

2004-05 New Jersey Coyote/Fox Hunter Survey

Summary

There are an estimated 930 canine (coyote, gray fox and red fox) hunters in New Jersey (Burnett 2004). Coyote and fox may be hunted during the small game seasons prescribed by New Jersey's annual Game Code by properly licensed sportsmen (e.g., October 2 through November 12, 2004 – archery only and November 13, 2004 through February 21, 2005 – firearm or bow and arrow). Properly licensed and permitted deer hunters may also harvest coyote and fox during proscribed deer seasons. A special permit was required when hunting coyote and fox between February 1-21, 2005 (inclusive) when hunting with a muzzleloading rifle in an area with no open deer season, when with a shotgun using shot size larger than #4 fine shot or when hunting at night with shotgun only [N.J.A.C. 7:25-5.19]. The daily bag limit was two coyote per day but no daily bag limit on fox. Five hundred forty-five permits were issued for the 18-day, February season.

A **2004-05 New Jersey Coyote/Fox Hunter Survey** was mailed to all 545 holders of the Special Eastern Coyote and Fox Hunting Permit. The survey objective was to gather information regarding canine hunter demographics, prior hunting experience, current hunting activity, equipment used, predator response and expenditures (excluding license and permit fees). The usable response rate was 45.3 percent. Ninety-five percent of New Jersey's canine hunters are state residents, male (98.4 percent) and have a mean age of 47.0 years. Prior to the 2004-05 hunting season, 74.1 percent of respondents indicated they had previously hunted coyotes or fox in New Jersey (37.9 percent), in other states (8.2 percent) or both (28.0 percent). Nearly three-quarters (72.8 percent) of survey respondents indicated specifically hunting for coyote or fox between October 2, 2004 and February 21, 2005 and 66.7 percent were active a mean 4.6 days during the special February season. Survey respondents reported 154 unique coyote sightings and 193 instances of finding coyote sign (tracks, scat) in 19 New Jersey counties.

Most canine hunters (54.9 percent) spent \$100 or less on coyote/fox hunting in New Jersey during the 2004-05 seasons (excluding license and permit fees), with a mean \$144 per hunter. Coyote/fox hunting generated an estimated \$152,881 to the local economy. Most of the estimated 358 hunters active during the special February season: (1) hunted one 6-hour period exclusively (43.8 percent); (2) preferred hunting from ½ hour after sunset until midnight (54.8 percent); (3) hunted on private land (49.2 percent); (4) used a shotgun (80.2 percent) with #4 fine shot (57.7 percent); and, (5) used a call imitating rabbit (93.2 percent). Four coyotes were harvested during the special February season and reported as required by law, in addition to an estimated 11 gray fox, 93 red fox and 53 crows harvested.

This survey was conducted as part of **Job III-B. Hunter and Trapper Harvest, Recreational and Economic Survey**. This job is included within **Grant Number W-68-R-9, New Jersey Wildlife Research and Management: Project III. Upland Wildlife and Furbearers**.

Methods

Five hundred forty-five special, coyote and fox hunting permits were issued for the 2005 special permit season (285 via mail and 260 via over-the-counter sales at Division offices). The 2004-05 New Jersey Coyote/Fox Hunter Survey (Appendix A), including a pre-addressed business reply envelope, was mailed to all permit recipients. Eight questionnaires (1.5 percent) were returned by the postal authorities as undeliverable and 537 were delivered.

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Demographic and economic analyses are based on the 243 (45.3 percent) responses that were correctly completed and returned within the acceptable period.

Harvest data analyses are based on the 177 respondents (33.0 percent) that actively hunted for coyote and/or fox at some time during the 2004-05 hunting season.

Results

Hunter Age Class

The age class distribution of respondents is presented in Table 1. Respondent age ranged from 11 to 74 years, with a mean age of 47.0 ± 1.6 years. The mean age of all New Jersey firearm hunters in 2003-04 was 50.1 ± 0.6 years (Burnett 2004). A simple majority of respondents (16.0 percent) was between 40 and 44 years of age. The age class distribution from the 2003-04 survey is presented for comparison.

Table 1. Age class distribution of NJ canine hunters based on responses (n = 243) to the 2004-05 New Jersey Coyote/Fox Hunter Survey

Age Class	Percent of 2004-05 respondents	Estimated number of hunters (2004-05)	Estimated number of hunters (2003-04)
< 16	1.6%	9	8
16 to 19	1.2%	7	4
20 to 24	1.6%	9	9
25 to 29	5.3%	29	19
30 to 34	4.9%	27	23
35 to 39	14.8%	80	60
40 to 44	16.0%	86	44
45 to 49	10.3%	55	54
50 to 54	11.9%	64	41
55 to 59	14.0%	75	41
60 to 64	7.8%	42	19
65+	10.3%	55	19
Unknown	0.0%	0	0
Total	100.0%	537	341

Hunter Residency

The residency distribution of respondents by county (resident) and state (non-resident) is presented in Table 2. New Jersey residents constitute the majority of coyote/fox hunters (95.0 percent), and live in every New Jersey County, except Hudson. Most (44.4 percent) of the hunters live in North Jersey¹; 28.8 percent live in Central Jersey²; and, 21.8 percent live in South Jersey³. Non-resident hunters live in Pennsylvania (3.3 percent) and New York (0.4 percent). Three hunters (1.2 percent) did not provide residency information. The residency distribution from the 2003-04 survey is presented for comparison.

¹ Bergen, Essex, Hudson, Morris, Passaic, Somerset, Sussex, Union and Warren Counties.

² Burlington, Mercer, Middlesex, Monmouth and Ocean Counties.

³ Atlantic, Camden, Cape May, Cumberland, Gloucester and Salem Counties.

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Table 2. Residency distribution of NJ canine hunters based on responses (n = 243) to the 2004-05 New Jersey Coyote/Fox Hunter Survey

County	Percent of 2004-05 respondents	Estimated number of hunters (2004-05)	Estimated number of hunters (2003-04)
Atlantic	2.9%	15	17
Bergen	2.5%	13	17
Burlington	8.6%	46	25
Camden	4.9%	27	17
Cape May	2.9%	15	2
Cumberland	5.3%	29	17
Essex	1.2%	7	4
Gloucester	4.1%	22	12
Hudson	0.0%	0	4
Hunterdon	7.4%	40	37
Mercer	4.5%	24	12
Middlesex	4.5%	24	19
Monmouth	3.3%	18	19
Morris	6.6%	35	12
Ocean	7.8%	42	13
Passaic	4.5%	24	21
Salem	1.6%	9	12
Somerset	2.5%	13	2
Sussex	8.6%	46	25
Union	1.2%	7	4
Warren	9.9%	53	39
New York	0.4%	2	0
Pennsylvania	3.3%	18	12
Unknown	1.2%	7	0
Total	100.0%	537	341

Hunter Gender

Survey respondents are overwhelmingly male (98.4 percent), regardless of state residency in 2004. All female respondents (1.6 percent) were New Jersey residents. Based on survey results, there were 528 male and 9 female permit holders in 2004-05 compared to 335 male and 6 female permit holders in 2003-04.

Hunter Prior Experience

Information on previous hunting experience was solicited from survey respondents in 1999, 2000, 2002, 2003 and 2004⁴. No survey was conducted in 2001. The percentage of these survey respondents with previous experience was 61.5, 64.2, 64.2, 61.1 and 75.7 percent, respectively. Prior to the 2004-05 hunting season, 74.1 percent of respondents indicated they had previously hunted coyotes or fox in New Jersey (37.9 percent), in other states (8.2 percent) or both (28.0 percent).

⁴ Prior experience was requested for coyote only (1999 and 2000), and coyote or fox (2002-2004).

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Permit Sales

A summary of special season permit sales is presented in Table 3. Coyote hunting was authorized for current and valid license holders by permit (cost = \$2) only during the month of February in 1997-2000 and 2002-2005. Coyote could be hunted in conjunction with the prescribed fox hunting seasons during the 2000-01 season (outside dates September 30, 2000 to February 19, 2001) and no permit was required. Permits were again required during the month of February in 2002-2005 when hunting coyote or fox from ½ hour after sunset to ½ hour before sunrise.

Table 3. Summary of New Jersey special season permit sales, 1997 to present

Year	Permit issuance	Revenue to Division (\$US)
1997 ⁵	865	1,730.00
1998	998	1,996.00
1999	874	1,748.00
2000	757	1,514.00
2001	Not required	0.00
2002 ⁶	354	708.00
2003	379	758.00
2004	345	690.00
2005	545	1,090.00
Total	5,117	10,234.00

Active Hunters

Over one-quarter (27.2 percent) of respondents did not hunt coyote/fox during the 2004-05 seasons. Primary reasons for non-participation included no time (57.6 percent), health (16.7 percent) and poor weather (7.6 percent). About one-tenth (9.1 percent) gave no reason for not participating. Based on survey responses, 146 permit holders were inactive.

Over two-thirds (72.8 percent) of survey respondents indicated specifically hunting for coyote or fox between October 2, 2004 and February 21, 2005. Based on survey responses, 66 hunters pursued coyote/fox from October 2 to November 12, 2004 (bow and arrow only), spent a mean 6.3 days afield and enjoyed 420 recreation-days. Hunter effort was concentrated primarily in North Jersey (70.0 percent), followed by South Jersey (20.0 percent) and Central Jersey (10.0 percent). Nearly two-thirds (63.3 percent) of coyote/fox archers hunted their resident county.

Based on survey responses, 154 hunters pursued coyote/fox from November 13, 2004 to January 31, 2005 (firearm or bow and arrow), spent a mean 8.1 days afield and enjoyed 1,246 recreation-days. Hunter activity was more evenly distributed during this period as follows: North Jersey (55.7 percent); Central Jersey (25.7 percent); and, South Jersey (18.6 percent). Nearly three-quarters (74.3 percent) of coyote/fox hunters hunted their resident county.

Based on survey responses, 358 hunters pursued coyote/fox from February 1-21, 2005, spent a mean 4.6 days afield and enjoyed 1,646 recreation-days. Hunter activity during this period was similar to that of November 13 – January 31, with most activity in North Jersey (55.6 percent) followed by Central Jersey (24.1 percent) and South Jersey (20.4 percent).

⁵ Permit valid for harvesting coyote only 1997-2000.

⁶ Permit valid for harvesting coyote, gray fox and red fox 2002-present.

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For all periods combined, an estimated 391 hunters enjoyed 2,247 recreation-days of coyote/fox hunting during the 123-day season, and averaged 8.6 days afield per hunter.

Decoy use was slightly less prevalent among survey respondents in 2005 (24.3 percent) compared to 2004 (25.2 percent). Based on survey responses, 95 hunters used a decoy while coyote/fox hunting during 2004-05 compared to 60 hunters during 2003-04. As in 2003-04, rabbit decoys were most commonly used (70.5 percent) during 2004-05. Decoys are not required to hunt coyote/fox in New Jersey.

Active respondents reported 154 coyote sightings and 193 instances of finding coyote sign (tracks, scat) in 19 New Jersey counties during 2004-05 compared to 108 sightings and 143 signs reported in 17 counties during 2003-04. No reports of coyote evidence were received from Bergen or Hudson Counties. Coyote presence as reported by survey respondents was highest in Warren (78), Hunterdon (42), Sussex (40) and, Morris and Ocean Counties (29 each).

Hunter Expenditures

Information on hunter expenditures (excluding license and permit fees) in 2004-05 is presented in Table 4. The majority of hunters (54.9 percent) spent \$100 or less on coyote/fox hunting in New Jersey during 2004-05, with a mean expenditure per hunter of \$144. Based on survey responses, 391 hunters contributed \$152,881 to the state's economy. By comparison, 56.9 percent of 240 hunters spent \$100 or less on coyote/fox hunting in New Jersey during 2003-04, with a mean expenditure per hunter of \$128 and contributed \$77,418 to the state's economy.

Table 4. Hunter expenditures (\$US) February 1-21, 2005 based on responses (n = 162) to the 2004-05 New Jersey Coyote/Fox Hunter Survey (excluding license and permit fees)

2004-05 Expenditures (\$US)	Percent of 2004-05 respondents	Estimated number of hunters (2004-05)	Estimated number of hunters (2003-04)
\$1-100	54.9%	215	136
\$101-200	19.1%	75	39
\$201-300	13.0%	51	31
\$301-400	4.9%	19	6
\$401-500	4.9%	19	6
Over \$500	3.1%	12	8
No response	0.0%	0	14
Total	100.0%	391	240

2005 Special Coyote/Fox Season (February 1-21, 2005)

The following information pertains only to the Special Permit Coyote/Fox season. Based on survey responses (n = 162), 358 sportsmen pursued coyote/fox in New Jersey during this period, spent a mean 4.6 days afield and enjoyed 1,646 recreation-days while harvesting four coyotes, 11 gray fox and 93 red fox.

Hunting Activity

Information on hunter activity by 6-hour period is presented in Table 5. One hundred fifty-seven (43.8 percent) hunted one period exclusively, 153 hunters (42.6 percent) hunted two periods, 31 hunters (8.6 percent) hunted three periods and 17 hunters (4.9 percent) hunting during all four periods. The majority of hunters (54.8 percent) preferred hunting between sunset and midnight,

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and 28.9 percent hunted this period exclusively. Reasons for period preference were not solicited.

Table 5. Hunter activity and preference February 1-21, 2005 based on responses (n = 162) to the 2004-05 New Jersey Coyote/Fox Hunter Survey

Hunting period	Estimated number of hunters		
	Total	Exclusive	Preference
½ hour before sunrise until noon	124	8	42
Noon until ½ hour after sunset	168	16	74
½ hour after sunset until midnight	258	102	180
Midnight until ½ hour before sunrise	73	1	32
No response	0	0	30
Total		157	358

Information on hunter activity by land ownership is presented in Table 6. Three hundred seven (85.8 percent) hunted one, land ownership class, exclusively. Thirty-eight (10.5 percent) hunted two, 9 (2.5 percent) hunted three and 4 (1.2 percent) hunted four different land ownership classes, respectively. Most hunters (49.2 percent) hunted on private land, and 48.0 percent hunted this land ownership class exclusively. Reasons for selection were not solicited.

Table 6. Hunter activity by land ownership February 1-21, 2005 based on responses (n = 162) to the 2004-05 New Jersey Coyote/Fox Hunter Survey

Land owner	Estimated number of hunters	
	Total	Exclusive
Private	176	172
Federal (military bases, national wildlife refuge)	7	2
State Wildlife Management Area	96	91
Utility Right-of-way	10	0
State Park or Forest	59	40
County or Municipal	10	2
Total	358	307

Information on hunter activity by habitat type is presented in Table 7. One hundred eighty-three (51.2 percent) hunted one habitat type, exclusively. Eighty (22.2 percent) hunted two, 55 (15.4 percent) hunted three, 18 (4.9 percent) hunted four and 20 (5.5 percent) hunted five different habitat types, respectively. Most hunters (33.0 percent) hunted in interconnected fields and woods, and 26.0 percent hunted this habitat type exclusively. Reasons for selection were not solicited.

Table 7. Hunter activity by habitat hunted February 1-21, 2005 based on responses (n = 162) to the 2004-05 New Jersey Coyote/Fox Hunter Survey

Habitat type hunted	Estimated number of hunters	
	Total	Exclusive
Open farm field	64	22
Golf course or park	0	0
Old fields	48	7
Interconnected fields and woods	118	93
Swamp or marshland	54	13
Large wood lot	73	48

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No response	1	0
Total	358	183

Equipment

Coyote and fox could be hunted with bow and arrow (minimum 35-lb draw or peak weight), muzzleloading rifle (minimum .44 caliber) and shotgun (10 or 12 gauge only, #2 ≤ size ≤ #4 fine shot) between the hours of ½ hour before sunrise to ½ hour after sunset. Authorized weapons were restricted to shotguns from ½ hour after sunset to ½ hour before sunrise. The use of dogs or bait was prohibited.

Based on survey responses, 287 (80.2 percent) shotgun, 44 (12.3 percent) muzzleloading rifle and 15 (4.3 percent) archery hunters pursued coyote/fox during the special season. Four (1.2 percent) and seven (1.9 percent) of hunters had no preference or did not respond, respectively. Shotgun hunters favored #4 fine shot (57.7 percent) over #2 fine shot (30.8 percent).

Possession of a predator call (electronic, mouth blown or other) was required while hunting during the special season. Based on survey results, slightly more hunters (122 or 34.0 percent) used mouth blown than electronic (119 or 33.3 percent) calls. One hundred thirteen hunters (31.5 percent) utilized both call types. Other call types used included squeeze bulbs, lip squeaking and turkey box calls. Calls used most imitated rabbit (93.2 percent). Other calls used by more than 5.0 percent of respondents imitated deer fawns (12.3 percent), coyote (11.8 percent), turkey (6.8 percent), mice (6.2 percent) or other rodents (5.6 percent) and cats (5.6 percent).

Predator Response

A variety of avian and mammalian predators responded to calls made by hunters, including: bald eagle (22), bobcat (5), coyote (222), crow (1,587), gray fox (36), hawk (230), osprey (2), owl (154), raccoon (13) and red fox (165). Other animals responding to hunter calls included domestic cats (9), dogs (1) and deer (1). Response to calling was greatest between ½ hour after sunset until midnight (64.3 percent).

Hunter Harvest

New Jersey law requires all successful hunters to report their coyote harvest to the nearest Division Law Enforcement Office within 24 hours of harvest. A summary of hunter harvests during the special permit seasons (1997-2005) is presented in Table 8. Three (75.0 percent) of the coyotes harvested in 2005 were taken after sunset. The 2005 coyote hunter success rate was 1.1 percent compared to 1.7 percent in 2004.

Table 8. Summary of NJ hunter harvests during the special, permit coyote/fox seasons (1997-2005)

Year	Permit issuance	Estimated active hunters	Reported coyote harvest	Estimated gray fox harvest	Estimated red fox harvest	Estimated other harvest
1997	865	528	4	N/a	N/a	N/a
1998	998	634	11	N/a	N/a	N/a
1999	874	266	6	N/a	N/a	N/a
2000	757	410	7	N/a	N/a	N/a
2001	0					

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2002	354	256	6	Not solicited	Not solicited	Not solicited
2003	379	252	4	32	92	0
2004	345	240	4	67	161	0
2005	545	358	4	11	93	53 crows
Total	5,117	2,944	46	110	346	53 crows

Additional Information

Additional information on coyote and fox is provided in Attachment 2 of the Federal Aid in Wildlife Restoration Report W-68-R-9 Job III-B entitled Hunter and Trapper Harvest, Recreational and Economic Survey. Coyote information is also provided in Job III-D entitled Occurrence and Distribution of the Eastern Coyote in New Jersey. Data files are stored at the Division of Fish and Wildlife (NJ Department of Environmental Protection) Nacote Creek and Hedge Haven field offices.

Literature Cited

Burnett, Andrew W. 2004. Hunter and trapper harvest, recreational and economic survey. P-R Performance Report W-68-R-8 Attachment 1. New Jersey Division of Fish and Wildlife. Trenton, NJ 08625

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Appendix A.

2004-05 NJ COYOTE/FOX HUNTER SURVEY

Dear Fellow Hunter:

This is a copy of the 2004-05 Coyote/Fox Hunter Questionnaire. This survey contains questions about your coyote and fox hunting activities in New Jersey this past (2004-05) season. Kindly take a moment now to complete this survey and return it in the self-addressed envelope provided. The information you provide is anonymous.

Only hunters who received a 2005 New Jersey Coyote/Fox Special Hunting Permit will receive this survey. The information we receive in this survey will be used in evaluating, planning and improving hunting seasons in New Jersey and for determining harvest levels and trends for several species. Your reply is important to us even if you did not hunt or even if you were not successful harvesting any game this year.

Thank you for completing this questionnaire and for promptly returning it in the envelope provided.

Sincerely,

Larry Herrighty

Larry Herrighty, Chief
Bureau of Wildlife Management
NJ Division of Fish and Wildlife

HOW TO COMPLETE THIS SURVEY

1. Please answer all applicable questions. Answer this questionnaire even if you did not hunt or if you did not harvest any game during the past season.
2. Estimate the number of days hunted or game killed if you don't recall the exact number. Please list specific numbers where they're asked for in days; please don't write in "week" or "month".
3. Please report **only** the game taken by **you**, not the entire hunting party. For example, if you were hunting with a friend who shot two fox while you shot only one, you would report 1 fox.
4. Record your answers in the space provided after each question.
5. After completing the questionnaire, return it in the envelope provided.

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2004-05 New Jersey Coyote/Fox Hunter Survey Questionnaire

1. What is your age in years? _____
2. In which COUNTY do you reside? (if non-resident, enter state) _____
3. Your sex (Check **one**) MALE FEMALE
4. Prior to 2004-05, have you hunted coyotes or fox in NJ? (Check **one**) YES NO
5. Prior to 2004-05, have you hunted coyotes or fox in other States? (Check **one**) YES NO
6. During 2004-05, did you *specifically* hunt for coyote or fox in NJ?
(October 2, 2004 to February 21, 2005) (Check **one**) YES NO

If you answered **YES** to Question 6, please go on to Question 8.

7. If you answered **NO** to Question 6, please list the single most important reason why you did not actively pursue coyote or fox in New Jersey during the 2004-05 season:
_____.

If you answered **NO** to Question 6, **STOP HERE**. Thank you for participating in this year's Coyote/Fox Hunter Survey. Kindly return the survey in the self-addressed envelope provided. The NJ Division of Fish and Wildlife values your input and the information you provided.

8. If you answered **YES** to Question 6, please complete the following table

Time Period	Number of days hunted	Primary County hunted
A. Oct. 2 - Nov. 12, 2004 (Bow and Arrow Only)		
B. Nov. 13, 2004 – Jan. 31, 2005 (Firearm or Bow)		
C. Feb. 1-21, 2005 (Special Permit Season)		

9. Did you use a decoy to hunt coyote or fox during 2004-05? (Check one) YES NO
10. If you answered **Yes** to Question 9, what type of animal or bird did the decoy imitate? _____
11. Please list the locations in which you saw coyotes or found tracks/scat during the 2004-05 seasons:

	Township	County	Township	County	Township	County
Animal seen						
Tracks/scat						

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Questions 12-28 relate only to the **Special Permit** Coyote / Fox Season (Feb. 1-21, 2005)

12. Please check the time period(s) you hunted during the 2005 **Special Permit** Coyote / Fox Season:
- A. ½ hour before sunrise until noon C. ½ hour after sunset until midnight
 B. Noon until ½ hour after sunset D. Midnight until ½ hour before sunrise
13. Which **one** period did you most prefer? _____
14. With what weapon type do you **most** prefer to hunt coyote or fox? (Check **one**):
- A. Bow and Arrow B. Muzzleloading Rifle C. Shotgun (Shot Size Used: _____)
15. What type of predator call(s) did you use during the 2005 **Special Permit** Coyote / Fox Season:
- A. Mouth blown B. Electronic recording C. Other: _____
16. What animal or bird did your predator call imitate? _____
17. Please check the time period that predators responded most to your calls during the 2005 **Special Permit** Coyote / Fox Season: (Check **one**)
- A. ½ hour before sunrise until noon C. ½ hour after sunset until midnight
 B. Noon until ½ hour after sunset D. Midnight until ½ hour before sunrise

How many of the following species did you call in during the 2005 **Special Permit** Coyote / Fox Season?
(Please write in **number** for each species encountered)

Species	A. # seen / shot <i>not</i> taken	B. Shot taken / animal recovered	C. Shot taken / animal <i>not</i> recovered
18. Coyote			
19. Gray fox			
20. Red fox			
21. Crow			
22. Owls			
23. Hawks			
24. Bobcat			
25. Other (list:)			

