

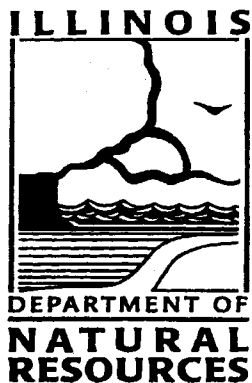


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**Department of Natural Resources
Division of Wildlife Resources**

**Results of the 1995 Illinois Groundhog (Woodchuck)
Hunter Survey**

**Administrative Report
PR Project W-112-R
June 27, 1997**



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Illinois Department of Natural Resources
Division of Wildlife Resources
Administrative Report
27 June 1997

RESULTS OF THE 1995 ILLINOIS GROUNDHOG (WOODCHUCK) HUNTER SURVEY

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Abstract: Purchasers of the 1994 Illinois Habitat Stamp who hunted groundhogs (woodchucks, *Marmota monax*) the previous year were surveyed (mail questionnaire) to determine their groundhog hunting activities, harvest, and attitudes and opinions, for the 1995 calendar year. The mailing list consisted of 2,253 residents, 1,615 (72%) of which returned questionnaires. Because 413 of the respondents indicated they had never hunted groundhogs, the usable sample was reduced to 1,202. Of these respondents, 577 had hunted groundhogs in Illinois in 1995. These hunters were afield an average of 14.8 days; 50% of the days afield occurred during June-July and 39% occurred during August-October. Almost all (98%) of the hunters pursued groundhogs on private land, and 75% of them had little or no difficulty in finding a place to hunt. One-half (52%) of the hunters pursued groundhogs near corn/soybean fields, whereas 47% utilized barns/outbuildings and 43% used creeks/ditches. The hunters harvested an average of 0.46 groundhog per day afield and 6.8 groundhogs for the entire year. The vast majority (82%) of the hunters pursued groundhogs to control "varmints" or "pests", however, 56% hunted groundhogs for recreational sport. A plurality (46%) of the hunters adopted spot-and-stalk techniques to hunt groundhogs. Equipment most frequently used included .22 rimfire or centerfire rifles (76%), rifle scope (74%), binoculars/spotting scope (62%), and camouflage clothing (45%). A majority (65%) of the hunters in northern Illinois thought the groundhog population had increased during the last 5 years, whereas a plurality (44%) of the southern hunters thought the population had decreased. Statewide, a majority (53%) of the hunters thought the length of the closed-season period for groundhogs (1 April-31 May) was about right. The groundhog hunters averaged 41 years of age, had hunted groundhogs for an average of 20 years, and the vast majority (87%) resided in rural areas or small towns. Groundhog hunters traveled an average distance (one way) of 14 miles per day afield. Participants in the survey provided 18 recipes for preparing groundhog for the table (Appendix A). Depending on conditions, groundhogs can be an ecological asset, a sporting animal, or a nuisance. Groundhogs should be managed as a renewable natural resource for the benefit and enjoyment of the citizens of Illinois.

Woodchucks , more commonly known as "groundhogs", occur throughout the length and breadth of Illinois (Hoffmeister 1989:154-156). This large (weight to 14 lbs) member of the squirrel family utilizes a variety of habitats, burrows extensively, and is primarily (if not exclusively) a vegetarian. Groundhogs spend ≤ 2 hours per day above ground, feeding extensively on clovers and grasses. They forage on garden and field crops when available, which may conflict with human activities and interests.

In Illinois, groundhogs breed in late February or March and young are born 31-32 days later (Hoffmeister 1989:156). Groundhogs, which do not breed until the 2nd year of age, have an average of 4.9 young per litter (Mumford and Whitaker 1982). Females produce only 1 litter per year, as would be expected in a hibernating animal the size of a groundhog. In Illinois, most groundhogs are in hibernation from November through February.

The groundhog is probably hunted more than any other "varmint" in the eastern part of the United States (Rue 1968:233). In addition, the species was formerly trapped for fur, which was sometimes used for making cheap fur coats (Schwartz and Schwartz 1959:118). As evidenced by bones in midden heaps, the groundhog was an important meat staple for Indians in eastern North America prior to settlement (Rue 1968:246).

Illinois Conservation Law classifies the groundhog (woodchuck) as a game mammal. However, the groundhog can become a nuisance when it feeds on crops, burrows under buildings, or

causes other problems for people. A total of 3,474 groundhogs were handled by Nuisance Wildlife Control Permittees in Illinois in 1995 (Bluett 1996). Thus, hunting regulations and management decisions should be sufficiently restrictive to maintain healthy populations of groundhogs and, at the same time, flexible enough to cope with problem animals. From 1991 to 1995, an average of 9,400 hunters spent 58,700 days afield and harvested 34,000 groundhogs annually in Illinois (Anderson et al. 1996).

Prior to the present survey, the Illinois Department of Natural Resources (DNR) knew relatively little about the activities, attitudes, and opinions of groundhog hunters in the state. Basic information as to why, where, and when people engage in groundhog hunting was lacking. However, with such information, the DNR can more adequately assess Illinois Conservation Law as it applies to groundhogs and groundhog hunting. Both sportsmen and the general public stand to benefit from regulations that allow appropriate management of groundhogs in Illinois.

METHODS AND MATERIALS

A 4-page, 24-question questionnaire was developed specifically for the 1995 Illinois Groundhog (Woodchuck) Hunter Survey (Fig. 1). This questionnaire and a letter of explanation (Fig. 2) were mailed to 2,253 potential groundhog hunters on 12 January 1996. Non-respondents were sent 2nd and 3rd copies of the questionnaire, and accompanying letters (Figs. 3 and 4), on 22 February and 4 April, respectively. As of 28 May 1996, 1,615

usable questionnaires were returned for a response rate of 72%.

The mailing list for this survey was developed from information recorded on 1994 Illinois Habitat Stamp stubs. Each stub was designed to capture the purchaser's name, mailing address, and game species (including groundhogs) hunted during the previous year in Illinois (Fig. 5). License vendors were instructed to fill out the stubs and return them to the DNR Permit Office in Springfield. By systematically sampling the 216,474 stubs that were returned (total sales was 284,444), 2,253 purchasers were selected as potential groundhog hunters.

Data were transferred from returned (filled-out) questionnaires to a computer file using a data management program (Ashton-Tate dBASE III+). The data were analyzed with a statistical program (SPSS Inc. SPSS/P+2.0). Results were tabulated relative to the northern half of Illinois, the southern half, and the entire state.

The line used to divide the state into north and south halves was route US-36 from the Indiana state line west to Springfield, route IL-29 north to Pekin, and route IL-9 west to the Iowa state line. This is the same line that is used to zone the state for purposes of setting the rabbit, quail, pheasant, and gray partridge hunting seasons.

HUNTING REGULATIONS IN 1995

In recent years, groundhogs have been legal game in Illinois from 1 June to the following 31 March. Thus, for calendar year 1995, groundhogs could be hunted from 1 January to 31 March and

from 1 June to 31 December. Shooting hours were from sunrise to sunset. There were no restrictions on the number of groundhogs that could be taken per day or have in possession. Other than limitations on shotguns (not larger than 10 gauge, ≤ 3 shell capacity, and shot size not larger than lead BB or steel T), there were no restrictions on the types of firearms or ammunition that could be used for hunting groundhogs.

FINDINGS

Of the 1,615 people who filled out and returned the questionnaire, 413 (26%) indicated they had never hunted groundhogs. Thus, their questionnaires were not used as a source of data for this study. Of the other 1,202 respondents, 94% purchased a resident Illinois hunting license and 95% purchased an Illinois Habitat Stamp for the 1995 season (Table 1). About one-half (48%) of the respondents hunted groundhogs in Illinois, and 5.5% hunted groundhogs and/or prairie dogs in another state, in 1995. Of those who hunted groundhogs in Illinois, 8.3% hunted groundhogs and/or prairie dogs in another state.

The vast majority (82%) of respondents who hunted groundhogs in Illinois in 1995 did so to control "varmints" or "pests" (Table 2). Thirty-six percent hunted groundhogs for this purpose only. More than one-half (56%) of the hunters pursued groundhogs for recreational sport. About 1 hunter in 6 (16%) hunted groundhogs to have a wild game dinner; hunters rarely (1%) pursued groundhogs for cultural or ethnic reasons. Seventeen respondents provided 18 recipes for preparing groundhogs for the

table (Appendix A). In view of the fact that groundhogs are mostly--if not exclusively--vegetarians (Hoffmeister 1989:156), their flesh should make acceptable table fare.

Hunting Activities

The number of groundhog hunters and their days afield were about equally divided between the northern and southern halves of the state (Table 3). The hunters reported spending an average of 14.8 days afield in 1995. The number of days afield differed little between northern and southern hunters. Statewide, 37% of the hunters were afield 1-5 days, and 25% were afield 6-10 days. In comparison, the annual hunter harvest survey indicated that groundhog hunters spend an average of 6.1 days in the field in 1995; 64% spent 1-5 days and 20% spent 6-10 days (Anderson et al. 1996).

Groundhog hunters were much more likely to be in the field during the warmer months of June-October (18-60%) than during the colder months of November-March (2-5%) (Table 4). Similarly, 89% of their days afield occurred during the warmer months (50% were in June-July), compared to 11% during the colder months. This temporal pattern of hunter activity prevailed for both the northern and southern portions of the state.

Almost three-fourths (75%) of the groundhog hunters were active in only 1 county; 18% were active in 2 counties and 7% were active in ≥ 3 counties. Similarly, 86% of the hunters were active in their county of residence, and 65% of them were active only in their county of residence.

Almost all (98%) of the hunters pursued groundhogs on private land (Table 5). Three-fourths (75%) of the hunters had no or little difficulty finding a place to hunt groundhogs. Southern Illinois hunters were about as likely to experience (moderate or much) difficulty finding a place to hunt groundhogs as northern Illinois hunters.

A majority (52%) of the groundhog hunters associated their activities with corn/soybean fields (Table 6). Almost as many hunters (47%) pursued groundhogs in the vicinity of barns/outbuildings, and 43% used creeks/ditches. Fencerows and clover/alfalfa/hay were also utilized by sizeable percentages of hunters (38% and 36%, respectively). Hunters in southern Illinois made greater use of corn/soybeans, and less use of barns/outbuildings, than hunters in the northern counties.

Groundhog Harvest

The hunters reported harvesting an average of 0.46 groundhog per hunter per day afield and 6.8 groundhogs per hunter for the 1995 calendar year (Table 7). The harvest rates were slightly greater in the northern half of the state than in the southern half. Statewide, 16% of the hunters harvested 0 groundhogs, 48% harvested 1-5 groundhogs, 20% harvested 6-10 groundhogs, 10% harvested 11-20 groundhogs, and 6% harvested ≥ 21 groundhogs. In comparison, the annual Illinois Hunter Harvest Survey indicated that an average of 3.9 groundhogs were harvested per hunter in 1995; 11% of the hunters bagged 0 groundhogs, 65% bagged 1-5 groundhogs, 19% bagged 6-10 groundhogs, 4% bagged 11-19

groundhogs, and 1% bagged ≥ 20 groundhogs.

Statewide, the hunters reported taking ≥ 1 groundhogs on 36% of their days afield (Table 7). They took 1-5 groundhogs on 23% of their days and ≥ 6 groundhogs on 13% of their days. The hunters harvested 0 groundhogs on 64% of their days in the field.

Hunting Techniques and Equipment Used

A plurality (46%) of the hunters adopted spotting-and-stalking techniques to hunt groundhogs in Illinois in 1995 (Table 8). Spotting-and-stalking was employed by more hunters in northern Illinois (52%) than in southern Illinois (40%). Statewide, other hunters employed either hide/wait-and-ambush techniques (26%) or long-range shooting (26%) to hunt groundhogs. Groundhog hunters appeared to be more active in the afternoon than in the morning (Table 8).

Rifles, either .22 rimfire or centerfire, were the firearms of choice for the vast majority (76%) of the groundhog hunters (Table 9). Northern hunters preferred .22 rimfires, whereas southern hunters preferred centerfires. Statewide, small percentages of hunters used shotguns (12%) or bow and arrows (6%) for hunting groundhogs.

Other equipment used by a majority of the groundhog hunters included rifle scopes (74%) and binoculars/spotting scopes (62%). Sizeable percentages of the hunters also used camouflage clothing (45%). Miscellaneous "equipment" of interest included a bi-pod/tri-pod/shooting stick, mountain bike, decoy, and dog.

Attitudes and Opinions

Closed Season for Groundhogs. Majorities of hunters in northern counties (52%), southern counties (55%), and statewide (53%) felt that the length of the 2-month (1 April to 31 May) closed season for groundhogs was about right (Table 10). The remaining hunters were much more apt to think the closed season was too long (24%) than too short (10%).

Changes in Groundhog Population. A majority (65%) of the hunters in northern Illinois thought the groundhog population had increased during the last 5 years (Table 11). Conversely, a plurality (44%) of the southern hunters thought the population had decreased.

Unsolicited Comments. Fifty-eight respondents submitted 95 separate comments related to groundhogs and groundhog hunting in Illinois. The comments were to the effect that groundhog populations are decreasing/at low levels (37%), coyotes and other predators have depleted the groundhogs (26%), groundhogs are increasing in numbers/are nuisances/should receive no protection (21%), herbicides have hurt groundhog populations (4%), and need more information about groundhog hunting (4%). The remaining comments (8%) addressed 5 miscellaneous topics.

Characteristics of Groundhog Hunters

The groundhog hunters who participated in the present survey were predominantly residents of rural (54%) or small town (33%) environments (Table 12). Their average age was 41 years, and they had hunted groundhogs for an average of 20 years. The

hunters traveled an average distance (one way) of 14 miles per day afield when pursuing groundhogs.

Economics of Groundhog Hunting

The hunters reported spending an average of \$51 each to hunt groundhogs in 1995 (Table 13). With an estimated 7,000 groundhog hunters in the state (Anderson et al. 1996), total expenditures were projected at \$0.36 million for the 1995 calendar year. In comparison, hunters of rabbits, quail, and pheasants spent averages of \$156-\$294 (totals of \$24.8-\$30.8 million) in Illinois in 1989-1991 (Anderson and David 1991a, 1991b, 1992), spring turkey hunters spent an average of \$85 (total of \$2.8 million) in 1990 (Anderson and Garver 1991), and crow hunters spent an average of \$54 (total \$0.54 million) in 1995-96 (Anderson and David 1996).

DISCUSSION

The mailing list for the present (1995) groundhog hunter survey was developed by systematically selecting purchasers of the previous year's (1994) Illinois Habitat Stamp who (according to information on the stamp stub) had hunted groundhogs the previous year (1993). However, 26% of the returned questionnaires were from respondents who said they had never hunted groundhogs. This finding suggests that some license vendors and/or hunters are not taking seriously the task of filling out the habitat stamp stub and are arbitrarily checking "groundhog" as one of the species hunted last year. Similar

findings were reported for the 1995-96 Illinois Crow Hunter Survey (Anderson and David 1996).

Respondents who did hunt groundhogs reported going afield an average of 14.8 days and harvesting an average of 6.8 groundhogs per hunter in 1995. These data do not compare well with the results of the annual Illinois Hunter Harvest Survey, which indicates that groundhog hunters spent an average of 6.1 days afield per hunter and harvested an average of 3.9 groundhogs per hunter during the 1995 season (Anderson et al. 1996). However, the hunter harvest survey probably included many participants who did not hunt groundhogs per se, but shot them as opportunities presented themselves. Furthermore, the mailing list for the present survey was based on people who hunted groundhogs in 1993 and again in 1995. Thus, our groundhog hunter survey contains some bias toward the more ardent, more committed groundhog hunters.

Like crow hunting (Anderson and David 1996), groundhog hunting in Illinois appears to be a low-budget, close-to-home outdoor activity. Hunters spent an average of \$51 per hunter to pursue groundhogs in 1995 (Table 13), which is the lowest amount that has been documented for a hunting activity in the state. In addition, 86% of the groundhog hunters were active in their county of residence, and 75% of them were active in only 1 county.

However, the above findings do not negate the fact that avid groundhog hunters exist in Illinois. In this context, we note that 17% of the groundhog hunters were afield for ≥ 21 days per

hunter and 16% harvested ≥ 11 groundhogs per hunter in 1995 (Tables 3 and 7). Although groundhogs are not viewed with the same esteem as glamour species such as pheasants and deer, the challenge of hunting these burrowing animals does have its followers. According to Rue (1968), the groundhog is heavily hunted in the eastern United States.

We also note that 16% of the hunters pursued groundhogs for the purpose of obtaining a wild game dinner (Table 2), and that 17 respondents submitted 18 recipes for preparing groundhog for the table (Appendix A). Clearly, there is a segment of the hunting society that relishes groundhog for its culinary attributes. Like deer, groundhogs are vegetarians that consume a wide variety of vegetable matter (Rue 1968, Hoffmeister 1989:156) and, therefore, make acceptable table fare. It is unfortunate that some people express disdain at the thought of eating groundhog. In our opinion, the stigma is unwarranted.

The vast majority (82%) of the hunters pursue groundhogs to control "varmints" or "pests", with 36% doing so for this single purpose (Table 2). In comparison, 51% of the state's crow hunters engage in their sport to control "pests", with only 14% doing so for this purpose only (Anderson and David 1996). Evidently, groundhogs create more problems for the citizens of Illinois than crows. Groundhogs are known to forage on crops and gardens, undermine houses and outbuildings, and burrow into lawns, levees, and pond dams--activities that put the species at odds with people and their interests. As measured by the number of Nuisance Animal Removal Permits issued by the DNR, the

groundhog was exceeded only by the raccoon (Procyon lotor) and beaver (Castor canadensis) as the target of complaints in Illinois in 1995 (Bluett 1996).

In Illinois, groundhogs are protected by a closed season from 1 April through 31 May--i.e., the period when young are born and reared. During the other 10 months, the species is classified as legal game with no bag limits. However, the "actual" or "real" groundhog hunting season is more like 6 months in length because the species is in hibernation--and unavailable to hunters--from November through February (Hoffmeister 1989:156-157). In view of this circumstance, and the fact that most hunters do not support extending the length of the closed-season period (Table 10), we recommend retaining the 10-month legal hunting season for groundhogs in Illinois for the next several years.

In our opinion, the groundhog should be promoted for its positive contributions to conservation and society. The groundhog's ecological role as a home builder for other mammals is significant; rabbits, foxes, opossums, weasels, and skunks use groundhog burrows for their own dens (Schwartz and Schwartz 1959:118-119). Because large quantities of subsoil are moved by burrowing, the countless generations of groundhogs have contributed to the aeration and mixing of soils (Schwartz and Schwartz 1959:118-119). Furthermore, the groundhog is a challenging game species that is heavily hunted in eastern portions of the United States (Rue 1968:233). In fact, firearm companies developed high-powered, small-caliber, super-accurate

rifles specifically to satisfy the needs of groundhog hunters (Rue 1968:233). When properly prepared, groundhogs--especially the young of the year--make good eating (Rue 1968:246). Appendix A contains several appetizing recipes for preparing groundhog. We believe these positive attributes far out-weigh the damage and nuisance problems that are caused by groundhogs in Illinois.

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Table 1. Percentage of respondents to the 1995 Illinois Groundhog Hunter Survey who purchased a resident hunting license, purchased a habitat stamp, hunted groundhogs in Illinois, and hunted groundhogs and/or prairie dogs in another state, during the 1995 calendar year (n=1,202 state residents).

Activity	Number	Percentage
Purchased resident Illinois hunting license	1,135	94.4
Purchased Illinois Habitat Stamp	1,139	94.8
Hunted groundhogs in Illinois	577	48.0
Hunted groundhogs and/or prairie dogs in another state	66 ^a	5.5 ^a

^aOf the 577 respondents who hunted groundhogs in Illinois, 48 (8.3%) hunted groundhogs and/or prairie dogs in another state.

Table 2. Reasons given by respondents for hunting groundhogs in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Reason	Percentage of Hunters		
	North	South	Entire State
	(274)	(300)	(577)
To control varmints or pests	89	76	82 ^b
For sport	54	58	56 ^a
For wild game dinner	14	18	16 ^c
For cultural or ethnic reasons	1.1	1.0	1.0
Others ^d	3.3	3.7	3.5

^a8% hunted groundhogs for the single purpose of sport.

^b36% hunted groundhogs for the single purpose of controlling varmints or pests.

^cSeventeen respondents provided 18 recipes for preparing groundhog for the table (Appendix A).

^dIncludes practice shooting skills (1.6%) and 8 miscellaneous reasons (1.9%).

Table 3. Number of days spent afield by groundhog hunters in Illinois during the 1995 calendar year. The season extended from 1 January to 31 March and from 1 June to 31 December statewide. Sample sizes are in parentheses.

Parameter	North	South	Entire State	
	(265)	(290)	(555)	
Percentage of hunters	48	52	100	(555)
Percentage of days afield	50	50	100	(8,189)
Mean days afield per hunter	15.4	14.2	14.8 ^a	(555)

^a37% of the hunters were afield 1-5 days, 25% were afield 6-10 days, 21% were afield 11-20 days, and 17% were afield \geq 21 days.

Table 4. Temporal distribution of groundhog hunting in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Month	North	South	Entire State
	<u>Percentage of Hunters</u>		
	(252)	(289)	(541)
January	3	1	2
February	2	4	3
March	14	13	13
April	--	--	-- ^a
May	--	--	-- ^a
June	56	59	57
July	62	59	60
August	47	46	46
September	36	26	31
October	21	15	18
November	8	2	5
December	3	2	2
	<u>Percentage of Days</u>		
	(3,750)	(3,810)	(7,560)
January	1	<1	1
February	1	2	1
March	5	6	5
April	--	--	--
May	--	--	--
June	23	28	26
July	23	26	24
August	17	19	18
September	14	11	13
October	10	7	8
November	5	1	3
December	1	<1	1

^aGroundhogs are protected by a closed season from 1 April to 31 May in Illinois.

Table 5. Ownership of lands used by groundhog hunters, and the level of difficulty they experienced in finding a place to hunt, in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Subject	Percentage of Hunters		
	North	South	Entire State
Ownership of land	(274)	(300)	(574)
Private	99	96	98
Public	1	4	2
Level of difficulty	(273)	(296)	(569)
None	64	57	60
Little	13	17	15
Moderate	16	17	17
Much	7	9	8

Table 6. Types of habitats utilized by groundhog hunters in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Habitat	Percentage of Hunters		
	North	South	Entire State
	(274)	(299)	(573)
Corn/soybeans	38	64	52
Barns/outbuildings	52	41	47
Creeks/ditches	44	41	43
Fencerows	35	40	38
Clover/alfalfa/hay	36	37	36
Woodlots	20	16	18
Weedy/fallow fields	17	8	13
Yards/gardens	4	2	3
Levees/pond dams	2	2	2
Railroad rights-of-way	1	3	2
Others ^a	3	3	3

^aIncludes old dumps, junk yards, rock piles, cemeteries, orchards, sewage treatment plants, and swamps.

Table 7. Number of groundhogs harvested by groundhog hunters in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Parameter	North	South	Entire State
Mean groundhogs per hunter:			
Per season	(265) 7.7	(290) 6.0	(555) 6.8 ^a
Per day afield	(4,076) 0.50	(4,113) 0.42	(8,189) 0.46
Days harvested:			
0 groundhogs	(3,268) 61%	(3,507) 67%	(6,775) 64%
1-5 "	25	22	23
6-10 "	7	7	7
11-20 "	3	2	3
>20 "	4	2	3

^a16% of hunters harvested 0 groundhogs, 48% harvested 1-5 groundhogs, 20% harvested 6-10 groundhogs, 10% harvested 11-20 groundhogs, and 6% harvested ≥ 21 groundhogs.

Table 8. Hunting techniques employed by groundhog hunters, and time of day when afield, in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Subject	Percentage of Hunters		
	North	South	Entire State
Hunting technique	(271)	(298)	(569)
Spot and stalk	52	40	46
Hide/wait and ambush	23	29	26
Long-range shooting	23	29	26
Others ^a	2	2	2
Time of day when afield	(272)	(300)	(572)
Mostly in morning	16	13	14
Mostly in afternoon	36	42	40
About evenly between mornings and afternoons	48	43	46

^aIncludes "jump" shooting and treed by dog.

Table 9. Types of weapons and other equipment used by groundhog hunters in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Item	Percentage of Hunters		
	North	South	Entire State
Weapon	(274)	(299)	(573)
Shotgun	14	11	12
.22 rimfire rifle	38	29	33
Centerfire rifle	35	50	43
Handgun	2	3	3
Black powder	2	1	1
Air rifle/pistol	1	<1	1
Bow and arrow	7	5	6
Others	1	1	1
Equipment	(251)	(264)	(515)
Camouflage clothing	41	49	45
Face net/paint	10	8	9
Ground blind	11	11	11
Tree stand	4	3	4
Safety belt	3	2	2
Rifle scope	65	83	74
Stool/chair	13	19	16
Bait	<1	1	1
Binoculars/ spotting scope	61	63	62
Others ^a	5	1	3

^aIncludes bi-pod/tri-pod/shooting stick, mountain bike, blanket, decoy, and dog.

Table 10. Opinions of groundhog hunters regarding the length of the protection period for groundhogs in Illinois. Sample sizes are in parentheses.

Responses to the question,

"By Illinois law, groundhogs are afforded protection during the breeding season (1 April to 31 May), and they are legal game during the remainder of the year. In your opinion, is the 2-month protection period too short, about right, or too long?"

	<u>North</u> (272)	<u>South</u> (295)	<u>Entire State</u> (570)
Too short	6%	13%	10%
About right	52	55	53
Too long	30	18	24
No opinion	12	14	13

Table 11. Opinions of groundhog hunters as to whether the groundhog population has increased, decreased, or remained unchanged in Illinois (1995). Sample sizes are in parentheses.

Responses to the question,

"In your opinion, has the groundhog population in your area increased, decreased, or remained unchanged during the last 5 years?"

	<u>North</u> (272)	<u>South</u> (297)	<u>Entire State</u> (572)
Increased	65%	25%	44%
Decreased	9	44	27
Unchanged	23	24	24
Don't know	3	7	5

Table 12. Some characteristics of groundhog hunters in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Characteristic	North	South	Entire State
Residence	(271)	(297)	(571)
Rural	49%	59%	54%
Small town	35	31	33
Urban	16	10	13
Mean age in years	(274) 40.4	(297) 40.8	(574) 40.6 ^a
Mean years groundhog hunted	(268) 16.6	(294) 22.2	(565) 19.5 ^b
Mean miles traveled (one way) per day afield	(224) 13.0	(264) 15.6	(488) 14.4 ^c

^a1% of hunters were ≤ 15 years of age, 4% were 16-20 years, 17% were 21-30 years, 29% were 31-40 years, 27% were 41-50 years, 14% were 51-60 years, 3% were 61-64 years, and 5% were ≥ 65 years.

^b19% of hunters had hunted groundhogs for ≤ 5 years, 16% had hunted 6-10 years, 24% had hunted 11-20 years, 23% had hunted 21-30 years, and 18% had hunted ≥ 31 years.

^c51% of hunters traveled ≤ 5 miles, 20% traveled 6-10 miles, 15% traveled 11-20 miles, and 14% traveled ≥ 21 miles.

Table 13. Expenditures by groundhog hunters in Illinois during the 1995 calendar year. Sample sizes are in parentheses.

Expenditure	North	South	Entire State
	(270)	(293)	(566)
\$0-\$25	59%	55%	57%
\$26-\$50	20	20	20
\$51-\$100	10	15	13
\$101-\$200	6	4	5
\$201-\$300	2	3	2
≥300	3	3	3
Mean	\$51	\$51	\$51
Total	\$0.17 M	\$0.19 M	\$0.36 M ^a

^aBased on an estimated 7,000 resident groundhog hunters in 1995-96 (Anderson et. al. 1996).

1995 ILLINOIS GROUNDHOG HUNTER SURVEY
(WOODCHUCK)



INSTRUCTIONS

Please answer the following questions, beginning below, for your groundhog (woodchuck) hunting activities in Illinois in 1995.

If you did not hunt groundhogs in Illinois in 1995, answer only the questions that apply to you (PART I and PART III). Your opinions are important even if you did not hunt.

Report only your kill. DO NOT report the kill of others with whom you may have hunted. Your responses are strictly confidential and will never be associated with your name. Since you are part of a small, randomly selected group, your participation is very important.

If you can't remember the exact figures, give your best estimate. When completed, insert questionnaire into the self-addressed envelope and mail.

Your comments are welcome but please write them on a separate sheet of paper to receive proper attention.

PART I: General Information

1. Did you purchase a 1995 resident Illinois hunting license?
(circle number for appropriate answer)

Yes.....1 No.....2

2. Did you purchase a 1995 Illinois Habitat Stamp for your personal use?

Yes.....1 No.....2

3. Did you hunt groundhogs (woodchucks) in Illinois in 1995?
NOTE: The season extended from 1 January to 31 March and from 1 June to 31 December. (circle number for appropriate answer)

Yes.....1 No.....2

4. Did you hunt groundhogs or prairie dogs in another state in 1995? (circle number for appropriate answer)

Groundhogs: Yes.....1 No.....2
Prairie dogs: Yes.....1 No.....2

Figure 1. The questionnaire used for conducting the 1995 Illinois Groundhog (Woodchuck) Hunter Survey (continued).

IF YOU DID NOT HUNT GROUNDHOGS IN ILLINOIS IN 1995,
SKIP TO PART III - QUESTION #18.

PART II: Groundhog Hunting Activities

5. On how many different days did you hunt groundhogs in Illinois in 1995?....._____days
6. In which month, or months, did you hunt groundhogs most in Illinois in 1995?

	<u>Month</u>	<u>Number of Days</u>
Hunted most	_____	_____
Second most	_____	_____
Third most	_____	_____
Fourth most	_____	_____
Fifth most	_____	_____

7. In which county, or counties, did you hunt groundhogs most in Illinois in 1995?

	<u>County</u>
Hunted most	_____
Second most	_____
Third most	_____

8. How many groundhogs did you harvest (kill and retrieve) in Illinois in 1995?

Number of groundhogs harvested _____

9. On how many different days in 1995 did you harvest:
- a. Zero groundhogs....._____days
 - b. 1 groundhog....._____days
 - c. 2 groundhogs....._____days
 - d. 3 groundhogs....._____days
 - e. 4 or more groundhogs...._____days
10. On average, about how many miles did you travel per day (one way) to hunt groundhogs in Illinois in 1995?
_____miles (one way)
11. Did you hunt groundhogs primarily on private land or primarily on public land in Illinois in 1995? (circle number for appropriate answer)

Private land.....1

Public land.....2

12. Please rate the level of difficulty you experienced in finding a place to groundhog hunt in Illinois in 1995-96. (circle number for appropriate answer)

No difficulty.....1	Moderate difficulty.....3
Little difficulty.....2	Much difficulty.....4

13. Which of the following best describes the type(s) of habitat in which you hunted groundhogs most in Illinois in 1995? (check [✓] all that apply)

a. Creeks/ditches..... <input type="checkbox"/>	d. Barns/outbuildings.... <input type="checkbox"/>
b. Fencerows..... <input type="checkbox"/>	e. Corn/soybean fields... <input type="checkbox"/>
c. Woodlots..... <input type="checkbox"/>	f. Weedy/fallow fields... <input type="checkbox"/>
g. Clover/alfalfa/hay fields..... <input type="checkbox"/>	
h. Others (write in) _____ <input type="checkbox"/>	
	_____ <input type="checkbox"/>

14. Did you hunt groundhogs mostly in the morning, mostly in the afternoon, or split your time about evenly between mornings and afternoons? (circle number for appropriate answer)

Mostly in morning.....1
Mostly in afternoon.....2
About evenly between mornings and afternoons....3

15. What type of weapon did you use most for hunting groundhogs in Illinois in 1995? (circle number for appropriate answer)

Shotgun.....1	Black powder.....5
.22 rimfire rifle...2	Air rifle/pistol....6
Centerfire rifle....3	Bow and arrow.....7
Handgun.....4	Other.. _____ .8
	(write in)

16. What hunting technique did you use most for hunting groundhogs in Illinois in 1995? (circle number for appropriate answer)

Spot and stalk.....1	Long-range shooting.....3
Hide/wait and ambush...2	Other _____ .4
	(write in)

17. Which of the following items did you usually use when hunting groundhogs in Illinois in 1995? (check [✓] the items you usually used)

a. Camouflage clothing... <input type="checkbox"/>	e. Safety belt..... <input type="checkbox"/>
b. Face net/paint..... <input type="checkbox"/>	f. Rifle scope..... <input type="checkbox"/>
c. Ground blind..... <input type="checkbox"/>	g. Stool/chair..... <input type="checkbox"/>
d. Tree stand..... <input type="checkbox"/>	h. Bait..... <input type="checkbox"/>
i. Binoculars or spotting scope..... <input type="checkbox"/>	
j. Others (write in) _____ <input type="checkbox"/>	
	_____ <input type="checkbox"/>

PART III: Background Information and Opinions

18. How old were you on your last birthday?....._____years

19. How many years have you hunted groundhogs?....._____years

20. In what type of community do you now live? (circle number)

- Rural (country, farm, town of less than 500 residents)..1
- Small town (500 to 20,000 residents).....2
- Urban (over 20,000 residents, suburban, city).....3

21. About how much money do you think you spent for hunting groundhogs in Illinois in 1995? (circle number for appropriate answer)

- | | | |
|----------------|-----------------|------------------|
| \$0-\$25.....1 | \$51-100.....3 | \$201-300.....5 |
| \$26-50.....2 | \$101-200.....4 | Over \$300.....6 |

22. Which of the following best describes your reason(s) for hunting groundhogs in Illinois? (check [✓] all that apply)

- For sport.....
- For control of varmints or pests.....
- For wild game dinner.....
- For cultural or ethnic reasons.....
- Other (write in)_____..

22a: If you have a favorite recipe for preparing groundhog, we would appreciate it if you would share it with us.

23. By Illinois law, groundhogs are afforded protection during the breeding season (1 April to 31 May), and they are legal game during the remainder of the year. In your opinion, is the 2-month protection period too short, about right, or too long? (circle number for appropriate answer)

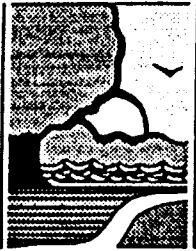
- Too short..1 About right..2 Too long..3 No opinion..4

24. In your opinion, has the groundhog population in your area increased, decreased, or remained unchanged during the last 5 years? (circle number for appropriate answer)

- Increased..1 Decreased..2 Unchanged..3 Don't know..4

Thank you for your cooperation

POSTAGE IS PREPAID



ILLINOIS
DEPARTMENT OF
NATURAL RESOURCES

524 South Second Street, Springfield 62701-1787

Jim Edgar, Governor ● Brent Manning, Director

Dear Fellow Sportsman:

You are one of a select group of Illinoisans asked to provide information about your groundhog (woodchuck) hunting activities during the past hunting season.

The information supplied by you and other selected hunters is needed to properly manage groundhogs in Illinois. Our goals are to grant maximum groundhog hunting opportunities to license holders, to maintain an attractive level of hunter success, and to minimize nuisance animal problems.

The information you provide is used to better understand the characteristics of our groundhog population and groundhog hunters. It will also help us understand how groundhog hunters view their sport.

Your reply is very important, even if you did not hunt groundhogs or you were not successful. Only a limited number of groundhog hunters can be contacted, therefore, your response is urgently needed.

Please take a few minutes to fill out the parts of the enclosed questionnaire that apply to you. If you do not remember exact figures, please give your best estimates.

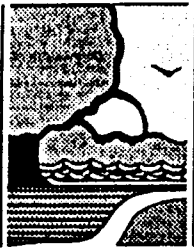
Drop the completed questionnaire in the mail. Postage is prepaid.

Sincerely,

Jeffrey M. Ver Steeg
Chief, Wildlife Resources

JMV:WLA
Enclosure
G1

Figure 2. The letter that accompanied the first mailing of the questionnaire.



ILLINOIS
DEPARTMENT OF
NATURAL RESOURCES

524 South Second Street, Springfield 62701-1787

Jim Edgar, Governor ● Brent Manning, Director

Dear Fellow Sportsman:

Recently, we mailed you a Groundhog (Woodchuck) Hunter Questionnaire and requested that you fill it out and return it as soon as possible. We have not received your form at this time. Perhaps you have misplaced the questionnaire or you have not found time to complete it and return it to us.

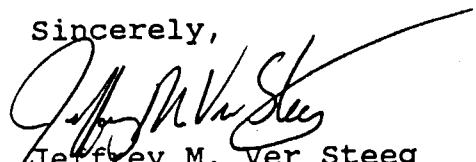
We are providing another questionnaire which we hope you will complete and return as soon as possible. If you have already returned the first questionnaire, please throw this one away. The information supplied by you and other groundhog hunters being sampled is needed to better manage groundhog populations.

Please fill out the questionnaire completely and return it even if you did not hunt groundhogs or you were unsuccessful.

Please drop the completed questionnaire in the mail. Postage is prepaid. Your prompt attention will be sincerely appreciated.

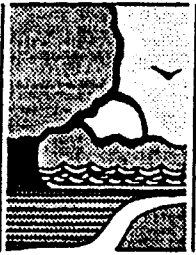
Thank you.

Sincerely,



Jeffrey M. Ver Steeg
Chief, Wildlife Resources

JMV:WLA
Enclosure
G2



ILLINOIS
DEPARTMENT OF
NATURAL RESOURCES

524 South Second Street, Springfield 62701-1787

Jim Edgar, Governor ● Brent Manning, Director

Dear Fellow Sportsman:

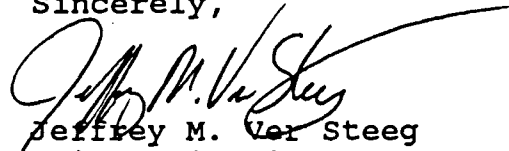
This letter is to remind you that we still would like to receive a report of your groundhog (woodchuck) hunting activities for the past season. We don't like to keep bothering you, but this information is very important which only you can provide.

Another copy of the questionnaire is enclosed. We hope you will complete it and return it as soon as possible. If you have already returned a questionnaire, please discard this one. Your response is needed, even though you did not hunt groundhogs or you had an unsuccessful season.

Postage is prepaid for returning the questionnaire. Please drop the completed questionnaire in the mail. Your prompt attention will be greatly appreciated.

Thank you.

Sincerely,


Jeffrey M. Van Steeg
Chief, Wildlife Resources

JMV:WLA
Enclosure
G3

Habitat Stamp ILLINOIS DEPARTMENT OF CONSERVATION 1994		278011
Name	County of Residence	*Check species hunted last season <input type="checkbox"/> Rabbit <input type="checkbox"/> Quail <input type="checkbox"/> Pheasant <input type="checkbox"/> Squirrels <input type="checkbox"/> Furbearers <input type="checkbox"/> Crow <input type="checkbox"/> Doves <input type="checkbox"/> Woodcock <input type="checkbox"/> Deer <input type="checkbox"/> Partridge <input type="checkbox"/> Groundhog
Address	City, State & Zip Code	
Signature of Applicant	Date	
(This Stub To Be Returned To Department)		
Habitat Stamp ILLINOIS DEPARTMENT OF CONSERVATION 1994		278012
Name	County of Residence	*Check species hunted last season <input type="checkbox"/> Rabbit <input type="checkbox"/> Quail <input type="checkbox"/> Pheasant <input type="checkbox"/> Squirrels <input type="checkbox"/> Furbearers <input type="checkbox"/> Crow <input type="checkbox"/> Doves <input type="checkbox"/> Woodcock <input type="checkbox"/> Deer <input type="checkbox"/> Partridge <input type="checkbox"/> Groundhog
Address	City, State & Zip Code	
Signature of Applicant	Date	
(This Stub To Be Returned To Department)		

Figure 5. The stubs that were attached to the 1994 Illinois Habitat Stamps.

Appendix A: Groundhog Recipes from the 1995 Illinois Groundhog
(Woodchuck) Hunter Survey.

Fried Woodchuck

Parboil meat and cut into small pieces. Roll in flour. Deep fry until brown.

Lester Cornstubbles - Joliet, IL

Woodchuck Stew

1 bay leaf	1 Tbsp vinegar
1/8 tsp thyme	2 cloves
1 onion	Salt, pepper

Cut meat into serving pieces. Place in kettle with all the above ingredients. Cover with water. Bring to a boil and reduce heat. Simmer gently for 3 hours. Add 1 carrot-diced, 3 potatoes-peeled, and continue to cook for 30 minutes longer. Strain and serve.

Lester Cornstubbles - Joliet, IL

Tender Fried Groundhog

Use only young groundhog, 3-4 months old (that is, unless you're an alligator). Cut into 5 pieces, salt and pepper using freshly ground pepper. Roll in flour, and brown both sides in cast iron skillet. Add enough water to cover meat and simmer over very low heat for 1 1/2 hours. Use a lid on the skillet.

Recipe also good for rabbit.

William Palya - Streator, IL

Deep Fried Groundhog

Breading mix: 1 1/2 cups flour
2 1/2 cups grated parmesan cheese
4 Tbsp garlic and onion powder
4 Tbsp black pepper
1/3 cup Lowery's Seasoned Salt

Pressure cook quartered groundhog until tender. Bread and deep fry.

Good for chicken, fish, pork chops, rabbit and squirrel.

David Ritzert - Solon Mills, IL

Fried Groundhog

1 groundhog, cut up	Garlic powder
1 cup corn meal	3 onions
1 cup flour	1 stalk celery
1 egg	1/2 stick butter
1 cup water	Cooking oil
Parsley	Salt and pepper

Boil groundhog with 1 onion and celery until tender. Beat egg and 1 cup water together. Add seasonings to corn meal. Dip meat in egg/water mixture and then into corn meal until completely coated. Cut remaining 2 onions into thin slices. Melt butter in skillet and add onions. Fry until tender. Move onions to side but not out of skillet. Add enough cooking oil to bring level of oil to 3/4 inch. Heat oil and add groundhog. When coating is crisp on bottom, turn over, reduce heat to low or medium, cover meat with onions, cover pan and simmer for 15 minutes. Remove groundhog and onions. Salt and pepper to taste. Serves 4. Preparation time: 1 hour.

Robert Rue - Jerseyville, IL

Fried and Pressure Cooked Groundhog

When dressing the groundhog be sure to remove the kernels from under the front legs. Cut up groundhog and salt to taste. Roll in flour, put in hot fat and fry until brown. Then put in inset pan in pressure cooker with 1/2 inch water in bottom of cooker. Cook for 70 minutes with 15 lbs of pressure.

Dan Carpenter - Coal City, IL

Groundhog Stew

Skin and clean groundhog, trimming fat. Cut into pieces and soak in salt water for 24 hours. Season groundhog with salt, pepper, garlic powder and onion powder to taste. Dust groundhog with flour. Bake groundhog with 1 can beef broth, carrots and potatoes at 300-325 degrees until meat separates from the bone. Add one pkg. beef brown gravy mix to pan broth and serve.

James Poppenhouse - Litchfield, IL

Groundhog Hash

4 cups cooked, lean meat
4 cups thick sliced or diced potatoes
1 chopped onion
1/2 cup vegetable oil

Cut meat into small pieces. Brown with onion in skillet with fat. Add potatoes and cook 20-25 minutes longer. Turn frequently to prevent burning. Season to taste.

This recipe can be used with rabbit, squirrel, and small game birds.

Ray Garrett - Jonesboro, IL

Marinated Groundhog on the Grill

Marinate: 1 Tbsp real butter 1/2 tsp cracked pepper
 1 tsp Worcester sauce 1/2 tsp sweet basil
 1 tsp A-1 Steak sauce 1 Tbsp Italian dressing
 1/2 tsp lemon juice 1/2 tsp garlic salt

Use groundhog that is one-third grown. After skinning, soak overnight in salt water. Next day, wash meat thoroughly and cover with the marinade. Put back in refrigerator and leave overnight. The third day, cook on grill at low flame. Baste meat with another batch of marinade as it cooks.

Earl Gill - Brighton, IL

Barbecued Groundhog

Flour
Salt and pepper
1/2 cup oil
3 medium onions
3-4 cans tomato puree
1 cup water

Remove kernels from legs and pull membrane off groundhog to expose red meat. Season with salt and pepper or with your preference. Roll in flour and deep fry lightly - don't over fry. Place meat in roasting pan. Pour 1/2 cup oil over meat. Sprinkle flour over meat, then tomato puree, slice onions over meat and repeat with flour and puree. The flour and puree make the sauce. Pour about 1 cup of water over this. Bake at low temperatures, about 300-350 degrees. Check periodically to make sure it doesn't dry out. Water can be added.

This is good served with mash potatoes and cole slaw.

Name and address unknown

Pressure Cooked and Grilled Barbecued Groundhog

Cut groundhog into pieces and pressure cook 15 minutes at 10 lbs. Remove, apply barbecue sauce immediately. Place on hot charcoal grill and grill until sauce cooks into meat.

Roger Sherrill - Urbana, IL

Great Barbecue

Parboil meat and then wash in cold water. Remove meat from bones, place in aluminum foil or baking dish. Pour your favorite barbecue sauce on it and bake for 2 hours at 250 degrees.

C. F. Heffner - Alton, IL

Baked Groundhog

Use 6-8 lbs. groundhog. Defat and remove glands from underarm. Cut into serving pieces and soak in salt water overnight. Pat dry and season to taste. Brown in hot lard, let cool. Generously brush with Dijon Mustard. Lay on top of bacon strips in Dutch oven. Add diced onion, celery and top with fresh parsley. Cover with water and bake (with lid on) at 325 degrees until tender, adjusting liquid until almost dry at serving time.

Daniel Fritts - Streator, IL

Baked Groundhog

Defat groundhog. Put in cast iron Dutch oven. Season with garlic salt, bay leaf, salt and pepper. Cover with chives, potatoes, and fresh carrots. Bake at 325-350 degrees, covered for 30-40 minutes and then uncovered for about 10-15 minutes.

Leon Troutman - Rushville, IL

Boil and Bake Groundhog

- 2 groundhogs
- 1/2 tsp salt
- 2 Tbsp pepper
- 3 onions
- 6-8 potatoes
- 4-5 carrots

Boil groundhog until tender. Remove from water, cool and debone. Cut groundhog into good sized chunks and add sliced onions, carrots and potatoes. Place in baking pan. Add salt and pepper and bake at 375 degrees until vegetables are tender and meat is browned.

Randy Johnson - Sandwich, IL

Fried Young Groundhog

Pan fry young ones in flour and corn meal batter.

Eric Thatcher - Carrollton, IL

Parboiled and Baked Groundhog

Parboil 1/2 hour. Rub with sage, red pepper and bay leaf.
Bake until done.

Jack Rolfe - Metropolis, IL

Shake-N-Bake Groundhog

Pork chop Shake-n-Bake at 400 degrees.

John McInnes - Princeton, IL

