

A REPORT ON THE 2014 WATERFOWL HUNTER SURVEY

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Abstract

Waterfowl hunter opinions vary greatly and wildlife agencies should reasonably consider those opinions towards regulations when setting season dates to hunt waterfowl within the context of Adaptive Harvest Management. For this reason Ohio waterfowl hunters were surveyed via an open internet based survey from 20 January 2014 through 14 February 2014. A total of 2584 valid surveys were submitted, up from 1818 in 2013 (Ervin 2013). I tested results for three forms of bias (age, avidity, and spatial). I found no difference in age of respondents (mean = 46.5 SD = 14.3; median = 47) compared to the total population of 2013 Ohio Wetland Habitat Stamp customers (mean = 46 SD = 18.1; median = 45). I found spatial differences between the proportions of respondents who hunt in each zone compared to proportions of addresses of 2013 Ohio Wetland Habitat Stamp customers for the LEMZ and the North Zone. The LEMZ is overrepresented in the survey, while the North Zone is underrepresented. I attribute this difference to hunters who live in the North Zone, but hunt primarily in the LEMZ. Survey respondents purchased an Ohio Wetland Habitat Stamp 5 of 5 years from 2009-2013 more often (48.9%) than all 2013 Ohio Wetland Habitat Stamp customers (13.3%) indicating respondents to this survey are avid waterfowl hunters. Similar to the 2013 survey the majority (62.9%) of respondents primarily hunted in the North Zone, followed by the South Zone (22.0%), and the Lake Erie Marsh Zone (LEMZ) (15.1%). Differing from the 2013 survey, 2014 survey respondents were asked to choose between three season date alternatives for the zone which they indicated they hunted in most frequently. The survey revealed preference for the duck hunting season date alternative which was similar to last year in the LEMZ and the South Zone; however preference in the North Zone marginally favored an alternative which differed from 2013. Overall respondents indicated that stabilized season regulations would be helpful (37.5%) or very helpful (23.0%) and (30.0%) indicated No opinion/Unsure. Respondents in each zone and overall (63.0%) preferred a one hen mallard daily bag limit, while fewer (7.8%) respondents preferred a hen mallard bag limit of 0, and (29.3%) preferred a hen mallard daily bag limit of 2; the strongest preference (38.1%) to liberalize to a two hen mallard daily bag limit occurred in the LEMZ.

Introduction

Need for survey

The timing of waterfowl migration through Ohio depends on a multitude of factors including the biology of the 20+ species of waterfowl, climate, weather, day length, habitat, geography, and others.

These factors must be considered when setting waterfowl hunting season dates to correspond with fall migration, if waterfowl hunting opportunity is to be optimal.

In addition to the ecological and biological factors the opinions of Ohio's 20,000+ waterfowl hunters must be considered. Internet surveys are a cost effective means of surveying people (Balch 2010) when compared to other survey methods. However, with the cost effectiveness of a 'convenience sample' provided by open internet survey methodologies, such as this survey, one must consider what the data actually represent. With this survey method a random sample is not drawn and therefore the results are prone to bias. Laborde et al. (2012) showed that an open online survey of Louisiana waterfowl hunters was biased towards more avid hunters than a random mail based survey conducted in the same year, but that responses were similar to value or policy oriented questions. Similarly in simultaneous surveys of Ohio waterfowl hunters conducted in 2009 by the Ohio Division of Wildlife (ODOW) (open online) and Ohio State University (random mail based) (Bruskotter 2010) responses to the online survey tended to be from more avid hunters and hunters who utilized private lands more frequently, however responses to questions about regulations generated similar results (ODNR DOW 1, unpublished data, 2010). Additionally, one could reasonably expect internet based surveys to be biased toward younger more internet savvy hunters as suggested by Graefe et al. (2011).

Purpose of survey

The human dimensions aspect of managing waterfowl and waterfowl hunting is more important now than ever. The 2012 revision of the [North American Waterfowl Management Plan](#) explicitly recognizes wildlife enthusiasts as a third component of the plan, along with waterfowl populations and wetland habitat. Mid-continental waterfowl populations are near all-time highs (USFWS 2014), while both federal and in-state numbers of waterfowl hunters are at historic lows (Virtiska et al. 2013, Ervin 2011). Funding for habitat conservation is driven by the sale of hunting license and waterfowl stamps, and that funding source is waning yearly as fewer waterfowl hunters buy stamps. Therefore waterfowl hunting season regulations should reasonably consider the opinions of waterfowl hunters, to perhaps provide a sense of inclusiveness to hunters regarding regulations as a means of hunter retention. The purpose of this survey is to gather data on hunter opinions which will be considered when setting waterfowl hunting season regulations within the constraints of [Adaptive Harvest Management](#).

Dates available to hunt ducks are among the most controversial issues among waterfowl hunters. Opinions vary greatly based on species hunted and geographic location. Under the liberal regulations package for ducks the U. S. Fish and Wildlife Service allows states to open duck hunting season for 60 days with a 6 bird bag limit. States with three waterfowl zones, as in Ohio, are allowed to split (close) the season and reopen it only once. In past surveys Ohio waterfowl hunters have indicated they prefer a split season. The general structure of the season in recent years has therefore been designed to open an early portion of the duck season (the first split) designed to take advantage of early migrating (i.e. green winged teal, widgeon, and pintails) and locally hatched ducks (i.e. mallards and wood ducks); and a later segment of the season (second split) to take advantage of late migrating waterfowl. All duck hunting seasons must be closed by the last Sunday in January. A portion of this

survey is designed to gather public opinion from Ohio's waterfowl hunters to consider while setting waterfowl hunting season dates for Ohio in the 2014-15 waterfowl hunting season and beyond.

Waterfowl hunter recruitment and retention are paramount issues among state and federal wildlife agencies (Case 2004). Waterfowl hunter retention and 'churn' rates (i.e., a hunter hunts one year, but not in subsequent years) is thought to be high, however has only been quantified for Ohio waterfowl hunters over a two year time span (Ervin 2013). A goal of this study is to compare avidity of survey respondents to all Ohio Wetland Habitat stamp customers by comparing how many years from 2009-2013 respondents purchased a stamp compared to all stamp buyers; in doing so I will also quantify recruitment and retention over a five year time span.

Similar to other Great Lakes states, Ohio hunters harvest mallards from a variety of breeding populations, primarily the Great Lakes States and the Eastern Population. The long term trend in Great Lakes mallard population is slightly decreasing as of 2013. For that reason states in the Great Lakes region (including Michigan, Ohio, Wisconsin, and Minnesota) have traditionally opted to use a one hen mallard bag limit as a conservative measure to be risk averse to additive hen mallard hunting mortality. Great Lakes states are actively researching this topic to determine whether this added restriction is necessary and functioning as anticipated. Hunter opinions toward hen mallard harvest also play a role in the regulations-setting process. The Ohio Division of Wildlife last asked hunters their preferences toward hen mallard regulations in a 2000 survey of waterfowl hunters (Barry and Shieldcastle 2002). I ask a similar question in this survey to gather more contemporary data on hunter preference towards hen mallard daily bag limits.

Methods

I developed an open internet based survey. The survey was open from 20 January - 14 February 2014. Invitations to participate in the study were sent to all wetland habitat stamp buyers who purchased a stamp in 2013 and provided a valid email address in the Wild Ohio Customer Relationship Management System (WOCRMS) (n=11,480) on 21 January 2014. A follow up email was sent to customers who had not filled out the survey on 27 January 2014. Additionally, the ODOW sent a press release to news sources and posted on the Division of Wildlife website on 17 January 2014. The emails and press releases included a brief description and a direct link to the survey. I disabled the survey link on 15 February 2014.

I required respondents to enter their unique ODOW customer identification number. Customer IDs are issued through WOCRMS and are unique to each customer and consistent over time. I filtered the survey data by removing surveys with duplicate customer IDs and customers that did not buy an Ohio Wetland Habitat Stamp from the 2013-14 licensing year. The final survey data set therefore contained only surveys filled out with non-duplicated Customer IDs of customers who purchased a wetland stamp in the 2013-14 licensing year. Of the customer IDs removed during the filtering process some could have been youth hunters who were not required to purchase an Ohio Wetlands Habitat

stamp to hunt waterfowl. I queried these data by age and all respondents under the age of 18 who purchased a hunting license for the 2013-14 season (n = 40) were added back into the final data set.

In addition I asked respondents to indicate in which duck hunting zone they primarily hunted during the 2013-14 waterfowl hunting season. Since preferences towards regulations, where people hunt, and even the methods used to hunt may vary geographically, I grouped all responses by the primary duck hunting zone each respondent indicated they hunted the most in during the 2013-14 waterfowl season, and also tabulated responses overall (i.e. all zones combined). Different from previous surveys respondents were asked to select among season date alternatives for ducks instead of selecting preferred times to hunt. Respondents were only presented season alternatives for the duck hunting zone which they indicated they hunted most.

To detect age bias, I used respondents' customer ID number to calculate age and then compared the ages of survey respondents to all customers who purchased a 2013 Ohio Wetlands Habitat Stamp. I calculated mean, standard deviations of the mean and median age for both groups. I excluded the forty respondents under the age of 18 from any age analyses since they were not required to purchase a stamp, and therefore not represented in the list of 2013 Ohio Wetlands Habitat Stamp customers.

To detect spatial bias I asked respondents which duck hunting zone they primarily hunted in during the 2013-14 season and compared the responses to the percentage of geocoded addresses of all 2011 Wetland Habitat Stamp customers. Responses and geocoded addresses were grouped categorically in one of the three duck hunting zones in Ohio.

To detect avidity bias I asked respondents to answer a series of questions about how many days they duck and goose hunted in the 2013-14 hunting season and how many ducks and geese they harvested in the 2013-14 season for comparison to data gathered through the Harvest Information Program (HIP) in 2012 (Raftovich and Wilkins 2013). Additionally I asked respondents how many years they have waterfowl hunted in Ohio, and I quantified the percentages of respondents and all Ohio Wetland Habitat Stamp customers who purchased a stamp from 2009-2013 categorically as those who purchased 1 of 5 years, 2 of 5, etc. to test for avidity bias in this survey and quantified retention over a five year time span.

Questions gauging satisfaction with season dates and the level of agreement with stabilizing season dates for waterfowl were organized using the Likert method (Frey et al 2000). I used a five item approach and scaled responses from 2 to -2 (i.e. 'excellent' or 'very helpful' scored as 2, 'good' or 'helpful' scored as 1, 'neutral' scored as 0, 'poor' or unhelpful' scored as -1, 'very poor' or 'very unhelpful' scored as -2). I interpreted summed responses with positive values as general satisfaction or agreement, and summed responses with negative values as general dissatisfaction or disagreement.

I analyzed responses to season date alternatives for the north zone using the density function in ESRI ArcMap. I used the Customer ID of respondents to query WOCRMS for respondents' addresses. I geocoded customer addresses using the geocoding toolbar to create a point shapefile representing the location of respondents who responded to primarily hunting in the north zone. I attributed the resulting

point shapefile with responses to the season date alternative preferred by each respondent and created a density raster.

Results and Discussion

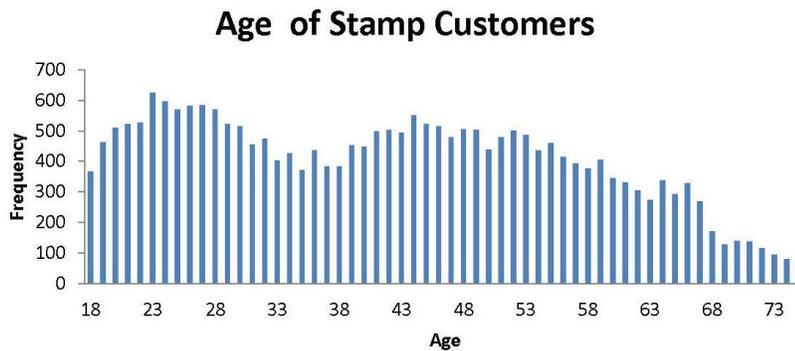
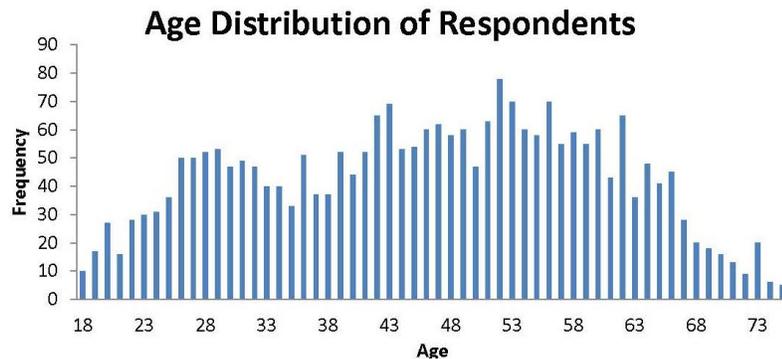
Sample size, and bias

I received 2861 unique survey responses. I removed 317 responses from respondents who either entered the same customer ID more than once or entered customer ID's which did not match the list of wetland habitat stamp customers in 2013. I received forty responses from respondents under the age of 18 who purchased a valid hunting license; I retained these responses in the final data set. Therefore, the total number of responses used for analysis was 2584. Filtering of the raw data by these criteria ensures the integrity of the final data set.

The age distribution of respondents to this survey appeared to be similar to the age distribution of all 2013 Ohio Wetland Habitat Stamp customers. Interestingly ages 18 to 25, the age group which is presumably the most internet savvy, are underrepresented in the survey responses. The mean age of respondents (46.5, SD = 14.3) was similar to the mean age of all 2013 Wetland Habitat Stamp customers (46, SD = 18.1); and median age for respondents, 47, was similar to the median age of all 2013 Wetland Habitat Stamp customers, 45, indicating no age bias in respondents to this survey (Table 1).

Table 1 : Age distribution of survey respondents to the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Age of respondents compared to all stamp customers	Age		
	\bar{x}	SD	median
Survey Respondents*	46.54	14.3	47
All 2013 Ohio Wetland Habitat Stamp Customers	46.01	18.1	45



* excludes respondents under age 18 (n = 40)

Respondents to this survey appeared more avid than all 2013 Wetland Habitat Stamp Customers based on responses to the question "How many of the last 5 seasons have you hunted waterfowl in Ohio?" (Table 2). I compared responses to this question to the actual purchasing patterns of the respondents, and interestingly respondents who had purchased 1 of 5 or 2 of 5 years responded relatively accurately, while those who purchased 3 of 5 or 4 of 5 years were relatively inaccurate. Regardless the disparity between the actual purchasing patterns of respondents and all 2013 Wetland Habitat Customers was quite apparent. Survey respondents have purchased 5 of 5 consecutive years (48.9%) more frequently than all 2013 Ohio Wetland Habitat Stamp Customers (13.3%). Interestingly 45% of Ohio Wetland Habitat Stamp customers have purchased only 1 of 5 years from 2009-2013. A closer look at these data shows that nearly 70,000 unique customers have purchased a stamp from 2009-2013, while single year stamp sales have never exceeded 32,000. This suggests that recruitment of stamp customers was high, while retention was low. Future research should focus on identifying demographics of customers who are recruited but not retained, and determining why customers are not retained.

Table 2 : Responses to "How many of the last 5 seasons have you hunted waterfowl in Ohio?" from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014 compared to data queried from the Wild Ohio Customer Relationship Management System (WOCRMS).

Number of years respondent has purchased a stamp 2009-2013	Survey Respondents*		WOCRMS*
	Response	Actual	
	%	%	%
1 of 5	12.7	12.5	45.0
2 of 5	7.8	8.6	18.5
3 of 5	9.0	18.6	13.0
4 of 5	8.4	11.4	7.7
5 of 5	62.1	48.9	13.3

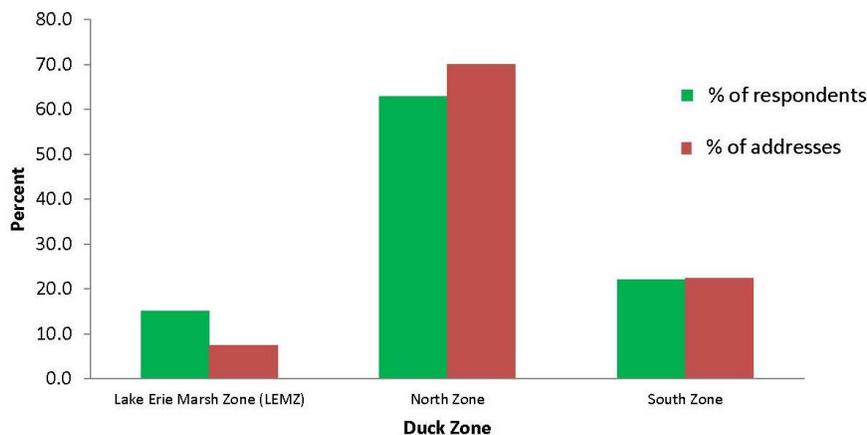
* excludes respondents under age 18 (n = 40)

The spatial distribution of respondents to this survey was representative of the total population of Ohio Wetland Habitat Stamp customers from the 2011-12 licensing year (Table 3). In response to the question "What is the primary Ohio Duck Zone where you hunted waterfowl most often during the 2013-14 season?" 391 (15.1%) respondents indicated Lake Erie Marsh Zone (LEMZ), 1624 (62.8%) indicated North Zone, and 569 (22.0%) indicated South Zone. Addresses of Ohio Wetland Habitat Stamp customers in 2011-12 indicated that 7.5% resided in the LEMZ, 70.1% in the North Zone, and 22.5% in the South Zone. Similarly, in a random mail based survey of Ohio waterfowl hunters in 2000 (Barry and Shieldcastle 2002) 21.1% of respondents primarily hunted in the LEMZ Counties, 59.0% in the North Zone excluding the LEMZ counties, and 19.8% in the South/Ohio River Zone. Since some customers likely live in the North Zone, but primarily hunt in the LEMZ; and the similarities with the 2000 survey, I considered this sample representative of the actual distribution of where Ohio waterfowl hunters actually hunted.

Table 3: Responses to "What is the primary Ohio Duck Zone where you hunted waterfowl most often during the 2013-14 season?" from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014 (Survey) compared to addresses of all 2011 Ohio Wetland Habitat Stamp customers (All).

Zone waterfowl hunted most often	Survey		All	
	n	%	n	%
Lake Erie Marsh Zone (LEMZ)	391	15.1	1564	7.5
North Zone	1624	62.8	14685	70.1
South Zone	569	22.0	4712	22.5
Grand Total	2584		20961	

Percent of survey respondents compared to customer addresses per duck hunting zone



Responses to survey questions

The paragraphs below present results and discussion of individual survey questions. See Appendix A for the exact wording of questions asked in this survey and summarized response data in tables and figures.

Type of hunting (Appendix A, Table 1)

The majority of hunters (84.2%) within and among all zones indicated they hunted both ducks and geese. Few hunters specialized in either duck (8.4%) or goose (3.8%) hunting exclusively; however 11.9% of LEMZ hunters indicated hunting ducks exclusively. Respondents indicated hunting neither ducks nor geese fewest among the four choices (3.6%). These results are similar to responses gathered in the 2013 Ohio Waterfowl Hunter survey (Ervin 2013).

Satisfaction with duck season dates (Appendix A, Table 2)

Satisfaction with duck season dates was generally normally distributed but slightly skewed toward satisfaction overall, and for the LEMZ and South Zone, while North Zone hunters generally

indicated dissatisfaction with the duck hunting season dates. I analyzed summed responses on a Likert scale for satisfaction with duck season dates. Results were positive for the LEMZ (8), South Zone (202), and overall (96) indicating satisfaction with duck season dates, while summed responses were negative for the North Zone (-114) indicating dissatisfaction. Laborde (2013 unpublished data) found the most dissatisfied hunters in the Mississippi Flyway were most likely to purchase a stamp 5 of 5 consecutive hunting seasons. One potential explanation of this phenomenon is that the most avid hunters (e.g. the hunters most likely to hunt year after year) are the most vocal with criticism.

Satisfaction with goose season dates (Appendix A, Table 3)

The distribution of satisfaction with the 2012-13 Ohio goose hunting season was skewed towards satisfaction overall and for each zone independently. The distributions of responses to this question were nearly identical for each of the three waterfowl hunting zones. I analyzed summed responses on a Likert scale for satisfaction with goose season dates. Results were positive for all zones and overall: LEMZ (150), North Zone (763), South Zone (341), and overall (1254) indicating satisfaction with goose season dates.

Most preferred duck season option for the LEMZ (Appendix A, Table 4), North Zone (Appendix A, Table 5), and South Zone (Appendix A, Table 6)

I asked respondents to select among duck season options with varying dates base on the zone which they hunted in the most. I developed three alternatives for each zone; one alternative closely mimicked season structures from 2011-present; and I developed two additional alternatives from hunter input and though discussion with DOW staff in each duck zone.

LEMZ

The duck season option which received the most support (41.4%) in the LEMZ was the alternative which mimicked recent, 2011-present, season structures (i.e., October 18-November 2; November 15-December 28). An alternative beginning Oct 18th and running for 60 days continuously received support from 30.6% of respondents, and the third alternative, Oct 18-Nov. 30; and Dec. 13-28 received support from 21.3% of respondents.

I designed season alternatives to open the third Saturday in October, which is one week later than the past two years, to alleviate conflicts with teal season ending dates, youth waterfowl weekend, deer archery and muzzleloader seasons, and the big duck opener. When asked about deer hunting most respondents (66.7%) from the LEMZ indicated they hunted both deer and waterfowl in the 2012-13 season; 6.7% indicated hunting the early muzzleloader season during the 2nd weekend in October despite the waterfowl opener on the same day. Interestingly 63.4% indicated waterfowl seasons should be set without regard to deer season, while only 4.3% indicated the season should be set to avoid the early muzzleloader season. See Tables 12-14 for more on the relationship between deer and waterfowl seasons.

North Zone

The duck season option which received the most support (37.2%) in the North Zone was the alternative of October 25-November 30; December 20-January 11. We created this alternative based on criticism received for the 2012-13 season which was open for only three days in November and conflicted with deer gun season. This alternative is vastly different than past regulations, but received marginally more support than the alternative which mimicked season dates from 2012-13. The alternative which mimicked the 2012-13 season dates received 32.1% of the support, while an alternative between the two received the least amount of support from respondents (23.1%).

Responses to this survey suggest a spatial divide in waterfowl season date preferences in the North Zone. I analyzed this data further to attempt to look at spatial trends in the data and the resulting maps indicate a trend in the data spatial from east to west. Hunters in the eastern portion of the north zone generally preferred the season alternative which placed more days in December and January (i.e. similar season structures to 2011-present) (Figures 1 and 2), while respondents in the western portion of the state primarily preferred the season alternative which placed most days in November (Figure 3). The intermediate season date alternative which had dates in November, December, and January was spatially broadly applicable, however received the least support in terms of the number of respondents who selected that alternative.

Figure 1: Geographic locations of hunters who selected North Zone duck season dates of Oct 18-Nov 2; Nov 29-Jan 11 the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014; and the relationship of those dates to dabbling duck migration in the current North Zone from aerial waterfowl survey data collected 1985-present.



Preference for North Zone duck season dates of Oct 18-Nov 2; Nov 29-Jan 11. The map indicates the density of north zone hunters who preferred this season alternative.

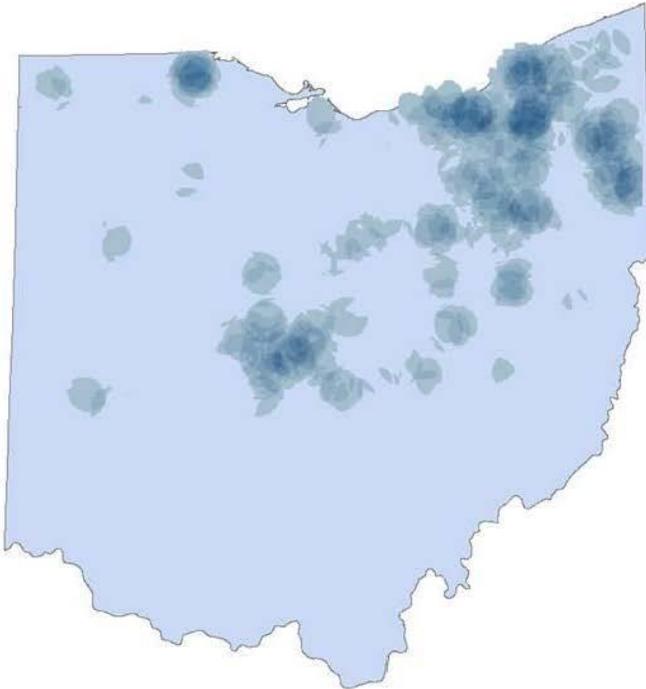
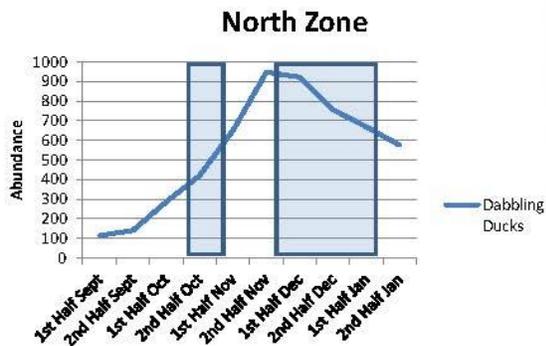
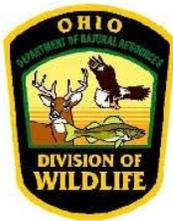


Figure 2: Geographic locations of hunters who selected North Zone duck season dates of Oct 25-Nov 9; Nov 22-Jan 4 the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014; and the relationship of those dates to dabbling duck migration in the current North Zone from aerial waterfowl survey data collected 1985-present.



Preference for North Zone duck season dates of Oct 25-Nov 9; Nov 22-Jan 4. The map indicates the density of north zone hunters who preferred this season alternative.

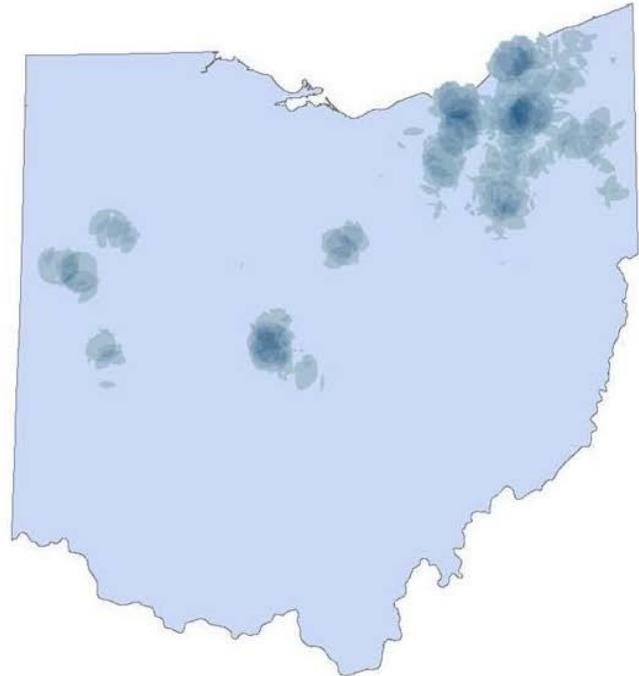
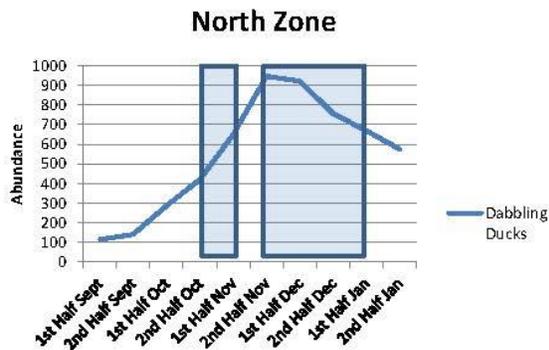
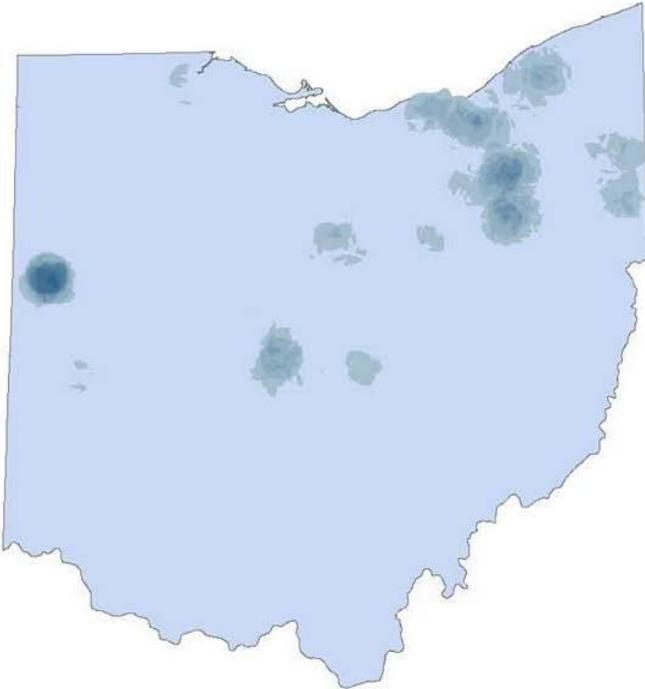
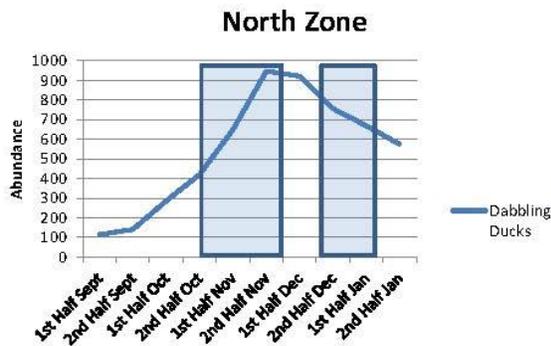


Figure 3: Geographic locations of hunters who selected North Zone duck season dates of Oct 25-Nov 30; Dec 20-Jan 11 the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014; and the relationship of those dates to dabbling duck migration in the current North Zone from aerial waterfowl survey data collected 1985-present.



Preference for North Zone duck season dates of Oct 25-Nov 30; Dec 20-Jan 11. The map indicates the density of north zone hunters who preferred this season alternative.



When asked to rank the data sources that should be used to set season dates, respondents to this survey ranked migration data highest, followed by weather data and hunter opinions receiving nearly equal support statewide. See *Ranking of data sources to be used in setting season dates* for respondents opinions of which data sets should be used in considering season date alternatives (Appendix A, Tables 21-23).

South Zone

The duck season option which received the most support (48.5%) in the South Zone was the alternative of October 25-November 2; December 12-January 31; receiving nearly double the support of any of the other alternatives. Per the federal frameworks the last day seasons can be open in the Mississippi Flyway is the last Sunday in January, which is January 25th 2015; and not the last Saturday January 31st 2015; conflicting with the alternatives I provided in the survey.

Nevertheless I interpret these results to suggest respondents prefer a season structure with as many days as possible in second split. The preferred season structure represents a 9 day early split

followed by a 51 day late split; while the two other alternative structures represent 16 days in the first split and 44 in the second split.

Another factor which potentially complicates seasons in the south zone is the interaction, and potential conflict, with the weekend of deer gun season. In some years (i.e., 2015-16 through 2018-2019 seasons) it will be possible to have a 9/51 season structure with no overlap in days for duck season and deer gun season. However based on the current wording of the federal frameworks (i.e., duck season end date of last Sunday in January) and the current deer gun season structure (i.e., first full week after Thanksgiving) this season structure will not be possible in some years, namely 2014-15 (also 2019-20 season) without overlapping the opener of the second split for waterfowl hunting with the weekend of deer gun season.

Also see *Interactions of waterfowl hunting and deer hunting (Appendix A, Tables 12-14)*

Importance of ducks species in terms of harvest (Appendix A, Tables 7-10)

I asked respondents to rank four groups of ducks ((1)Green-winged teal, Wood ducks, and resident mallards; (2) Gadwall, Northern Pintails, and American Widgeon; (3) migrant Mallards and American Black Ducks; and (4) Scaup, Redheads, Canvasbacks, Bufflehead, and Goldeneye) in order of importance to overall duck harvest. In all zones and overall respondents ranked migrant mallards and black ducks as the most important group to overall harvest most frequently (n = 1191); however respondents ranked green-winged teal, wood ducks, and resident mallards highest nearly as often (n = 1004). This may suggest that both early season and late season harvest are nearly as important to various groups of duck hunters, since green-winged teal and wood ducks are typically late October-early November migrants out of Ohio, while migrant mallards and American black ducks routinely winter in the southern part of Ohio. Interestingly, North Zone respondents ranked green-winged teal, wood ducks, and resident mallards higher than migrant mallards and black ducks. Gadwall, Northern Pintail, and American Widgeon ranked third in all zones and overall, and the group of diving ducks ranked lowest in all zones and overall.

Habitats in which respondents hunt waterfowl (Appendix A, Table 11)

I asked respondents to select the habitats which they waterfowl hunt most often. Overall (38.7%) and in the North (37.6%) and South (44.5%) Zones respondents indicated hunting in 'multiple habitats, therefore I can adapt to varying weather conditions' most frequently. Respondents from the LEMZ selected 'shallow wetlands, moist soil wetlands, or flooded crop; freezing temperatures threatens access to hunt these habitats' most frequently (40.8%), followed closely by 'multiple habitats' (34.4%). More respondents in the South Zone (22.8%) indicated hunting moving water as their primary habitat to hunt ducks compared to the other zones, indicating the importance of rivers and streams to south zone waterfowl hunters.

To test the hypothesis that season date preference varied with the habitat in which respondents hunt I cross referenced the responses to the season date preference questions with this question about the habitats in which respondents primarily hunt by zone. There is an apparent divide in the LEMZ

between respondents who indicated hunting primarily in shallow emergent wetlands, moist soil wetlands, and flooded crops and those who indicated hunting in multiple habitats. Respondents who indicated hunting primarily in shallow water habitats preferred the season date alternative of 60 days straight with no split, while those who indicated hunting in multiple habitats favored the season alternative similar to 2011-2013 regulations.

Responses from the North Zone indicated a similar pattern but to a lesser extent. Those who indicated hunting multiple habitats preferred the season alternative which most closely mimicked the season structure from 2011-2013 in the north zones, while respondents who indicated hunting lakes, and reservoirs or shallow wetland habitats preferred to the season alternative which shifted most days earlier in the year to November.

Interactions of waterfowl hunting and deer hunting (Appendix A, Tables 12-14)

I asked a series of questions to gather information on the interaction of waterfowl hunting and deer hunting among respondents. Overall most (77.6%) indicated hunting both deer and waterfowl, while fewer (22.4%) indicated hunting waterfowl exclusively. Of the respondents which hunted deer, more (n = 1174) indicated hunting 'waterfowl primarily, but also hunted deer' than those who indicated 'hunting deer primarily, but also hunting waterfowl' (n = 762), which is not unexpected given that this survey targeted waterfowl hunters.

I asked respondents to select in which deer season they participated. Deer shotgun season (28.8%) and during the deer rut with archery equipment (27.7%) were selected most frequently, followed by the statewide muzzleloader season in January (16.5%) and the early muzzleloader season in October (11.0%). Responses were similar among all zones.

I then asked respondents to indicate if they preferred that waterfowl season be closed during various deer season segments listed in the previous question. Overall (55.8%) and in all zones independently respondents indicated that waterfowl seasons should be set without regard to deer seasons. I believe these results should be interpreted with the potential avidity bias of this survey in mind, see Tables 15-20 for information on the avidity of respondents to this survey. When cross tabulated with responses to questions about whether the respondents deer or waterfowl hunted primarily (Table 12) and intermittence of waterfowl hunting (Table 19), no apparent trends existed in the data to suggest that respondents who primarily deer hunted, or those who waterfowl hunted intermittently preferred that waterfowl seasons and deer season do not overlap. It seems counterintuitive however that respondents did not prefer waterfowl hunting and deer hunting opportunities to be temporally separated when possible given waterfowl migration data.

Number of days respondents hunt ducks and geese (Appendix A, Table 15 and 17)

I asked respondents to indicate the number of days they hunted ducks and also geese in the 2013-14 season as another metric to gauge avidity of respondents. The U. S. Fish and Wildlife Service estimates the total number of active duck and goose hunters per state with the Harvest Information

Program (HIP). These data are reported in the Migratory Bird Hunting activity and Harvest Report (Raftovich and Wilkins 2014), and I use them for comparison to these survey results.

Data from HIP estimates the total active duck hunters in the 2013-14 season in Ohio to be 22,400 and total duck hunter days afield at 165,800; and 23,500 active goose hunters who spent 160,300 days afield. I interpret the quotient of the two statistics, 7.4 days for ducks and 6.8 days for geese, to be average days afield per hunter.

Responses to the survey question for the number of days spent duck hunting indicated a bimodal distribution with most respondents indicating duck hunting 1-5 or 6-10 days generally near the mean estimated using HIP data of 7.4 days afield per hunter. A second peak in the distribution, prominently from respondents in the LEMZ, but also in other zones and overall, was present for the category of 20+ duck hunting days afield. This second peak potentially represented an avid group of hunters who may collectively add an avidity bias to these survey results, therefore all results of this survey and interpretations based on these results should bear this in mind.

The bimodal distribution in responses to number of days spent goose hunting was less prominent, but still present. Respondents in all zones indicated goose hunting 1-5 days most frequently followed by 6-10 days. These results are consistent with the mean number of days afield for goose hunters in Ohio during the 2013-14 season estimated by HIP of 6.8 days afield per hunter.

Intermittence of waterfowl hunting (Appendix A, Table 19)

I asked respondents to select how many of the last five seasons they have waterfowl hunted in Ohio to gauge intermittence and avidity. Respondents in all zones and overall indicated hunting 5 of 5 of the most recent seasons most frequently (62.1%) compared to all other responses. Respondents in the LEMZ selected 5 of 5 (73%) at a higher percentage than the North Zone (61.7%) and the South Zone (55.8%).

I compared these survey responses to actual purchasing patterns of the Wetland Habitat Stamp to determine the accuracy of responses and to compare purchasing patterns of the survey respondents to those of the entire population of Ohio Wetland Habitat Stamp customers (See Table 2). Survey respondents selected hunting '3 of 5' and '4 of 5' less frequently than reality, while selecting '5 of 5' more frequently. The most striking difference is comparing the purchasing patterns of the Ohio Wetland Habitat Stamp over the last five year between survey respondents and all other customers (people who have purchased a stamp in the last five years, but who did not take the survey). The relationship is nearly inverse and indicates that stamp customers buy '1 of 5' years more often than any other category. These data suggest that retention of waterfowl hunters is a paramount issue compared to recruitment of waterfowl hunters, and further suggests that this survey is biased toward the opinions of avid hunters.

Number of years waterfowl hunting in Ohio (Appendix A, Table 20)

I asked respondents to select from categories which best describe the number of years they have hunted waterfowl in Ohio. In all zones and overall respondents indicated hunting 16+ years more frequently (47.4%) than any other category; potentially indicating avidity bias in this survey. Responses from the LEMZ are skewed most heavily towards the 16+ category (61.8%) while the South zone is the least (37.3%). The '1 to 5 year' category was selected by the highest percentage of respondents in the South Zone (30.6%) followed by the North Zone (24.0%) potentially indicating recruitment into the sport is occurring at a higher rate there compared to other zones.

Data sources used to set regulations (Appendix A, Tables 21-23)

I asked respondents to rank the order in which they think the Division of Wildlife should consider three data sources (migration, weather, and hunter opinions) when setting season dates for waterfowl hunting. Overall respondents ranked migration data as highest (n = 1025) compared to both hunter opinions (n = 776) and weather data (n = 661).

In all zones and overall respondents ranked using waterfowl migration data highest (41.6%) more frequently than second (34.0%) or third (24.4%). Respondents in all zones and overall ranked weather data highest less frequently (26.9%) than second (36.5%) or third (36.6%). Overall respondents ranked hunter opinion data third (39.0%) more frequently than first (31.5%) or second (29.5%), however responses from the north zone were bimodal with nearly as much support for ranking hunter opinion data highest (n = 531, 34.1%) as lowest (n = 552; 35.5%).

Stable seasons (Appendix A, Table 24)

I asked respondents to indicate preference for stabilizing waterfowl seasons over multiple years in regard to making regulations easier to understand. I interpret these results on a Likert scale where positive values indicate support for stabilized seasons and negative values indicate lack of support. In each zone and overall scaled responses were positive (LEMZ = 272; North Zone = 1186; South Zone = 363; Overall = 1821), which suggests support for stabilized waterfowl seasons over multiple years to make regulations easier to understand.

Hen Mallards (Appendix A, Table 25)

I asked respondents to indicate their preference for hen mallard daily bags limits after providing context surrounding the issue. Survey purists would likely interpret these results as biased since context was provided to respondents in the question. I felt context regarding the issue was necessary for respondents to make an informed response, given the assumption that most respondents likely do not understand the background rationale for why restrictive hen mallard harvest would be considered.

Respondents in all zones and overall supported maintaining the status quo hen mallard daily bag limit of one (63.5%) more than twice as frequently as two (28.7%) and a small percentage (7.9%) supported a daily hen mallard bag limit of zero. These results are similar to those from a mail based survey of Ohio waterfowl hunters in 2000 (Barry and Shieldcastle 2002), where respondents supported

(77.5%) the Ohio Division of Wildlife's voluntary decision to reduce the hen mallard daily bag limit from two to one.

Management Implications

This survey efficiently gathered hunter input from a large sample of Ohio waterfowl hunters. Future developments of this survey should work towards further increasing the number of unique respondents, and curtailing or quantifying any potential biases. A potential mechanism to accomplish this would be to include survey invitations in the envelope when the wetland habitat stamps are mailed. This would efficiently invite (sample) a census of waterfowl hunters since envelopes and postage are already paid for in the wetland stamp mailings; and would curtail any sampling bias, though response bias may still exist.

The hunter input gathered through this survey will provide guidance during the regulations setting process for the 2014-15 waterfowl hunting seasons, including season dates and hen mallard bag limits. In addition, results from this survey suggest waterfowl hunter retention should be considered as paramount to hunter recruitment; regulations should be set in the future using primarily waterfowl migration data, while weather data and hunter opinion data should be considered as secondary means of information; and stabilized regulations should be pursued by the ODOW in future waterfowl regulations setting processes, where possible.

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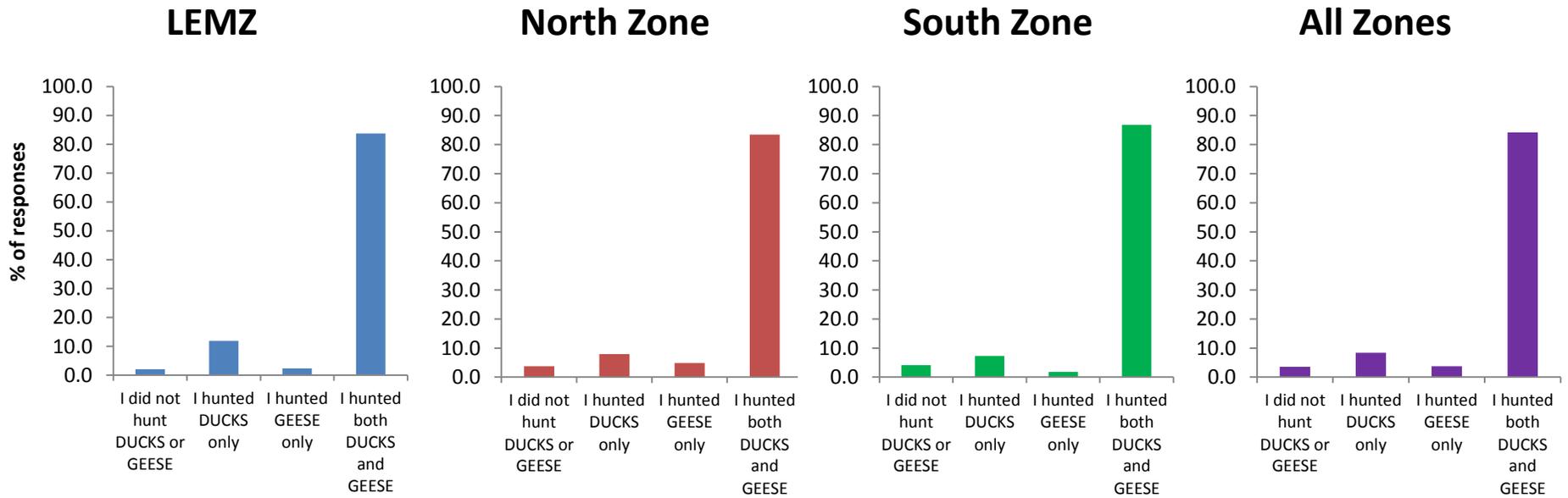
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APPENDIX A

Table 1: Responses to "Select from the list below which best describes your waterfowl hunting during the 2013-14 season" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Type of waterfowl hunted	Zone							
	LEMZ*		North Zone		South Zone		All Zones	
	n	%	n	%	n	%	n	%
I did not hunt DUCKS or GEESE	8	2.1	61	3.8	23	4.1	92	3.6
I hunted DUCKS only	46	11.9	127	7.9	41	7.3	214	8.4
I hunted GEESE only	9	2.3	78	4.9	10	1.8	97	3.8
I hunted both DUCKS and GEESE	323	83.7	1340	83.4	487	86.8	2150	84.2
Grand Total	386		1606		561		2553	



* LEMZ refers to Lake Erie Marsh Zone

Table 2: Responses to "The 2013-14 season dates for DUCKS were:" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Satisfaction with duck season dates	Zone							
	LEMZ		North Zone		South Zone		All Zones	
	n	%	n	%	n	%	n	%
Excellent	32	8.3	112	7.0	41	7.3	185	7.2
Good	135	35.1	491	30.6	259	46.2	885	34.7
Neutral/No Opinion	69	17.9	325	20.2	119	21.2	513	20.1
Poor	89	23.1	343	21.4	91	16.2	523	20.5
Very Poor	51	13.2	243	15.1	24	4.3	318	12.5
Did not hunt DUCKS	9	2.3	92	5.7	27	4.8	128	5.0
Grand Total	385		1606		561		2552	

LEMZ

North Zone

South Zone

All Zones

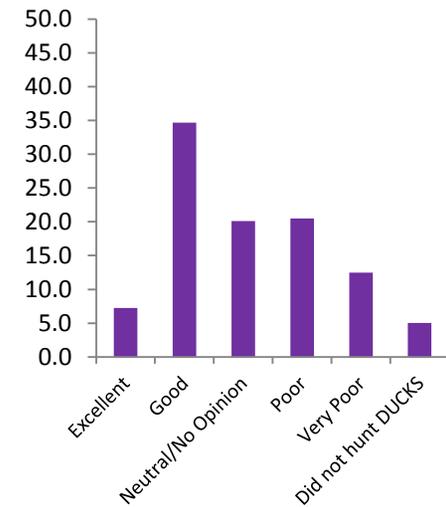
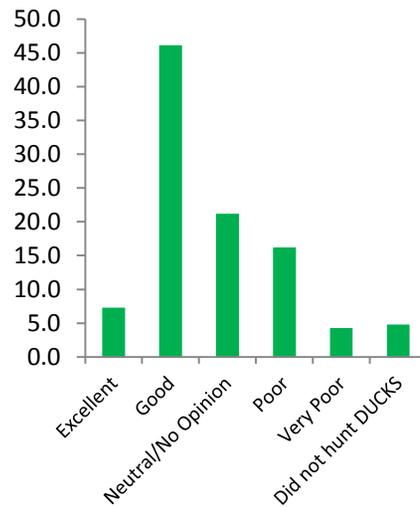
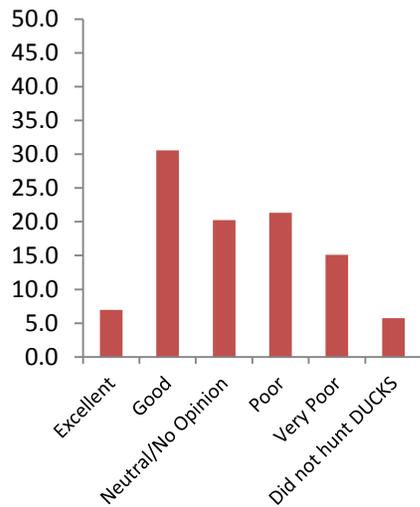
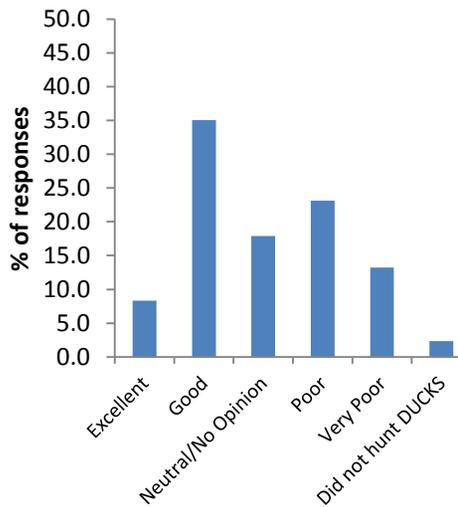


Table 3: Responses to "The 2013-14 season dates for GEESE were:" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Satisfaction with goose season dates	Zone							
	LEMZ		North Zone		South Zone		All Zones	
	n	%	n	%	n	%	n	%
Excellent	46	11.9	242	15.1	69	12.3	357	14.0
Good	160	41.6	651	40.6	281	50.1	1092	42.8
Neutral/No Opinion	74	19.2	318	19.8	105	18.7	497	19.5
Poor	56	14.5	192	12.0	54	9.6	302	11.8
Very Poor	23	6.0	90	5.6	12	2.1	125	4.9
Did not hunt GEESE	26	6.8	111	6.9	40	7.1	177	6.9
Grand Total	385		1604		561		2550	

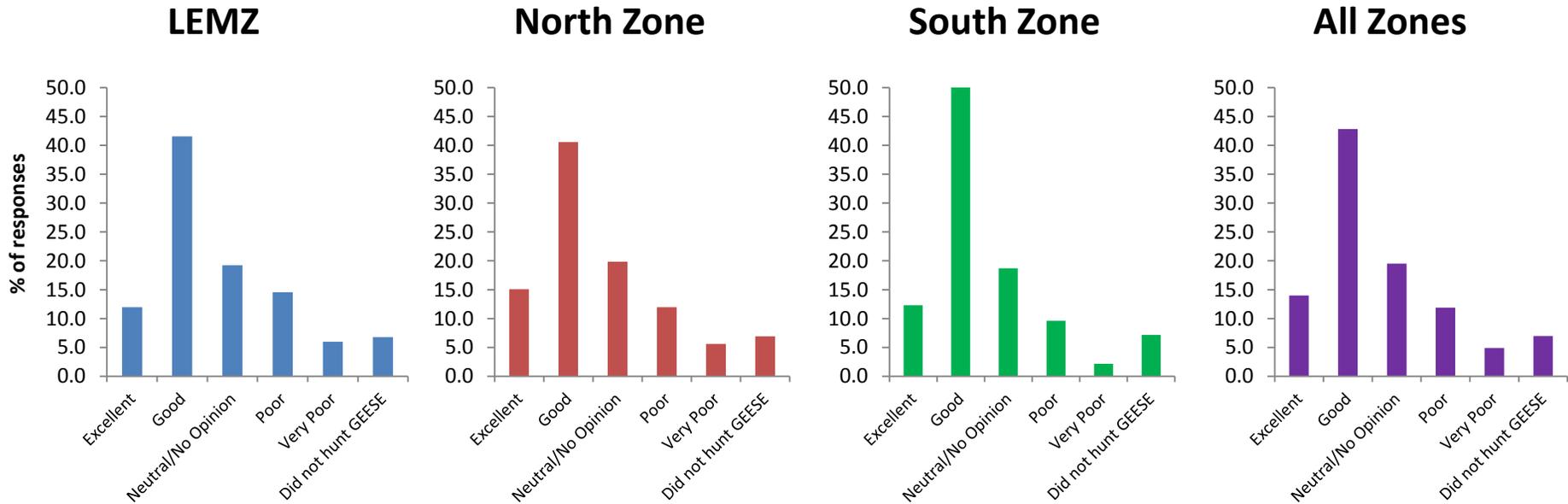


Table 4: Responses to "Select from the list below the DUCK season option which you would most prefer for the Lake Erie Marsh Zone (Note: these options are for 60 days seasons only, seasons may vary based on federal frameworks)." from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Most preferred option to hunt ducks	Zone	
	LEMZ	
	n	%
October 18 - December 16	119	30.6
October 18 - November 30; December 13 - 28	83	21.3
October 18 - November 2; November 15 - December 28	161	41.4
Unsure/No opinion	26	6.7
Grand Total	389	

LEMZ

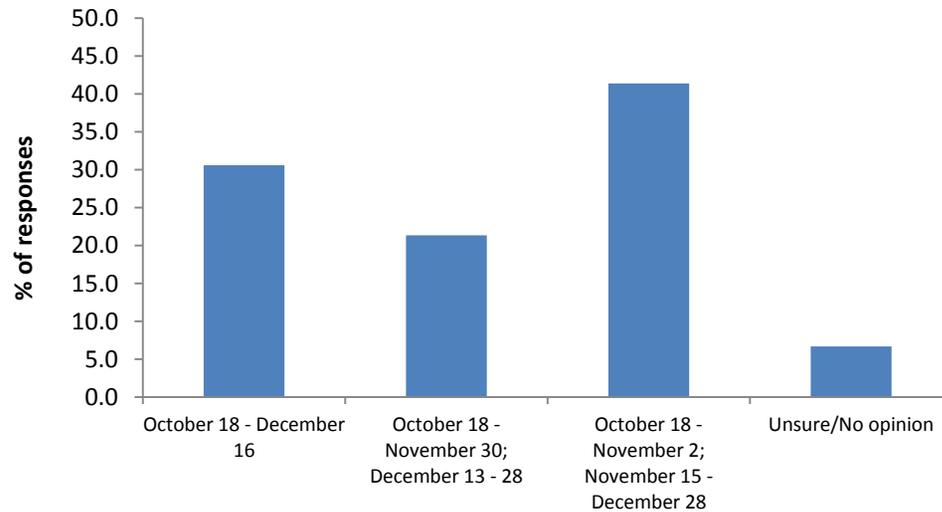


Table 5: Responses to "Select from the list below the DUCK season option which you would most prefer for the North Zone (Note: these options are for 60 days seasons only, seasons may vary based on federal frameworks)." from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Most preferred option to hunt ducks	Zone	
	North	
	n	%
October 25 - November 9; November 22 - January 4	377	23.2
October 25 - November 30; December 20 - January 11	601	37.1
October 18 - November 2; November 29 - January 11	521	32.1
Unsure/No opinion	123	7.6
Grand Total	1622	

North Zone

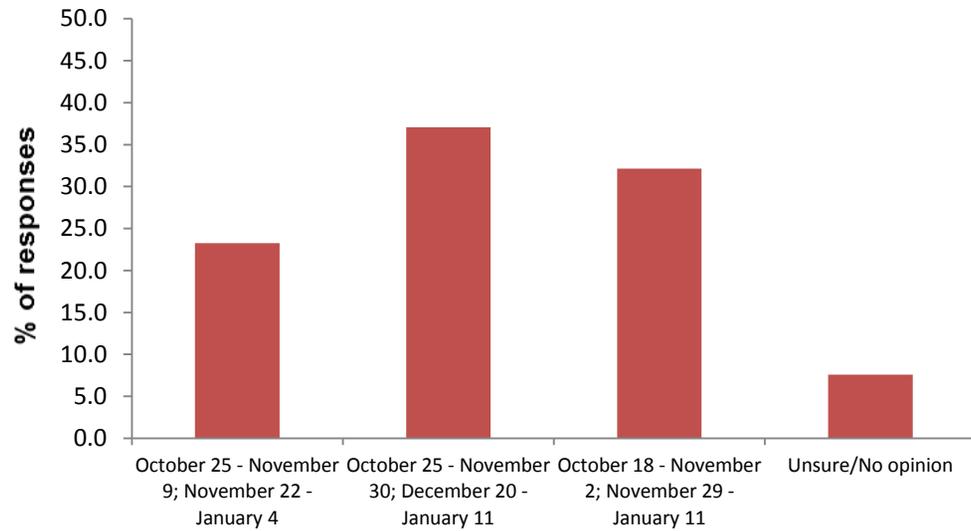


Table 6: Responses to "Select from the list below the DUCK season option which you would most prefer for the South Zone (Note: these options are for 60 days seasons only, seasons may vary based on federal frameworks)." from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Most preferred option to hunt ducks	Zone	
	South	
	n	%
October 25 - November 9; December 19 - January 31	90	15.8
October 25 - November 2; December 12 - January 31	275	48.4
October 18 - November 2; December 19 - January 31	144	25.4
Unsure/No opinion	59	10.4
Grand Total	568	

South Zone

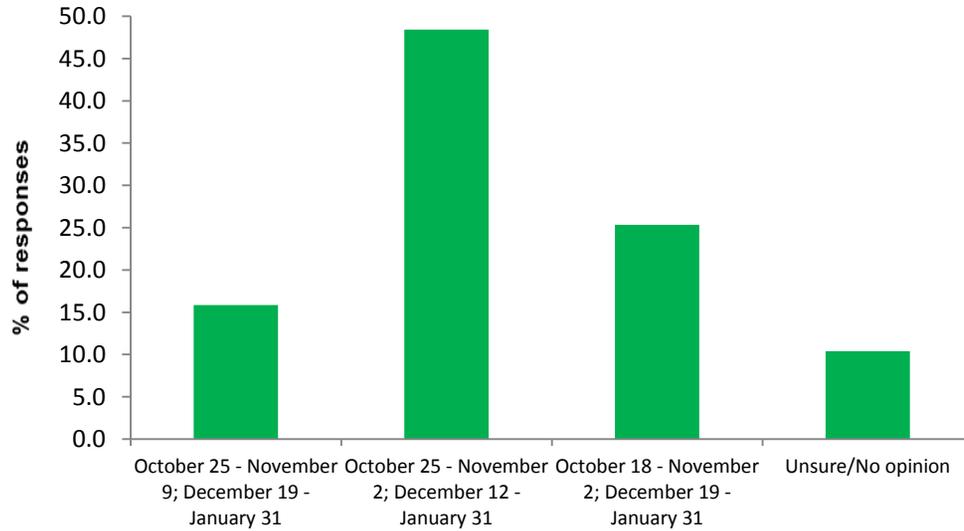


Table 7: Responses to "Rank in order of importance the species groups which are important to you in terms of harvest (1 being the highest rank, and 4 the lowest) for Green-winged teal, Wood ducks and Resident Mallards" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Rank of harvest importance of AGWT, WODU, and resident MALL	Zone						All Zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1	125	33.0	725	45.9	174	31.5	1024	40.8
2	128	33.8	516	32.7	193	35.0	837	33.3
3	78	20.6	179	11.3	105	19.0	362	14.4
4	48	12.7	159	10.1	80	14.5	287	11.4
Grand Total	379		1579		552		2510	

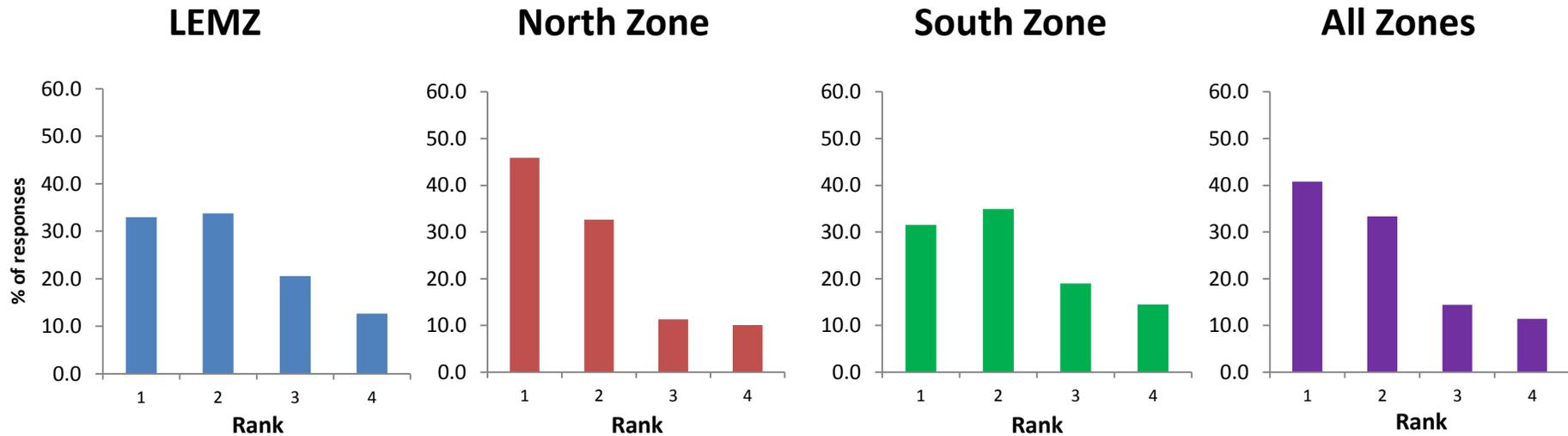


Table 8: Responses to "Rank in order of importance the species groups which are important to you in terms of harvest (1 being the highest rank, and 4 the lowest) for Gadwall, Pintail, and Widgeon" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Rank of harvest importance of GADW, NOPI, and AMWI	Zone						All Zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1	16	4.2	54	3.4	24	4.3	94	3.7
2	98	25.9	275	17.4	115	20.8	488	19.4
3	188	49.6	746	47.2	255	46.2	1189	47.4
4	77	20.3	504	31.9	158	28.6	739	29.4
Grand Total	379		1579		552		2510	

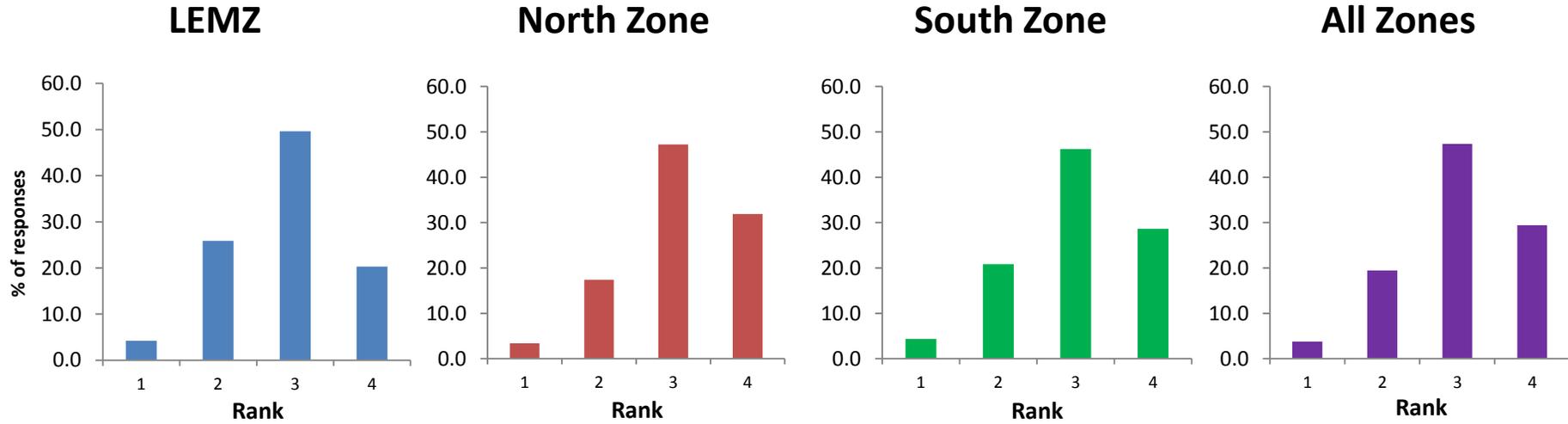


Table 9: Responses to "Rank in order of importance the species groups which are important to you in terms of harvest (1 being the highest rank, and 4 the lowest) for migrant Mallards and Black Ducks" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Rank of harvest importance of migrant MALL and ABDU	Zone						All Zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1	212	55.9	692	43.9	302	54.7	1206	48.1
2	113	29.8	610	38.7	155	28.1	878	35.0
3	39	10.3	186	11.8	49	8.9	274	10.9
4	15	4.0	88	5.6	46	8.3	149	5.9
Grand Total	379		1576		552		2507	

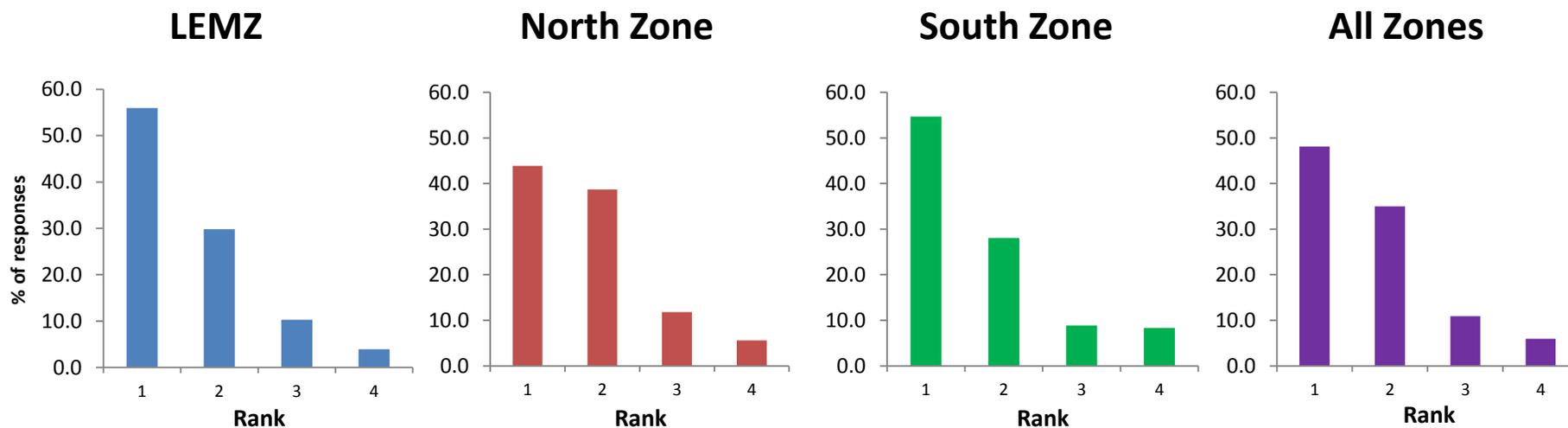


Table 10: Responses to "Rank in order of importance the species groups which are important to you in terms of harvest (1 being the highest rank, and 4 the lowest) for Scaup, Redheads, Canvasbacks, Bufflehead, and Goldeneye" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Rank of harvest importance of Diving Ducks	Zone						All Zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1	26	6.9	108	6.8	52	9.4	186	7.4
2	40	10.6	178	11.3	89	16.1	307	12.2
3	74	19.5	468	29.6	143	25.9	685	27.3
4	239	63.1	825	52.2	268	48.6	1332	53.1
Grand Total	379		1579		552		2510	

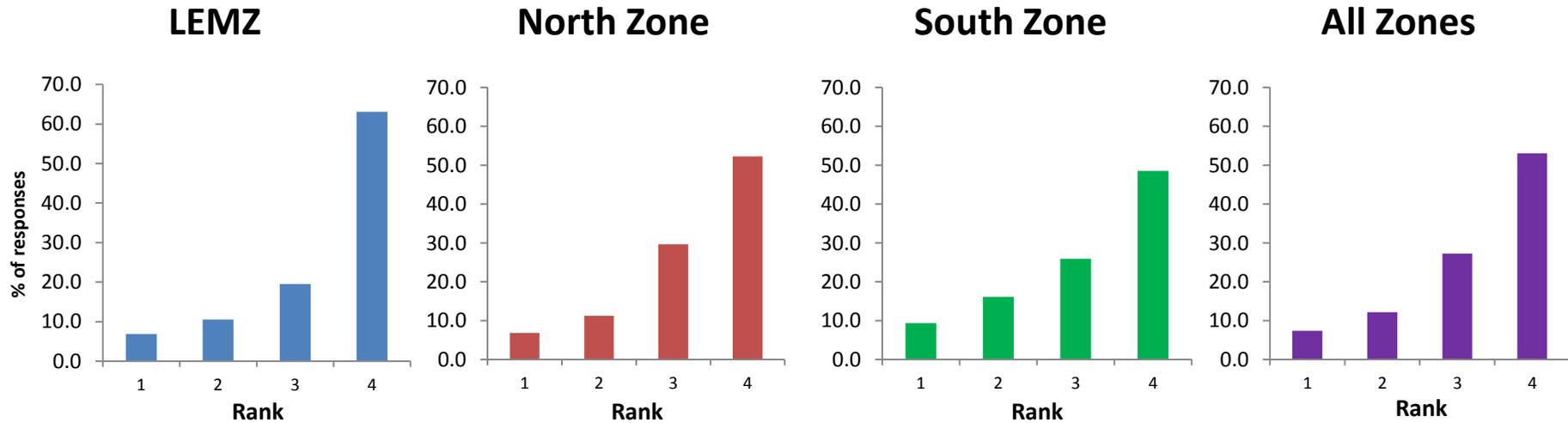


Table 11: Responses to "Select which best describes the habitat in which you hunt waterfowl..." organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Habitat Hunted	Zone						All zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
I hunt dry agriculture fields; freezing temperatures don't threaten my access to hunt these habitats.	21	5.5	138	8.6	33	5.9	192	7.5
I hunt multiple habitats; therefore I can adapt to varying weather conditions to access habitats.	132	34.4	600	37.5	252	44.8	984	38.6
Lakes, reservoirs, or other large open bodies of water; freezing in shallow water wetlands may help my success, but 5-10 days of freezing temperatures threatens my access to hunt these habitats.	67	17.4	350	21.9	81	14.4	498	19.6
Moving water such as streams, creeks, or water discharge areas; frozen conditions in all other habitats may make conditions prime for me to hunt these habitats, and access is seldom limited by freezing conditions.	7	1.8	108	6.8	128	22.8	243	9.5
Shallow emergent wetlands, moist soil wetlands, or flooded crop; freezing water temperatures threatens access to hunt these habitats.	157	40.9	404	25.3	68	12.1	629	24.7
Grand Total	384		1600		562		2546	

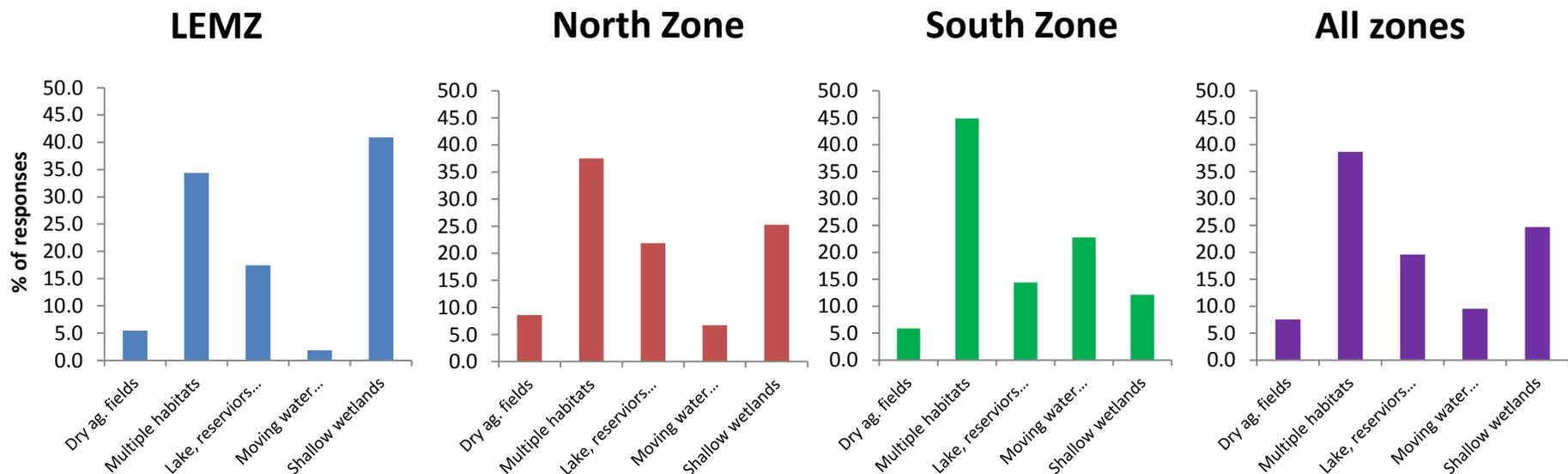


Table 12: Responses to "Select from below which best describes you." organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Relationship between waterfowl and deer hunting	Zone							
	LEMZ		North Zone		South Zone		All zones	
	n	%	n	%	n	%	n	%
I deer hunt primarily, but also waterfowl hunt	73	19.0	502	31.4	195	35.2	770	30.4
I waterfowl hunt exclusively, and do not deer hunt	128	33.3	332	20.8	110	19.9	570	22.5
I waterfowl hunt primarily, but also deer hunt	183	47.7	763	47.8	249	44.9	1195	47.1
Grand Total	384		1597		554		2535	

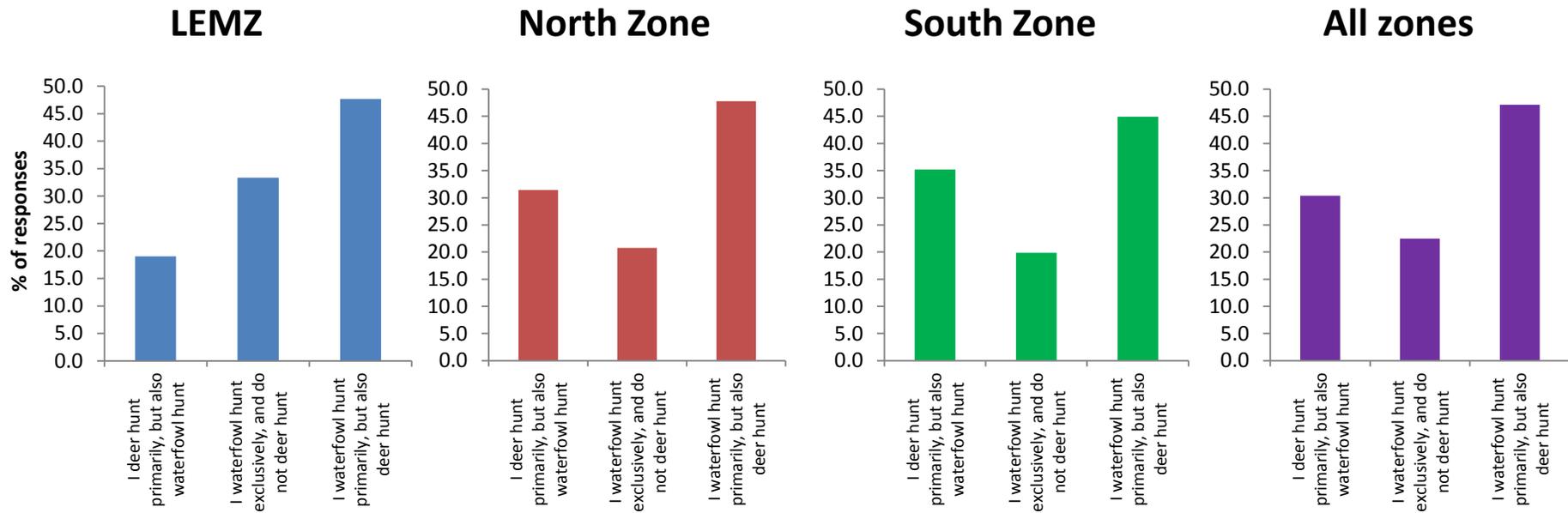
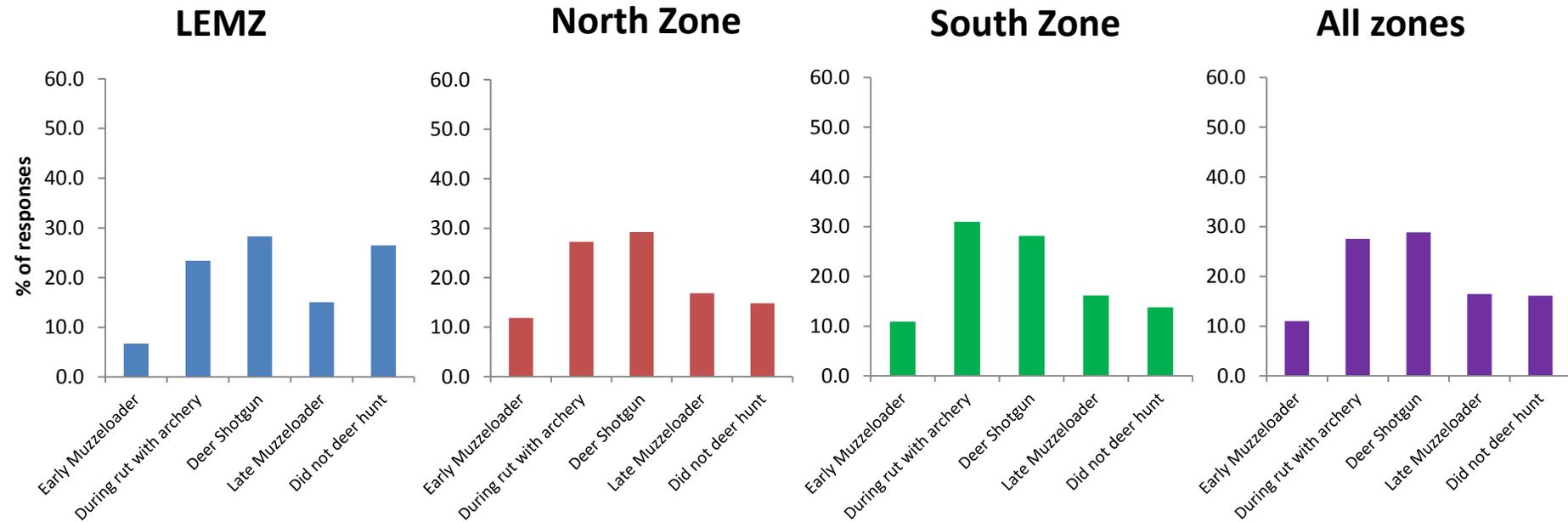


Table 13: Responses to "Select from below ALL which apply to you." organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Deer hunting opportunities pursued in 2013-14 season	Zone							
	LEMZ		North Zone		South Zone		All zones	
	n*	%	n*	%	n*	%	n*	%
I deer hunted during the early muzzleloader season in 2013	41	6.7	363	11.9	114	10.9	518	11.0
I deer hunted during the rut with archery equipment in 2013	143	23.4	832	27.2	324	31.0	1299	27.6
I deer hunted during the statewide shotgun season in 2013	173	28.3	893	29.2	294	28.1	1360	28.9
I deer hunted during the muzzleloader season in January 2014	92	15.1	515	16.9	169	16.2	776	16.5
I did not deer hunt in 2013	162	26.5	453	14.8	144	13.8	759	16.1
Grand Total	611		3056		1045		4712	

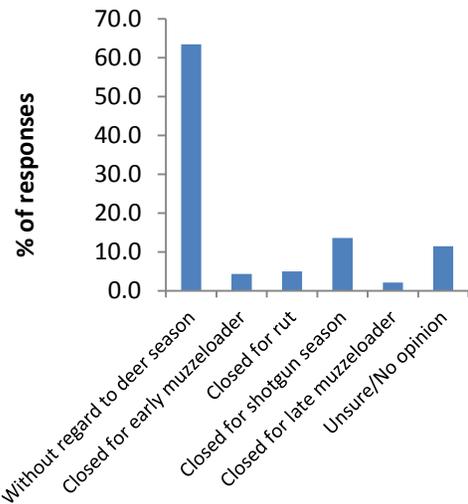


* respondents could select more than one response

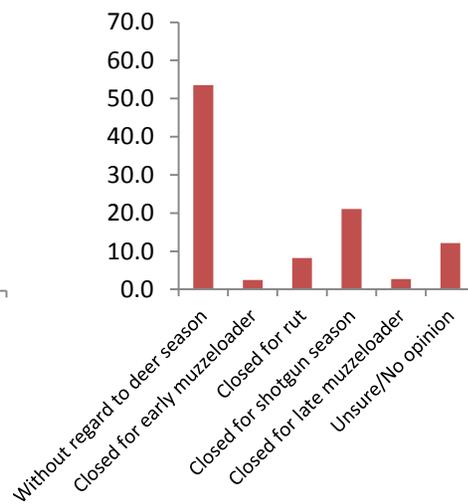
Table 14: Responses to "Waterfowl seasons should be set..." organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Preferred relationship between waterfowl regulations and deer seasons	Zone							
	LEMZ		North Zone		South Zone		All zones	
	n*	%	n*	%	n*	%	n*	%
without regard to deer seasons.	265	63.4	942	53.5	351	57.5	1558	55.9
to be closed during the early anterless muzzleloader season.	18	4.3	43	2.4	10	1.6	71	2.5
to be closed during the deer rut in early-mid November.	21	5.0	144	8.2	53	8.7	218	7.8
to be closed during the statewide shotgun season.	57	13.6	370	21.0	104	17.0	531	19.0
to be closed during the late muzzleloader season.	9	2.2	47	2.7	13	2.1	69	2.5
no opinion/unsure.	48	11.5	214	12.2	79	13.0	341	12.2
Grand Total	418		1760		610		2788	

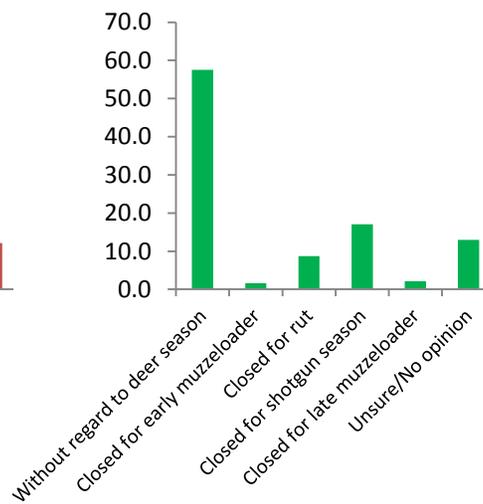
LEMZ



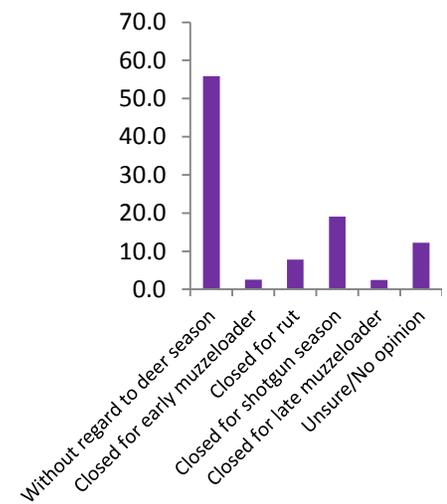
North Zone



South Zone



All zones



* respondents could select more than one response

Table 15: Responses to "How many days did you hunt DUCKS in Ohio in the 2013-14 season?" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Number of days duck hunted in 2013-14	Zone						All zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
I did not hunt DUCKS	13	3.4	135	8.4	30	5.4	178	7.0
1 to 5	92	24.0	402	25.0	126	22.6	620	24.4
6 to 10	76	19.8	379	23.6	123	22.1	578	22.7
11 to 15	61	15.9	243	15.1	101	18.1	405	15.9
16 to 20	42	10.9	159	9.9	74	13.3	275	10.8
20+	100	26.0	287	17.9	103	18.5	490	19.2
Grand Total	384		1605		557		2546	

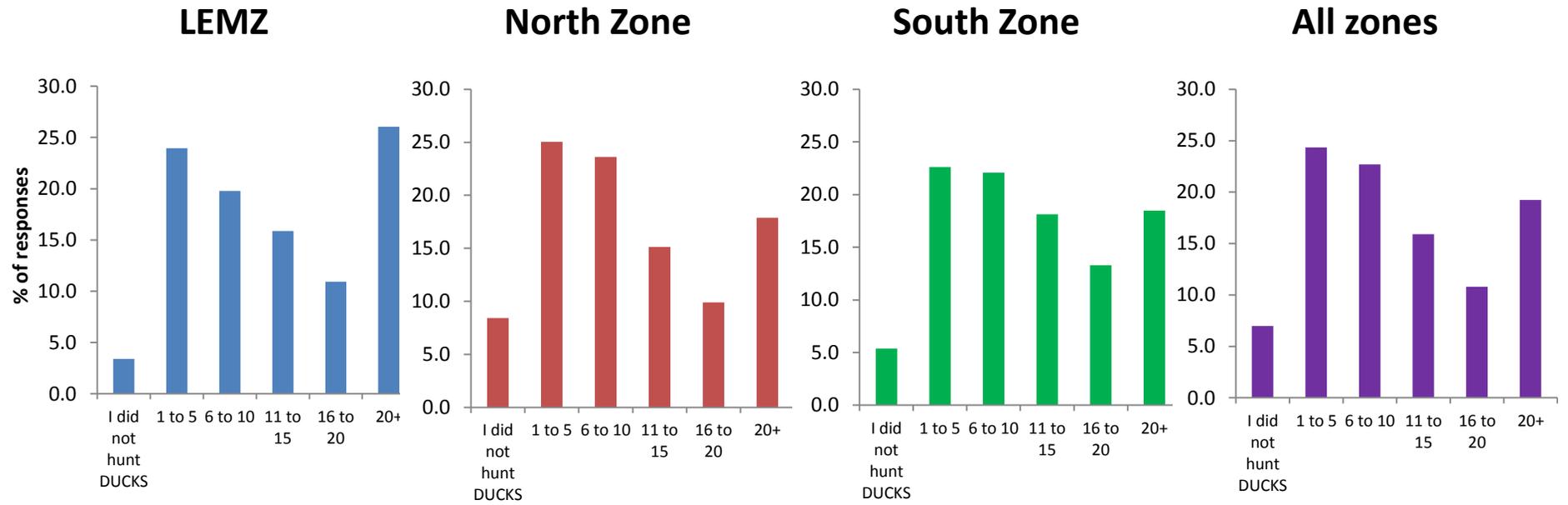


Table 16: Responses to "How many DUCKS did you HARVEST in Ohio in the 2013-14 season?" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Ducks harvested	Zone						All zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
0	52	13.5	376	23.5	106	19.1	534	21.0
1 to 6	110	28.6	504	31.5	159	28.6	773	30.4
7 to 12	69	17.9	268	16.7	109	19.6	446	17.6
13 to 18	28	7.3	158	9.9	69	12.4	255	10.0
19 to 24	33	8.6	102	6.4	41	7.4	176	6.9
25+	93	24.2	193	12.1	71	12.8	357	14.0
Grand Total	385		1601		555		2541	

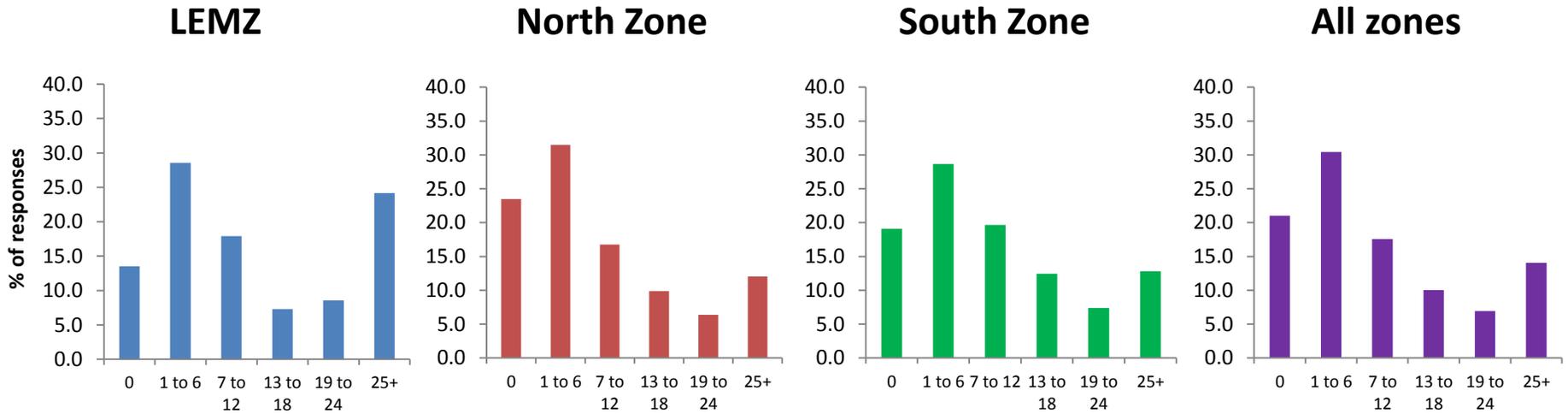
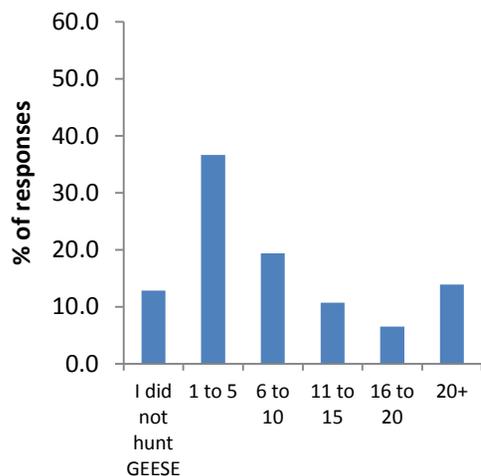


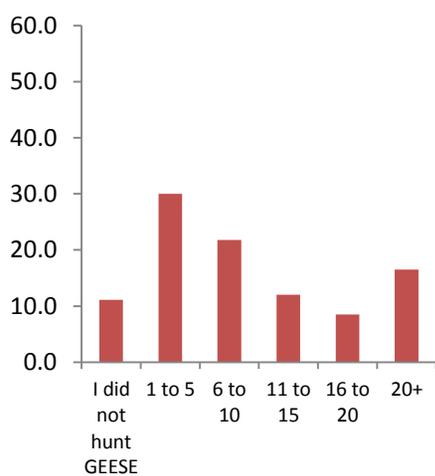
Table 17: Responses to "How many days did you hunt GEESE in Ohio in the 2013-14 season?" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Number of days goose hunted in 2013-14	Zone							
	LEMZ		North Zone		South Zone		All zones	
	n	%	n	%	n	%	n	%
I did not hunt GEESE	49	12.8	177	11.1	58	10.5	284	11.2
1 to 5	140	36.6	478	30.0	197	35.6	815	32.3
6 to 10	74	19.4	347	21.8	107	19.3	528	20.9
11 to 15	41	10.7	191	12.0	68	12.3	300	11.9
16 to 20	25	6.5	135	8.5	54	9.8	214	8.5
20+	53	13.9	263	16.5	69	12.5	385	15.2
Grand Total	382		1591		553		2526	

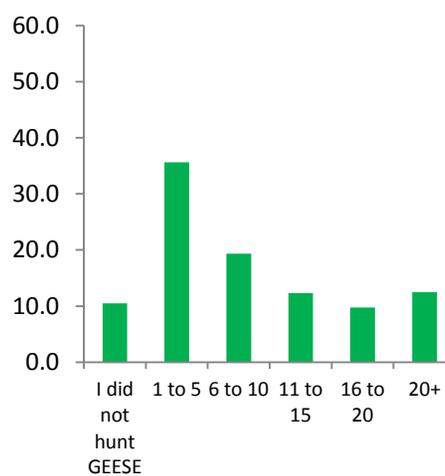
LEMZ



North Zone



South Zone



All zones

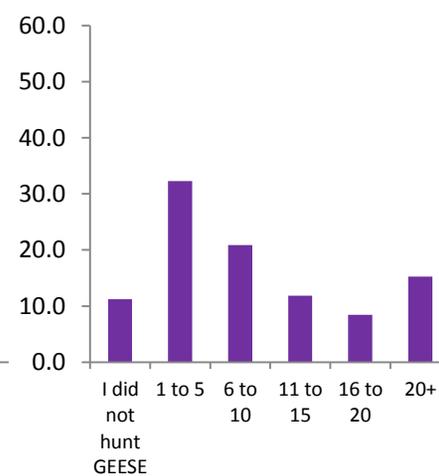
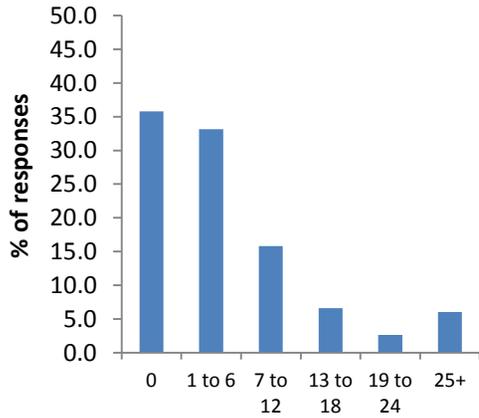


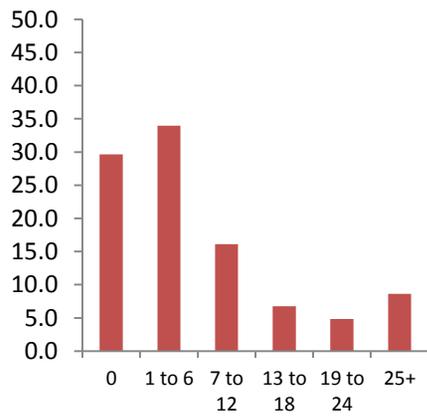
Table 18: Responses to "How many GEESE did you HARVEST in Ohio in the 2013-14 season?" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Geese harvested	Zone						All zones	
	LEMZ		North Zone		South Zone			
	n	%	n	%	n	%	n	%
0	136	35.8	473	29.7	174	31.3	783	30.9
1 to 6	126	33.2	542	34.0	223	40.1	891	35.2
7 to 12	60	15.8	257	16.1	87	15.6	404	16.0
13 to 18	25	6.6	108	6.8	30	5.4	163	6.4
19 to 24	10	2.6	77	4.8	12	2.2	99	3.9
25+	23	6.1	138	8.7	30	5.4	191	7.5
Grand Total	380		1595		556		2531	

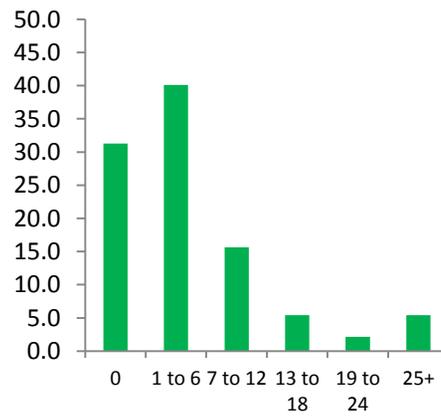
LEMZ



North Zone



South Zone



All zones

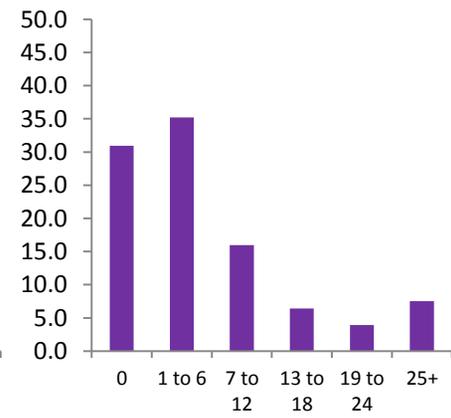
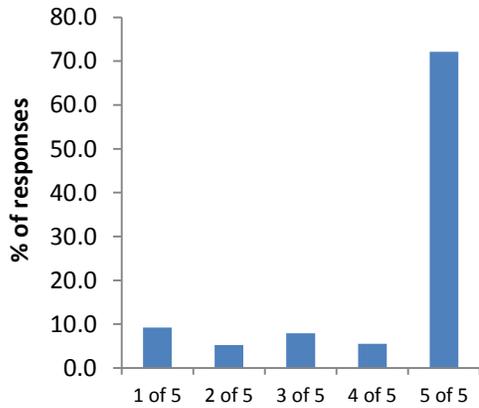


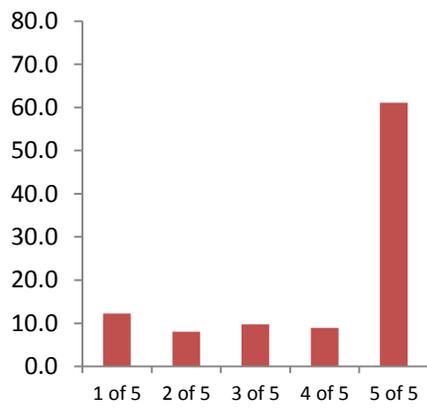
Table 19: Responses to "How many of the last 5 seasons have you hunted waterfowl in Ohio?" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Number of years respondent has waterfowl hunted out of last 5 years	Zone						All zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1 of 5	35	9.2	194	12.3	94	16.9	323	12.8
2 of 5	20	5.3	127	8.0	51	9.2	198	7.9
3 of 5	30	7.9	154	9.7	47	8.5	231	9.2
4 of 5	21	5.5	141	8.9	55	9.9	217	8.6
5 of 5	274	72.1	966	61.1	308	55.5	1548	61.5
Grand Total	380		1582		555		2517	

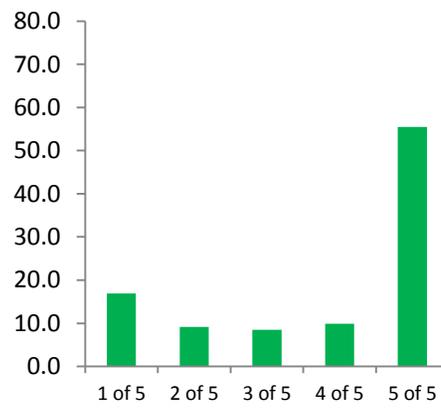
LEMZ



North Zone



South Zone



All zones

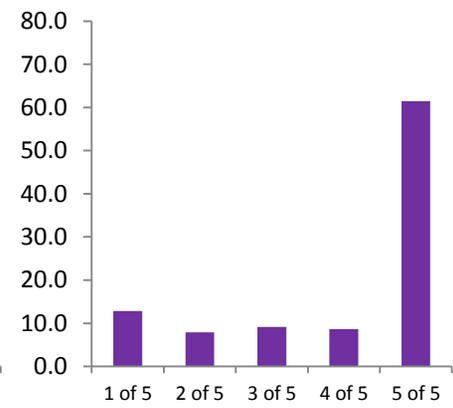
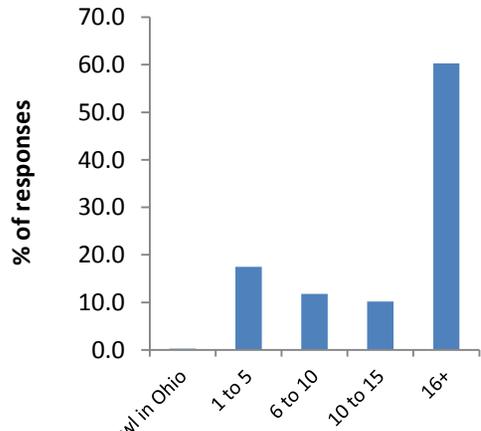


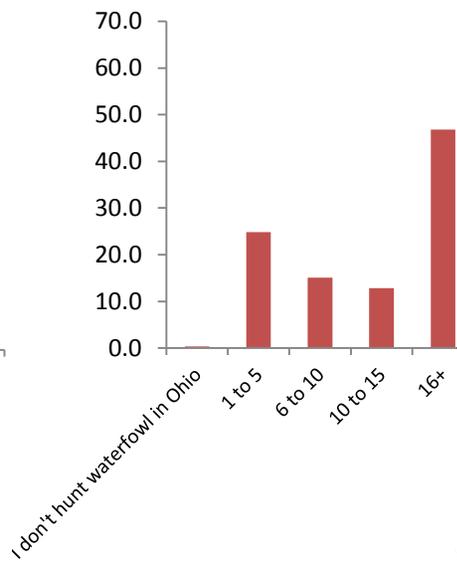
Table 20: Responses to "How many years have you hunted waterfowl in Ohio?" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Number of years respondent has waterfowl hunted in Ohio	Zone							
	LEMZ		North Zone		South Zone		All zones	
	n	%	n	%	n	%	n	%
I don't hunt waterfowl in Ohio	1	0.3	6	0.4	7	1.3	14	0.6
1 to 5	67	17.5	397	24.8	173	31.1	637	25.1
6 to 10	45	11.7	242	15.1	97	17.4	384	15.1
10 to 15	39	10.2	206	12.9	74	13.3	319	12.6
16+	231	60.3	748	46.8	206	37.0	1185	46.7
Grand Total	383		1599		557		2539	

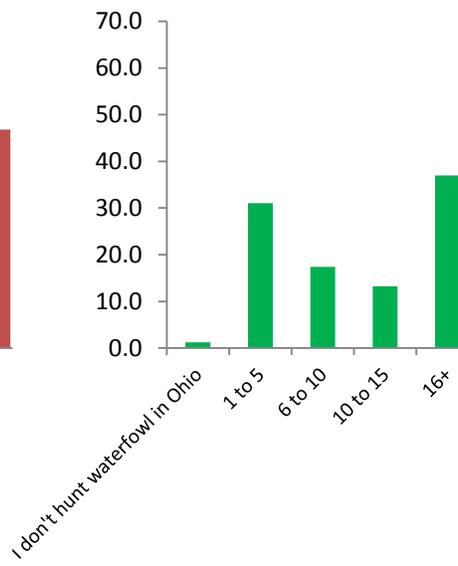
LEMZ



North Zone



South Zone



All zones

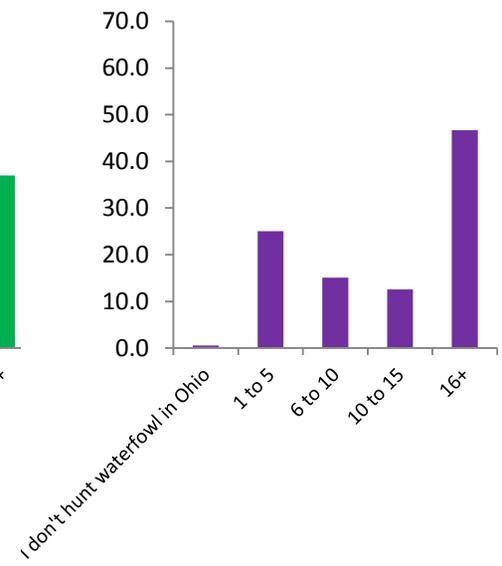


Table 21: Responses to "Waterfowl seasons should be set in the future using...(rank the three data sets below, 1 being the highest rank, and 3 the lowest)." The rankings presented here are for the response "migration data" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014. The remaining responses are summarized in Tables 23 and 24.

Rankings of response "waterfowl season should be set using migration data"	Zone						All zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1	162	42.9	628	39.7	255	47.0	1045	41.8
2	130	34.4	532	33.7	184	33.9	846	33.8
3	86	22.8	420	26.6	104	19.2	610	24.4
Grand Total	378		1580		543		2501	

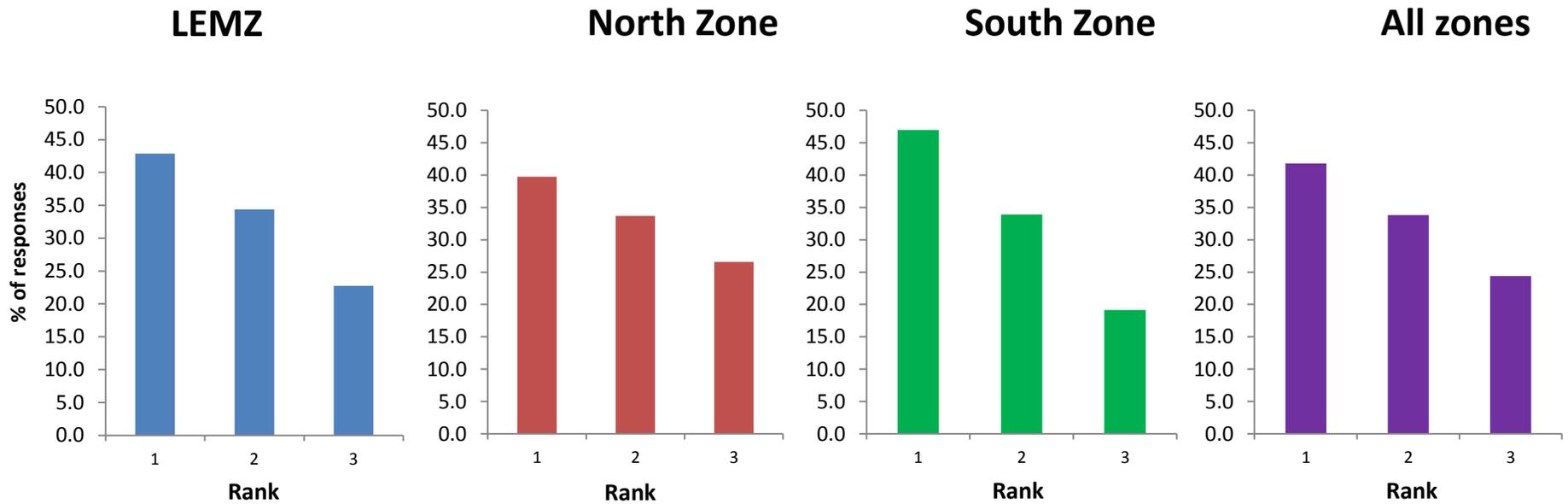


Table 22: Responses to "Waterfowl seasons should be set in the future using...(rank the three data sets below, 1 being the highest rank, and 3 the lowest)." The rankings presented here are for the response "weather data" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014. The remaining responses are summarized in Tables 23 and 24.

Rankings of response "waterfowl season should be set using weather data"	Zone						All zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1	112	29.6	418	26.5	146	26.9	676	27.0
2	138	36.5	567	35.9	212	39.0	917	36.7
3	128	33.9	595	37.7	185	34.1	908	36.3
Grand Total	378		1580		543		2501	

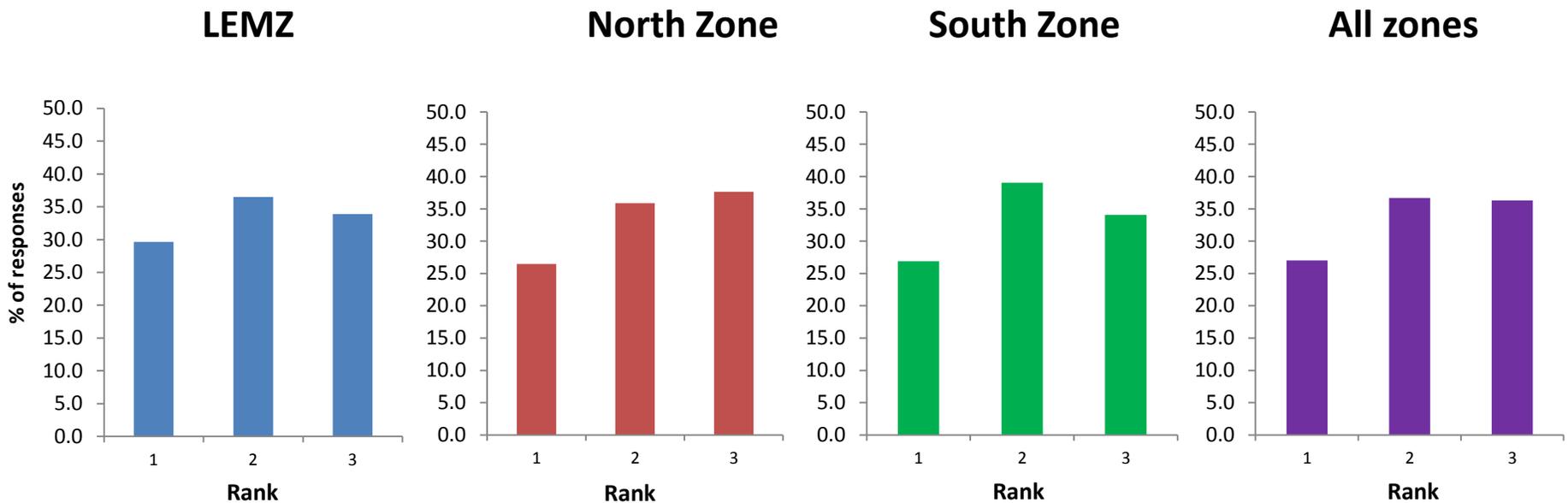


Table 23: Responses to "Waterfowl seasons should be set in the future using...(rank the three data sets below, 1 being the highest rank, and 3 the lowest)." The rankings presented here are for the response "hunter opinion data" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014. The remaining responses are summarized in Tables 23 and 24.

Rankings of response "waterfowl season should be set using hunter opinions"	Zone						All zones	
	LEMZ		North Zone		South Zone		n	%
	n	%	n	%	n	%		
1	104	27.5	535	33.8	142	26.2	781	31.2
2	110	29.1	482	30.5	147	27.1	739	29.5
3	164	43.4	564	35.7	254	46.8	982	39.2
Grand Total	378		1581		543		2502	

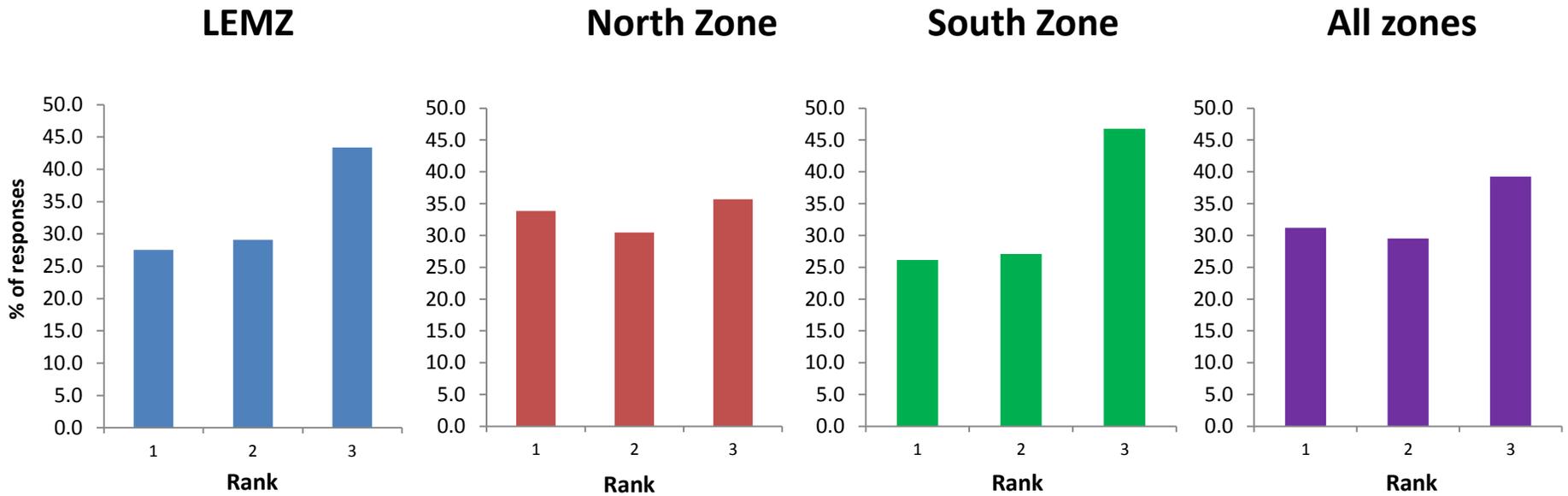


Table 24: Responses to "In terms of making waterfowl regulations easier to understand, stabilizing waterfowl seasons over multiple years would be...(e.g. stable season opener; stable split time; stable 2nd split opener for multiple seasons in a row)" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Stable seasons would be...	Zone							
	LEMZ		North Zone		South Zone		All zones	
	n	%	n	%	n	%	n	%
Very Helpful	101	26.3	363	22.7	118	21.3	582	23.0
Helpful	129	33.6	630	39.4	191	34.5	950	37.5
No opinion/Neutral	103	26.8	467	29.2	190	34.4	760	30.0
Unhelpful	43	11.2	104	6.5	44	8.0	191	7.5
Very Unhelpful	8	2.1	33	2.1	10	1.8	51	2.0
Grand Total	384		1597		553		2534	

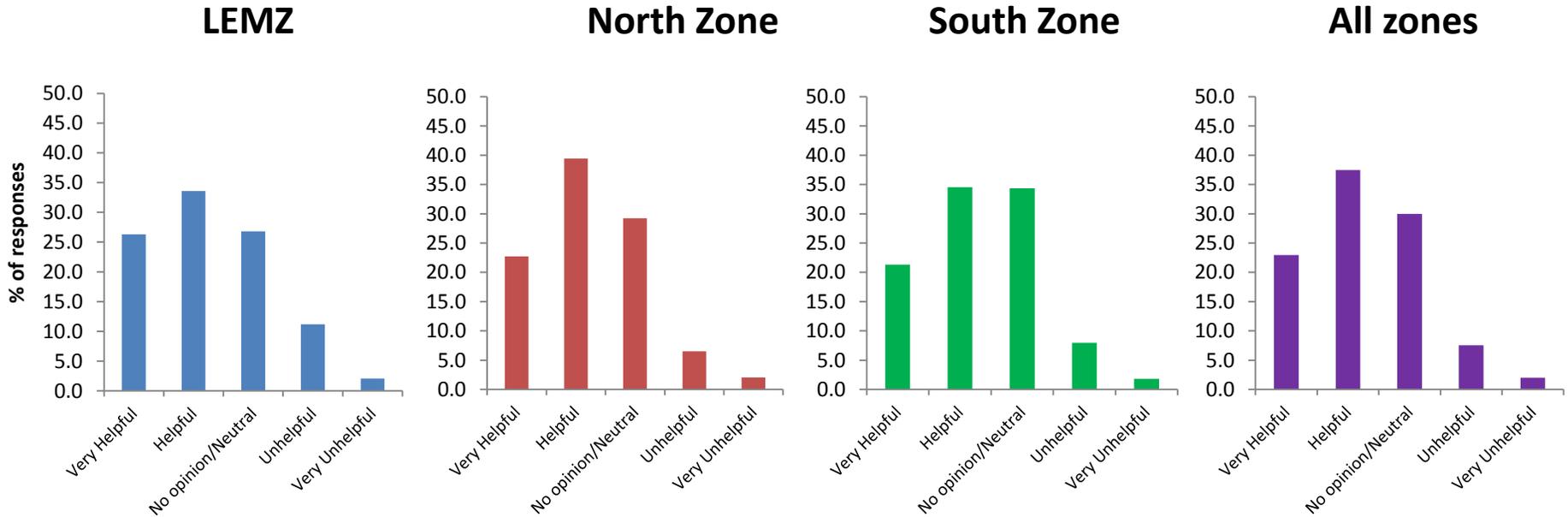


Table 25: Responses to "Ohio hunters primarily harvest mallards from the Great Lakes population. The best available science suggests this population is in a slight long term decline. For that reason the Ohio Division of Wildlife along with other states in the Great Lakes region have restricted hen mallard harvest to 1 per day, which is more conservative than the 2 per day currently allowed by the U.S. Fish and Wildlife Service. While restrictive hen mallard harvest is logical, evidence is inconclusive how a one hen mallard bag limit impacts harvest of Great Lakes population hen mallards compared to a bag limit of two. In your opinion what should the hen mallard bag limit be in Ohio?" organized by responses per duck hunting zone from the online Ohio Waterfowl Hunter Survey conducted January 20th - February 14th, 2014.

Hen mallard bag limit	Zone							
	LEMZ		North Zone		South Zone		All zones	
	n	%	n	%	n	%	n	%
0	27	7.1	122	7.8	43	7.9	192	7.8
1	207	54.8	994	63.8	359	66.2	1560	63.0
2	144	38.1	441	28.3	140	25.8	725	29.3
Grand Total	378		1557		542		2477	

