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MICHIGAN WATERFOWL HUNTER ACTIVITY AND OPINIONS ON REGULATIONS, MANAGEMENT, AND SATISFACTION, 1998-1999

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Abstract: Nearly 3,000 waterfowl hunters were contacted by mail after the 1998-99 waterfowl hunting season to determine hunter activity and opinions about waterfowl management in Michigan; 77% responded to the survey. An estimated 58,924 people hunted migratory waterbirds including ducks and geese (*Anatidae*), American coots (*Fulica americana*), moorhens and rails (*Rallidae*), and common snipe (*Capella gallinago*). Duck and goose hunting were the most common type of waterfowling and about equal in popularity. Most goose hunters preferred an earlier regular goose season with more days rather than a season starting later in the fall with fewer days. However, a 2-goose daily limit was also preferred even if this resulted in the need to shorten the season. Most duck hunters (76%) hunted in only one of Michigan's three geographic hunting zones, while 22% hunted in two zones, and 2% hunted in all three zones. About 60% of all duck hunting activity took place in the southern third of the state. October was the most active month for duck hunting, followed by November; relatively few hunters pursued ducks in December. Preferences for duck season starting dates were variable. Most duck hunters thought the daily limit should be between 4 and 6. Special regulations (i.e., weekend openers, season splits and zones, species restrictions) generally had little effect on duck hunter satisfaction.

The Michigan Department of Natural Resources (DNR) and U.S. Fish and Wildlife Service (USFWS) share responsibility for the management of migratory game birds in Michigan. The USFWS annually establishes maximum season length, the earliest and latest dates that waterfowl hunting can occur (framework dates), and the maximum daily harvest limits for each species of migratory birds. The DNR can only select hunting seasons and daily harvest limits within the guidelines established by the USFWS, thus State regulations may be more restrictive but not more liberal than Federal regulations.

Waterfowl population status and social (i.e., hunter attitude) considerations are used when developing waterfowl hunting regulations. The opinions of waterfowl hunters have traditionally been obtained at public meetings and during informal contacts with



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hunters, including phone calls and letters. However, opinions obtained through these processes may not reflect those held by most waterfowl hunters because these opinions often come from dissatisfied hunters or focus on local issues.

In 1981, a Michigan Citizen's Waterfowl Advisory Committee (CWAC) was established by the DNR to provide feedback on proposed waterfowl regulations. The CWAC consists of 19 waterfowl hunters; seven members representing hunting groups and 12 "members-at-large" from throughout the state. Since its inception, the CWAC has provided a source of organized feedback to waterfowl management professionals, plus it has served as a network for dispersing management information to other hunters. The CWAC has been a valuable management tool, but the opinions of CWAC members on regulation issues have not been compared to the general waterfowl-hunting public.

Complexity of waterfowl hunting regulations has generally increased over time, with more intricate rules often established to improve hunter satisfaction. However, wildlife professionals have rarely measured hunter opinions on regulation alternatives or how specific regulations have influenced satisfaction (Ringelman 1997). In this study we (1) quantify hunter activity and general satisfaction during the 1998-1999 waterfowl season, (2) determine waterfowl hunters' opinions on various waterfowl regulations and management issues, and (3) measure hunter satisfaction for regulations designed to increase duck hunter satisfaction.

METHODS

Ducks, geese, coots, moorhens (gallinules), rails, and snipe could be harvested during several periods (seasons) within the overall 1998-1999 Michigan waterfowl season (Table 1). In order to hunt migratory birds in Michigan, most hunters purchased a small game hunting license, a waterfowl hunting license, a federal waterfowl stamp, and registered with the USFWS Harvest Information Program (HIP). Landowners and their families could hunt migratory birds on their property without a hunting license, although they still had to purchase a federal waterfowl stamp and register with HIP.

A four-page, self-administered questionnaire (Appendix A) was developed by DNR staff with initial input from the CWAC to identify important management/regulation issues. This questionnaire was sent to 3,044 randomly selected people that had purchased a waterfowl hunting license in 1998.

Estimates were derived from survey data provided by hunters using a double sampling (two-phase) design (Cochran 1977) and were presented along with their 95% confidence limit. Confidence limits can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100, assuming estimates were not biased.

The double sampling design allowed estimates to be adjusted for non-response. Double sampling consisted of two phases of sampling. In the first phase, a simple random sample of license buyers was selected to receive a questionnaire by first-class

mail. Questionnaires were initially mailed in April 1999. A reminder note and up to two follow-up questionnaires were mailed to non-respondents. Anybody that failed to return a questionnaire after three mailings was sent another questionnaire by certified mail (phase 2 sample). This fourth follow-up mailing occurred during mid-September 1999.

Although 3,044 people were initially sent the questionnaire, 151 surveys were undeliverable (e.g., address change), resulting in an adjusted sample size of 2,893. A total of 1,839 people responded to the survey during the first three mailings, making up the phase 1 sample. The phase 2 sample consisted of 1,054 people, of which 36% returned their questionnaire. Therefore, questionnaires were returned by 2,223 people, yielding a 77% adjusted response rate. Some individuals did not answer all questions on the survey. When a respondent did not provide an answer, they were omitted from the analysis for that question.

RESULTS

In 1998, 69,704 people purchased a waterfowl hunting license in Michigan. About 85% of these people actually spent time hunting migratory waterbirds (Figure 1, Table 2). Most hunted ducks and geese; very few people hunted coots, moorhens, rails, and snipe. Most (99%) of the active hunters were men. Their mean age was 39 ± 1 years on 31 October 1998. Duck and goose hunters had been hunting waterfowl for an average of 15 ± 1 and 13 ± 1 years, respectively. Nearly one-third ($32 \pm 2\%$) of the licensees that hunted migratory birds hunted with a youth under 17 years old. Among those that hunted with a youth, $66 \pm 4\%$ indicated the youth was a family member. Although the 1998 youth waterfowl hunting day coincided with the beginning date of the regular goose hunting season, most hunters ($91 \pm 1\%$) reported that this did not create a problem.

About 42% of waterfowlers hunted primarily weekends and holidays, whereas 41% had no primary time when they hunted (Figure 2). A smaller proportion hunted mainly on weekdays (14%) or on vacation days (3%). About $13 \pm 2\%$ of migratory bird hunters kept a written log of their hunting activities and harvest, and $8 \pm 1\%$ were familiar with the Citizens Waterfowl Advisory Committee.

Goose Management and Hunting Issues

In 1998, $49,537 \pm 1,467$ people hunted geese in Michigan. The most popular (% hunters using county) early season goose hunting counties were Oakland (5%), Jackson (4%) and Kent (3%). Allegan (4%), Tuscola (4%), and Saginaw (3%) counties had the greatest hunter activity during the regular season, and Washtenaw (2%), Kent (2%), and Livingston (2%) were the most popular counties during the late goose season. About $40 \pm 3\%$ of goose hunters rated their goose hunting experiences in 1998 as either very good or good, and $31 \pm 3\%$ reported their experiences were neither good nor poor. In contrast, $28 \pm 3\%$ reported their experiences were either poor or very poor.

When asked how their 1998 goose hunting experiences compared to the previous three years, nearly one-half of the license buyers hunting during the early ($55 \pm 3\%$), regular ($54 \pm 3\%$), and late ($50 \pm 4\%$) goose hunting seasons were as satisfied with their hunting experiences. About one-third of the goose hunters were less satisfied during the early ($30 \pm 3\%$), regular ($37 \pm 3\%$), and late ($41 \pm 4\%$) hunting seasons and about 10% were more satisfied during the early ($15 \pm 2\%$), regular ($9 \pm 2\%$), and late ($10 \pm 3\%$) hunting seasons.

About $27 \pm 2\%$ of goose hunters harvested a goose with a leg band sometime during their lifetime of hunting. Most of the goose hunters that recovered a band indicated they normally report leg bands to either the USFWS ($53 \pm 4\%$) or DNR ($28 \pm 4\%$). About $19 \pm 4\%$ of goose hunters that harvested banded geese did not report the recovered bands. Goose hunters were asked how many geese with leg bands they harvested and reported during the last three years. When survey results were extrapolated over the total number of goose hunters, an estimated $20,458 \pm 3,216$ goose bands were recovered and $10,973 \pm 1,864$ reported (54% reporting rate) during the three-year period.

Resident and migrant goose harvest has been adjusted using season dates, season length, and daily harvest limits. When the migrant goose harvest must be reduced by adjusting the beginning date and length of the hunting season, most goose hunters (56%) preferred a longer season that begins earlier than a shorter season that starts later in the fall (30%) (Figure 3). However, 51% of goose hunters preferred a shorter season with a two-geese daily harvest limit to a longer season with a one-geese daily harvest limit (37%) (Figure 4).

Hunters were asked their opinion on the use of various techniques to control goose numbers in urban areas where human-geese conflict was a problem and hunting was not possible. In these situations, most (56%) goose hunters did not support replacing real eggs in goose nests with artificial eggs to control reproduction (Figure 5). Most (64%) goose hunters also did not support controlling goose populations using dietary supplements that would reduce reproduction. Most (62%) goose hunters supported killing adult geese and donating the meat to families in need as an option for reducing goose numbers.

Duck Management and Hunting Issues

In 1998, $50,883 \pm 1,439$ people hunted ducks in Michigan. Most ($62 \pm 3\%$) pursued ducks in the southern Lower Peninsula. About $39 \pm 3\%$ hunted in the northern Lower Peninsula and $17 \pm 2\%$ hunted in the Upper Peninsula. Most ($76 \pm 2\%$) hunted in only one geographical zone, while $22 \pm 2\%$ hunted in two zones, and $2 \pm 1\%$ hunted in all three zones. Of the people hunting in multiple (>1) zones, most ($80 \pm 4\%$) were southern Michigan residents that traveled to northern zones. This was expected as 75% of Michigan waterfowlers reside in the South Zone (Frawley 2001).

Duck hunters spent $308,199 \pm 21,539$ days hunting in the southern Lower Peninsula, $142,736 \pm 14,377$ days afield in the northern Lower Peninsula, and $55,827 \pm 8,480$ days afield in the Upper Peninsula. Statewide, duck hunters spent an average of 11 ± 1 days hunting ducks, and most (73%) hunted between 1-12 days (Figure 6). Counties with the most duck hunting activity (% hunters using county) in the southern Lower Peninsula were St. Clair (8%), Tuscola (7%), and Saginaw (5%). The counties of Iosco (2%), Roscommon (1%), and Manistee (1%) experienced use by the highest number of hunters in the northern Lower Peninsula, and Chippewa (2%), Marquette (2%), and Delta (2%) counties were most popular in Michigan's Upper Peninsula. Most duck hunters pursued ducks during October ($88 \pm 2\%$) and November ($61 \pm 3\%$) in 1998. Relatively few ($15 \pm 2\%$) waterfowlers hunted ducks in December.

Statewide, $59 \pm 3\%$ of duck hunters believed that the number of duck hunters had increased during recent years in the area they preferred to hunt. Regionally, $50 \pm 3\%$ of the hunters in the Upper Peninsula, $64 \pm 4\%$ of the hunters in the northern Lower Peninsula, and $61 \pm 3\%$ of the hunters in the southern Lower Peninsula thought that duck hunter numbers had increased. Statewide, $46 \pm 3\%$ of duck hunters indicated hunter crowding was a problem in their preferred duck-hunting area. Regionally, fewer hunters in the Upper Peninsula ($37 \pm 6\%$) indicated that crowding was a problem, compared to hunters in either the northern Lower Peninsula ($49 \pm 4\%$) or southern Lower Peninsula ($50 \pm 3\%$).

Among duck hunters that hunted in 1998, about $48 \pm 3\%$ rated their duck hunting experiences as either very good or good and $31 \pm 3\%$ reported their experiences were neither good nor poor. In contrast, $22 \pm 2\%$ reported that their hunting experiences were either poor or very poor. When asked to compare their 1998 hunting experiences to recent years, $53 \pm 3\%$ of the duck hunters were as satisfied in 1998 as they had been during the three previous years. About $31 \pm 3\%$ of duck hunters were less satisfied with their 1998 duck hunting season and $16 \pm 2\%$ were more satisfied.

When asked about future season dates, 45% of duck hunters statewide would prefer the hunting season to begin on a Saturday (Figure 7). About 33% preferred the season begin on the same date each year, regardless of the day of the week. Among waterfowlers that hunted ducks in southern Michigan, more indicated they would prefer to hunt during the first week in October ($58 \pm 3\%$) than the first week in December ($42 \pm 3\%$). If the southern Michigan duck season opened on the same date each year, hunters did not have a clear preference for a specific opening date among the choices provided: September 25, October 1, 5, 10, and 15 (Figure 8). The choice selected by the largest number (27%) of duck hunters was the category "any of these dates."

Duck hunters were presented with six regulatory options for reducing the number of ducks harvested and were asked to rank each option on a scale from 1 to 6 where 1 = most preferred and 6 = least preferred. The most preferred option (i.e., lowest ranking) was "adjusting the season to target abundant species" (\bar{x} ranking = 2.43 ± 0.11). Ranking for the remaining options were "allow biologists to select the best option

to protect species of concern" ($\bar{x} = 2.85 \pm 0.12$), "adopt only those restrictions required by the USFWS" ($\bar{x} = 3.48 \pm 0.14$), "eliminate multiple opening days" ($\bar{x} = 3.65 \pm 0.12$), "reduce daily harvest limit" ($\bar{x} = 4.12 \pm 0.12$), and "reduce season length" ($\bar{x} = 4.36 \pm 0.10$).

Duck hunters were asked to indicate their preference for a daily harvest limit. Options included daily limits of 1 to 6 ducks or more than 6 / day. None of the options were supported by a majority of hunters. However, the most commonly selected choices for a daily limit ranged from 4-6 ducks (Figure 9). These three options (4, 5, or 6 ducks / day) were selected by $74 \pm 2\%$ of duck hunters.

Hunter satisfaction was measured for regulation options designed to increase duck hunter satisfaction. When asked whether opening the duck season on a weekend affects their decision to hunt ducks, $31 \pm 3\%$ of waterfowlers replied yes while $69 \pm 3\%$ indicated no. Only 28% of duck hunters had increased satisfaction with the weekend opener (Figure 10). Twenty percent actually had decreased satisfaction and 52% replied the weekend opener had no effect on their hunting satisfaction.

In 1977, Michigan was divided into three geographic hunting zones to provide more satisfactory hunting opportunity (Martz 1980). Hunting seasons could open earlier in the north part of the state and later in the south, assuring seasons would encompass peak abundance during duck migration. One "split" (closed period within season allowing later closing date) was also allowed in each zone, again to better coincide season dates with peaks in duck migration. Based on our survey results, most duck hunters did not believe hunting zones ($70 \pm 3\%$) and season splits ($55 \pm 3\%$) made regulations difficult to understand. However, hunter satisfaction was not increased by these special regulations. Only 10% of duck hunters had increased satisfaction associated with hunting zones (Figure 10). About 73% of duck hunters indicated no effect on satisfaction due to zones, and 17% indicated that implementation of hunting zones decreased their satisfaction. Similarly, only 6% of duck hunters had increased satisfaction with implementation of split seasons. About 57% indicated no effect on satisfaction, and 37% of duck hunters indicated season splits actually decreased their hunting satisfaction (Figure 10).

Nearly all duck hunters ($90 \pm 2\%$) indicated daily-limit restrictions on certain species and sexes of ducks would not affect their decision to hunt ducks. In addition, 75% of duck hunters indicated these restrictions had no effect on their hunting satisfaction (Figure 11). About 55% of duck hunters indicated changing regulations from year to year did not effect there hunting satisfaction, whereas 41% of hunters indicated decreased satisfaction due to annual changes in regulations. Most duck hunters (62%) indicated simpler hunting regulations would increase their hunting satisfaction (Figure 11).

DISCUSSION AND MANAGEMENT IMPLICATIONS

This was the first extensive survey of Michigan waterfowl hunter opinions on

regulations, including a measurement of goose and duck hunter satisfaction. The adjusted survey response rate of 77% suggests a high level of hunter interest in Michigan waterfowl management. Moreover, Michigan waterfowlers had a relatively high level of satisfaction during the 1998-99 hunting season. About 40% of goose hunters and 48% of duck hunters rated their waterfowl hunting experience as either "good" or "very good," whereas 30% of duck and goose hunters gave their hunting experiences a rating of "neither good nor poor." Only 28% of goose hunters and 22% of duck hunters rated their 1998-99 waterfowl hunting "poor" or "very poor."

The survey provided information about waterfowl hunter characteristics, distribution, and movement across hunting zones. We also obtained insight for hunter preferences for specific waterfowl management issues ranging from solving goose-human conflict in urban areas to alternatives for the southern Michigan duck season opening day. Information provided by hunters on season length, daily harvest limits, and special regulations was an especially valuable part of this study. Results helped clarify the level of hunter acceptance for Michigan waterfowl regulations and the effectiveness of special regulations designed to increase hunter satisfaction.

Responses to survey questions about alternatives to reduce the duck harvest suggest opinions of Michigan duck hunters reflect those of hunters in other areas of the country. Keeping hunting season lengths and daily harvest limits above some threshold level is important for maintaining hunter satisfaction and participation (Ringleman 1997, Humburg et al. 1998a). The number of people hunting ducks, as well as the frequency of hunting, has been predicted to drop sharply if the daily harvest limit is reduced below 3 birds, or if the season is shorter than 5 weeks (Ringleman 1997). Above these levels, most duck hunters planned to hunt the same number or more days than they had during the previous year.

Daily harvest limits and season length probably also affect participation among goose hunters. Goose hunters in Illinois preferred a shorter season (50 days) to a longer season (70 days) if they could harvest two geese per day rather than one goose (Anderson et al. 1998). Most Michigan goose hunters also supported shortening the regular goose-hunting season (from 30 days to 20 days) in exchange for increasing the daily harvest limit from one bird to two birds. Trading days of regular season length for an expanded daily harvest limit may be desirable for Michigan hunters because of the availability of special early and late goose hunting seasons. Although Michigan's regular season length was shortened significantly during the 1990s, there was no indication that goose-hunting opportunity fell below a threshold level that influenced participation.

Most Michigan duck hunters indicated their hunting enjoyment was not affected by which day of the week hunting seasons began or by a reduction in daily harvest limits for some species. Hunting zones and use of season splits also had little influence on hunter enjoyment. In fact, these special regulations designed to increase hunter satisfaction actually had no effect or reduced satisfaction for a majority of Michigan waterfowl hunters. This has been observed among other waterfowl hunters in the

United States (Enck et al. 1993, Ringelman 1997, Humburg et al. 1998b), and among many former hunters who indicated that confusing regulations partly caused them to quit hunting waterfowl (Enck et al. 1993).

Regulations debated most by Michigan waterfowl hunters during the 1990s have included the earlier (mid-September start date) regular goose season, use of a 2-goose daily limit, and opening the duck season in early October in southern Michigan. Based on survey responses, a majority of Michigan waterfowl hunters support these regulations. Furthermore, feedback from Michigan waterfowl hunters (via this survey) argues against expanding "special regulations," particularly duck season splits. Results also suggest a weekday (vs. weekend) season opener may be an acceptable solution to opening day hunter crowding. Likewise, a smaller daily duck limit (3-5 vs. 6) may be an acceptable means to reduce duck harvest if necessary.

Goals of the DNR Wildlife Division include maintaining viable populations of wildlife and providing a variety of opportunities for hunting and other types of wildlife-related recreation and appreciation. Hunters actually desire waterfowl populations above "viable" levels, as duck and goose abundance also influence satisfaction. Hunting regulations are the primary tool available for managers to adjust mortality and future recruitment of these birds. Thus, hunting regulations may influence hunter satisfaction short-term (i.e., opportunity/complexity) and long-term (i.e., population trends). Although many factors (e.g., breeding habitat, weather, and harvest regulations) can effect migratory bird abundance and hunter success and satisfaction during a particular year, wildlife professionals have the greatest influence over regulations. Therefore, regulations should assure hunting opportunity that results in high hunter satisfaction, while protecting the waterfowl populations being hunted.

Waterfowl hunter opinions on regulations and management issues likely reflect personal values and tradition. The influence of tradition upon the regulation setting process has not been investigated. Using periodic waterfowl hunter opinion surveys, coupled with input from groups like the CWAC, waterfowl managers can better understand social issues important to the waterfowl-regulations setting process. In addition, wildlife professionals need to explicitly state the purpose of new regulations and use scientific techniques to determine if the regulations were effective. Developing waterfowl regulations will continue to be challenging. This task requires balancing desires of the hunter majority with the requests of our most ardent waterfowlers, and all within the biological and ecological constraints of the waterfowl resources we hope will provide sustained recreational opportunity.

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LITERATURE CITED

- Anderson, W. L., R. M. Marshalla, R. M. Whitton, and D. J. Holm. 1998. Illinois waterfowl harvest, hunter activity, and attitudes toward youth waterfowl hunting day, quality hunting, and duck/goose regulations, plus sex/age of hunters, 1966-97 season. Periodic Report No. 95, Illinois Department of Natural Resources, Division of Wildlife Resources.
- Cochran, W. G. 1977. Sampling techniques. John Wiley & Sons, New York. 428pp.
- Enck, J. W., B. L. Swift, and D. J. Decker. 1993. Reasons for decline in duck hunting: insights from New York. *Wildlife Society Bulletin* 21:10-21.
- Frawley, B. J. 2001. Demographics, recruitment, and retention of Michigan hunters. Michigan Department of Natural Resources, Wildlife Division, Lansing. Report 3332.
- Humburg D. D., S. L. Sheriff, and D. A. Graber. 1998a. Missouri waterfowl hunter information survey, 1995-1996. Missouri Department of Conservation, Federal Aid in Wildlife Restoration, Final Report, Project. W-13-R, Study 34.
- Humburg D. D., G. S. Olson, and S. L. Sheriff. 1998b. Attitudes and preferences of Missouri waterfowl hunters. Pages 393-399 *in* D. H. Rusch, M. D. Samuel, D. D. Humburg, and B. D. Sullivan, eds. *Biology and management of Canada geese*. Proceedings of the International Canada Goose Symposium, Milwaukee, Wisconsin.
- Martz, G. F. 1980. Final report, zoned waterfowl hunting experiment: Michigan 1977-79 waterfowl seasons. Michigan Department of Natural Resources, Wildlife Division, Lansing. Report 2872.
- Ringelman, J. K. 1997. Effects of regulations and duck abundance on duck hunter participation and satisfaction. *Transactions of North American Wildlife and Natural Resources Conference* 62:361-376.

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Table 1. Waterfowl hunting seasons in Michigan during 1998-99.

Species, season, and area (zones)	Season dates (days)	Daily harvest limit
Ducks, geese, coots, and moorhens		
Youth waterfowl hunting season		Same as regular seasons
Statewide	Sept. 19 (1)	
Ducks, coots, moorhens, and geese (except Canada geese)		
Regular hunting seasons		6 ducks
Upper and Northern Lower Peninsula	Oct. 3 – Dec. 1 (60)	15 coots and moorhens
Southern Lower Peninsula	Oct. 10 – Dec. 8 (60)	10 geese
Canada geese		
Early seasons		
Upper Peninsula	Sept. 1 – 10 (10)	5
Lower Peninsula	Sept. 1 – 15 (15)	5
Regular season		
Statewide ^a	Sept. 19 – Oct. 4 (16)	2
Late season		
Southern Lower Peninsula	Jan. 9 – Feb 7, 1999 (30)	5
Rails and snipe		
Statewide	Sept. 15 – Nov. 14 (61)	25 rails 8 snipe

^aFour relatively small Goose Management Units had 20-50-day seasons that differed from the remainder of the state.

Table 2. Proportion of license buyers and number of people hunting migratory waterbirds in Michigan, 1998-99.

Species hunted	License buyers that hunted (%)	95% CL ^b	Number of hunters	95% CL ^b
Any migratory bird ^a	84.5	1.7	58,924	1,197
Ducks	73.0	2.1	50,883	1,439
Geese	71.1	2.1	49,537	1,467
Coots and moorhens	3.8	0.9	2,678	612
Rails	0.6	0.4	447	244
Common snipe	1.6	0.5	1,113	372
Ducks, but not geese	13.4	1.6	9,338	1,094
Geese, but not ducks	11.5	1.5	7,992	1,023

^aIncludes ducks, coots, moorhens, rails, common snipe, and geese.

^b95% confidence limit for the 1998 estimate.

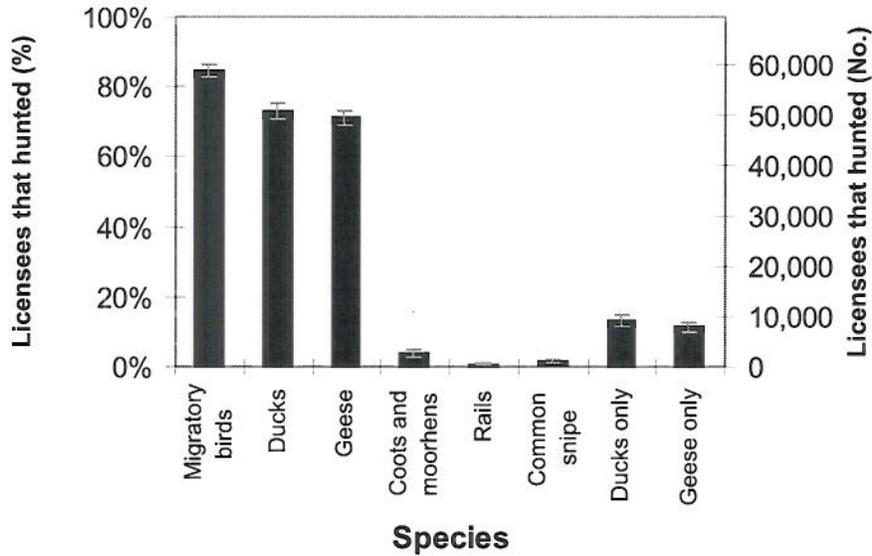


Figure 1. Proportion of license buyers and number of people hunting migratory waterbirds in Michigan during 1998. Error bars represent the 95% confidence limits. Waterfowl hunting licenses were purchased by 69,704 people.

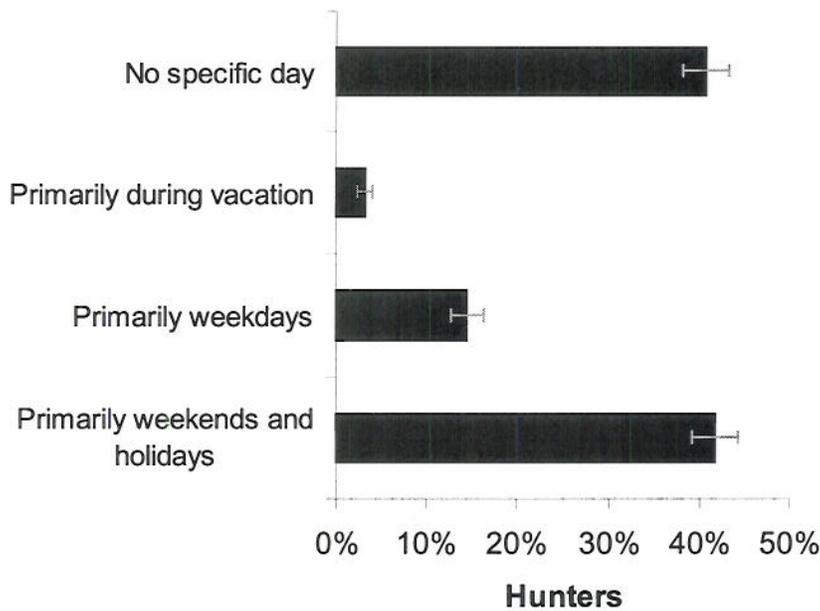


Figure 2. The primary time when hunters hunted migratory waterbirds in Michigan during 1998. Error bars represent the 95% confidence limits.

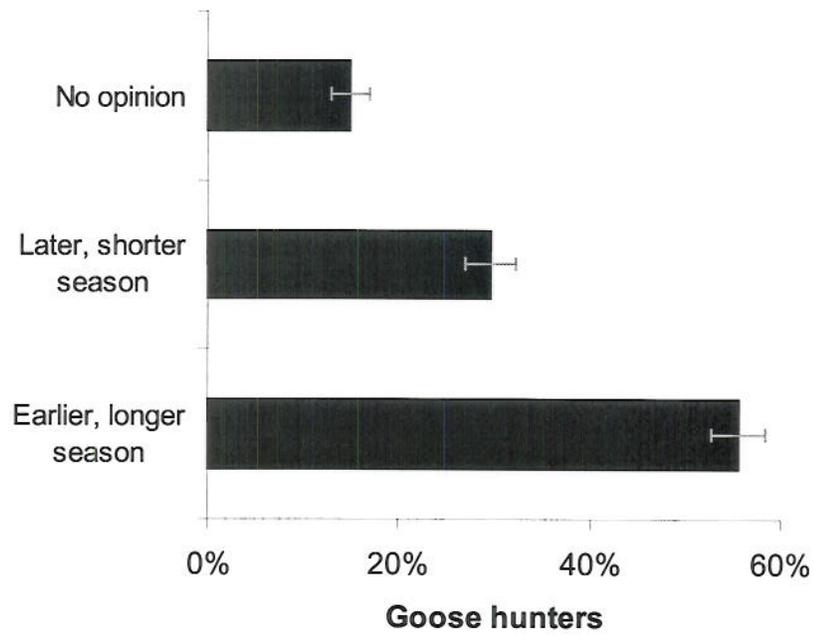


Figure 3. Goose hunters' preference for the length and timing of the goose hunting season in Michigan. Error bars represent the 95% confidence limits.

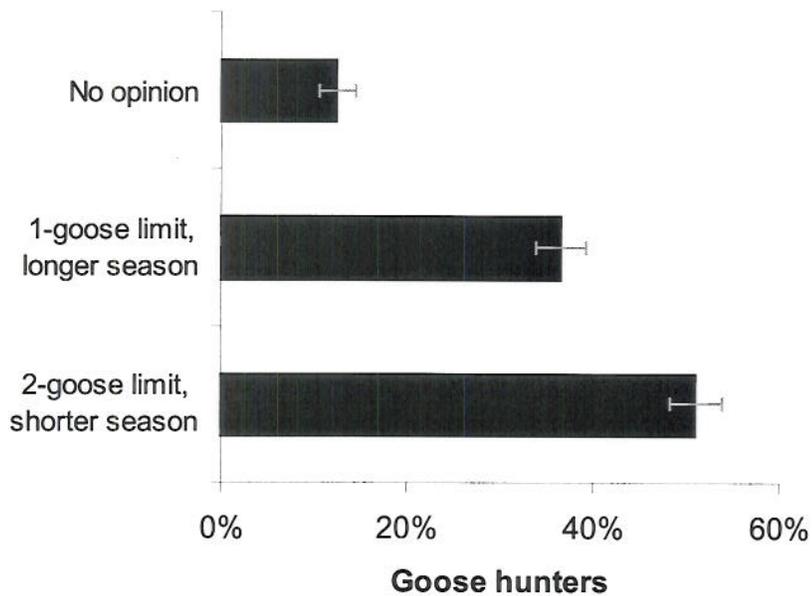


Figure 4. Goose hunters' preference for the hunting season length and daily harvest limit in Michigan. Error bars represent the 95% confidence limits.

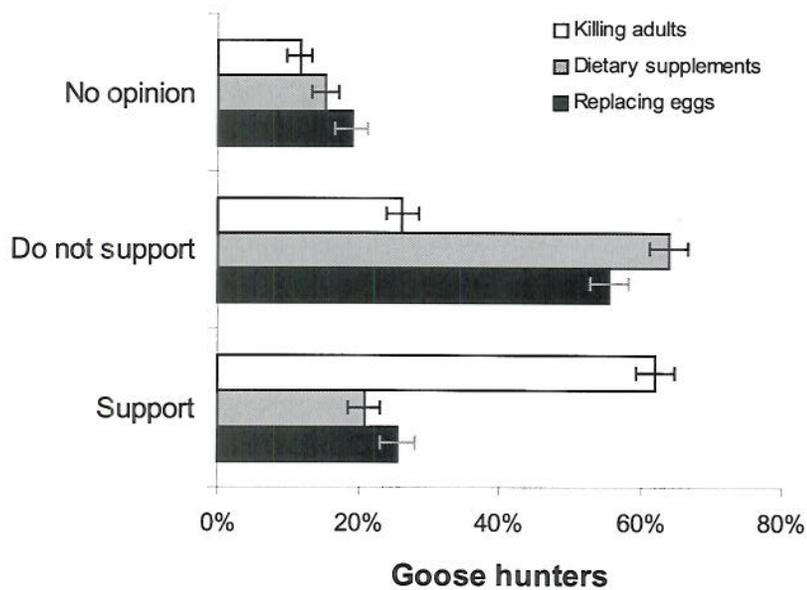


Figure 5. Proportion of hunters supporting alternative methods of controlling Canada goose populations in urban areas. Methods included killing adult birds, feeding dietary supplements to reduce reproduction, and replacing viable eggs with artificial eggs. Error bars represent the 95% confidence limits.

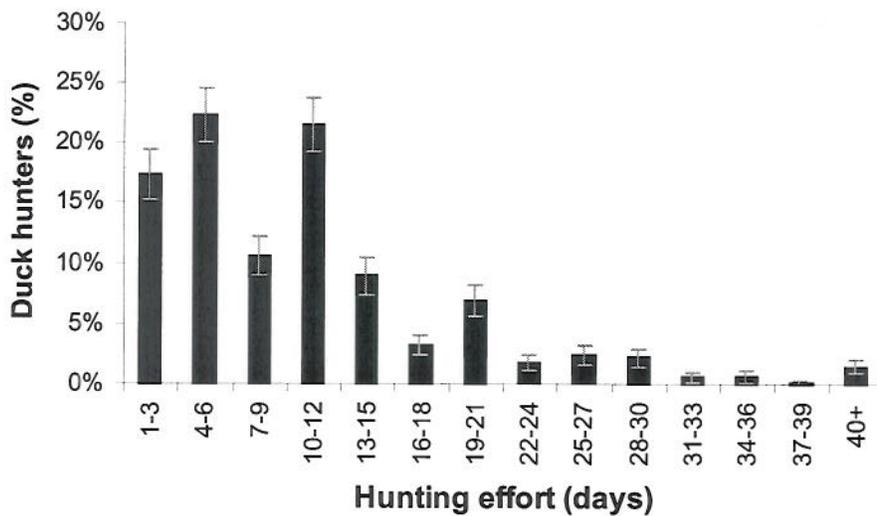


Figure 6. The number of days that duck hunters spent hunting ducks in Michigan during 1998. Error bars represent the 95% confidence limits.

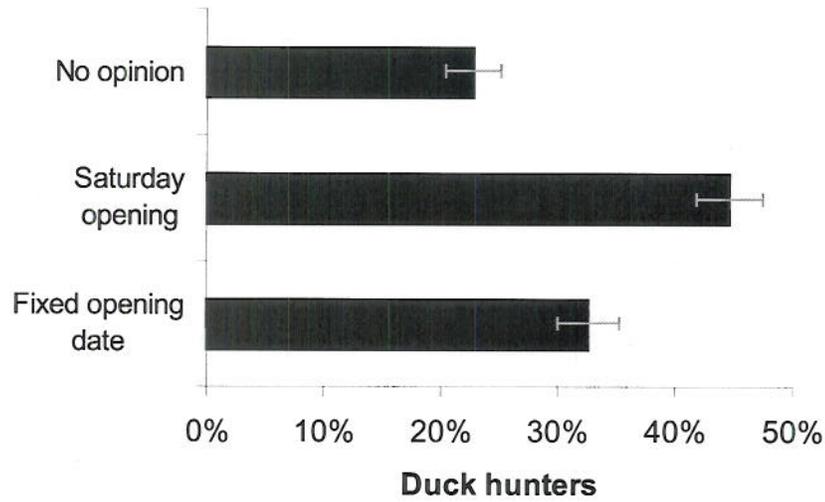


Figure 7. Duck hunters' preference for the opening of the waterfowl hunting season in Michigan. Error bars represent the 95% confidence limits.

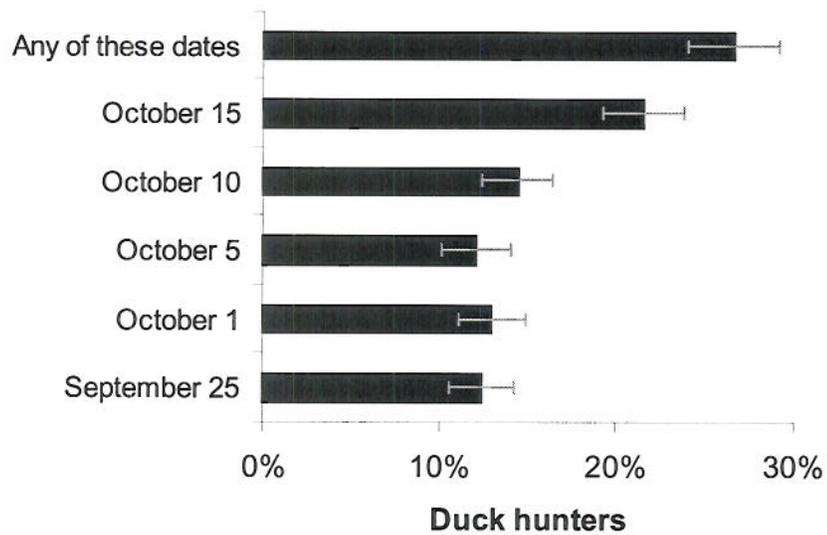


Figure 8. Duck hunters' preference for the opening of the waterfowl hunting season in the southern Lower Peninsula of Michigan (south zone). Error bars represent the 95% confidence limits.

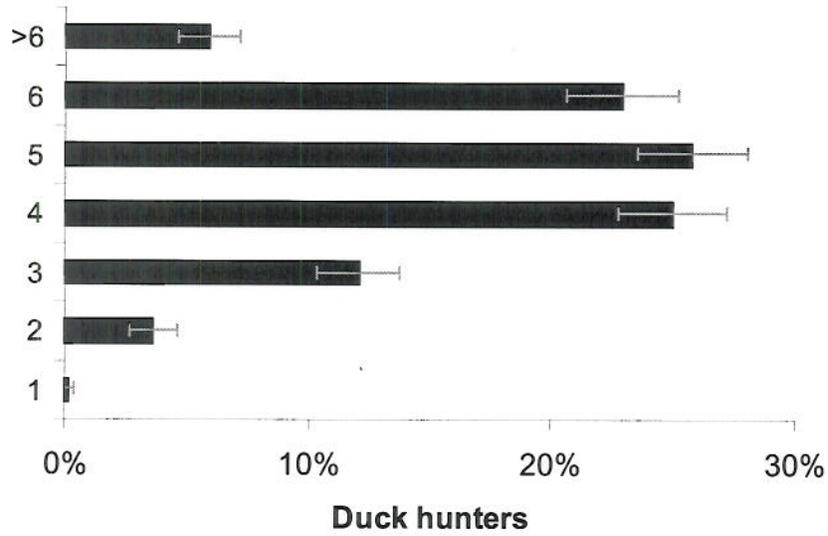


Figure 9. Duck hunters' preference for the daily limit of ducks in Michigan. Error bars represent the 95% confidence limits.

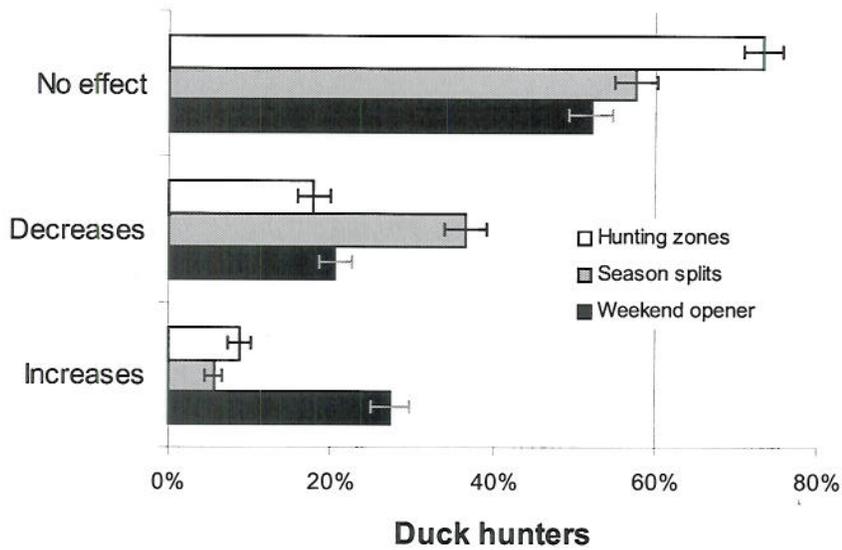


Figure 10. Impact of hunting season options on the satisfaction of duck hunters. Options included hunting zones within the state, hunting season splits, and opening duck season on a weekend. Error bars represent the 95% confidence limits.

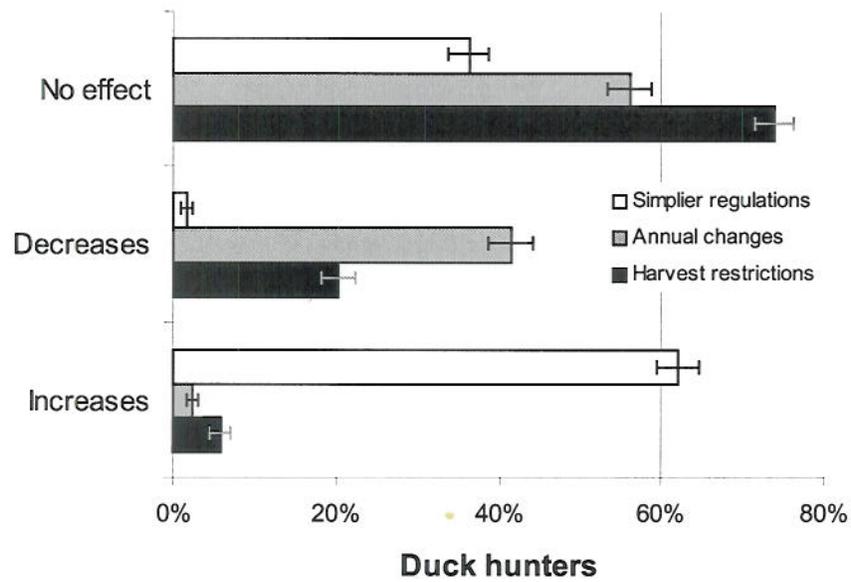


Figure 11. Impact of hunting season regulation options on the satisfaction of duck hunters. Options included simplifying regulations, annual regulation changes, and harvest restrictions on some species. Error bars represent the 95% confidence limits.

Appendix A. Questionnaire used for the waterfowl hunter opinion survey (not all questions applied to this study and some of the results were not presented in the paper.)



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1998-99 MICHIGAN WATERFOWL HUNTER OPINION SURVEY

This information is requested under authority of Part 435, 1994 PA 451, M.C.L. 324.43539.



A. The first section of this questionnaire will help us learn more about you and your waterfowl hunting experience. Please check mark or "x" the appropriate answer box for each question unless the question requires a written answer.

1. Please check each of the migratory bird groups you hunted in Michigan during the 1998-99 hunting season:

- Ducks
- Geese
- Coots and Gallinules (also called moorhens)
- Rails (Virginia and sora)
- Common snipe (also called jacksnipe)
- I did not hunt migratory birds in Michigan during 1998-99 *(If you did not hunt in 1998-99, go to question 35)*

2. How many years have you hunted the following waterfowl: **Ducks** _____ YEARS? **Geese** _____ YEARS?

3 a. During the 1998-99 waterfowl season did you hunt with a youth under 17 years old? Yes No

b. If yes, was the youth hunter a family member? Yes No

4. In 1998 the statewide youth hunt was held the same day as the regular goose season opening day (Sept. 19). Did this create a problem for people you hunt with? Yes No

5. When do you hunt waterfowl? *(please check only one)*

- Primarily on weekends and holidays
- Primarily on weekdays
- Primarily during a vacation
- No specific preference for any of the above

6. Did you hunt at any of the state-managed areas requiring a daily or seasonal use permit (these areas include Fish Point, Nayanquing Point, Shiawassee River, Harsens Island, Fennville, and Pte. Mouillee)? Yes No *(go to question 8)*

7. How many days did you hunt waterfowl at each of the state-managed areas listed below during 1998?
(write in number of days hunted at each daily permit area or leave spaces blank if you did not hunt these areas)

- Fish Point?** _____ DAYS
- Nayanquing Point?** _____ DAYS
- Shiawassee River?** _____ DAYS
- Harsens Island?** _____ DAYS
- Fennville?** _____ DAYS
- Pte. Mouillee?** _____ DAYS

8. Do you keep written records of your waterfowl hunts and kill? Yes No
9. Are you familiar with the Citizens Waterfowl Advisory Committee (CWAC)? Yes No

B. The following questions relate to **GOOSE HUNTING** season dates, locations, and bag limits. There are also questions related to managing resident giant Canada geese in Michigan.

10. If you hunted geese in Michigan during one of the 1998-99 goose seasons, please write in the name(s) of the counties you hunted most often each season: *(list up to two counties, leave blank if you did not hunt geese)*

First County	Second County

Early season (Sept. 1-10 in Upper Michigan, Sept. 1-15 in Lower Michigan)
Regular season (Sept. 19-Oct. 4, also late Oct.-Nov. in Goose Management Units)
Late season (Jan. 9-Feb. 7, 1999)

11. During the 1998-99 goose hunting seasons, do you think Canada goose abundance in Michigan was higher, lower, or about the same as compared to the previous 3 years?

- a) Early season: Higher The same Lower I did not hunt the early goose season
- b) Regular season: Higher The same Lower I did not hunt the regular goose season
- c) Late season: Higher The same Lower I did not hunt the late goose season

12. During 1998-99, was your level of satisfaction with Michigan goose hunting higher, lower, or about the same as compared to the previous 3 years?

- a) Early season: Higher The same Lower I did not hunt the early goose season
- b) Regular season: Higher The same Lower I did not hunt the regular goose season
- c) Late season: Higher The same Lower I did not hunt the late goose season

In recent years, the Canada goose population residing in Michigan (local geese) has continued to grow whereas migrant Canada geese arriving in the fall from northern Canada have declined in population size. Goose harvest can be targeted at local geese or the migrant Canada geese by adjusting hunting season dates.

13. During years when migrant goose harvest must be reduced, would you prefer a shorter season that starts later (for example, 10 days in October or November) or a longer goose season that starts earlier (for example, 20 days starting in late September)?

- Earlier, longer season Later, shorter season No opinion

14. Would you prefer a shorter regular goose season with a 2-geese daily bag limit, or a longer season with a 1-geese daily limit (for example, a 20-day season with a bag limit of 2 or a 30-day season with a limit of 1)?

- 2-geese limit, shorter season 1-geese limit, longer season No opinion

15. In urban areas where hunting can not control resident Canada goose populations, would you support replacing viable eggs in goose nests with artificial eggs to prevent reproduction? Yes No No opinion

16. In urban areas where hunting can not be used to control resident Canada goose populations, would you support the use of a dietary supplement fed to geese that would reduce the number of eggs that hatch (for example, broods might have 2 goslings instead of 5)?

- Yes No No opinion

17. In urban areas where hunting can not be used to help control resident Canada goose populations, would you support killing adult geese and donating the meat to families in need?

- Yes No No opinion

18. Have you ever shot a goose with an aluminum U.S. Fish and Wildlife Service band on its leg?

- Yes(*go to next question*) No(*go to question 21*)

19. Some hunters officially report banded geese by writing or telephoning-in the number appearing on the leg band to the U.S. Fish and Wildlife Service (Washington DC) or to the Michigan DNR. To whom would you normally report a goose leg-band number (check one) ?

- I normally do not report goose band numbers
- I normally report band numbers to the U.S. Fish and Wildlife Service (Washington DC)
- I normally report goose band numbers to the Michigan DNR or other state agency

20. a. In the past 3 years, how many geese with leg-bands have you harvested? _____ GEESE WITH LEG-BANDS
 b. How many of those band numbers did you officially report to the U.S. Fish and Wildlife Service, Michigan DNR or other state agency? _____ LEG-BANDS REPORTED

21. Overall, how would you rate your 1998-99 Michigan goose hunting experience? *(please check only one)*

- Very good
- Good
- Neither good nor poor
- Poor
- Very poor

C. The following questions relate to **DUCK HUNTING** season dates, locations, and bag limits in Michigan.

22. How many days did you hunt ducks in each of the Michigan hunting zones during the 1998-99 waterfowl season?

- a. **North zone (Upper Peninsula)** _____ DAYS
- b. **Middle zone (northern Lower Peninsula)** _____ DAYS
- c. **South zone (southern Lower Peninsula)** _____ DAYS

23. If you hunted ducks in Michigan during the 1998-99 waterfowl season, please write in the name(s) of the 2 counties you hunted most often *(if you did not hunt ducks, leave blank, and go to question 35)*:

First County: _____ **Second County:** _____

24. Which months did you hunt ducks in Michigan during 1998? *(please check each month you hunted)*

- October
- November
- December

25. In the South Zone (southern Lower Michigan), would you prefer to hunt ducks during the first week of October or the first week of December? *(please check only one)* October December

26. During the last 5 years, has the number of duck hunters increased in the area you prefer to hunt? Yes No

27. Is duck hunter crowding a problem in the area you prefer to hunt? Yes No

28. Do you think the DNR should consider a fixed opening date for ducks each year, rather than a Saturday opener?

- Yes
- No
- No opinion

29. If the duck season began on a fixed date, which date would you prefer for Michigan's southern hunting zone? *(please check only one)*

- Sept. 25
- Oct. 1
- Oct. 5
- Oct. 10
- Oct. 15
- Any of these dates

30. Recommendations from the U.S. Fish and Wildlife Service for duck-harvest management are based largely on duck numbers and habitat conditions in central Canada and North and South Dakota. Please rank the following regulatory options that could be used to manage Michigan duck populations if restrictions are necessary beyond those recommended by the U.S. Fish and Wildlife Service.

(please place a number next to each option with "1" the most preferred option and "6" the least preferred):

- _____ Elimination of multiple opening days (eliminate separate zone openers)
- _____ Reduced season length
- _____ Reduced daily bag limit
- _____ Adjustment of season opening and closing dates to target more abundant species
- _____ Whatever regulations state biologists determine to be best for Michigan duck populations
- _____ No restrictions beyond U.S. Fish and Wildlife Service guidelines should be implemented

31. What do you think the maximum daily duck bag limit should be for Michigan duck hunters? *(please check only one)*

- 1 2 3 4 5 6 more than 6

32. During the fall of 1998, do you think duck abundance in Michigan was higher, lower, or about the same as compared to the previous 3 years?

- Higher The same Lower

33. During the 1998 duck season, was your level of satisfaction with Michigan duck hunting higher, lower, or about the same as compared to the previous 3 years?

- Higher The same Lower

34. Overall, how would you rate your 1998 Michigan duck hunting experience? *(please check only one)*

- Very good Good Neither good nor poor Poor Very poor

D. The following questions relate to **SPECIAL REGULATIONS**, which describe what species and sexes of ducks can be harvested, and when, where, and how you can hunt ducks.

35. Does having the duck season open on a weekend affect your decision to hunt ducks? Yes No

36. How does having the duck season open on a weekend affect your duck hunting satisfaction?

- Increases satisfaction Decreases satisfaction No effect on satisfaction

37. Do bag limit restrictions for certain species or sexes of ducks (for example, no more than 1 hen mallard in the bag) affect your decision to hunt ducks? Yes No

38. How do bag restrictions for certain species or sexes of ducks affect your duck hunting satisfaction?

- Increases satisfaction Decreases satisfaction No effect on satisfaction

39. Do duck hunting zones (areas with different opening and closing dates) make hunting regulations hard to understand?

- Yes No

40. How do duck hunting zones affect your duck hunting satisfaction?

- Increases satisfaction Decreases satisfaction No effect on satisfaction

41. Do season splits (open and closed periods within the duck hunting season) make duck hunting regulations hard to understand? Yes No

42. How do duck hunting season splits affect your duck hunting satisfaction?

- Increases satisfaction Decreases satisfaction No effect on satisfaction

43. Does it make a difference to you whether the duck hunting regulations change from year to year? Yes No

44. How does changing the duck hunting regulations from year to year affect your duck hunting satisfaction?

- Increases satisfaction Decreases satisfaction No effect on satisfaction

45. How would making the hunting regulations less complicated affect your duck hunting satisfaction?

- Increases satisfaction Decreases satisfaction No effect on satisfaction

THANK YOU VERY MUCH FOR YOUR PARTICIPATION!