population due to the limited resident license categories with the exception of nonresidents that can purchase a specific small game license. Therefore, to develop a survey pool, individual survey recipients were selected from the 2011 license database using Microsoft (MS) SQL Server. Recipients were selected according to the following characteristics: 1) at least one member of the household had purchased a resident hunting, trapping, or combination license in 2011, 2) a nonresident purchased a small game, hunting, or combination license in 2011, 3) a nonresident purchased a military license in 2011, or 4) at least one individual of a household held a permanent identification (PID) card in 2011. If multiple license holders were selected with the same address, the first license holder with that address was selected.

Five percent (5%) of Alaska resident license holders (including military and PID) were selected by random from this pool and then stratified by all Alaskan communities with a minimum sample size of 10 per city. If a stratum had less than 10 members, all of them were selected. Five percent (5%) of all nonresident license holders were randomly selected and not stratified by city. A total of 512 location strata were created due to the city/license combinations.

This survey required online response submission through a secure URL portal to reduce the expense and increase processing efficiency. The web application was created using Adobe Flex, MS SQL Server, and ColdFusion and viewed using Adobe Flash. On 2 April 2012 a postcard (Fig. 2) was mailed requesting selected participants of that household to visit the online survey application and respond so that all members of the household were represented. Selected participants were asked to complete the online survey by 30 April. For those that had not completed the survey by 1 May, a reminder postcard was created and mailed on 7 May asking

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participants to complete the survey by 30 May. The survey effort was completed on 30 May 2012.



**Figure 2. The small game hunter survey postcard mailed out to selected participants in April 2012.**

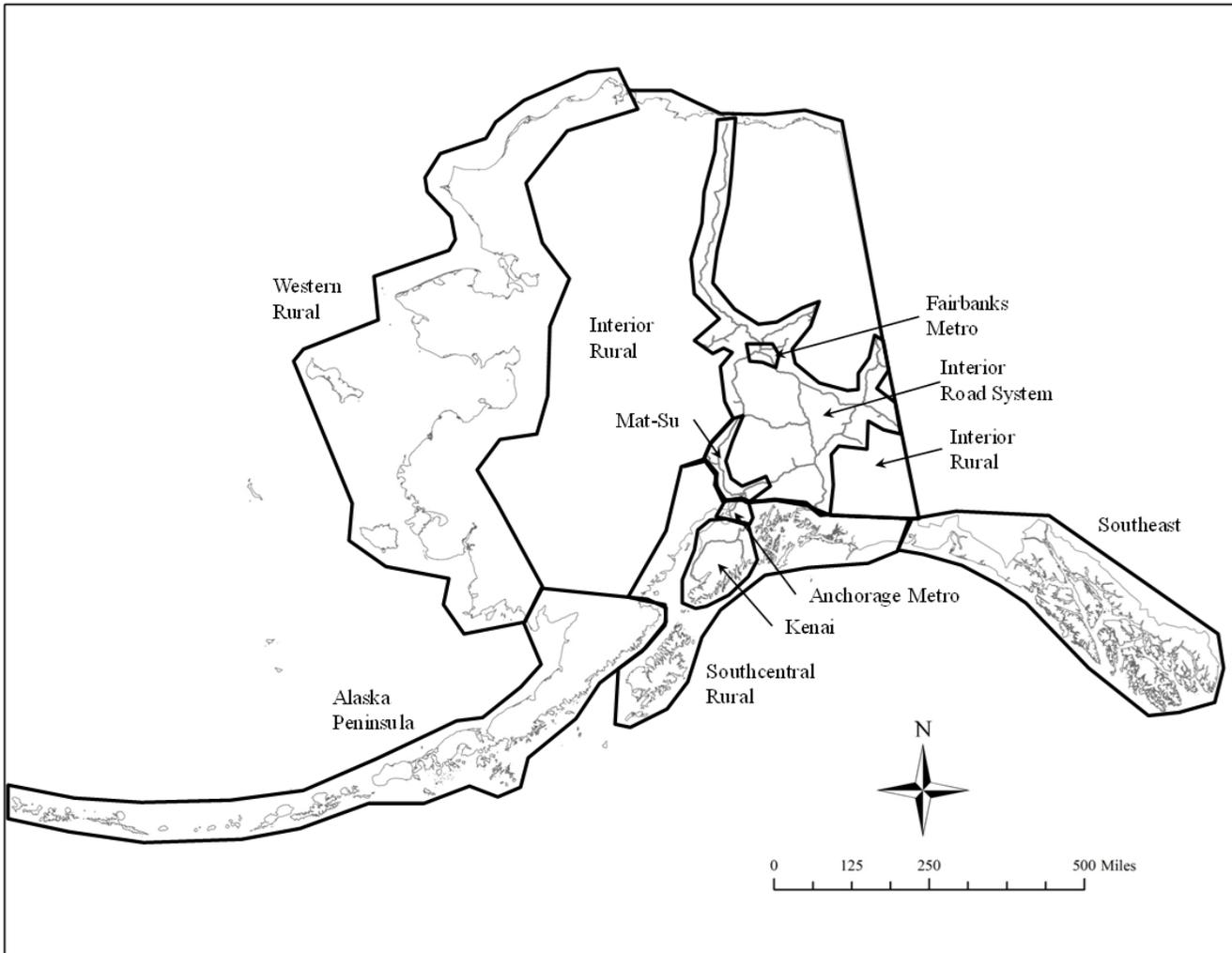
In order to more effectively interpret the responses to means of transportation, effort, and hunting location questions 10 geographic areas of the state were identified and responses linked to those areas (Fig. 3). These regions were selected based on population size and access to the primary road system in Alaska.

Based on total statewide survey responses, estimates of the total number of hunters and those under the age of 16 that hunted small game in Alaska were calculated. Microsoft SQL Server, MS Access, and MS Excel were used to summarize data and produce estimates.

## Results

### SURVEY RESPONSE

In 2011, 170,363 total license holders (resident, nonresident, and PID) lived in 133,853 unique households (Table 1). A random sample of 9,539 was taken of these households and stratified by license type and city. From 9,539 survey requests we received 1,068 completed online surveys, for a response rate of 11.2% (Table 1).



**Figure 3. Geographic areas used to better describe small game hunting effort, transportation methods, and location.**

**Table 1. Statewide small game hunter survey response rate by license type.**

License Type	Status	Total Number of		Sample Size	Surveys Returned		Households that Hunted Small Game	
		License Holders	Households		Number	Percent	Number	Percent
Nonresident Alien Hunting	Nonresident	15	14	0	0	0.0%	0	0.0%
Nonresident Hunting	Nonresident	7,002	6,639	323	75	23.2%	3	4.0%
Nonresident Hunting & Sport Fishing	Nonresident	573	549	27	8	29.6%	0	0.0%
Nonresident Hunting & Trapping	Nonresident	106	95	6	1	16.7%	0	0.0%
Nonresident Hunting/1 Day Sport Fishing	Nonresident	8	7	0	0	0.0%	0	0.0%
Nonresident Hunting/14 Day Sport Fishing	Nonresident	258	242	10	1	10.0%	0	0.0%
Nonresident Hunting/3 Day Sport Fishing	Nonresident	35	33	3	1	33.3%	0	0.0%
Nonresident Hunting/7 Day Sport Fishing	Nonresident	1,053	981	56	8	14.3%	0	0.0%
<b>Total Nonresident</b>		<b>9,050</b>	<b>8,560</b>	<b>425</b>	<b>94</b>	<b>22.1%</b>	<b>3</b>	<b>3.2%</b>
Nonresident Small Game Hunting	Nonresident-Small Game	1,635	1,486	74	11	14.9%	6	54.5%
	<b>Total Nonresident-small game</b>	<b>1,635</b>	<b>1,486</b>	<b>74</b>	<b>11</b>	<b>14.9%</b>	<b>6</b>	<b>54.5%</b>
Nonresident Military Hunting	Resident	470	435	22	3	13.6%	2	66.7%
Nonresident Military Sport Fishing & Hunting	Resident	852	786	41	3	7.3%	1	33.3%
Res ANG/Mil Reserves Sport Fishing & Hunting	Resident	1,652	1,542	85	10	11.8%	4	40.0%
Resident Blind Hunting	Resident	28	28	0	0	0.0%	0	0.0%
Resident Hunting	Resident	16,220	11,816	940	87	9.3%	33	37.9%
Resident Low Income Sport Fishing, Hunting & Trapping	Resident	17,170	12,453	1,074	28	2.6%	11	39.3%
Resident Sport Fishing & Hunting	Resident	40,117	32,605	1,997	327	16.4%	128	39.1%
<b>Total Resident</b>		<b>76,509</b>	<b>59,665</b>	<b>4,159</b>	<b>458</b>	<b>11.0%</b>	<b>179</b>	<b>39.1%</b>
Resident Hunting & Trapping	Resident-Trapping	704	543	78	1	1.3%	1	100.0%
Resident Sport Fishing, Hunting & Trapping	Resident-Trapping	6,909	5,825	400	91	22.8%	59	64.8%
<b>Total Resident with Trapping</b>		<b>7,613</b>	<b>6,368</b>	<b>478</b>	<b>92</b>	<b>19.2%</b>	<b>60</b>	<b>65.2%</b>
Resident Permanent license holders	Resident-Permanent ID	75,556	57,774	4,403	413	9.4%	104	25.2%
	<b>Total Permanent ID</b>	<b>75,556</b>	<b>57,774</b>	<b>4,403</b>	<b>413</b>	<b>9.4%</b>	<b>104</b>	<b>25.2%</b>
<b>Survey Total</b>		<b>170,363</b>	<b>133,853</b>	<b>9,539</b>	<b>1,068</b>	<b>11.2%</b>	<b>352</b>	<b>33.0%</b>

The highest survey response rate was among nonresidents with licenses other than small game at 22%, followed by resident trapping license holders at 19%, and then by nonresident small game license holders at nearly 15% (Table 1). The response rate for rural residents (residents living away from the road system) was lower than urban residents (Table 2). Residents in the Interior Rural (2.6%) and Western Rural (4.3%) areas had the lowest response rate.

Based on the responses received it is apparent that an unknown percentage of respondents misunderstood the time period which the survey was hoping to represent (1 December 2011 through the end of the grouse and ptarmigan season). This confounds the conclusions that can be made through this survey effort, particularly those reflecting harvest, effort, and transportation methods used to hunt. However, despite the survey intentions it appears that the majority of answers are reflective of the entire RY 11 small game hunting season.

**Table 2. Survey response rate among all geographic areas and nonresidents.**

Geographic Area	Surveys		Response Rate
	Sent	Returned	
Alaska Peninsula	506	34	6.7%
Anchorage	2,031	275	13.5%
Kenai Peninsula	876	108	12.3%
Fairbanks	832	111	13.3%
Mat-Su	959	144	15.0%
Interior Roadsystem	484	48	9.9%
Interior Rural	538	14	2.6%
Western Rural	1,181	51	4.3%
Southeast	1,071	125	11.7%
Southcentral Rural	435	41	9.4%
NA <sup>a</sup>	127	12	9.4%
Non-resident	499	105	21.0%
<b>TOTAL</b>	<b>9,539</b>	<b>1,068</b>	

<sup>a</sup> Represents unidentified resident respondent locations and residents from unknown locations living out of state.

## SMALL GAME HUNTING

An average of 39% of residents holding one of the 7 categories of hunting license (trapping licenses excluded) reported hunting small game (Table 1). So did more than 65% of resident hunting and trapping license holders. Anecdotal reports from trappers to ADF&G indicate one reason trappers may hunt small game is to use grouse and ptarmigan wings as attractants along their trap lines.

An estimated 66,423 (95% CI = 56,935 – 75,941) individuals hunted small game in Alaska (Table 3). Of these, 12,349 (95% CI = 10,730 – 13,968) hunters were under the age of 16 and 54,074 were age 17 and older. Similarly, an estimated total of 43,103 households (42,019 resident and 1,084 nonresident) hunted small game in Alaska during the reporting period.

**Table 3. Mean and estimated number of small game hunters by age and household.**

Status	Number of Households that Hunted Small Game	Mean Number of Small Game Hunters per Household		Estimated Number of Statewide Small Game Hunters	
		Total	Age 10-16	Total	Age 10-16
Total Nonresident	273	1.00	0.00	273	0
Total Nonresident-small game	811	1.00	0.00	811	0
Total Resident	23,319	1.60	0.33	37,310	7,695
Total Resident with Trapping	4,153	1.67	0.42	6,936	1,744
Total Permanent ID	14,547	1.45	0.20	21,094	2,909
Survey Total	43,103			66,423	12,349

An estimated 32% of all respondents reported hunting small game specifically and 22% hunted small game only opportunistically while pursuing other hunting or outdoor activities (Table 4). The majority (46%) of small game hunters in Alaska enjoyed targeting small game yet also harvesting them opportunistically when doing other outdoor recreational activities.

Survey respondents reported spending more days hunting spruce grouse (32% of all hunter days), snowshoe hare (27%), and ptarmigan (26%) than any other species (Table 5). However the number of hunting days varied by geographic area (Appendix A). Anchorage respondents reported spending the same amount of effort hunting spruce grouse (33%) and ptarmigan (30%), while respondents in the Alaska Peninsula area and nonresident hunters reported focusing on ptarmigan (52% and 71% respectively). Species identification may have an unknown influence on survey results. For example, Southeast respondents reported 36% of their overall effort was spent hunting spruce grouse despite this species having a very limited range (Prince of Wales Island group) and overall low abundance in this geographic area.

Of the Alaska resident respondents that reported hunting small game, most hunters stayed within the GMU in which they lived (Appendix A). For example, 89% of respondents in the Kenai area reported hunting small game in GMU 15, 74% of Mat-Su residents in GMU 14, 76% of Fairbanks residents in GMU 20, and 77% of Southeast residents in GMU 1-5.

The primary transportation methods used to hunt small game reported by survey respondents, based on method used per days hunting, included walking (31%), highway vehicle (28%), and ATV (18%; Table 6). However, this varied by geographic area; hunters in Western Rural reported using primarily snowmachine (73%) versus other means of transportation. Statewide, ptarmigan were hunted primarily using snowmachine (38%) and walking (22%; Appendix B); However, in the Western Rural area and GMU 13 the total was higher (59%). Spruce, ruffed, and sharp-tailed grouse were hunted primarily using highway vehicles and walking. Too few data were collected to estimate transportation methods used for Alaska hare and sooty grouse.

**Table 4. Number of respondents who targeted and/or opportunistically hunted small game.**

Method	Number of Responses	Percent
Specifically Targeted Small Game	131	31.6%
Hunted Small Game Opportunistically	90	21.7%
Both of the Above	193	46.6%
Total	414	100.0%

**Table 5. Total number of days reported hunting each species by Alaskan resident geographic area and nonresidents.**

Geographic Area	Number of Respondents	Grouse				Ptarmigan	Hare		Total
		Ruffed	Spruce	Sharp-tailed	Sooty		Snowshoe	Alaska	
Alaska Peninsula	34	0	61	0	0	101	30	1	193
Anchorage	272	53	215	8	0	198	176	5	655
Fairbanks	108	143	168	66	5	171	48	28	629
Interior Roadsystem	48	48	161	35	10	80	119	5	458
Interior Rural	14	11	58	2	0	83	0	0	154
Kenai Peninsula	108	27	155	0	0	80	260	0	522
Mat-Su	144	115	403	11	0	115	293	2	939
Southcentral Rural	41	28	42	0	0	13	50	0	133
Southeast	125	9	38	1	21	20	17	0	106
Western Rural	51	0	54	0	0	190	139	38	421
Non-Resident	111	3	13	2	0	60	6	0	84
NA <sup>a</sup>	12	0	6	0	0	2	6	0	14
Total	1,068	437	1,374	125	36	1,113	1,144	79	4,308
Percent		10%	32%	3%	1%	26%	27%	2%	

<sup>a</sup> Represents unidentified resident respondent location and residents from unknown locations living out of state.

**Table 6. Percentage of respondents that utilize specific transportation methods for hunting small game in Alaska by geographic area.**

	Alaska			Interior		Kenai	Southcentral			Western		Average	
	Peninsula	Anchorage	Fairbanks	Roadsystem	Rural		Mat-Su	Rural	Southeast	Coastal	Percent	Number	
Highway Vehicle	21%	37%	38%	29%	8%	14%	26%	32%	35%	0%	28%	114	
Foot	17%	28%	25%	34%	8%	55%	31%	58%	25%	12%	31%	126	
ATV	25%	21%	16%	11%	25%	17%	26%	0%	20%	12%	18%	78	
Airplane	4%	5%	7%	0%	0%	0%	1%	0%	10%	0%	3%	13	
Boat	8%	6%	7%	0%	0%	0%	1%	0%	5%	0%	3%	15	
Snowmachine	21%	3%	5%	26%	58%	14%	13%	11%	0%	73%	16%	68	
Other	4%	0%	0%	0%	0%	0%	1%	0%	5%	3%	1%	4	
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	418	
Sample Size	24	108	55	35	12	42	70	19	20	33	394		

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An attempt was made to estimate total harvest. Estimates were calculated by multiplying the total reported harvest of that species by an expansion factor (122.1). The expansion factor was calculated by dividing the estimated total number of households that hunted small game (43,103) by the total number of reported households that hunted small game identified from individual survey responses (352). Due to low response rate, estimated statewide harvests should be interpreted cautiously and are likely biased. However, during the RY11 statewide small game hunting season, an estimated 140,000 ptarmigan, 71,000 snowshoe hare, 61,000 spruce grouse, 5,500 ruffed grouse, 1,800 sharp-tailed grouse, 700 sooty grouse, and 600 Alaska hare were harvested.

## **Discussion**

Although this survey intended to focus recipient responses to their hunting activities during winter from 1 December 2011 to the end of the grouse and ptarmigan season (March-May), actual responses suggest most recipients provided information reflecting the entire season (August through the end of the grouse and ptarmigan season in the spring). For instance, some hunters reported using boats in areas that had no open water during the reporting period. Also, based on conversations with grouse and ptarmigan hunters and conservation and hunting organizations, the majority of hunters hunt grouse during the fall (August through October), a time period outside of the intended survey reporting period, and hunt ptarmigan during the winter and spring (December through the end of the season). However based on our responses it appears that grouse hunting effort and harvest were very high. If this were accurate, estimates of effort, hunter participation, and harvest could be quite low. Overall, there is strong reason to believe respondents reported on their activities during the entire small game hunting season and not just the period specified in the survey.

## **ONLINE SURVEY APPLICATION**

In an attempt to conserve state resources, take advantage of Alaska's strong web-based communication infrastructure, and to operate similarly to other web-based hunter reporting programs within ADF&G we decided to implement an online response survey. Using an online-only medium for survey responses was a relatively new approach for ADF&G. Overall our response rate was low (11.2%). However there are several contributing factors that should be considered when interpreting the response rate. First, Adobe Flash was required for entering and completing the survey application. Adobe Flash is not supported by Apple™ based operating systems. During the survey response period in April and May 2012, ADF&G received numerous complaints that their Apple™ product would not allow them to enter or complete the survey application. Respondents did have the option to download Flash; however, frustrated and weary survey respondents may have simply given up and never responded. Considering Apple's™ market share overall at 13.6% nationwide (The MacObserver.com October 2012) and nearly 50% among smart phones nationwide (Businessinsider.com July 2012) there is the potential that Apple™ product users were unable to enter or complete the survey. Thus, the Adobe Flash problem could have affected the response rate. In addition, this was a new survey for ADF&G. Hunters who received the postcard asking them to respond may have been confused or frustrated given the other requirements for hunter reporting and surveying ADF&G administrators. Finally, it was not possible to have a survey focused only on small game hunters due to our, license categories with the exception of nonresidents that can buy a specific small game license (1% of

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the total 2011 Alaska hunting license holders). Seeing that the survey was specific to small game, respondents that did not hunt small game during the survey period may have simply disregarded the survey which might bias extrapolation of survey results to the broader population.

This initial survey revealed many ways future small game hunter survey efforts could improve response rates, efficiency for the recipient, and provide a more thorough statewide perspective on small game hunting effort and harvest. First, any future survey should continue to take advantage of online applications; however, it should be built with software that can be accessed readily by a variety of operating systems. In addition, the survey should have a paper questionnaire available for those unable or unwilling to access the Internet. Finally, any future survey should inquire about small game hunting activities for the entire season in one complete, postseason survey. The bifurcated survey approach was a new approach for ADF&G and may have been misleading for some respondents.

While this survey was in development during the winter of 2011–2012, we planned on implementing a follow-up survey to capture information from the first portion of the small game hunting season (August 2012 through November 30, 2012). However, there are several reasons a future survey will be delayed. First of all, ADF&G no longer supports Adobe Flash as application software. Therefore, the survey application that was constructed for this survey would need to be reconstructed using alternative software. Secondly, a midseason questionnaire could again be misinterpreted and provide results that misrepresent statewide small game hunters, because it appears most respondents provided small game hunting details for the entire season.

Online survey research results on the topic of expected and/or necessary response rates vary widely; the average response seems to be approximately 20% although some studies suggest 10-20% rates are satisfactory ([www.surveygizmo.com](http://www.surveygizmo.com)). The difference is that those studies started with a known Internet user base; this survey had to move forward without knowledge of how many of the respondents might participate via the Internet. The highest response rates were by nonresident hunters and the lowest by low-income resident hunters. This might be explained by access to Internet resources or reflect higher interest from nonresidents that travel to hunt. Another issue is the assumption that higher response rate yields a more accurate survey; however, some studies have shown no significant difference (Langer 2003).

## **INTERPRETING HUNTER RESPONSES**

We felt a single household questionnaire was the best way to capture the hunting activities of both the license holder within the household, other hunters in the household, and young hunters (Age 10–16) in the household. Young hunters, between 10-16 years of age, are not required to purchase a hunting license; therefore documenting their effort and harvest presents unique challenges this survey hoped to overcome. By asking for household small game hunting information, data could be summarized by individual respondent or household.

Due to the low response rate and likely misinterpretation of the survey period, precise effort and harvest estimates could not be calculated. Reported transportation methods, effort, and harvest summaries reflected only those who responded. Although these data can be insightful and useful

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in beginning to understand how Alaska's small game resources are hunted they should be used cautiously. Additional survey effort will be required to generate a more accurate estimate of participation, harvest, positive species identification, and hunting effort related to Alaska's small game.

Because of the low response in some of the license groups we thought it most appropriate to lump the license type groups based on logical differences: 1) Nonresident – all except small game holders, 2) Nonresident small game – expect a high percent hunted since they bought the specific license, 3) Resident – all except those that have a trapping combination license, 4) Resident including trapping – expect higher hunt rate since many trappers use small game as bait, and 5) Resident Permanent Identification holders – lower rate since many could be just fisherman.

Small game hunters used various transportation methods to pursue the species in which they were most interested. Small game hunters along the road system used transportation methods differently than residents in rural or other areas off the main road system. Road system hunters (Anchorage, Kenai, Mat-Su, and Fairbanks) predominantly used highway vehicles and walking followed by ATV in order of importance. Rural residents used snowmachines more than urban residents to hunt ptarmigan. Rural grouse hunters used ATVs more than urban hunters, who tended to use highway vehicles and walking as the primary transportation methods.

Despite having a low survey response rate, calculations were made to estimate statewide harvest of each species. Harvest estimates are not to be used for management purposes and likely reflect large bias due to the low response rate and survey design. Despite potential bias they do reveal the overall trend that was reflected throughout the survey. Spruce grouse, snowshoe hare, and ptarmigan are the most popular small game species statewide through hunting effort and harvest. It is possible less harvest occurs on ruffed and sharp-tailed grouse because they are not as widespread throughout Alaska and are less accessible than other species in certain areas of the state. Sooty grouse harvest is low as it is largely pursued by residents from a small population of hunters in that geographic area to which the species is restricted, Southeast Alaska. Alaska hare is also restricted, to western and southwestern areas of the state, and is thought to be at low abundance where it does occur.

The popularity of spruce grouse, snowshoe hare, and ptarmigan compliments the hunter survey work completed by McGowan (1980, 1985 and 1986); that work suggested spruce grouse were the most popular small game species in the early to mid-1980s. The increased interest in ptarmigan could be explained by various factors, including technological improvements in off-road vehicles over the past 25 years. These improvements have allowed hunters to more easily pursue ptarmigan during the fall and particularly winter months and at greater distances from the road corridor.

The importance of ptarmigan to statewide small game hunters was strongly underscored through this survey effort. Although neither our regulations nor this survey allowed us to distinguish between willow, white-tailed, and rock ptarmigan in terms of numbers harvested or hunter effort, willow ptarmigan were likely the predominant species harvested. This is the most abundant ptarmigan species in Alaska and occurs throughout the entire state with the exception of the Aleutian Islands. This species is facing unique challenges as the state's population continues to

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grow. Increased wintertime recreation and increasing interest in pursuing easy and affordable small game hunting opportunities will continue to put pressures on all of Alaska's small game species particularly ptarmigan.

This survey effort clearly demonstrated both the recreational and subsistence value of Alaska's small game resources. However, the ADF&G has only just begun to understand small game harvest, participation, and overall statewide effort. For managers to adequately address future regulatory proposals, hunters to be well informed on the status of various small game populations, and the state to thoroughly understand the contributions small game hunters make to regional and local economies future surveys will need to occur. They will also need to address the limitations outlined in this report including refining the medium through which various groups are queried, increasing response rates, and more accurately estimate harvest at a finer geographic scale.

## Acknowledgments

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**Appendix A: Number of days hunted reported by small game survey respondents, by species and geographic area.**

**Figure A1. Total number of days respondents from within the Kenai geographic area reported hunting, by species.**

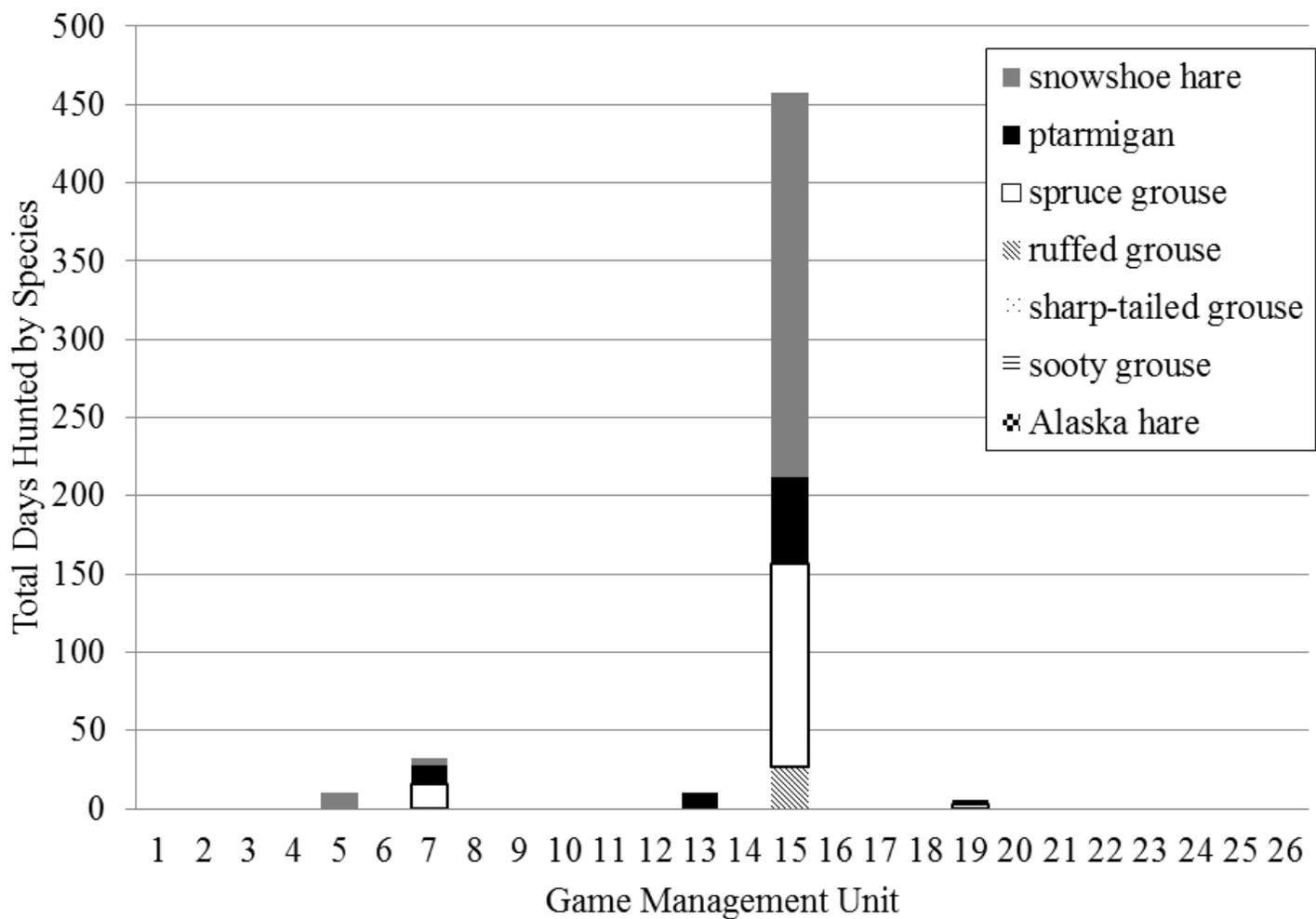
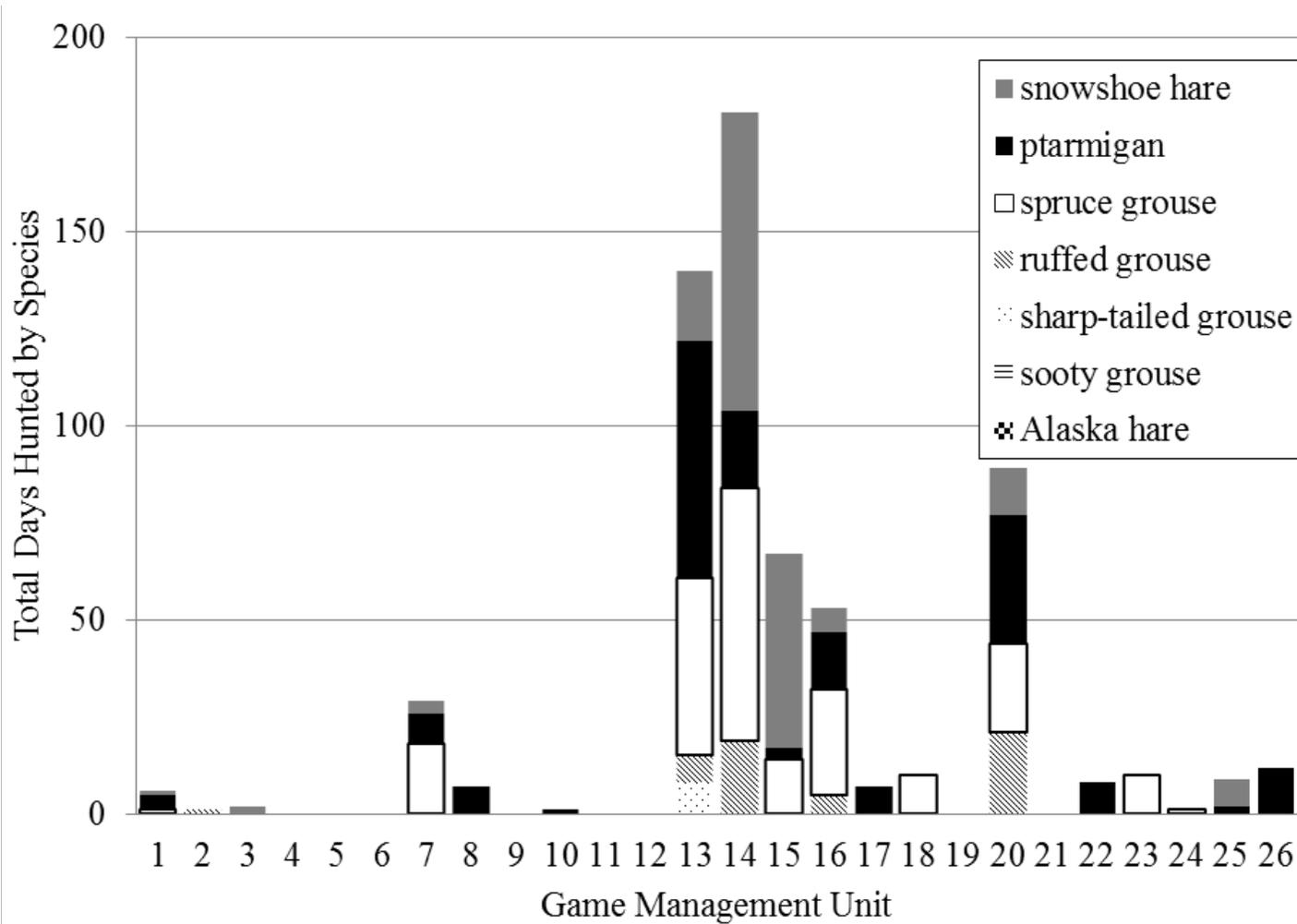
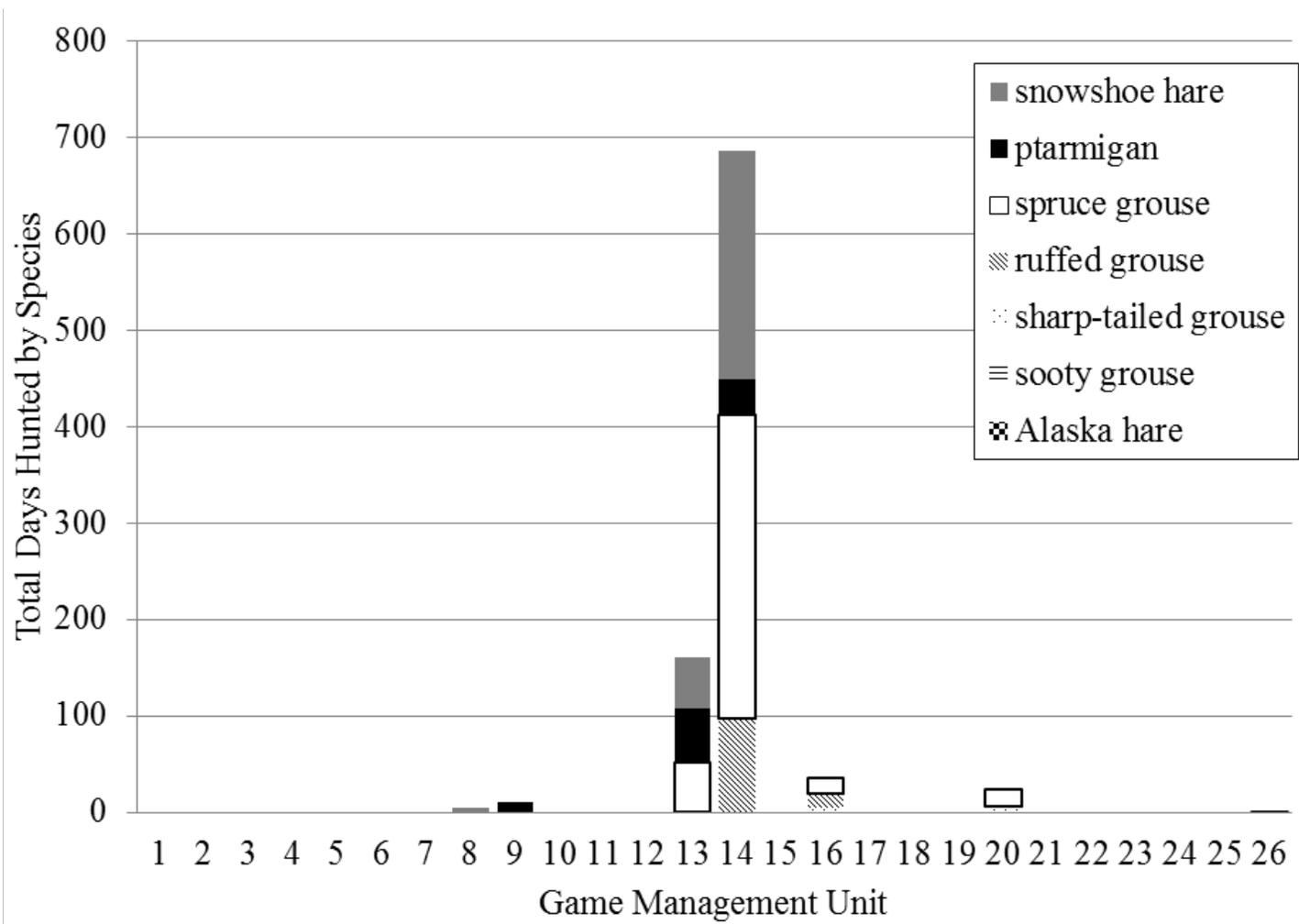


Figure A2. Total number of days respondents from within the Anchorage geographic area reported hunting, by species.



**Figure A3. Total number of days respondents from within the Mat-Su geographic area reported hunting, by species.**





**Figure A5. Total number of days respondents from within the Alaska Peninsula geographic area reported hunting, by species.**

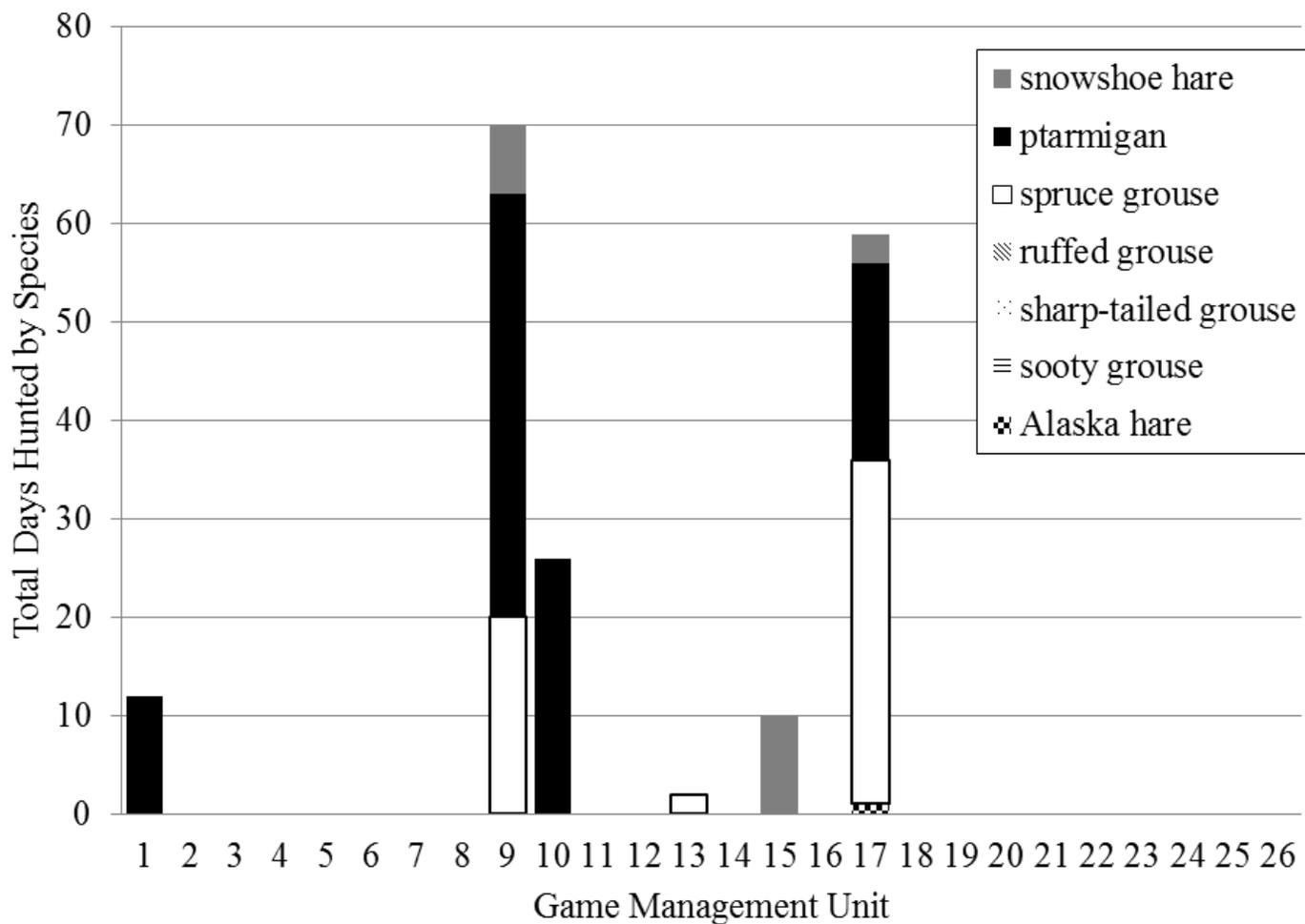
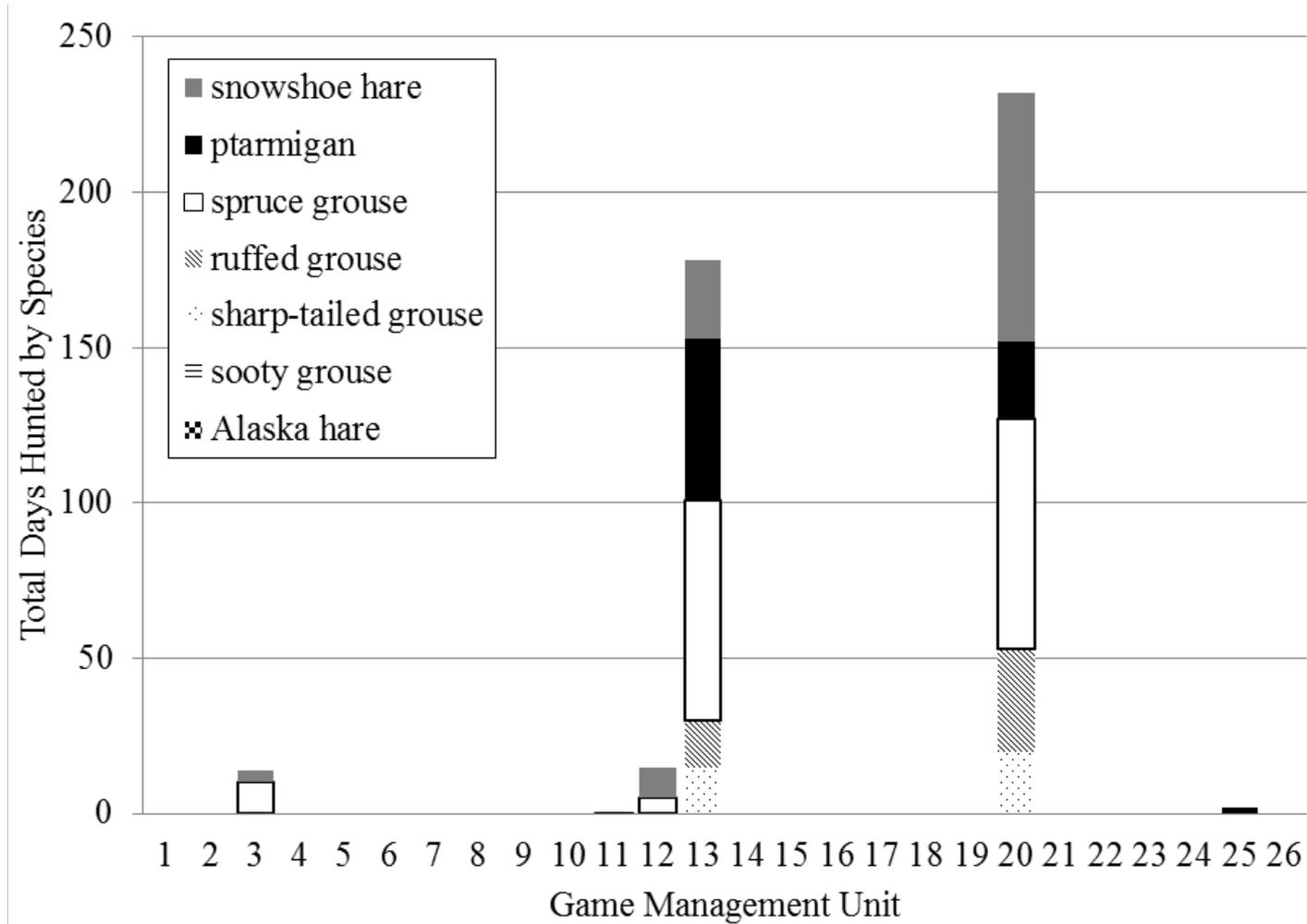
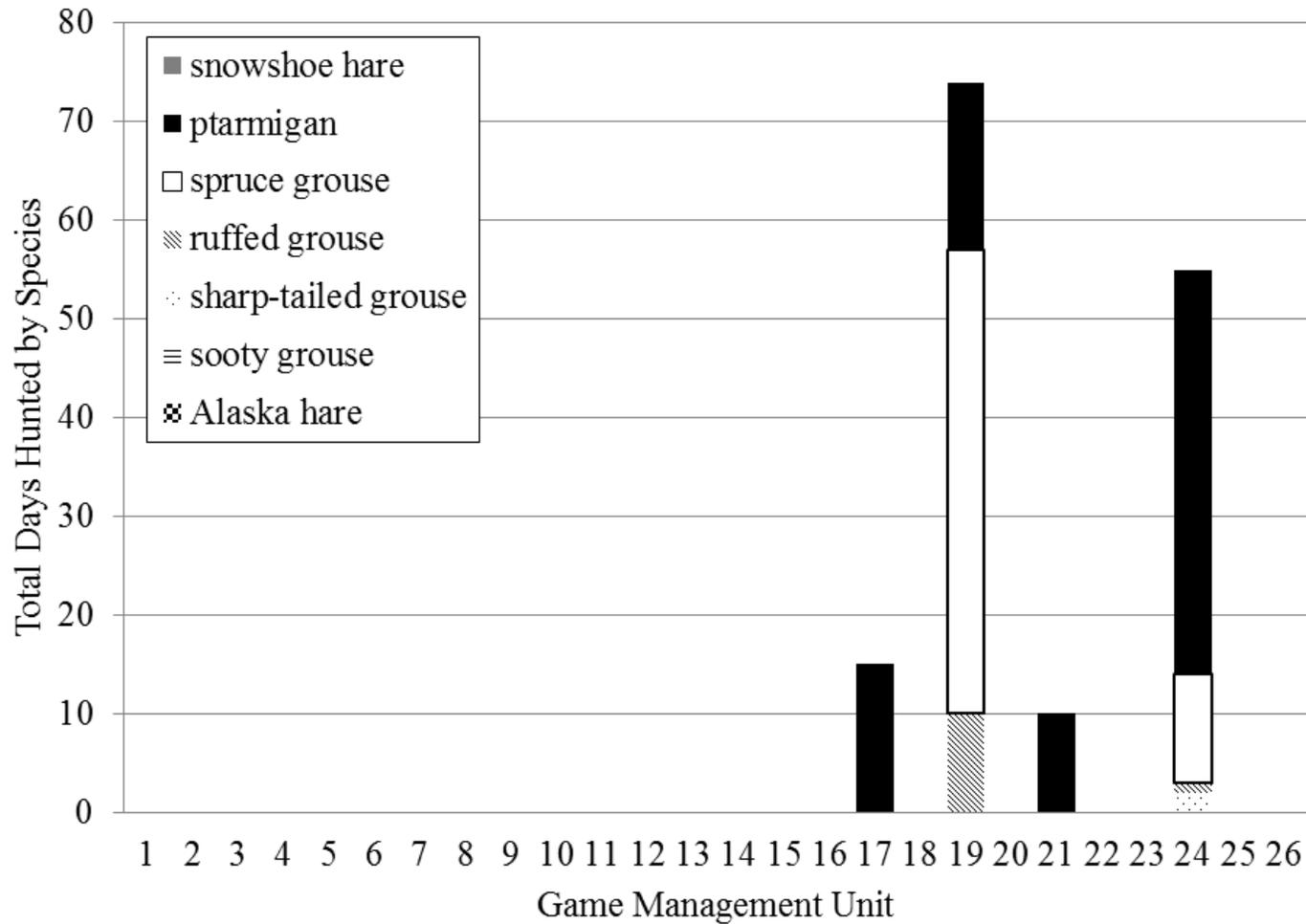


Figure A6. Total number of days respondents from within the Interior Road System geographic area reported hunting, by species.



**Figure A7. Total number of days respondents from within the Interior Rural geographic area reported hunting, by species.**





**Figure A9. Total number of days respondents from within the Southeast geographic area reported hunting, by species.**

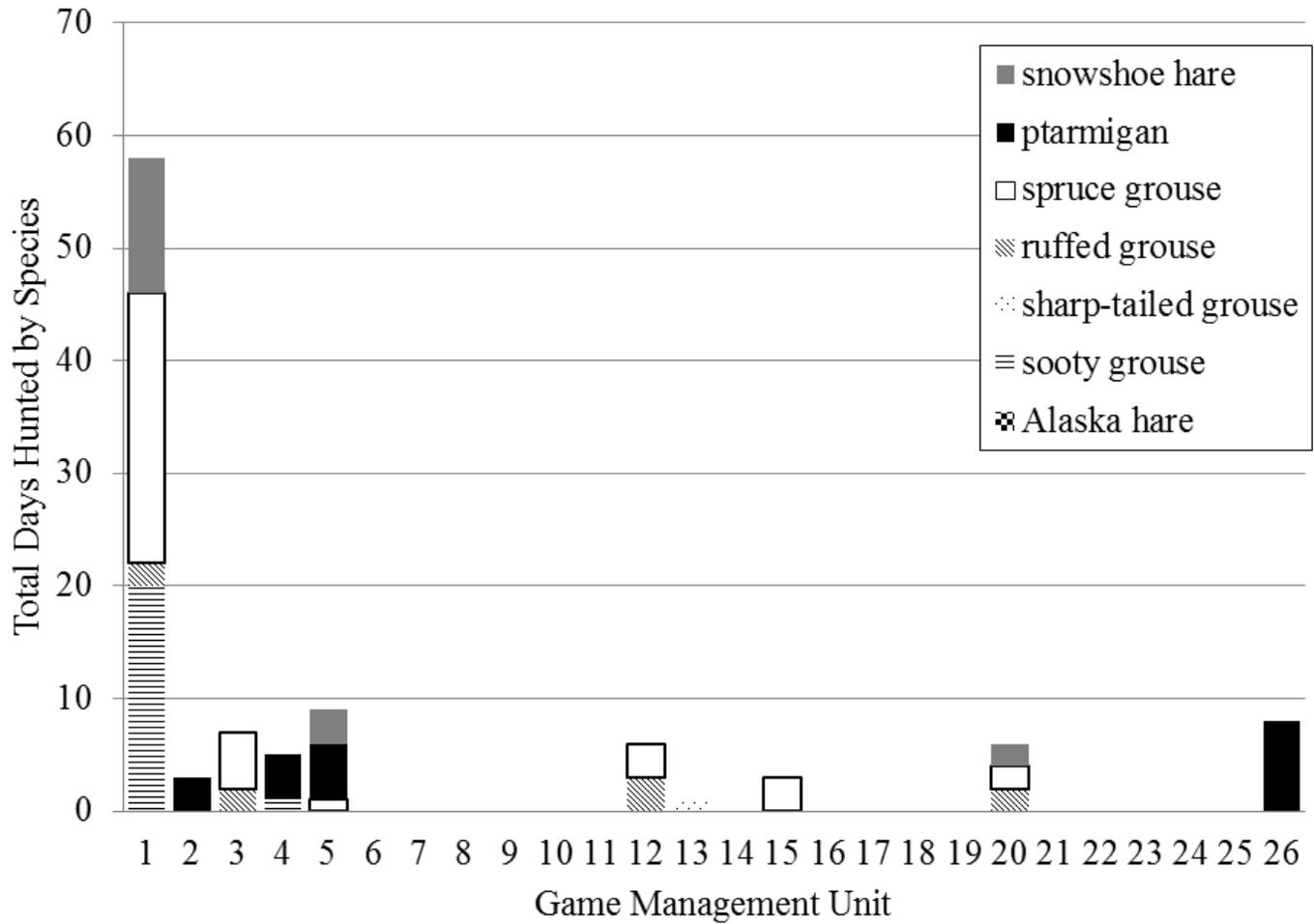
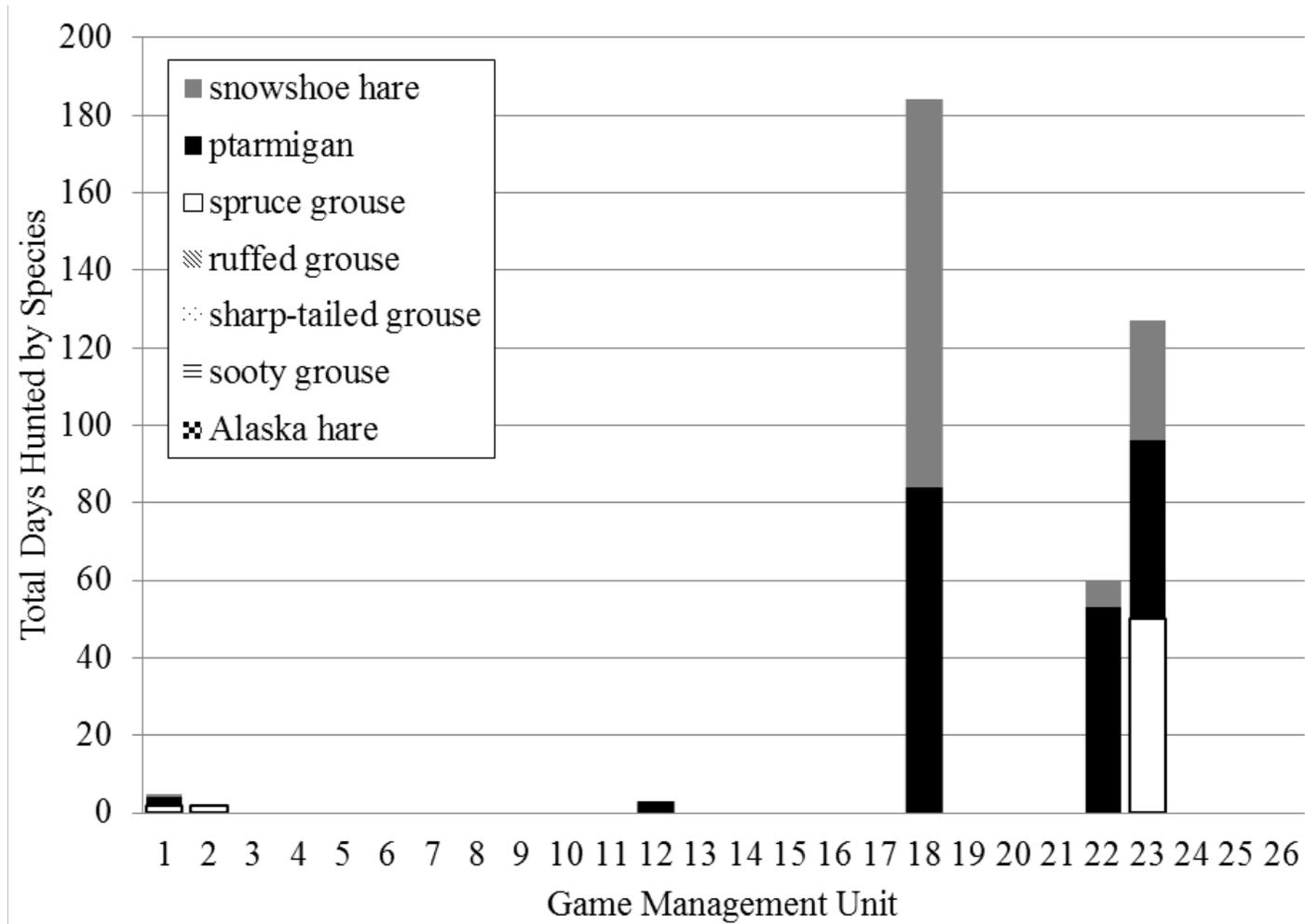


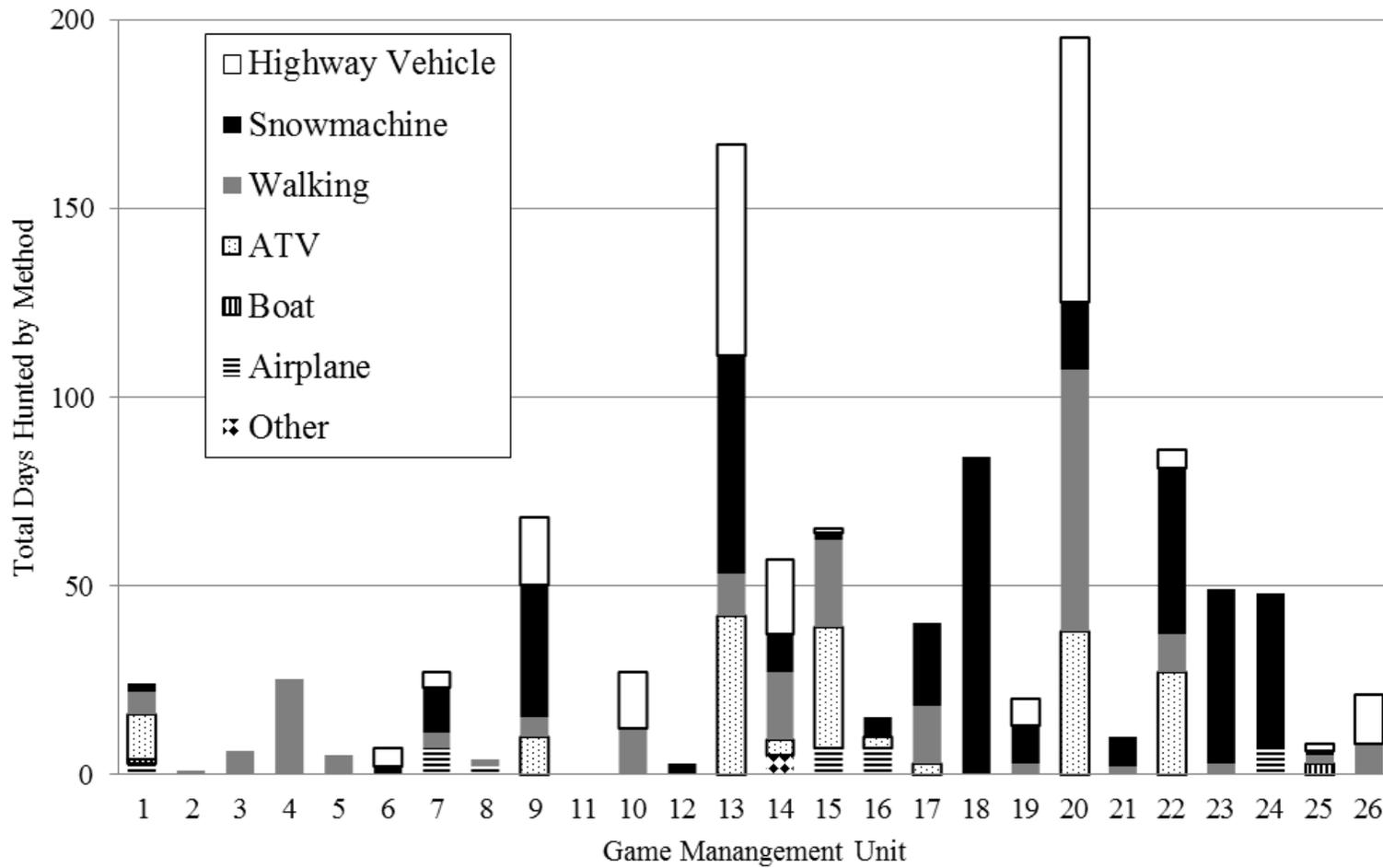
Figure A10. Total number of days respondents from within the Western Rural geographic area reported hunting, by species.



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**Appendix B: Number of days hunted reported by 2012 small game survey respondents, by species and transportation methods used.**

Figure B1. Total number of days hunting ptarmigan using various transportation methods.



**Figure B2. Total number of days hunting spruce grouse using various transportation methods.**

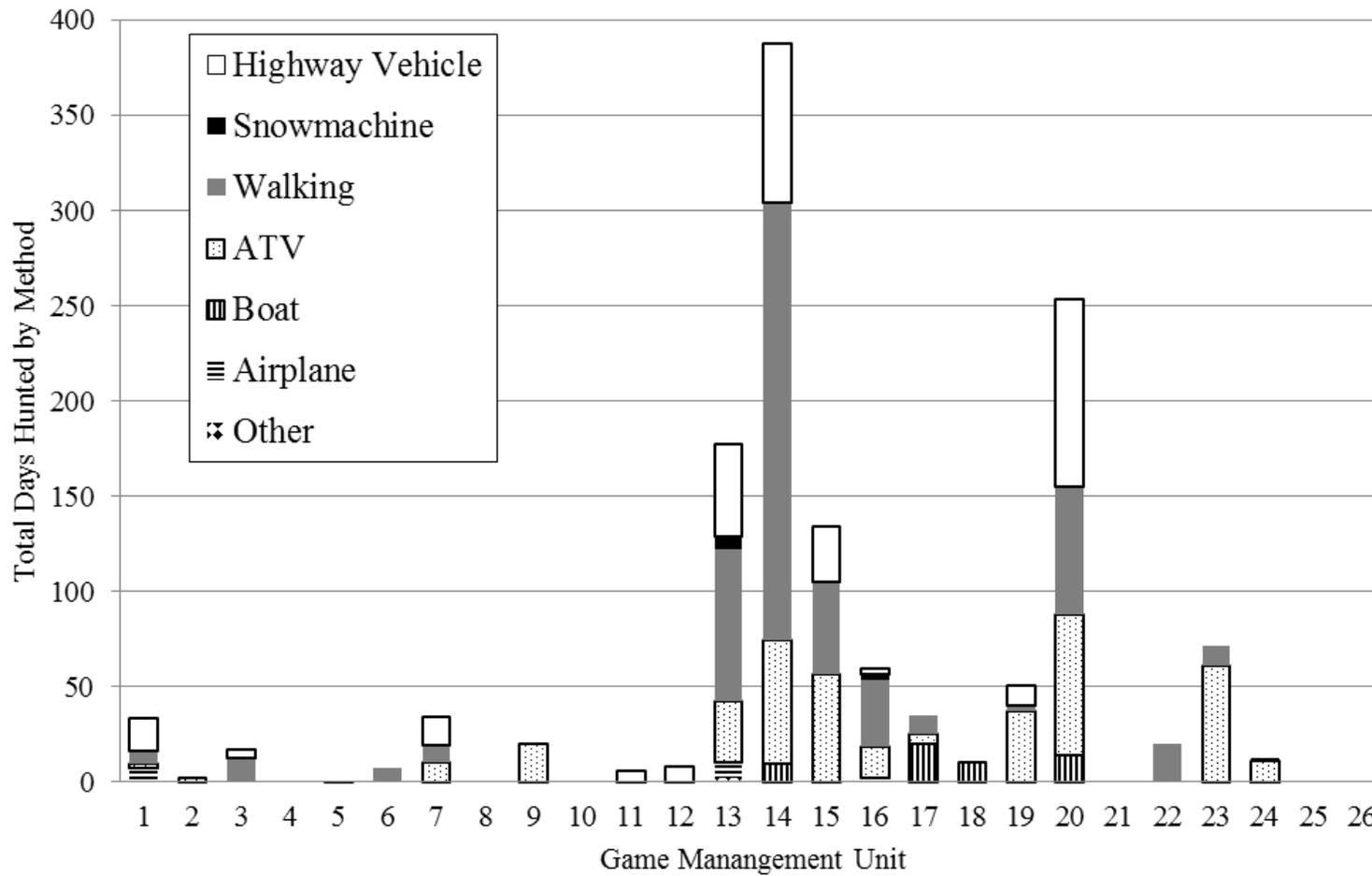
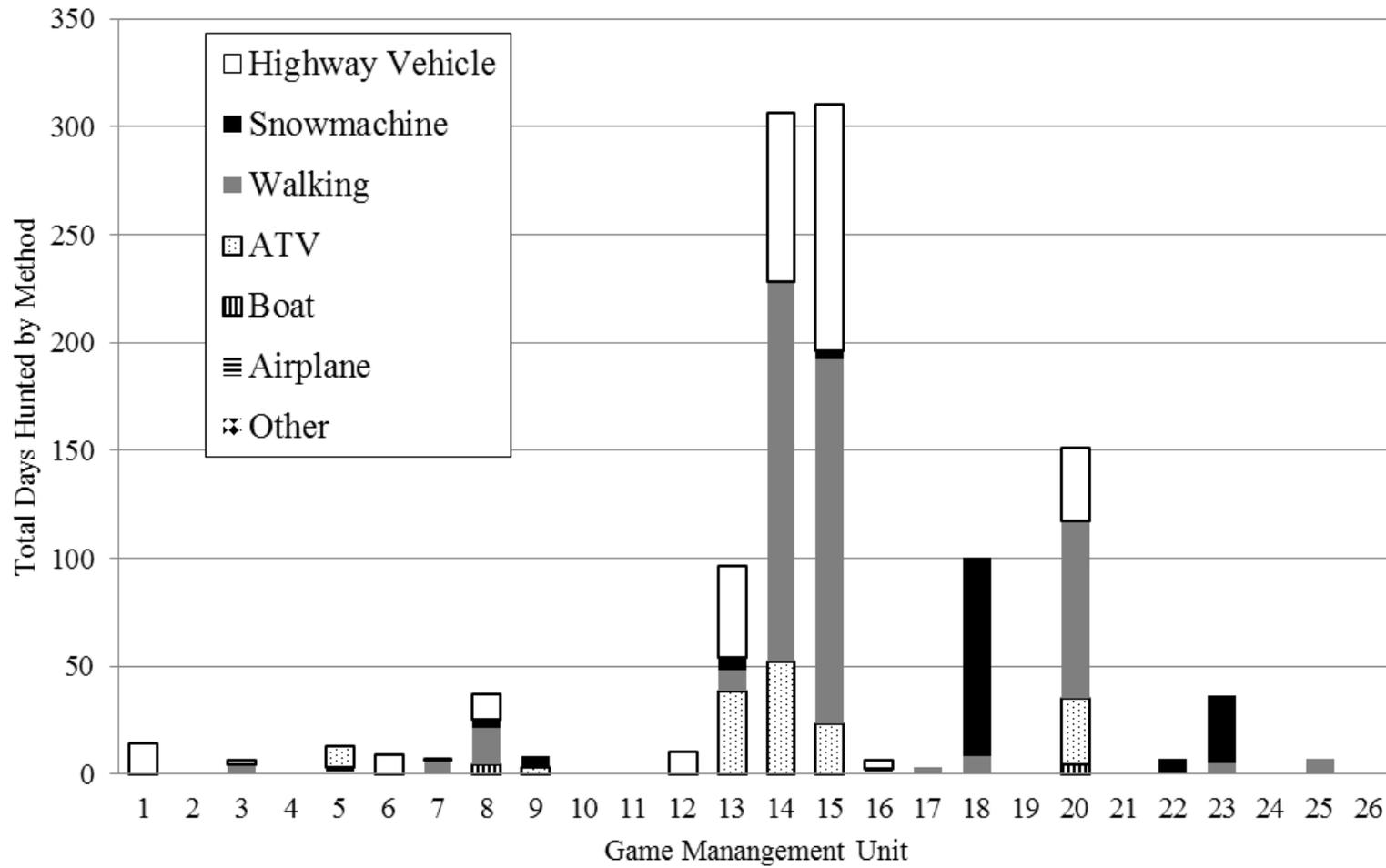
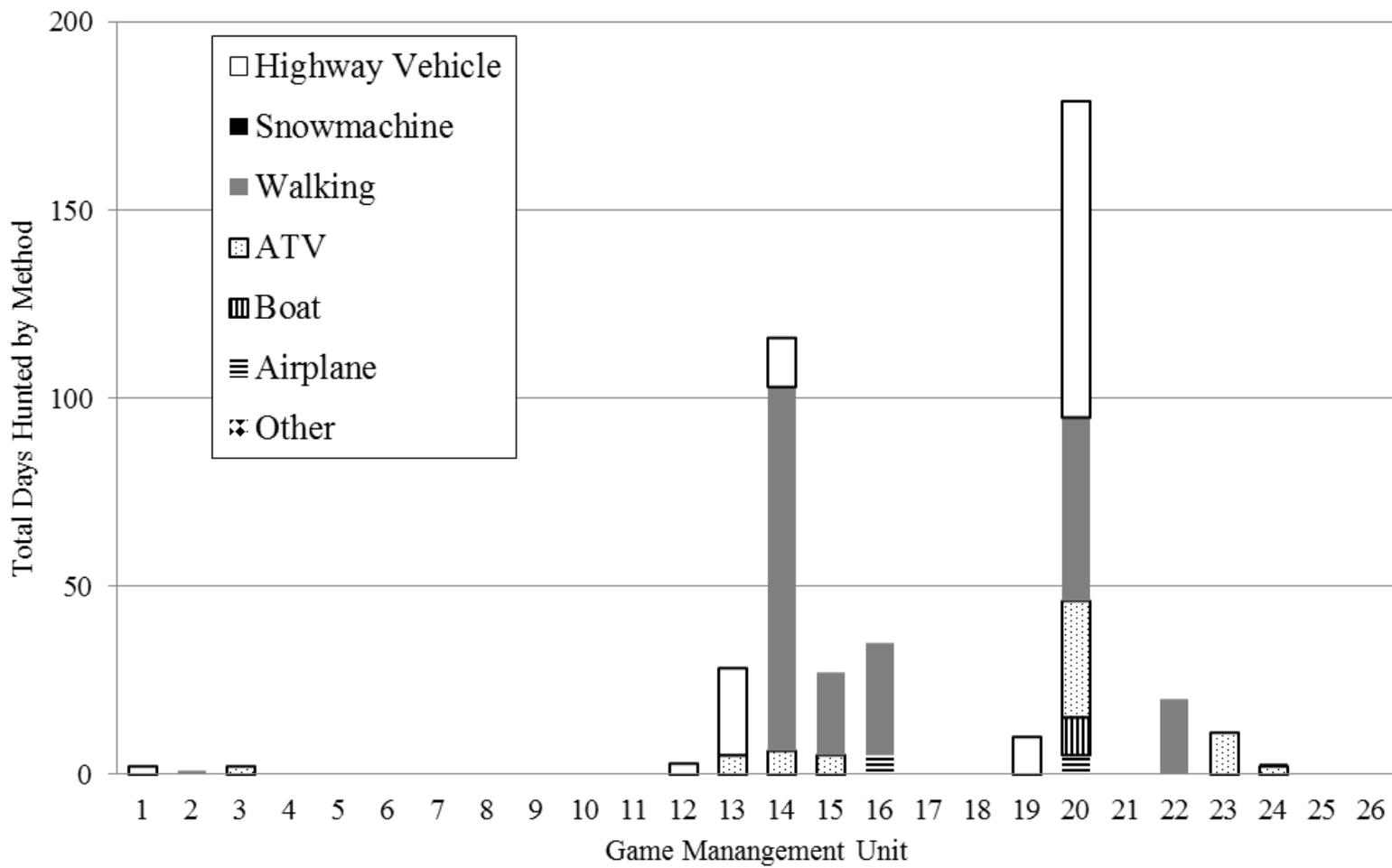
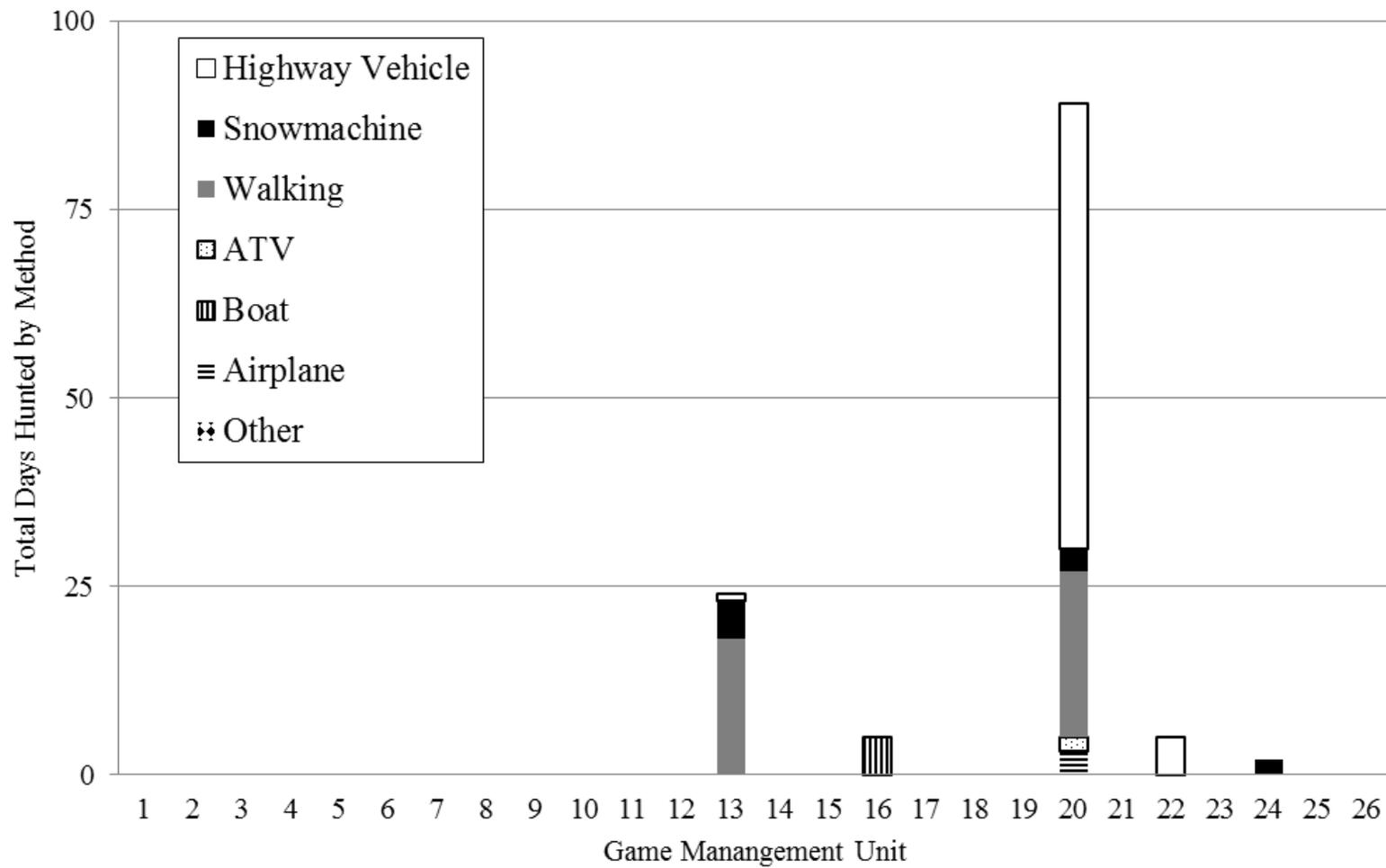


Figure B3. Total number of days hunting snowshoe hare using various transportation methods.



**Figure B4. Total number of days hunting ruffed grouse using various transportation methods.**



**Figure B5. Total number of days hunting sharp-tailed grouse using various transportation methods.**

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