

ANALYSIS OF SATISFACTION AND PARTICIPATION IN  
HUNTING: A PILOT STUDY

BY

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## EXECUTIVE SUMMARY

### Analysis of Satisfaction and Participation in Hunting: A Pilot Study

#### Background

In recent years, hunting license sales have declined in New York. This decline has been attributed to a number of factors, including those related to hunters' satisfaction with various aspects of the current hunting situation. Of special concern is the degree to which dissatisfaction with hunting programs and opportunities results in hunter dropouts (or desertion), a phenomenon that has not been evaluated previously.

Studies conducted earlier in New York and elsewhere have attempted to identify possible reasons for desertion from hunting. New York's hunter access study (1978) provided some insight into the access problems of active hunters. However, as was pointed out in that study, the extent to which perceived or actual access problems prevented people from hunting or discouraged others from continuing to hunt could not be determined. This limitation is one applicable to any study of participating recreationists. It is possible that although a relatively small percentage (less than 20%) face serious access problems, these hunters in combination with those having dissatisfaction with other aspects of hunting could increase the number of dropouts such that more people leave hunting each year than enter. The degree to which this is true, and a broader insight into this type of problem, can only be obtained from studies including people who fail to continue hunting.

#### Procedures

As reported in Job VII-2, Broome and Monroe Counties were chosen as generally representative of a moderately rural county and an urban county, respectively, in Central New York State. Since 1977-78 license stubs were the oldest available, they were used for selecting the sample for the mail survey. Telephone directories for the two counties in 1980 were used to select the sample for the telephone survey. The questionnaires were developed for both surveys so that they would have as many comparable questions as possible and still maintain the separate and distinct approaches developed with each survey design. The mail survey of 1977-78 hunting license buyers was designed to question hunters in categories A and B-1 of the following typology while the telephone survey of the general public was designed to question individuals in all categories of the typology.

## HUNTER PARTICIPATION TYPOLOGY

- A. Committed to Hunting
  - 1. Active (continuous) hunters
  - 2. Sporadic (noncontinuous) hunters
- B. Uncommitted to Hunting
  - 1. Deserters (no longer hunt)
  - 2. Nonhunters
- C. Potentially Committed to Hunting
  - 1. Potential hunters

## Results and Discussion

Response rates: A mail survey of a sample of 1977-78 hunting license buyers in Broome and Monroe Counties was conducted in 1980. The initial Monroe County sample of 531 names and addresses resulted in 105 nondeliverable questionnaires and 304 returned questionnaires (71% of deliverable). The initial Broome County sample of 800 names and addresses resulted in 176 nondeliverable questionnaires and 454 returned questionnaires (73% of deliverable). A telephone interview survey of a sample of adult residents in Broome and Monroe Counties was conducted in 1980. The 689 interviews attempted in Monroe County resulted in 500 completed interviews (73%). The 585 interviews attempted in Broome County resulted in 500 completed interviews (85%).

General survey comparisons: Few statistically significant differences were found between the responses of rural Broome County vs. Binghamton City area respondents for the mail and telephone surveys; thus, Broome County was considered one homogeneous rural county sample for comparison with the Monroe County urban sample. Numerous differences were found between data from Broome and Monroe County respondents on hunter participation, hunting involvement, and other socioeconomic variables. The mail survey data determined that the majority of Broome and Monroe county 1977-78 hunting license buyers who responded to the survey were active hunters (80% and 77%, respectively); sporadic hunters were less frequently reported (15% and 20%, respectively) and deserters were only occasionally reported (5% and 3%, respectively). The telephone survey data determined that the majority of Broome and Monroe County residents who participated in the survey were nonhunters (66% and 80%, respectively), with active hunters being reported less frequently (17% and 6%, respectively), followed by deserters (8% and 7%, respectively), sporadic hunters (6% and 4%, respectively), and potential hunters (3% and 3%, respectively). The ability to contact individuals or households selected in the sample area and to receive

complete survey information was better for the telephone survey than the mail survey, but the mail survey was designed to collect more information related to hunting impediments and hunter participation. The information collected in each survey complemented the other and provided a more complete overview of the hunting involvement process.

Comparison of Survey Nonresponse Biases: A summary of completion rates for the mail and telephone surveys of each study area is presented in Table A. The mail surveys included up to three reminder notices in attempting to obtain a high response rate. The telephone surveys used up to three calls in attempting to reach a high proportion of each sample.

The high rate of nondeliverable mail questionnaires was expected since the mailing list was almost 3 years old. The only statistically significant differences found between data of the various sample groups for either the nondeliverable or nonresponse rates was the higher nondeliverable rate for Binghamton City area vs. rural Broome County. Respondents tended to be older than either nonrespondents or those individuals with nondeliverable addresses. No statistically significant differences were found between the age distributions of nonrespondents and individuals with nondeliverable addresses. These age data were of samples from both counties and were taken from the 1977-78 hunting license stubs used in selecting the sample.

As can be seen from Table A, not all respondents to the mail survey were residents of Monroe or Broome County, where their hunting licenses were purchased. Since we wanted to expand the survey results to the entire population of all hunting license holders in each county, only those cases which were for county residents were used in the following analysis of the mail survey data. This approach also permitted a direct comparison between the mail and telephone survey data since both data bases then included (respectively) representative samples of resident county hunting license holders and county residents.

Statistically significant differences were found between the lower percentage refusal rates of the rural subsample in Broome County vs. either the Binghamton City area subsample or the Monroe County sample. However, no statistically significant differences were identified between the Binghamton City subsample of Broome County vs. Monroe County.

Table A. SAMPLING EFFICIENCY OF MONROE AND BROOME COUNTY SURVEY AUDIENCES.

	Monroe	Broome County	
	<u>County</u>	<u>Urban</u>	<u>Rural</u>
Mail Survey of			
<u>License Holders</u>			
Original sample size	531	400	400
Nondeliverable	20%	25%	18%
Returned/Deliverable	71%	75%	69%
Residents of County	88%	86%	86%
Response efficiency (County residents responding/deliverables)	63%	65%	59%
Total efficiency (County residents responding/original sample size)	50%	48%	49%
Telephone Survey of			
<u>General Public</u>			
Adjusted sample size (People contacted and interviews attempted)	689	322	263
Interviews completed	73%	78%	95%



Mail vs. Telephone Survey Nonresponse Biases: In summary, the ability to contact individuals or households selected in the sample areas and to receive complete survey information was better for the telephone than the mail survey. Nevertheless, both surveys have reasonable return rates for their respective types. While the potential exists for some survey biases due to those sampling units not contacted and those contacted who did not complete the survey, sufficient returns were obtained in both surveys to assume generally representative data for each study area.

Comparisons between the sampling procedures and biases of the two surveys were difficult since the sampling universes and problems differed. No existing data base could be located to use as a baseline for comparing the results of the surveys.

Thus, the following qualitative assessment was developed:

	<u>Mail Survey</u>	<u>Telephone Survey</u>
Sampling frame	Hunting license buyers who reside in the sample county.	County residents who have hunted, currently hunt or potentially will hunt in New York State, plus nonhunters.
Sample source	1977-78 hunting license stubs from sales in the sample county.	1980 County telephone directories.
Potential sampling frame biases	Low level problem--excludes only those individuals who purchase their license by mail (from Albany) or in a county other than their county of residence.	Low level problem--excludes households with an unlisted number or without a telephone. The extent of this bias was not known but it was expected to be less of a problem in rural areas and of somewhat more concern in urban areas.
Proportion of individuals not contacted	Moderate problem--the relatively high rate of nondeliverable mail surveys (18 to 25%) was expected since the sample source was nearly three years old. The individuals with nondeliverable surveys tended to be younger than those who responded to the survey. Individuals with addresses in Monroe County and the Binghamton City area were more often nondeliverable than those in rural Broome County. However, the extent or direction of other potential biases were not known (e.g., how does participation relate to the inability to locate an individual by mail?).	Moderate problem--the 13 to 15 percent of the households which could not be reached after three telephone calls may not have the same hunter characteristics. Monroe county and the Binghamton City area had similar percentages of households that could not be contacted after 3 telephone calls. The percentage of households that could not be contacted in rural Broome County was not available due to the record keeping procedures of the company conducting the survey. The extent or direction of other potential biases were unknown (e.g.,

### Mail Survey

Proportion of nonrespondents or refusals

Moderate problem--of those deliverable surveys, 25 to 31 percent were nonrespondents from the various sample areas; there were no significant differences between the nonrespondent rates from the various sample areas. Nonrespondents tended to be significantly younger than respondents. The actual extent and direction of other potential biases were unknown.

### Telephone Survey

how does hunting participation relate to inability to contact a household by telephone?).

Moderate problem--of those interviews attempted, 5 to 27 percent of the individuals refused to participate from the various sample areas. Individuals from urban areas were significantly more likely to refuse than those from rural areas. The urban area refusals may be related to less interest in hunting and therefore nonhunters may be underrepresented in the survey results. The actual extent and direction of other potential biases were unknown.

Comparison of Hunter Nonhunter Types: Most 1977-78 hunting license buyers (mail survey) in both Broome and Monroe Counties were committed to hunting either as active (i.e., hunt every year) or sporadic (i.e., hunt but not every year) hunters; few were no longer hunters\* (i.e., deserters) (Table B). More Broome County than Monroe County residents (telephone survey) were committed to hunting (Table B), while fewer nonhunters were found in Broome County than in Monroe County. Overall, there were more residents who were committed to hunting than who deserted from hunting (Table B). Potential hunters comprised only a few percent of the county residents; however, when expanded to estimate the total number of resident adults in each hunter type, the magnitude of even the potential hunter group was notable (Fig. 1).

The hunter typology data could not be directly compared between the mail and telephone surveys because of differences in populations sampled and time frames included. The mail survey sample represented only those individuals buying a hunting license in 1977-78 while the telephone survey sample represented the adult (> 17) population of the county and their current and past involvement with hunting. The mail survey data could be considered a subset of the telephone survey data in terms of both the target population and the time frame. Thus, the information collected in

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\*The small percentage of deserters in the mail survey data often provided an insufficient number of cases to analyze in subsequent sections of the report. Therefore, active and sporadic hunter data were often the only hunter types reported from the mail survey.

Table B. HUNTER TYPES IDENTIFIED FROM THE MAIL AND TELEPHONE SURVEYS.

Hunter Types	Broome County (N=341)	Monroe County (N=251)
	Percent	
MAIL SURVEY		
<u>Committed to Hunting</u>		
Active (continuous) hunters <sup>a</sup>	79.6	76.5
Sporadic (noncontinuous) hunters <sup>b</sup>	15.4	20.7
<u>Uncommitted to Hunting</u>		
Deserters <sup>c</sup>	5.0	2.8
Nonhunters	N/A	N/A
<u>Potentially Committed to Hunting</u>		
Potential hunters	<u>N/A</u>	<u>N/A</u>
	100.0	100.0
TELEPHONE SURVEY		
<u>Committed to Hunting</u>		
Active (continuous) hunters <sup>d</sup>	16.6	5.6
Sporadic (noncontinuous) hunters <sup>e</sup>	6.6	4.2
<u>Uncommitted to Hunting</u>		
Deserters <sup>f</sup>	8.0	6.6
Nonhunters <sup>g</sup>	66.2	80.4
<u>Potentially Committed to Hunting</u>		
Potential hunters <sup>h</sup>	<u>2.6</u>	<u>3.2</u>
	100.0	100.0

<sup>a</sup>Hunted in 1977 through 1980 and intended to hunt in 1980-81.

<sup>b</sup>Did not hunt in one or more years during 1977 through 1980 or did not intend to hunt in 1980-81.

<sup>c</sup>Did not hunt in any year during 1977 through 1980 nor did they intend to hunt in 1980-81 or they reported that they were currently not involved in hunting.

<sup>d</sup>Hunted in 1978 through 1980 and intends to hunt in 1980-81.

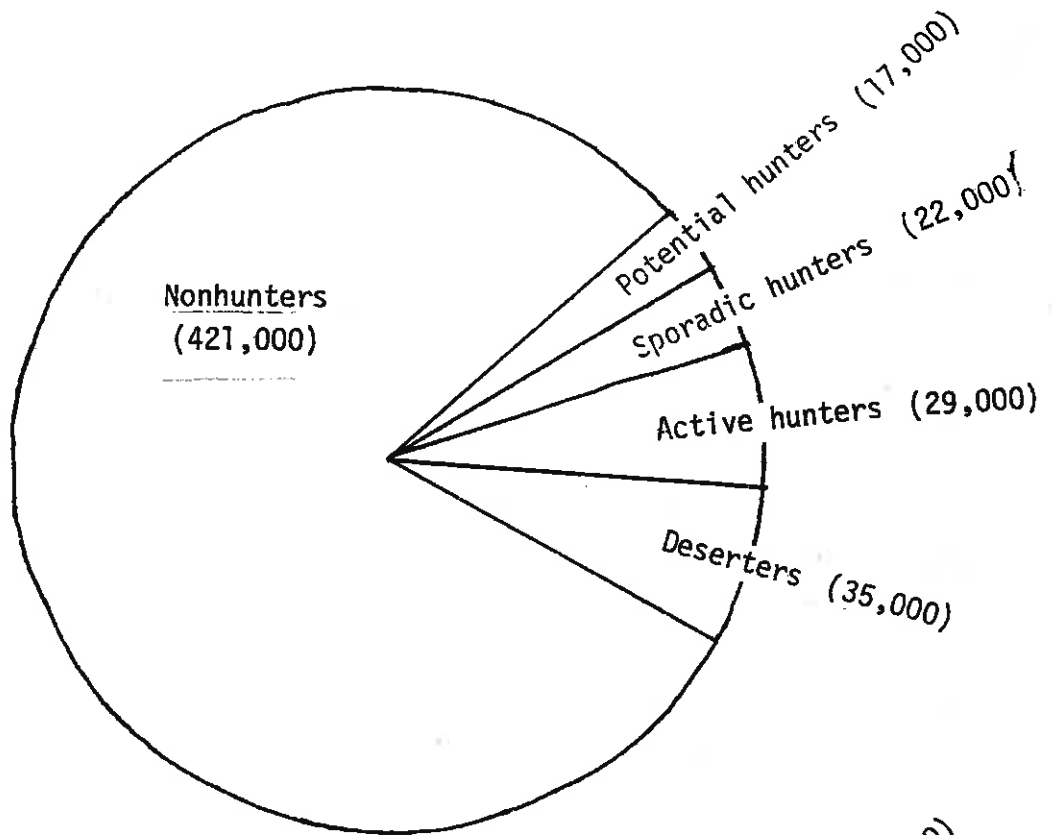
<sup>e</sup>Did not hunt in one or more years during 1978 through 1980 or did not intend to hunt in 1980-81.

<sup>f</sup>Did not hunt in 1979-80 and will not hunt again in 1980-81 or 1981-82.

<sup>g</sup>Never hunted and no interest in hunting.

<sup>h</sup>Considering hunting in 1980-81 or 1981-82.

Monroe County  
(Tot. adult  $\geq 17$   
population in 1980  
approx. 523,000)



Broome County  
(Tot. adult  $\geq 17$   
population in 1980  
approx. 162,000)

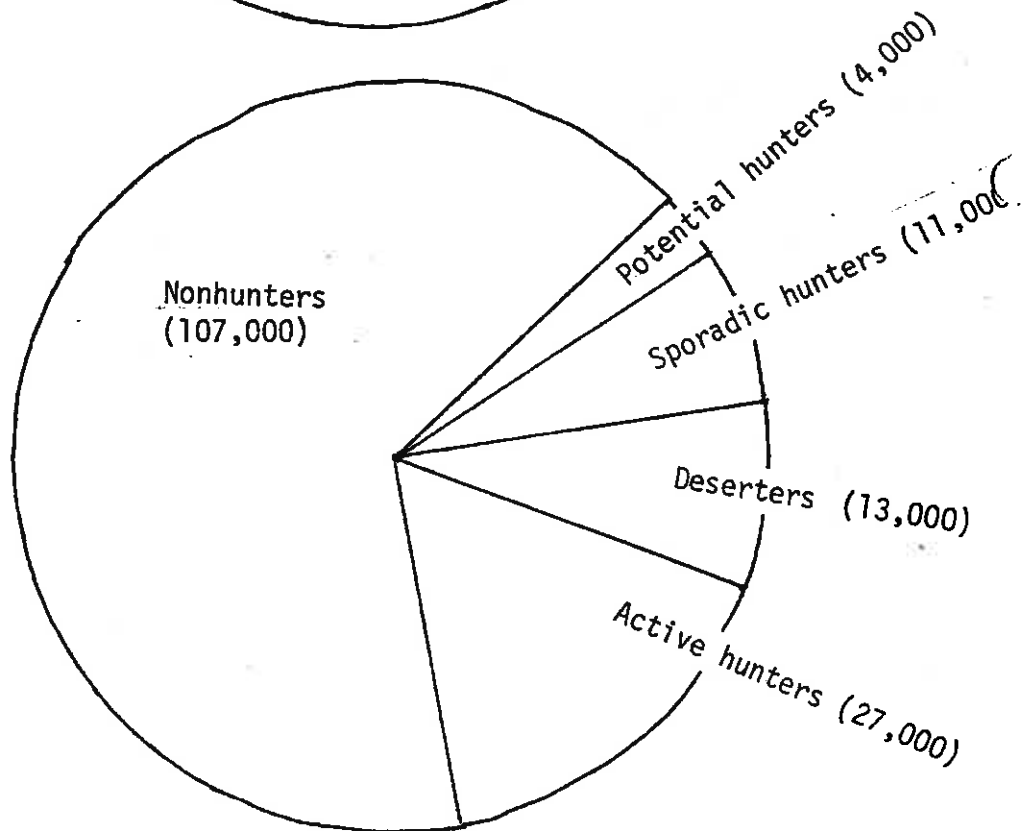


Figure I. Estimated number of total resident county adults ( $\geq 17$ ) in each hunter type (expanded from telephone survey data, using 1980 census data).

each survey complemented the other, providing a more complete overview of the hunting involvement process.

#### Hunting Participation/Desertion Among 1977-78 Hunting License Buyers (Mail Survey):

Most mail survey respondents from Broome and Monroe counties purchased a hunting license the following year in 1979-80 (91% and 90%, respectively) (Fig. II). The majority of Broome and Monroe County respondents reported that they had actually hunted during the 1970-71 through the 1976-77 hunting seasons. Hunting participation increased from 1970-71 through 1976-77 for respondents from both counties (Broome: 80% to 93%; Monroe: 79% to 90%).

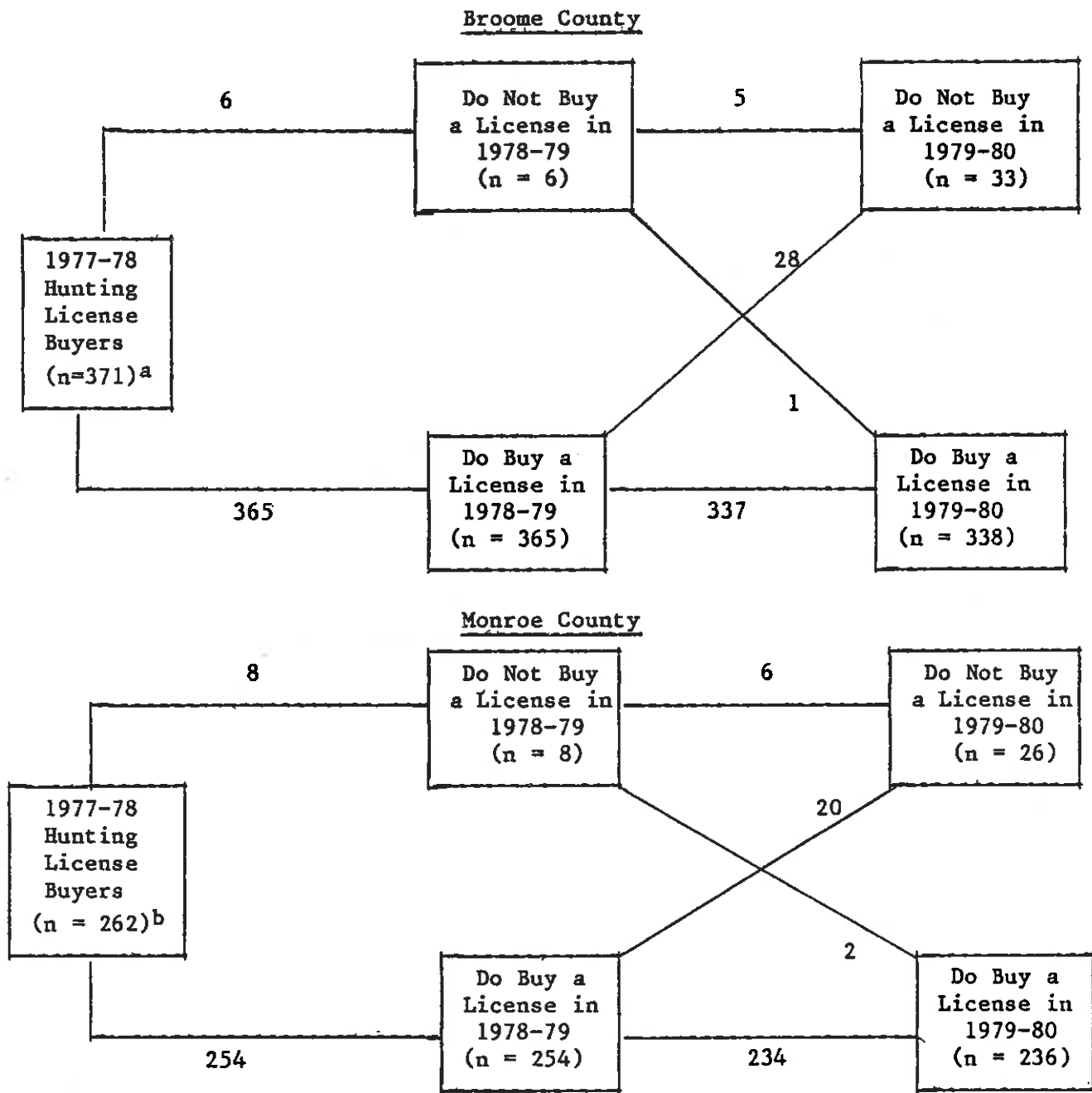
Most Broome County respondents hunted during the 1977-78, 1978-79, and 1979-80 seasons (95%, 95%, and 85%, respectively) and intended to hunt during the 1980-81 season (92%). Shifts between active and inactive hunter status occurred from year to year (Fig. III). Eighty percent of the respondents hunted in 1977 through 1980 and intended to hunt in 1980-81 (i.e., continuously active hunters); 19 percent missed 1 or 2 years; and 1 percent missed all 3 years after the 1977-78 season.

Most Monroe County respondents hunted during the 1977-78, 1978-79, and 1979-80 seasons (94%, 93%, and 82%, respectively) and intended to hunt during the 1980-81 season (92%). As in Broome County, many hunters in Monroe County changed between active and inactive hunter status from year to year (Fig. III). Seventy-six percent of the respondents hunted in 1977 through 1980 and intended to hunt in 1980-81 (i.e., active hunters); 20 percent missed 1 or 2 years; and 3 percent missed all 3 years after the 1977-78 season.

Hunting participation dynamics were very similar for Broome and Monroe County respondents (Fig. III). In both groups, respondents who did not hunt in 1979-80 tended to report that they intended to hunt in the 1980-81 season. This may not have been their actual experience but it is an indication that they viewed themselves as only temporarily inactive (i.e., sporadic hunters).

Those Broome and Monroe County respondents who did not hunt during one or both of the 1978-79 and 1979-80 seasons (i.e., sporadic hunters and deserters) reported similar reasons for not hunting. The five personal reasons cited most frequently for not hunting were: (1) not enough time to hunt; (2) lost interest in hunting generally; (3) no one to hunt with; (4) personal health problems; and (5) decided I don't like to kill game. These reasons for not hunting reflected attitudinal shifts, changes in life stage, and other personal life experiences. Resource-related reasons were cited less frequently. The three resource-related reasons mentioned most often

Figure II. Dynamics of 1978-80 Hunter License Buying Behavior by 1977-78 Broome and Monroe County License Buyers Responding to the Mail Survey.

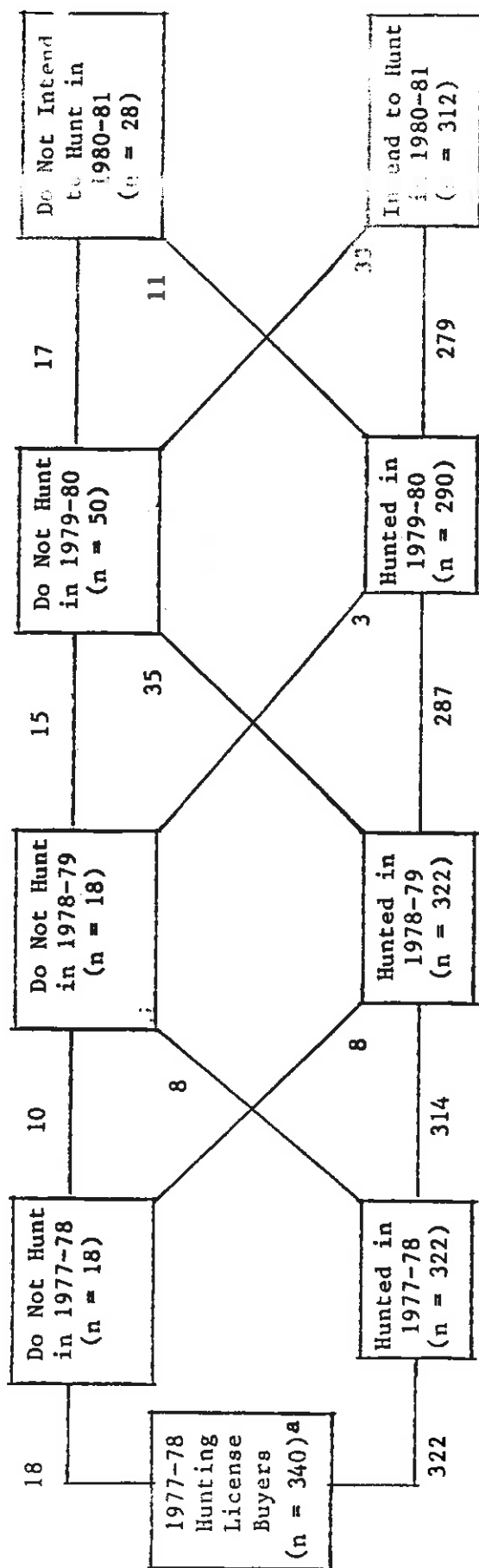


<sup>a</sup>Cases with missing data for these variables = 20

<sup>b</sup>Cases with missing data for these variables = 7

Figure III. Dynamics of 1977-81 Hunting Participation by 1977-78 Broome and Monroe County License Buyers Responding to the Mail Survey.

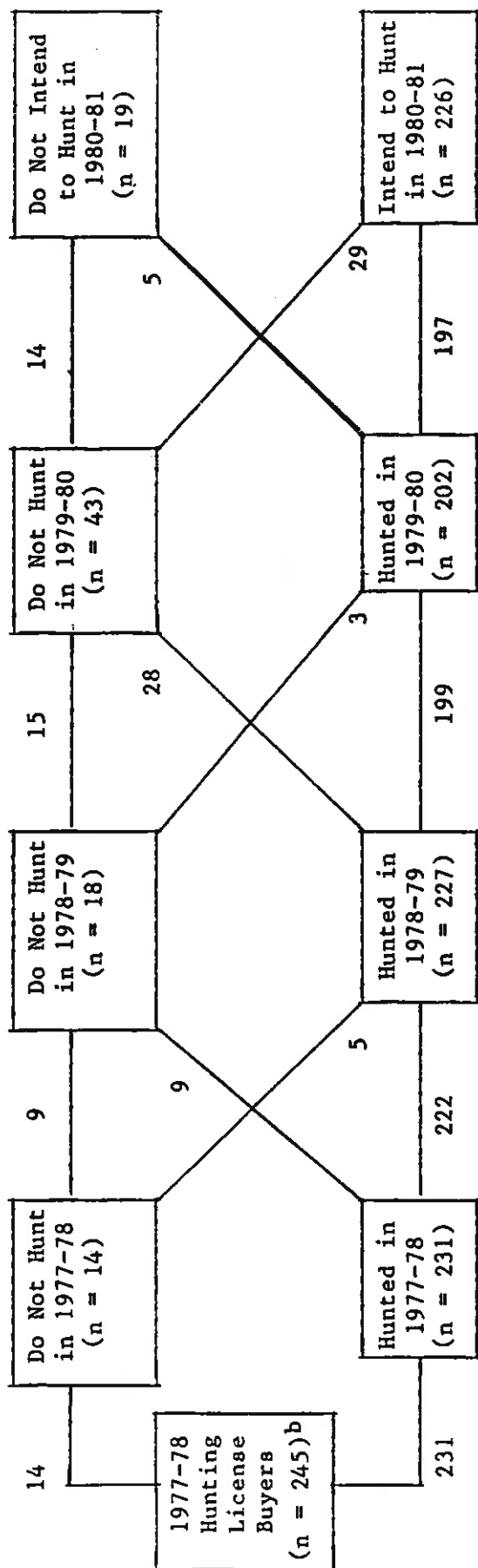
Broome County



<sup>a</sup>Cases with missing data for these variables = 51

Figure III. (continued)

Monroe County



<sup>b</sup>Cases with missing data for these variables = 24



were: (1) travel distances to hunting areas too great; (2) not enough game to keep me interested in hunting; and (3) not enough places to hunt. These reasons relate to the amount of wildlife and land available for hunting; it is noteworthy that respondents from both an "urban" and "rural" county reported similar resource-related reasons for not hunting.

Hunting Participation/Desertion Among County Residents (Telephone Survey): Of those Broome County respondents who hunted in 1979-80, the vast majority hunted big game (93%), one-half hunted small game (50%), and few (7%) hunted waterfowl. Of those Monroe County respondents who hunted in 1979-80, a majority hunted big game (77%) and small game (70%), and a minority hunted waterfowl (23%). Nearly equal percentages of Broome and Monroe County respondents who hunted in 1979-80 had hunted for the same type of game during 1978-79 and intended to hunt for these game in 1980-81. These percentages were nearly equal from year to year as a result of both active hunters who sought the same type of game each year and sporadic hunters who switched back and forth between active and inactive status.

Of those Broome County residents who had not hunted in 1979-80 but had done so previously, the majority had hunted big game (81%) and small game (81%); few (14%) had hunted waterfowl. These residents spent an average of 14.7 years hunting and the majority had hunted in the last ten years. Their reasons for not hunting since last being afield were largely personal: (1) losing interest in hunting; (2) not having enough time to hunt because of family, job or other responsibilities; (3) personal health problems and older age; and (4) deciding that they don't like to kill game. Resource-related reasons for not hunting were less frequently mentioned compared to the personal problems listed above. Only about one-half of these residents (who reported that they had not hunted in 1979-80 but had hunted previously) thought they would go hunting in 1980-81 or 1981-82.

Of those Monroe County residents who had not hunted in 1979-80 but had done so previously, most had hunted small game (87%), about one-half had hunted big game (54%), and one-fifth had hunted waterfowl (20%). These residents spent an average of 10.3 years hunting and the majority had hunted in the last 20 years. Like Broome County residents, these residents' reasons for not hunting since last being afield were predominately personal: (1) losing interest in hunting; (2) not having enough time to hunt because of family, job or other responsibilities; (3) deciding that they don't like to kill game; and (4) personal health problems and older age. Resource-related reasons for not hunting were mentioned less frequently. Only 39 percent of

these residents thought they would go hunting in 1980-81 or 1981-82.

Information from both the telephone and the mail surveys indicate that reasons for not hunting were more often personal than resource-related. Because sporadic hunters greatly outnumber deserters in the mail survey data, the telephone survey data were also analyzed by sporadic hunter and deserter categories to determine any differences in their reasons for not hunting. While sporadic hunters more often than deserters reported having insufficient time to go hunting, deserters more often reported less transient reasons: (1) they decided they don't like to kill game; (2) they had personal health problems; and (3) hunting had become too dangerous. More importantly the analysis shows that personal problems were more prevalent than resource-related problems as impediments to hunting among sporadic hunters and deserters in the telephone survey.

Active and sporadic hunters in both counties were asked why they go hunting. The three reasons most frequently expressed were: (1) to get close to nature; (2) to use their hunting skills; and (3) to obtain meat. Other reasons frequently cited by both hunter groups were "to be with family or friends" and "to find solitude". The only reason for hunting reported more frequently by active than by sporadic hunters in both counties was "to be with family or friends".

Respondents most often reported that "friends" were their usual hunting companions followed by "family members" (excluding parents and spouses). Active hunters more frequently hunted with family than did sporadic hunters; sporadic hunters more frequently hunted with friends.

Among mail survey respondents, most active and sporadic hunters in Broome and Monroe Counties reported that during their childhood someone in their family had been involved in hunting (active - 79% and 74%, respectively; sporadic - 67% and 67%, respectively). The majority of respondents from both counties had been introduced to hunting by parents or other family. This is partially explained by the fact that the majority of respondents went hunting for the first time (actually carried a firearm afield) when they were 16 years of age or younger. At that age they would be more likely to be introduced to hunting by older members of their family, rather than by friends who would be in their age group. Sporadic hunters reported more frequently than active hunters that they had been introduced to hunting by friends when 17 years of age or older.

Among telephone survey participants, the majority of active hunters, sporadic hunters, and deserters from both counties went hunting for the first time (actually carried a firearm afield) when they were 16 or younger. However, sporadic hunters

and deserters reported more often than active hunters from both counties that they had started hunting when 17 or older. These trends were similar to those reported by mail survey respondents.

Attitudes Toward Hunting and Trapping Among Broome and Monroe County Residents: The majority of active hunters, sporadic hunters, and potential hunters from both counties were mildly or strongly pro-hunting; most deserters were either neutral or mildly pro-hunting (15% of the deserters in Monroe County expressed anti-hunting attitudes). Nonhunters were often neutral toward hunting. Pro-hunting attitudes were somewhat more often expressed among nonhunters in Broome vs. Monroe County while anti-hunting attitudes were more often expressed by nonhunters in Monroe vs. Broome County.

#### Methodological Comparison

An evaluation of the mail survey vs. telephone survey methods used in this preliminary study are made largely on comparing the efficiency in meeting information objectives set for each method. The response efficiency of the telephone survey was 1 1/2 to 2 times that of the mail survey (73-95% vs. 48-50%). The quality of data obtained varied for the two methods depending on the type of data. For determining hunters' characteristics, participation and harvest rates, and reasons for hunting, the mail survey was better suited, largely because the entire sample was of hunters and because recall time for specific harvest and participation data was unlimited. For determining the dynamics of hunting recruitment/desertion and monitoring of trends in anti-hunting sentiment the telephone survey was best, primarily because of the sample population being all residents, not just hunters as in the mail survey. (A mail survey of residents would not be as effective because nonresponse would probably be very high, and the screening and follow-up questions for various hunter types would be very difficult to format acceptably.

#### Considerations/Recommendations for Future Research

Recommendations for future research on factors affecting hunting participation-desertion were made relative to three aspects of study design: study area, survey method(s), and instrument content. Study area(s) should be chosen to reflect any suspected regional variations in participation/desertion patterns and to facilitate regional or multi-regional Bureau staff efforts to improve participation. Survey methods should be chosen based on their suitability to reach and collect appropriate data from the key audience; mail surveys of previous years' license holders (when

combined with a nonrespondent telephone follow-up) are probably best to obtain information specifically on known hunters' year-to-year activity patterns, while telephone surveys are better adapted for monitoring anti-hunting sentiment and for classifying people into the various hunter types. Instrument content should be modified and expanded to (1) provide more depth to the reasons for discontinuing hunting and (2) questions on hunting satisfactions to balance the instrument and allow a more comprehensive appraisal of the hunting participation-desertion situation.

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## FINAL REPORT

STATE: New York

PROJECT NO.: W-146-R-7

PROJECT TITLE: Public Attitudes Toward Wildlife and Its Accessibility

STUDY NO. AND TITLE: VII-Evaluation of Hunting Programs, Participation and Satisfaction

STUDY OBJECTIVES: To gain a broader understanding of the dynamics of hunting, including (1) the types of satisfaction (experiences) sought by those who take up hunting, (2) the ability to provide these types of satisfaction in New York, and (3) reasons why hunters discontinue hunting.

JOB NO. AND TITLE: VII-4 Analysis of Satisfaction and Participation in Hunting

PERIOD COVERED: 1 April 1981 through 31 March 1982.

ABSTRACT: A mail survey of a sample of 1977-78 hunting license buyers in Broome and Monroe Counties was conducted in 1980. The initial Monroe County sample of 531 names and addresses resulted in 105 nondeliverable questionnaires and 304 returned questionnaires (71% of deliverable). The initial Broome County sample of 800 names and addresses resulted in 176 nondeliverable questionnaires and 454 returned questionnaires (73% of deliverable). A telephone interview survey of a sample of adult residents in Broome and Monroe Counties was conducted in 1980. The 689 interviews attempted in Monroe County resulted in 500 completed interviews (73%). The 585 interviews attempted in Broome County resulted in 500 completed interviews (85%). Few statistically significant differences were found between the responses of rural Broome County vs. Binghamton City area respondents for the mail and telephone surveys; thus, Broome County was considered one homogeneous rural county sample for comparison with the Monroe County urban sample. Numerous differences were found between data from Broome and Monroe County respondents on hunter participation, hunting involvement, and other socioeconomic variables. The mail survey data determined that the majority of Broome and Monroe County 1977-78 hunting license buyers who responded to the survey were active hunters (80% and 77%, respectively); sporadic hunters were less common (15% and 20%, respectively) and there were few deserters (5% and 3%, respectively). The telephone survey data determined that the majority of Broome and Monroe County residents who participated in the survey were nonhunters (66% and 80%, respectively); there were few active hunters (17% and 6%, respectively), deserters (8% and 7%, respectively), sporadic hunters (6% and 4%, respectively), or potential hunters (3% and 3%, respectively). The ability to contact individuals or households selected in the sample area and to

receive complete survey information was better for the telephone survey than the mail survey, but the mail survey was designed to collect more information related to hunting impediments and hunter participation. The information collected in each survey complemented the other and provided a more complete overview of the hunting involvement process. Thus, the recommended future research beyond this pilot study effort included the use of both types of surveys to collect data needed for hunting promotion programs and impediment mitigating programs for an increased number of participating hunters in New York State.

#### BACKGROUND

In recent years, hunting license sales have declined in New York. Total license sales declined from 1,142,013 during the 1976-77 hunting season to 895,656 during the 1979-80 hunting season.

A number of factors have been suggested for this decline: increasing urbanization, changes in age structure of the population, and an increasing emphasis on nonconsumptive activities. While these are undoubtedly relevant characteristics which impact the growth of hunting, it is possible that another set of variables related to hunter satisfaction may also be partially responsible for the lack of growth in hunting. The degree to which dissatisfaction with current hunting programs and opportunities results in hunter "dropouts" has not been evaluated to date.

New York's hunter access study (W-146-R, Study II) provided some measures evaluating the degree to which hunters have difficulty finding access to selected game species in various areas of the state. This study showed that access was not a serious problem for the majority of currently licensed hunters. However, since this study sampled from the universe of active hunters, it provided no information on the degree to which access problems caused people to drop out of hunting. Applegate (1977) has used univariate analysis to relate socioeconomic characteristics to desertion, but indepth studies of reasons for desertion have not been carried out. Several studies in the U.S. (e.g., Potter et al., 1973; Stankey et al., 1973) suggest that such factors as crowding are as important as bagging game to hunters' satisfaction and continued participation.

The limitation of New York's hunter access study is one applicable to any study of participating recreationists. It is possible that although a relatively small percentage (less than 20%) face serious access problems, these hunters in combination with those having dissatisfaction with other aspects of hunting may add to the number of retirees to the degree that the number leaving hunting exceeds the number entering. The degree to which this is true, and a broader insight into this type of problem, can only be obtained from studies including people who fail to continue hunting.

### PROCEDURES

As reported in Job VII-2, Broome and Monroe Counties were chosen as generally representative of a moderately rural county and an urban county, respectively, in Central New York State. Since 1977-78 license stubs were the oldest available, they were used for selecting the sample for the mail survey. Telephone directories for the two counties in 1980 were used to select the sample for the telephone survey. The questionnaires were developed for both surveys so that they would have as many comparable questions as possible and still maintain the separate and distinct approaches developed with each survey design. The mail survey of 1977-78 hunting license buyers was designed to question hunters in categories A and B-1 of the following typology while the telephone survey of the general public was designed to question individuals in categories A, B and C of the typology. The telephone survey work was subcontracted to Slade Research Associates of Rochester.

#### Hunter Participation Typology

- A. Committed to Hunting
  - 1. Active (continuous) hunters
  - 2. Sporadic (noncontinuous) hunters
- B. Uncommitted to Hunting
  - 1. Deserters (no longer hunt)
  - 2. Nonhunters
- C. Potentially Committed to Hunting
  - 1. Potential hunters

## RESULTS AND DISCUSSION

### Comparison of Survey Nonresponse Biases

A summary of completion rates for the mail and telephone surveys of each study area is presented in Table 1. The mail surveys used the Outdoor Recreation Research Unit's standard procedure of up to three reminder notices in attempting to obtain a high response rate. The telephone surveys used up to three calls in attempting to reach a high proportion of each sample.

Mail Survey Response: The relatively high rate of nondeliverable questionnaires was expected since the mailing list was almost three years old. The only statistically significant difference (Chi-square = 5.24 with 1 df,  $p < 0.05$ ) between Broome County and Monroe County data for either the nondeliverable rate or the response rate was the higher nondeliverable rate for the Binghamton City area compared to rural Broome County.

Overall, there were statistically significant differences (Duncan's Multiple Range Test,  $p < 0.05$ ) between the age distributions of those responding to the mail survey (mean age = 40.5) vs. both (a) nonrespondents (mean age = 36.2) and (b) individuals with nondeliverable addresses (mean age = 36.1); there were no statistically significant differences between the age distributions of nonrespondents and individuals with nondeliverable addresses. These age data were of samples from both counties and were taken from the 1977-78 hunting license stubs used for selecting the sample. Thus, respondents tended to be older than nonrespondents and those individuals with nondeliverable addresses.

As can be seen from Table 1, not all respondents to the mail survey were residents of Monroe County or Broome County, where their hunting licenses were purchased. Since we wanted to expand the survey results to the entire population of all hunting license holders in each county, only those cases which were for county residents were used in the following analysis of the mail survey data. This approach also allowed for a direct comparison between the mail and telephone survey data since both data bases then include (respectively) representative samples of resident county hunting license holders and county residents.

Telephone Survey Response: All residents reached in the telephone survey and classified in the "Adjusted Sample Size" in Table 1, but who were not interviewed, refused to cooperate in the telephone interviews. A sample size of approximately 25 percent larger than the Adjusted Sample Size was initially chosen. These 25 percent were not reached in three attempts, or in some cases the quota of interviews was

Table 1. SAMPLING EFFICIENCY OF MONROE AND BROOME COUNTY SURVEY AUDIENCE.

	<u>Monroe</u> <u>County</u>	<u>Broome County</u>	
		<u>Urban</u>	<u>Rural</u>
<u>Mail Survey of</u> <u>License Holders</u>			
Original Sample Size	531	400	400
Nondeliverable	20%	25%	18%
Returned/Deliverable	71%	75%	69%
Residents of County	88%	86%	86%
Response Efficiency (County Residents Responding/Deliverable)	63%	65%	59%
Total Efficiency (County Residents Responding/Original Sample Size)	50%	48%	49%
 <u>Telephone Survey of</u> <u>General Public</u>			
Adjusted Sample Size (People contacted and interviews attempted)	689	322	263
Interviews completed	73%	78%	95%



reached before the third attempt was made. Approximately one percent of these numbers were cases not included because of a hearing or language problem, or because a business number was dialed.

Statistically significant differences were found between the lower percentage refusal rates of the rural subsample in Broome County vs. the Binghamton City area subsample (Chi-square = 57.58 with 1 df,  $p < 0.05$ ) and between the rural subsample in Broome County vs. the Monroe County sample (Chi-square = 35.36 with 1 df,  $p < 0.05$ ). There were no statistically significant differences between the Binghamton City subsample of Broome County vs. Monroe County.

Mail vs. Telephone Survey Nonresponse Biases: In summary, the ability to contact individuals or households selected in the sample areas and to receive complete survey information was better for the telephone than the mail survey. Both surveys have reasonable return rates for surveys of each type. However, there was the potential for some survey biases due to those individuals or households not contacted (e.g., nondeliverable mail surveys and no answer to telephone calls) and those contacted who did not complete the survey (e.g., mail nonrespondents and telephone interview refusals). The extent and direction of any biases were unknown for this pilot study effort. Sufficient returns were obtained in both studies to assume that the respondent data were generally representative of each study area.

Comparisons between the sampling procedures and biases of the two surveys were difficult since the sampling universes and problems differed. No existing data base could be located to use as a baseline for comparing the results of the surveys. For example: (1) no data were available on the number of hunters or license holders who reside in each county; and (2) no previous hunter participation-desertion data were available in New York State for comparison purposes. Thus, the following qualitative assessment was developed:

	<u>Mail Survey</u>	<u>Telephone Survey</u>
Sampling frame	Hunting license buyers who reside in the sample county.	County residents who have hunted, currently hunt or potentially will hunt in New York State; plus non-hunters.
Sample source	1977-78 hunting license stubs from sales in the sample county.	1980 County telephone directories.

### Mail Survey

Potential sampling  
frame biases

Low level problem--excludes only those individuals who purchase their license by mail (from Albany) or in a county other than their county of residence.

Proportion of  
individuals not  
contacted

Moderate problem--the relatively high rate of nondeliverable mail surveys (18 to 25%) was expected since the sample source was nearly three years old. The individuals with nondeliverable surveys tended to be younger than those who responded to the survey. Individuals with addresses in Monroe County and the Binghamton City area were more often nondeliverable than those in rural Broome County. However, the extent or direction of other potential biases were not known (e.g., how does participation relate to the inability to locate an individual by mail?).

Proportion of  
nonrespondents  
or refusals

Moderate problem--of those deliverable surveys, 25 to 31 percent were nonrespondents from the various sample areas; there were no significant differences between the nonrespondent rates from the various sample areas. Nonrespondents tended to be significantly younger than respondents. The actual extent and direction of other potential biases were unknown.

### Telephone Survey

Low level problem--excludes households with an unlisted (number or without a telephone. The extent of this bias was not known but it was expected to be less of a problem in rural areas and somewhat more concern in urban areas.

Moderate problem--the 13 to 15 percent of the households which could not be reached after three telephone calls may not have the same hunter or potential hunter characteristics. Monroe County and the Binghamton City area had similar percentages of households that could not be contacted after 3 telephone calls. The percentage of households that could not be contacted in rural Broome County was not available due to the record keeping procedures of the company conducting the survey. The extent or direction of other potential biases were unknown (e.g., how does hunting participation relate to inability to contact a household by telephone?).

Moderate problem--of those interviews attempted, 5 to 27 percent of the individuals refused to participate from the various sample areas. Individuals from urban areas were significantly more likely to refuse than those from rural areas. The urban area refusals may be related to less interest in hunting and therefore nonhunters may be underrepresented in the survey results. The actual extent and direction of other potential biases were unknown.

### Comparison of Broome County Urban and Rural Subsamples

Mail Survey Differences: Statistical tests (Chi-square and T-test) conducted on the Binghamton City area vs. rural subsamples of the Broome County mail respondent data showed that out of 100 hunting participation and attitude variables in the data file only 9 were found to have a statistically significant difference ( $p < 0.05$ ). For many of these 9 variables, the magnitude of the differences between the two subsamples was often small (e.g., less than 10%) so that the management implications of such differences were not usually noteworthy. Additionally, some of these variables with significant differences were not important to the main hunting participation issues addressed by this study (e.g., percent who purchase a trapping license).

In Broome County, the proportion of rural respondents purchasing big game licenses in 1979-80 was significantly different from that of Binghamton respondents (Table 2); however, there was not a significant difference in 1978-79. Rural big game hunters were more often afield in both 1978-79 and 1979-80 than the city area respondents and they tended to bag more deer on the average, probably a result of their more frequent hunting (Table 2).

Rural Broome County respondents more often purchased trapping licenses in 1978-79 and 1979-80 than city area respondents but this represented only a minority of either group (Table 2).

More rural than city area Broome County respondents reported hunting with their spouses (12.5% vs. 4.2%, respectively); while this was a significant difference (Chi-square = 7.8 at 1 df) it represented only an 8 percent difference in frequency. Fewer rural than city respondents hunted with friends (42.9% vs. 57.9%, respectively) (Chi-square = 8.0 at 1 df).

Telephone Survey Differences: Statistical tests (Chi-square) conducted on the Binghamton City and rural subsamples of the Broome County telephone interview data showed that out of 26 hunting participation and attitude variables only 6 were found to have statistically significant differences ( $p < 0.05$ ). The magnitude of these differences was often small (e.g., less than 10%), minimizing their management implications.

In Broome County, the percentage of adults in the rural area who were active hunters during the 1979-80 season was significantly higher than from Binghamton City (Table 3). Adults from Binghamton more often reported anti-hunting and anti-trapping attitudes than rural residents; the differences were statistically significant but represented less than a 10 percent actual difference in each case (Table 3).

Table 2. STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN RURAL BROOME COUNTY AND BINGHAMTON CITY AREA MAIL SURVEY RESPONDENT DATA.

<u>Variable</u>	<u>Rural Broome County</u>	<u>Binghamton City area</u>	<u>Test Statistic (p&lt;0.05)</u>
<u>BIG GAME LICENSES</u>			
Percentage of Big Game License Purchasers in 1979-80	59.9%	49.1%	Chi-square=3.9 (1 df)
<u>BIG GAME HUNTERS</u>			
Average Days of Big Game Hunting in 1978-79	9.4 mean days	7.1 mean days	T statistic=2.9 (>250 df)
Average Days of Big Game Hunting in 1979-80	8.9 mean days	6.5 mean days	T statistic=2.7 (>250 df)
Average Number of Deer Bagged in 1978-79	0.42 deer	0.24 deer	T statistic=2.7 (>250 df)
Average Number of Deer Bagged in 1979-80	0.39 deer	0.24 deer	T statistic=1.9 (>250 df)
<u>TRAPPING LICENSES</u>			
Percentage of Trapping License Purchasers in 1978-79	10.3%	2.8%	Chi-square=8.2 (1 df)
Percentage of Trapping License Purchasers in 1979-80	9.3%	2.8%	Chi-square=6.3 (1 df)

Table 3. STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN RURAL BROOME COUNTY AND BINGHAMTON CITY AREA TELEPHONE SURVEY DATA.

<u>Variable</u>	<u>Rural Broome County</u>	<u>Binghamton City Area</u>	<u>Chi-square Statistic (p&lt;0.05)</u>
	<u>Percent</u>		
<u>GENERAL ADULT POPULATION</u>			
Percentage of Adults Hunting During 1979-80 Season	24.0	10.4	$\chi^2 = 15.3$ (1 df)
Percentage of Adults with Anti-Hunting Attitudes	10.8	19.6	$\chi^2 = 32.8$ (2 df)
Percentage of Adults with Anti-Trapping Attitudes	36.0	41.0	$\chi^2 = 15.4$ (2 df)
<u>HUNTERS</u>			
Percentage of Hunters Obtaining a Small Game License in 1979-80	48.3	84.6	$\chi^2 = 8.4$ (1 df)
Percentage of Hunters Planning to Hunt Waterfowl in 1980-81	1.7	19.2	$\chi^2 = 6.1$ (1 df)
Percentage of Small Game Hunters Among Hunters Who No Longer Hunt	70.3	91.4	$\chi^2 = 3.9$ (1 df)

Fewer rural Broome County than Binghamton City adults who reported hunting during the 1979-80 season obtained small game hunting licenses (Table 3); there was no significant difference in their small game hunting license buying behavior during the 1978-79 season. The proportion of rural Broome County 1979-80 hunters who planned to hunt waterfowl during the 1980-81 season was less than that of Binghamton hunters (Table 3). Among those hunters who no longer go afield, a larger percentage from Binghamton than from rural Broome County had hunted small game (Table 3).

Mail vs. Telephone Survey Differences: Both the mail and telephone survey data for Broome County were sufficiently similar (i.e., few statistically significant differences were found) between the rural and Binghamton City subsamples to consider them as one group. Thus, the Broome County survey data will be considered as one homogeneous "rural" county sample for comparison with the Monroe County "urban" sample data in subsequent sections of this report.

#### Comparison of Hunter-Nonhunter Types

Mail Survey Hunter Typology: The majority of 1977-78 hunting license buyers in both Broome and Monroe Counties were committed to hunting either as active (i.e., hunt every year) or sporadic (i.e., hunt but not every year) hunters; few no longer hunted<sup>1</sup> (i.e., were deserters) (Table 4). There were no statistically significant differences between the percentage of these hunter types in Broome and Monroe Counties (Chi-square < 6.0 with 2 df).

These data could not be expanded to all 1977-78 resident hunting license buyers because: (1) license sales data were not kept by residence area; and (2) data were not available to convert the number of licenses sold into the number of hunting license buyers.

Telephone Survey Hunter Typology: The percentage of Broome County residents committed to hunting (Table 5) was significantly greater than that of Monroe County residents, while the percentage of nonhunters was significantly less in Broome County than in Monroe County (Chi-square = 37.78 with 4 df;  $p < 0.05$ ). In both counties the percentage of residents who were committed to hunting was greater than the percentage

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<sup>1</sup>The small percentage of deserters in the mail survey data often provided an insufficient number of cases to analyze in subsequent sections of the report. Therefore, active and sporadic hunter data were often the only hunter types reported from the mail survey.

Table 4. PERCENTAGE OF 1977-78 HUNTING LICENSE BUYERS RESPONDING TO THE MAIL SURVEY WHO WERE IN EACH HUNTER TYPE.

Hunter Types	Broome County (N=341)	Monroe County (N=251)
	Percent	
<u>Committed to Hunting</u>		
Active (continuous) hunters <sup>a</sup>	79.6	76.5
Sporadic (noncontinuous) hunters <sup>b</sup>	15.4	20.7
<u>Uncommitted to Hunting</u>		
Deserters <sup>c</sup>	5.0	2.8
Nonhunters	N/A	N/A
<u>Potentially Committed to Hunting</u>		
Potential hunters	<u>N/A</u>	<u>N/A</u>
	100.0	100.0

<sup>a</sup>Hunted in 1977 through 1980 and intended to hunt in 1980-81.

<sup>b</sup>Did not hunt in one or more years during 1977 through 1980 or did not intend to hunt in 1980-81.

<sup>c</sup>Did not hunt in any year during 1977 through 1980 nor did they intend to hunt in 1980-81 or they reported that they were currently not involved in hunting.

Table 5. PERCENTAGE OF COUNTY RESIDENTS IN THE TELEPHONE SURVEY WHO WERE IN EACH HUNTER TYPE.

Hunter Types	Broome County	Monroe County
	(N=500)	(N=500)
	Percent	
	<i>Rural</i>	<i>Urban</i>
<u>Committed to Hunting</u>		
Active (continuous) hunters <sup>a</sup>	16.6	5.6
Sporadic (noncontinuous) hunters <sup>b</sup>	6.6	4.2
<u>Uncommitted to Hunting</u>		
Deserters <sup>c</sup>	8.0	6.6
Nonhunters <sup>d</sup>	66.2	80.4
<u>Potentially Committed to Hunting</u>		
Potential hunters <sup>e</sup>	2.6	3.2
	100.0	100.0

<sup>a</sup>Hunted in 1978 through 1980 and intends to hunt in 1980-81.

<sup>b</sup>Did not hunt in one or more years during 1978 through 1980 or did not intend to hunt in 1980-81.

<sup>c</sup>Did not hunt in 1979-80 and will not hunt again in 1980-81 or 1981-82.

<sup>d</sup>Never hunted and no interest in hunting.

<sup>e</sup>Considering hunting in 1980-81 or 1981-82.



no longer hunting (i.e., deserters) (Table 5). Potential hunters comprised only a few percent of the residents from either county. When the survey results were expanded to estimate the total number of resident adults in each hunter type, the magnitude of even the potential hunter group was worth noting despite the small fraction of the total population it represented (Table 6).

Mail vs. Telephone Survey Hunter Typologies: The hunter typology data could not be directly compared between the two surveys because of the differences in populations sampled and time frames included. The mail survey sample included only those individuals buying a hunting license in 1977-78, while the telephone survey sampled the entire adult population of the counties and obtained information on their current and past involvement with hunting. The mail survey data could be considered a subset of the telephone survey data in terms of both the target population and the time frame. Thus, the information collected in each survey complemented the other and provided a more complete overview of the hunting involvement process.

#### Hunting Participation - Desertion

License Buying Behavior of Mail Survey Respondents: The vast majority of Broome and Monroe County respondents (1977-78 hunting license buyers) reported purchased a hunting license in 1979-80 (91% and 90%, respectively). Ninety-one percent of the Broome County respondents purchased a hunting license in both 1978-79 and 1979-80, while 8 percent purchased a hunting license in only one of the two years and 1 percent in neither of the two years (Figure 1). Ninety percent of the Monroe County respondents purchased a hunting license in both 1978-79 and 1979-80, while 8 percent purchased a hunting license in only one of the two years and 2 percent in neither of the two years (Figure 2). There were no statistically significant differences in the proportions of hunting licenses buyers in Broome vs. Monroe County for the years listed.

Big game, small game and trapping licenses were purchased by greater percentages of Broome County than Monroe County residents in 1978-80 (Table 7). Sportsman's licenses and federal migratory bird stamps were purchased by greater percentages of Monroe than Broome County respondents in 1978-80. More respondents from both counties more often purchased Sportsman's licenses in 1979-80 than in 1978-79. While there was no change in the price of these licenses during these two years, it may have been considered more economical by the respondents to obtain this type of license rather than several separate licenses.

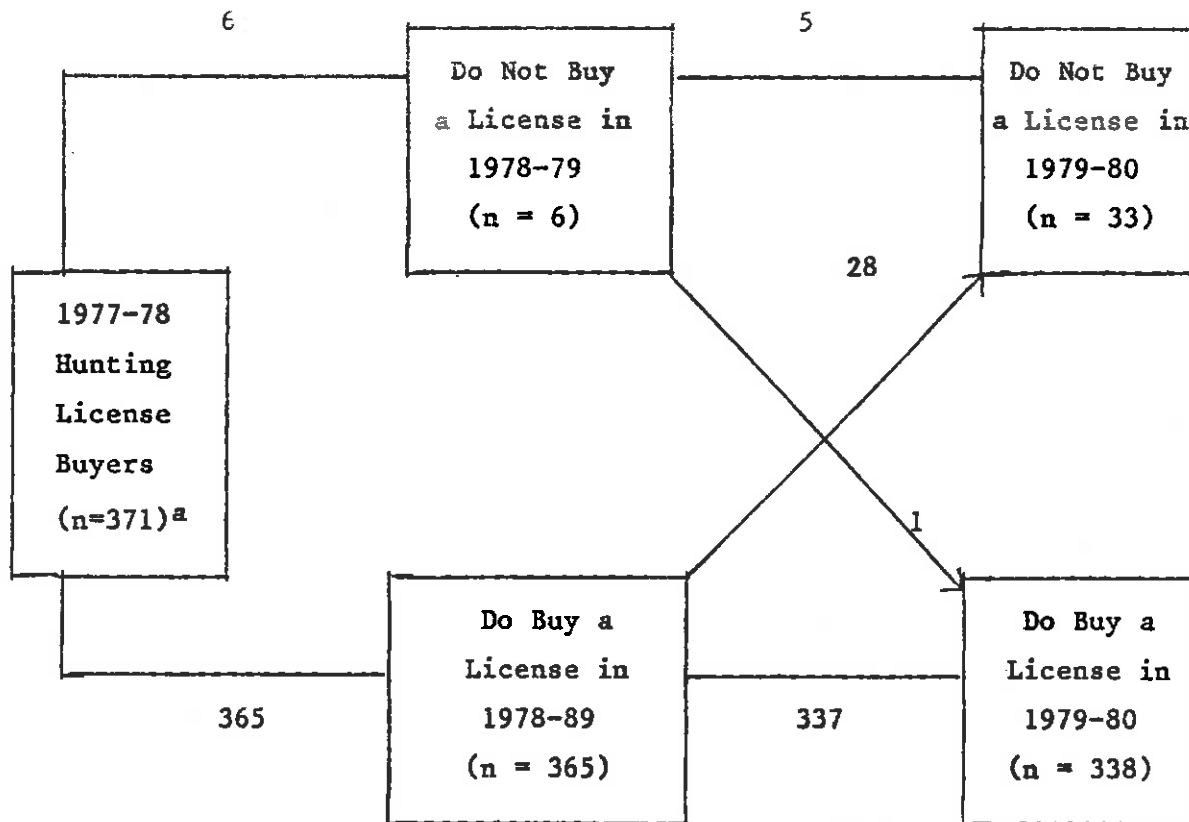
Table 6. ESTIMATED NUMBER OF TOTAL ADULT COUNTY RESIDENTS IN EACH HUNTER TYPE  
(EXPANDED FROM TELEPHONE SURVEY DATA).

Hunter Types	Total Estimated Number of Adults <sup>a</sup>	
	Broome County	Monroe County
<u>Committed to Hunting</u>		
Active (continuous) hunters	26,930	29,310
Sporadic (noncontinuous) hunters	10,710	21,980
<u>Uncommitted to Hunting</u>		
Deserters	12,980	34,540
Nonhunters	107,410	420,750
<u>Potentially Committed to Hunting</u>		
Potential hunters	<u>4,220</u>	<u>16,750</u>
	162,250 <sup>b</sup>	523,330 <sup>b</sup>

<sup>a</sup>Adults are 17 or more years of age.

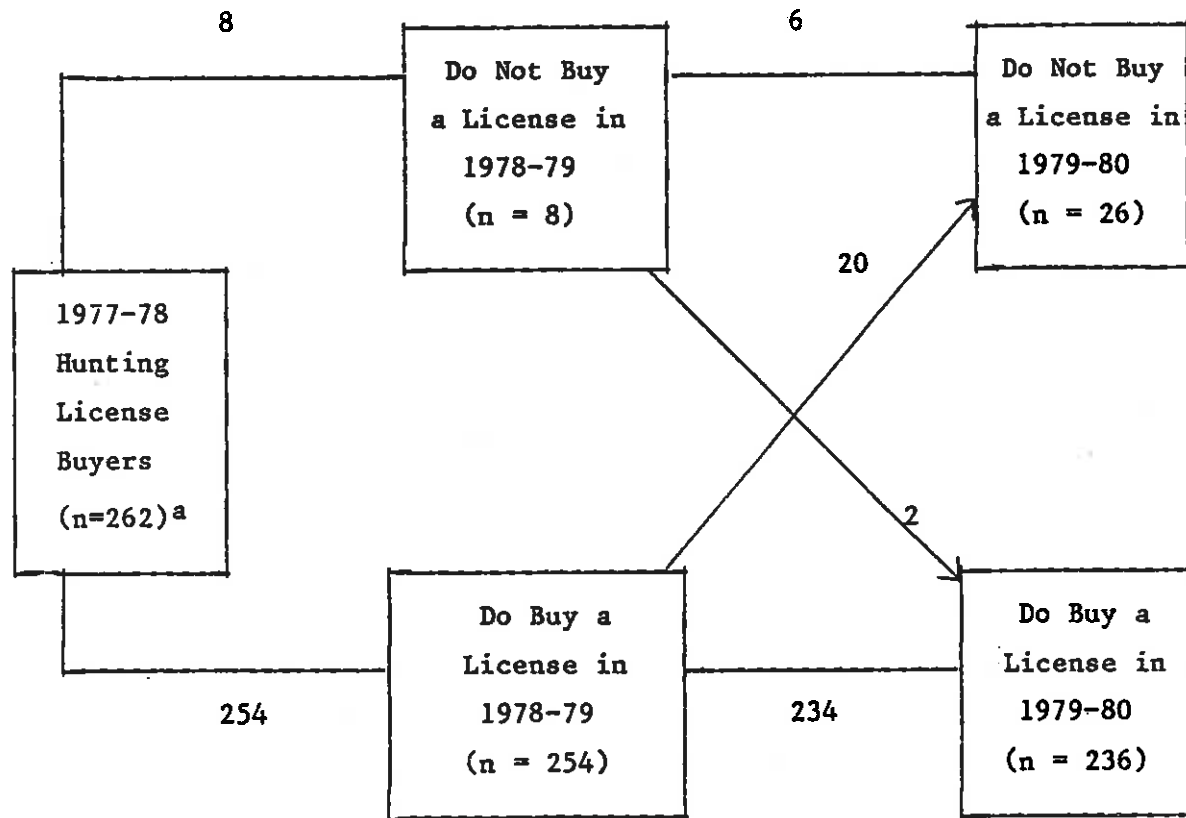
<sup>b</sup>Total number of adults taken from 1980 U.S. Bureau of the Census data.

Figure 1. Dynamics of 1978-80 Hunter License Buying Behavior by 1977-78 Broome County License Buyers Responding to the Mail Survey.



<sup>a</sup>Cases with missing data for these variables = 20

Figure 2. Dynamics of 1978-80 Hunter License Buying Behavior by 1977-78 Monroe County License Buyers Responding to the Mail Survey.

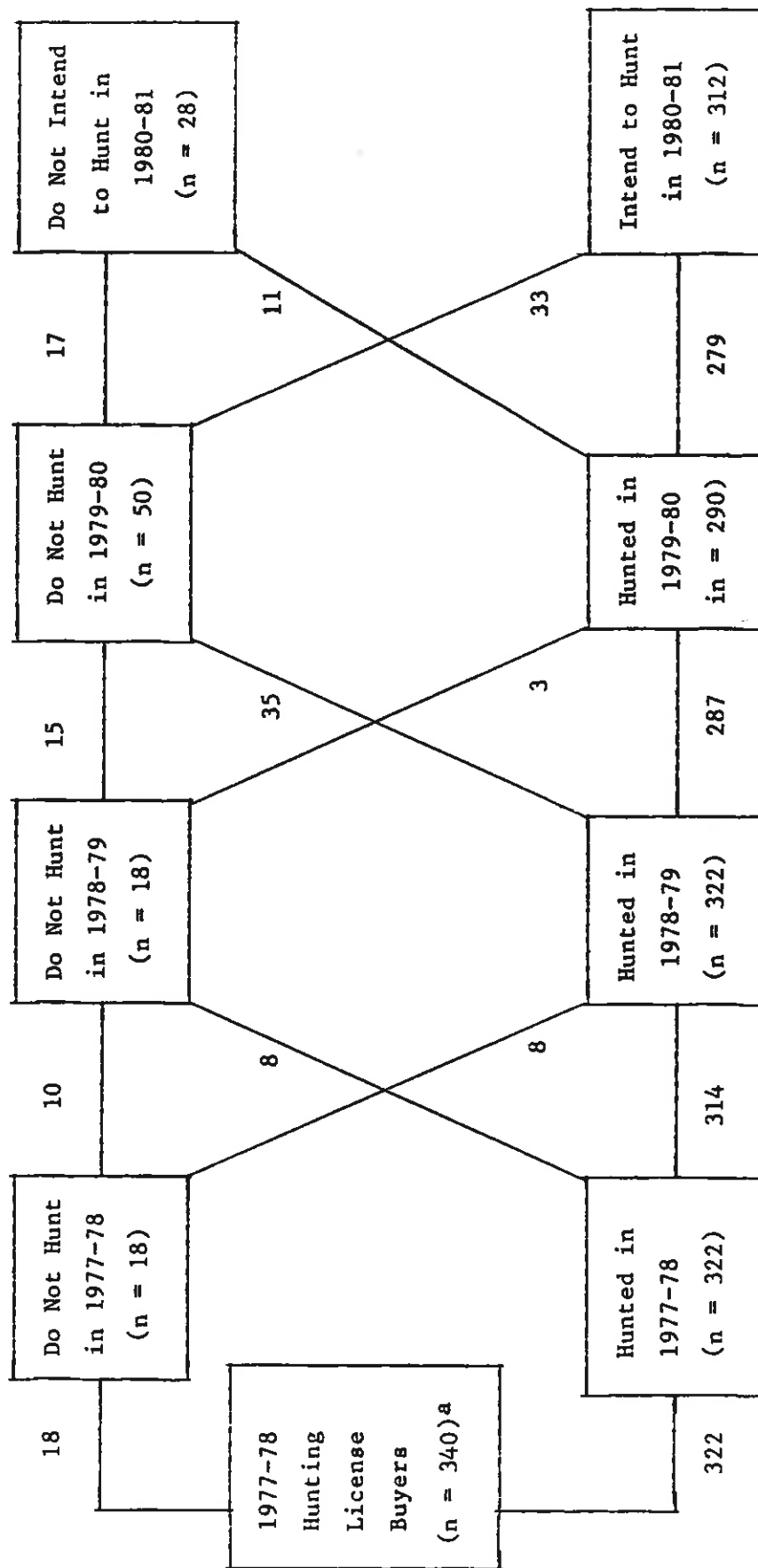


<sup>a</sup>Cases with missing data for these variables = 7

Table 7. TYPES OF LICENSES PURCHASED IN 1978-80 BY 1977-78 HUNTING LICENSE BUYERS  
RESPONDING TO THE MAIL SURVEY OF LICENSE HOLDERS.

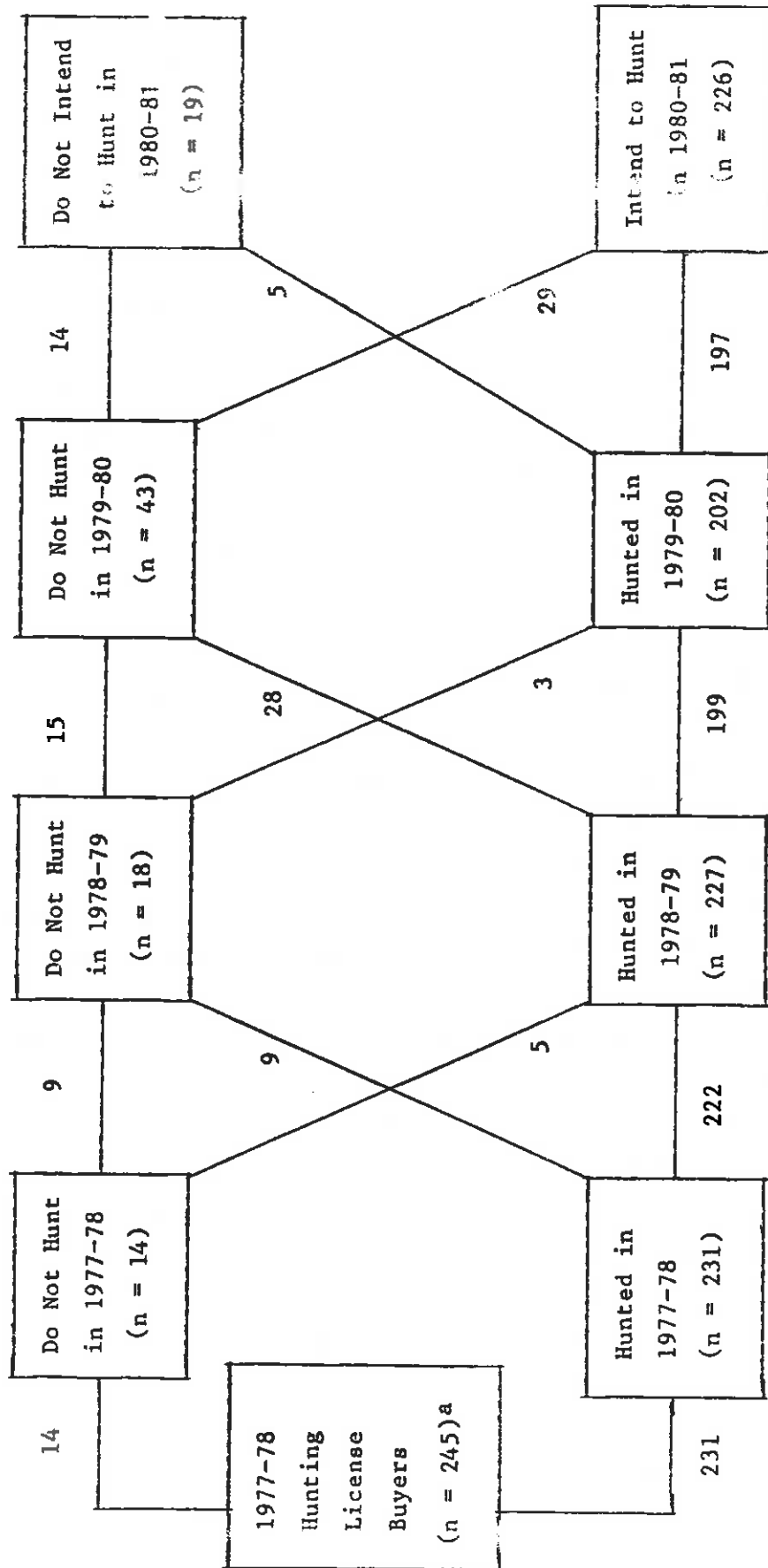
License Type	Broome County (N=391)		Monroe County (N=269)	
	1978-79 License Year	1979-80 License Year	1978-79 License Year	1979-80 License Year
	Percent			
Big Game	65.1	53.7	47.2	39.4
Small Game	49.9	35.4	43.0	28.4
Sportsman's	29.5	36.6	44.9	49.2
Federal Migratory Bird Stamp	13.9	11.6	28.9	22.4
Trapping	6.0	5.5	0.0	1.1

Figure 3. Dynamics of 1977-81 Hunting Participation by 1977-78 Broome County License Buyers Responding to the Mail Survey.



<sup>a</sup> Cases with missing data for these variables = 51

Figure 4. Dynamics of 1977-81 Hunting Participation by 1977-78 Monroe County License Buyers Responding to the Mail Survey.



<sup>a</sup> Cases with missing data for these variables = 24

Hunting Participation of Mail Survey Respondents: The majority of responding Broome and Monroe County license holders reported that they had hunted during the 1970-71 through the 1976-77 hunting seasons (Table 8). These data include only those respondents who were 16 years of age or older during a particular hunting season. Hunting participation increased from 1970-71 through 1976-77 for respondents from both counties.

The majority of Broome County respondents reported that they hunted during the 1977-78, 1978-79, and 1979-80 seasons (95%, 95%, and 85%, respectively) and intended to hunt during the 1980-81 season (92%). As Figure 3 indicates, some shifting between active and inactive hunter status occurred from year to year. Eighty percent of the respondents hunted in 1977 through 1980 and intended to hunt in 1980-81 (i.e., continually active hunters); 19 percent missed 1 or 2 years, and 1 percent missed all 3 years after the 1977-78 season.

The majority of Monroe County respondents reported that they hunted during the 1977-78, 1978-79, and 1979-80 seasons (94%, 93%, and 82%, respectively) and intended to hunt during the 1980-81 season (92%). As Figure 4 indicates, some shifting between active and inactive hunter status occurred from year to year. Seventy-six percent of the respondents hunted in 1977 through 1980 and intended to hunt in 1980-81 (i.e., active hunters); 20 percent missed 1 or 2 years, and 3 percent missed all 3 years after the 1977-78 season.

Hunting participation dynamics were very similar for Broome and Monroe County respondents (Figures 3 and 4). For both groups, most respondents who did not hunt in 1979-80 reported that they did intend to hunt in the 1980-81 season. This may not have occurred, but it indicates that they viewed themselves as only temporarily inactive (i.e., sporadic hunters).

For those respondents from Broome County who obtained the appropriate hunting licenses in 1978-79 and 1979-80, small game hunting was most popular, followed by big game and waterfowl hunting (Table 9). The mean number of animals bagged by Broome County respondents was highest for small game hunters, followed by waterfowl and big game hunters (Table 9).

For those respondents from Monroe County who obtained the appropriate hunting licenses in 1978-79 and 1979-80, small game and big game hunting were nearly equal in popularity while waterfowl hunting was only slightly less popular (Table 9). The mean number of animals bagged by Monroe County respondents was highest for waterfowl hunters followed by small game and big game hunters (Table 9).



Table 8. HUNTING PARTICIPATION OF 1977-78 HUNTING LICENSE BUYERS RESPONDING TO THE MAIL SURVEY DURING THE 1970-78 HUNTING SEASONS.

Hunting Season	Hunting Participation'			Total Number <sup>b</sup>
	<u>Hunted</u>	Did Not	Don't	
		Hunt	Remember <sup>a</sup>	
		Percent		
<u>BROOME COUNTY</u>				
1976-77	92.7	6.1	1.2	329
1975-76	90.5	7.9	1.6	316
1974-75	87.8	9.9	2.3	304
1973-74	84.8	12.2	3.0	296
1972-73	82.3	14.2	3.5	288
1971-72	81.6	15.2	3.2	277
1970-71	80.4	16.6	3.0	271
<u>MONROE COUNTY</u>				
1976-77	89.6	8.7	1.7	241
1975-76	85.7	13.0	1.3	238
1974-75	86.6	12.1	1.3	232
1973-74	83.2	14.6	2.2	226
1972-73	81.1	15.7	3.2	216
1971-72	80.0	16.7	4.3	209
1970-71	79.0	17.1	3.9	205

<sup>a</sup>Does not include those cases with missing data.

<sup>b</sup>Only includes those respondents who were 16 or more years old during a particular hunting season. It should be remembered that this reflects the history of the respondents and is not a dynamic model of hunting participation.

Table 9. HUNTING ACTIVITY OF 1977-78 HUNTING LICENSE BUYERS, IN THE MAIL SURVEY, DURING THE 1978-79 AND 1979-80 HUNTING SEASONS.

Type of Participants <sup>a</sup>	Average Hunting Participation			
	Broome County		Monroe County	
	1978-79	1979-80	1978-79	1979-80
<u>Small Game Hunters</u>				
mean days hunted	15.4	14.7	7.8	7.3
mean # animals bagged	11.3	10.5	6.0	5.6
<u>Big Game Hunters</u>				
mean days hunted	8.6	8.3	7.5	7.1
mean # animals bagged	0.35	0.33	0.38	0.32
<u>Waterfowl Hunters</u>				
mean days hunted	5.8	6.3	6.5	6.7
mean # birds bagged	4.4	5.3	8.3	10.5

<sup>a</sup>Includes respondents with appropriate licenses for each year.

Comparisons between Broome and Monroe County respondent data in Table 9 show that Broome County small game hunters were more avid and bagged more game per hunter than Monroe County hunters, while the reverse was true for waterfowl hunting. Big game hunters in Broome County were slightly more avid and bagged the same amount of game per hunter as Monroe County hunters.

Reasons for Mail Survey Respondents Not Hunting in 1978-80: Broome and Monroe County respondents who did not hunt during the 1978-79 and 1979-80 seasons (i.e., sporadic hunters and deserters) reported similar reasons for not hunting. The five personal reasons cited most frequently for not hunting included: (1) not enough time to hunt; (2) lost interest in hunting generally; (3) no one to hunt with; (4) personal health problems; and (5) decided I don't like to kill game (Tables 10 and 11). These reasons for not hunting reflected attitudinal shifts, changes in the stage of life, and other personal life experiences.

Resource-related reasons were cited less frequently by respondents compared to personal reasons for not hunting. The three resource-related reasons mentioned most often were: (1) travel distance to hunting areas too great; (2) not enough game to keep me interested in hunting; and (3) not enough places to hunt (Tables 10 and 11). These reasons relate to the amount of wildlife and land available for hunting; it is noteworthy that respondents from both an "urban" and "rural" county reported similar resource-related reasons for not hunting.

Hunting Participation of Telephone Survey Respondents: Among Broome County respondents who reported that they hunted in 1979-80, the vast majority hunted big game, one-half hunted small game, and only a small percentage hunted waterfowl (Table 12). Of those Monroe County respondents who reported that they hunted in 1979-80, a majority hunted big game and small game, and a minority hunted waterfowl (Table 12). A larger percentage of Broome County vs. Monroe County hunters reportedly hunted big game. Small game and waterfowl were hunted by a larger percentage of Monroe County hunters compared to Broome County hunters.

Nearly equal percentages of Broome and Monroe County respondents who hunted in 1979-80 reported that they had hunted for the same type of game during 1978-79 and intended to hunt for these game in 1980-81 (Table 12). While these percentages were nearly equal from year to year, this was a result of both active hunters who sought the same type of game each year and sporadic hunters who switched back and forth between active and inactive status. There were an insufficient number of sporadic

Table 10. REASONS FOR NOT HUNTING DURING THE 1978-79 SEASON, FOR THOSE MAIL SURVEY RESPONDENTS WHO DID NOT HUNT.

Reasons for Not Hunting <sup>a</sup>	Broome County (n=22)	Monroe County (n=22)
	Percent <sup>b</sup>	
Personal Reasons	74.1	80.0
Not enough time to hunt	31.8	27.3
Lost interest in hunting generally	22.7	22.7
No one to hunt with	22.7	18.2
Personal health problems	13.6	18.2
Decided I don't like to kill game	9.0	13.6
Bad hunting experience which made me quit	4.5	4.5
Moved away from New York State	4.5	4.5
Licenses too costly	4.5	4.5
Equipment, ammunition, etc. too costly	4.5	0.0
Dissatisfaction with hunting laws & regulations	4.5	0.0
Misc. reasons	9.0	4.5
Resource-related Reasons	29.6	52.0
Travel distance to hunting areas too great	22.7	22.7
Not enough game to keep me interested in hunting	18.2	22.7
Not enough places to hunt	22.7	13.6
Hunting areas too crowded	13.6	9.1
Hunting has become too dangerous	13.6	4.5
Did not have enough successful hunts	4.5	13.6

<sup>a</sup>Reasons were ordered in each category from most frequently to least frequently mentioned overall.

<sup>b</sup>Percentages total more than 100% since respondents could state more than one reason.

Table 11. REASONS FOR NOT HUNTING DURING THE 1979-80 SEASON, FOR THOSE MAIL SURVEY RESPONDENTS WHO DID NOT HUNT.

Reasons for Not Hunting <sup>a</sup>	Broome County (n=47)	Monroe County (n=43)
	Percent <sup>b</sup>	
Personal Reasons	71.7	71.7
Lost interest in hunting generally	27.7	25.6
Not enough time to hunt	29.8	20.9
No one to hunt with	14.9	23.8
Decided I don't like to kill game	10.7	16.3
Personal health problems	10.6	9.3
Moved away from New York State	12.7	4.7
Licenses too costly	6.4	11.6
Dissatisfaction with hunting laws & regulations	4.2	9.3
Equipment, ammunition, etc. too costly	4.3	4.7
Bad hunting experience which made me quit	2.1	2.3
Misc. reasons	10.6	6.9
Resource-related Reasons	45.3	54.7
Not enough game to keep me interested in hunting	23.4	34.9
Travel distance to hunting areas too great	21.2	28.0
Not enough places to hunt	23.4	23.3
Did not have enough successful hunts	19.1	16.3
Hunting areas too crowded	17.0	11.6
Hunting has become too dangerous	17.0	9.3

<sup>a</sup>Reasons were ordered in each category from most frequently to least frequently mentioned overall.

<sup>b</sup>Percentages total more than 100% since respondents could state more than one reason.

Table 12. TYPES OF GAME HUNTED IN 1978-81 BY COUNTY RESIDENTS WHO REPORTED IN THE TELEPHONE SURVEY THEY HAD HUNTED IN 1979-80.

Types of Game Hunted	Broome County (N=86)			Monroe County (N=30)		
	Hunted 1978-79	Hunted 1979-80	Intended to Hunt 1980-81	Hunted 1978-79	Hunted 1979-80	Intended to Hunt 1980-81
	Percent					
Big Game	86.0	93.0	93.0	76.7	76.7	80.0
Small Game	54.7	50.0	55.8	73.3	70.0	80.0
Waterfowl	9.3	7.0	7.0	26.7	23.3	30.0

hunters (who were active in 1979-80) in the sample to allow for an analysis of the reasons why they did not continue to hunt for each type of game during the following years.

Telephone Survey Respondents' Reasons for Not Hunting: Of those Broome County residents who reported that they had not hunted in 1979-80 but had hunted previously, the majority had hunted big game and small game, and only a small percentage had hunted waterfowl (Table 13). These residents spent an average of 14.7 years hunting and the majority had hunted in the last ten years (Table 14). Their reasons for not hunting since their last time afield were predominately due to personal problems: (1) losing interest in hunting; (2) not having enough time to hunt because of family, job or other responsibilities; (3) personal health problems and older age; and (4) deciding that they don't like to kill game (Table 15). Resource-related reasons for not hunting since their last trip were less frequently mentioned compared to the personal problems listed above. Only about one-half of these residents (who reported that they had not hunted in 1979-80 but had hunted previously) thought there was any possibility that they would go hunting in 1980-81 or 1981-82 (Table 16).

Of those Monroe County residents who reported that they had not hunted in 1979-80 but had hunted previously, the majority had hunted small game, about one-half had hunted big game, and a minority had hunted waterfowl (Table 13). These residents spent an average of 10.3 years hunting and the majority had hunted in the last 20 years (Table 14). Their reasons for not hunting since their last time afield were predominately due to personal problems: (1) losing interest in hunting; (2) not having enough time to hunt because of family, job or other responsibilities; (3) deciding that they don't like to kill game; and (4) personal health problems and older age (Table 15). Resource-related reasons for not hunting since their last trip were less frequently mentioned compared to the personal problems listed above. Only 39 percent of these residents thought there was any possibility that they would go hunting in 1980-81 or 1981-82 (Table 16).

Broome and Monroe County residents were very similar in the characteristics listed above. The exceptions were that Broome County residents tended to have a longer history of hunting, had hunted more recently and were somewhat more likely to hunt in 1980-81 or 1981-82 than Monroe County residents.

Table 13. TYPES OF GAME HUNTED IN NEW YORK STATE BEFORE 1979-80 BY THOSE COUNTY RESIDENTS IN THE TELEPHONE SURVEY WHO HAD NOT HUNTED IN 1979-80.

Types of Game Hunted	Broome County (N=72)	Monroe County (N=54)
	Percent	
Big Game	80.6	53.7
Small Game	80.6	87.0
Waterfowl	13.9	20.4



Table 14. LAST YEAR HUNTED BY THOSE COUNTY RESIDENTS IN THE TELEPHONE SURVEY WHO HAD NOT HUNTED IN 1979-80 BUT HAD HUNTED PREVIOUSLY.

Last Year Hunted	Broome County			Monroe County		
	Big Game	Small Game	Waterfowl	Big Game	Small Game	Waterfowl
	Percent <sup>a</sup>					
Before 1930	1.9	3.8	0.0	0.0	0.0	9.1
1930-1939	1.9	1.9	0.0	3.4	6.4	9.1
1940-1949	0.0	1.9	10.0	6.8	6.4	0.0
1950-1959	11.1	11.5	0.0	13.8	14.9	27.3
1960-1969	16.7	23.1	30.0	20.9	25.5	9.1
1970-1974	24.1	21.2	20.0	13.8	17.0	9.1
1975-1979	<u>44.3</u>	<u>36.6</u>	<u>40.0</u>	<u>41.3</u>	<u>29.8</u>	<u>36.3</u>
	100.0	100.0	100.0	100.0	100.0	100.0
	(N=54)	(N=52)	(N=10)	(N=29)	(N=47)	(N=11)

<sup>a</sup>Includes all residents in survey at all ages; thus it should be remembered that this reflects the history of the respondents and is not a dynamic model of hunting participation.

Table 15. REASONS FOR NOT HUNTING SINCE LAST HUNTING TRIP, FOR THOSE COUNTY RESIDENTS IN THE TELEPHONE SURVEY WHO DID NOT HUNT IN 1979-80.

Reasons for Not Hunting	Broome County (N=72)	Monroe County (N=54)
	Percent	
Personal Reasons	94.5	94.4
Lost interest in hunting generally	37.5	37.0
Not enough time to hunt/busy with job and family	31.9	29.6
Personal health problems/older age	16.7	9.3
Decided I don't like to kill game	6.9	22.2
No one to hunt with	4.2	3.7
Equipment, ammunition, etc. too costly/not available	4.2	1.9
Bad hunting experience which made me quit	4.2	0.0
Decided I don't like to eat game	1.4	3.7
Dissatisfaction with hunting laws and regulations	0.0	1.9
Licenses too costly	1.4	0.0
Miscellaneous reasons	4.2	7.4
Resource-related Reasons	12.3	18.5
Hunting has become too dangerous	6.9	9.3
Not enough game to keep me interested in hunting	4.2	9.3
Hunting areas too crowded	1.4	3.7
Did not have enough successful hunts	0.0	3.7
Travel distance to hunting areas too great	0.0	1.9
Not enough places to hunt	0.0	1.9

Table 16. POSSIBILITY OF HUNTING IN 1980-82 BY THOSE COUNTY RESIDENTS IN THE TELEPHONE SURVEY WHO HAD NOT HUNTED IN 1979-80 BUT HAD HUNTED PREVIOUSLY.

Possibility of Hunting in 1980-81 or 1981-82	Broome County (N=73)	Monroe County (N=54)
	Percent	
Considerable Chance	15.1	13.0
Some Chance	13.7	11.1
Little Chance	16.4	14.8
No Chance	<u>54.8</u>	<u>61.1</u>
	100.0	100.0

Comparison of Mail vs. Telephone Survey Data: Information from the mail survey shows that reasons for not hunting were more often personal than resource-related. An even larger proportion of telephone survey respondents reported that personal problems caused them to stop hunting. Because sporadic hunters greatly outnumber deserters in the mail survey data, the telephone survey data were also analyzed by sporadic hunter and deserter categories to ascertain if there were any differences in their reasons for not hunting. While sporadic hunters more often than deserters reported having insufficient time to go hunting, deserters more often reported less transient reasons: (1) they decided they don't like to kill game; (2) they had personal health problems; and (3) hunting had become too dangerous (Table 17). More importantly, the analysis shows that personal problems were more prevalent than resource-related problems as impediments to hunting among sporadic hunters and deserters in the telephone survey.

Other studies by these authors (Brown et al., 1981) have shown that nonrespondents to mail surveys were less likely to participate in the activity being studied. The telephone survey could be considered less biased in this situation (comparison of mail and telephone survey data) with the possible conclusion that personal problems were more often impediments to hunting participation than resource-related reasons.

An alternate hypothesis is that since mail survey data represented more recent sporadic hunters and deserters while the telephone survey represented the cumulative responses of sporadic hunters and deserters over numerous decades, mail survey results reflect the more recent problems and impediments experienced by sporadic hunters and deserters (e.g., personal and some resource-related problems), as opposed to a historical aggregation of these problems and impediments (e.g., predominately personal problems). One way to test such a hypothesis would be to use the telephone survey data to compare the more recent sporadic hunters' and deserters' reasons for not hunting with those from sporadic hunters and deserters of more than 5 or 10 years ago. However, attempts at such a test showed that an insufficient number of resource-related reasons were reported for not hunting to make a meaningful comparison.

A third possible explanation was that respondents to the mail survey were given a list of personal and resource-related reasons to prompt their response while telephone survey participants were only asked directly why they did not hunt. Thus, telephone respondents may have predominately considered only personal reasons while mail survey respondents were prompted to consider both types of impediments. If this latter hypothesis is the explanation for the difference noted in the data then such

Table 17. REASONS FOR NOT HUNTING SINCE LAST HUNTING TRIP, FOR THOSE BROOME AND MONROE COUNTY SPORADIC HUNTERS AND DESERTERS IN THE TELEPHONE SURVEY WHO DID NOT HUNT IN 1979-80.

Reasons for Not Hunting	Sporadic Hunters (N=54)	Deserters (N=72)
	Percent	
Personal Reasons	94.4	94.5
Not enough time to hunt/busy with job and family	48.1	18.1
Lost interest in hunting generally	33.3	40.3
Personal health problems/older age	9.3	16.7
Decided I don't like to kill game	5.6	19.4
Equipment, ammunition, etc. too costly/not available	3.7	2.8
No one to hunt with	1.9	5.6
Decided I don't like to eat game	1.9	2.8
Bad hunting experience which made me quit	0.0	4.2
Licenses too costly	1.9	0.0
Dissatisfaction with hunting laws and regulations	0.0	1.4
Miscellaneous reasons	9.3	2.8
Resource-related Reasons	13.0	16.4
Not enough game to keep me interested in hunting	7.4	5.6
Hunting has become too dangerous	3.7	11.1
Hunting areas too crowded	0.0	4.2
Did not have enough successful hunts	1.9	1.4
Travel distance to hunting areas too great	1.9	0.0
Not enough places to hunt	0.0	1.4

questions probably should be asked using a mail rather than telephone survey, thereby ensuring that all respondents can consider and react to the same list of items.

#### Hunting Involvement and Hunter Background

Hunting Involvement of Mail Survey Respondents: Active hunters in both Broome and Monroe Counties reported more frequently than sporadic hunters that they hunt a lot and hunting is an important part of their life (Table 18). Sporadic hunters in both counties reported more frequently than active hunters that they hunted occasionally but did not consider themselves avid hunters (Table 18).

The three reasons for hunting expressed most often by both active and sporadic hunters in both counties were: (1) to get close to nature; (2) to use their hunting skills; and (3) to obtain meat (Table 19). The other reasons frequently cited by both hunter groups were "to be with family or friends" and "to find solitude". The only reason for hunting reported more frequently by active hunters vs. sporadic hunters in both counties was "to be with family or friends" (Table 19).

A majority of respondents reported that friends were their usual hunting companions (Table 20); the second most often mentioned category was family members (excluding parents and spouses). Active hunters, compared to sporadic hunters, more frequently hunted with family and less frequently hunted with friends (Table 20).

Early Life Influences on the Hunting Involvement of Mail Survey Respondents: In both Broome and Monroe Counties most active hunters (79% and 74%, respectively) and sporadic hunters (67% and 67%, respectively) reported that during their childhood someone in their family had been involved in hunting. The majority of respondents from both counties also reported that they had been introduced to hunting by parents or other family (Table 21). This is partially explained by the fact that the majority of respondents went hunting for the first time (actually carried a firearm afield) when they were 16 or less years of age (Table 22). Thus, at that age they would be more likely to be introduced to hunting by older members of their family rather than by friends who would be in their age group. This pattern was less common among sporadic hunters than active hunters; more sporadic hunters reported that they had been introduced to hunting by friends when 17 years of age or older (Tables 21 and 22).

Table 18. 1977-78 HUNTING LICENSE BUYERS' (RESPONDING TO THE MAIL SURVEY) OPINION OF THEIR HUNTING INVOLVEMENT IN 1980.

<u>Hunting Involvement</u>	<u>Broome County</u>		<u>Monroe County</u>	
	<u>Active Hunters</u>	<u>Sporadic Hunters</u>	<u>Active Hunters</u>	<u>Sporadic Hunters</u>
	<u>Percent</u>			
Hunt occasionally but not avid hunter	20.5	46.1	21.3	56.9
Hunt occasionally and avid hunter	40.3	40.4	50.5	33.3
Hunt a lot and hunting is important	<u>39.2</u>	<u>13.5</u>	<u>28.2</u>	<u>9.8</u>
	100.0	100.0	100.0	100.0
	(N=268)	(N=52)	(N=188)	(N=51)

Table 19. 1977-78 HUNTING LICENSE BUYERS' (RESPONDING TO THE MAIL SURVEY) REASONS FOR HUNTING.

<u>Hunting Involvement</u>	<u>Broome County</u>		<u>Monroe County</u>	
	<u>Active Hunters</u>	<u>Sporadic Hunters</u>	<u>Active Hunters</u>	<u>Sporadic Hunters</u>
	<u>Percent<sup>a</sup></u>			
Get close to nature	67.2	75.0	71.1	82.4
Use hunting skills	65.7	61.5	63.6	60.8
Obtain meat	58.6	65.4	57.8	58.8
Be with family or friends	79.7	13.8	45.5	29.4
Find solitude	34.7	40.4	35.8	37.3
Obtain a trophy	11.9	7.7	12.8	9.8
Eliminate problem animals	3.7	0.0	2.7	11.8
	(N=268)	(N=52)	(N=187)	(N=51)

<sup>a</sup>Percentages total more than 100% since respondents could state more than one reason.



Table 20. USUAL HUNTING COMPANION FOR 1977-78 HUNTING LICENSE BUYERS RESPONDING TO THE MAIL SURVEY.

<u>Usual Hunting Companion</u>	<u>Broome County</u>		<u>Monroe County</u>	
	<u>Active Hunters</u>	<u>Sporadic Hunters</u>	<u>Active Hunters</u>	<u>Sporadic Hunters</u>
	<u>Percent<sup>a</sup></u>			
Friend	49.4	62.7	57.5	67.3
Family-relative (other than parents or spouse)	38.0	25.5	38.7	20.4
Usually hunt alone	22.1	27.5	14.0	12.2
Parent	16.0	17.6	12.4	6.1
Spouse	6.8	5.9	5.9	12.2
	(N=263)	(N=51)	(N=186)	(N=49)

<sup>a</sup>Percentages total more than 100% since respondents could list more than one person.

Table 21. PERSON WHO INTRODUCED 1977-78 HUNTING LICENSE BUYER (RESPONDING TO THE MAIL SURVEY) TO HUNTING.

Person Who Introduced Respondent to Hunting	Broome County		Monroe County	
	Active Hunters	Sporadic Hunters	Active Hunters	Sporadic Hunters
	Percent <sup>a</sup>			
Parent	54.1	44.2	50.0	35.3
Personal interest	23.1	15.4	22.9	17.6
Friend	14.2	23.1	16.0	37.3
Family-relative (other than parents or spouse)	12.7	21.2	22.9	15.7
Spouse	3.0	3.8	2.1	9.8
	(N=268)	(N=52)	(N=188)	(N=51)

<sup>a</sup>Percentages total more than 100% since respondents could list more than one person.

Table 22. AGE OF 1977-78 HUNTING LICENSE BUYERS (RESPONDING TO THE MAIL SURVEY) WHEN THEY WENT HUNTING FOR THE FIRST TIME<sup>a</sup>.

Age When Hunting for First Time	Broome County		Monroe County	
	Active Hunters	Sporadic Hunters	Active Hunters	Sporadic Hunters
	Percent			
15 or less	55.5	46.1	48.4	37.3
16	28.3	21.2	27.7	23.5
17-20	9.1	11.5	10.1	9.8
21-30	5.3	13.5	9.6	17.6
31-40	1.1	5.8	4.2	5.9
41-50	0.7	1.9	0.0	3.9
More than 50	0.0	0.0	0.0	2.0
	100.0	100.0	100.0	100.0
	(N=265)	(N=52)	(N=188)	(N=51)

<sup>a</sup>Hunting defined as actually carrying a firearm afield.

Age at First Hunt for Telephone Survey Participants: The majority of active hunters, sporadic hunters, and deserters from both counties went hunting for the first time (actually carried a firearm afield) before they were 17 (Table 23). However, sporadic hunters and deserters reported more often than active hunters from both counties that they had started hunting when 17 years of age or older (Table 23). These trends were similar to those reported by mail survey respondents in the previous subsection of the report.

#### Attitudes Toward Hunting and Trapping

Telephone Survey Respondents' Attitudes Toward Hunting: The majority of active hunters, sporadic hunters, and potential hunters from both counties were mildly or strongly pro-hunting (Table 24). Most deserters from both counties were either neutral or mildly pro-hunting, although 15 percent of the deserters in Monroe County reporting anti-hunting attitudes. Nonhunters were often neutral toward hunting. Pro-hunting attitudes were somewhat more prevalent among nonhunters in Broome County while anti-hunting attitudes were more prevalent among nonhunters in Monroe County.

Telephone Survey Respondents' Attitudes Toward Trapping: Few survey participants from either Broome or Monroe Counties trapped in 1980 (Table 25). Attitudes toward trapping were often reported as neutral by all types of respondents (Table 26). However, a plurality of active hunters and sporadic hunters from both counties reported pro-trapping attitudes while a plurality of deserters, potential hunters, and nonhunters from both counties reported anti-trapping attitudes.

#### Fish and Wildlife-related Recreational Activities

Telephone Survey Respondents: With a few exceptions, higher percentages of active hunters than any other hunter type reported participating in the 5 fish- and wildlife-related recreational activities listed in Table 27. The other 4 hunter types from both counties had similar percentages of respondents participating in the various activities, with the exception of the smaller percentage of nonhunters from both counties who participated in freshwater fishing (Table 27).

Table 23. AGE OF COUNTY RESIDENTS, IN THE TELEPHONE SURVEY, WHEN THEY WENT HUNTING FOR THE FIRST TIME<sup>a</sup>.

Age When Hunting for First Time	Broome County			Monroe County		
	Active Hunters	Sporadic Hunters	Deserters	Active Hunters	Sporadic Hunters	Deserters
	Percent					
15 or less	43.2	42.4	13.2	42.9	19.1	36.4
16	30.8	30.4	31.6	32.1	38.1	12.1
17-20	13.6	9.1	28.9	10.7	33.3	33.4
21-30	9.9	12.1	10.5	7.1	9.5	12.1
31-40	2.5	3.0	13.2	0.0	0.0	3.0
41-50	0.0	3.0	0.0	3.6	0.0	0.0
More than 50	0.0	0.0	2.6	3.6	0.0	3.0
	100.0	100.0	100.0	100.0	100.0	100.0
	(N=81)	(N=33)	(N=38)	(N=28)	(N=21)	(N=33)

<sup>a</sup>Hunting defined as actually carrying a firearm afield.

Table 24. ATTITUDES OF BROOME AND MONROE COUNTY RESIDENTS IN THE TELEPHONE SURVEY TOWARD HUNTING, BY HUNTER TYPES.

<u>County/Type of Hunter</u>	<u>Attitude Toward Hunting</u>					<u>Total</u>	
	<u>Strongly</u>	<u>Mildly</u>	<u>Neutral</u>	<u>Mildly</u>	<u>Strongly</u>	<u>Percent</u>	<u>N</u>
	<u>Pro-hunting</u>	<u>Pro-hunting</u>	<u>Pro-hunting</u>	<u>Anti-hunting</u>	<u>Anti-hunting</u>		
			<u>Percent</u>				
<u>Broome County</u>							
Active Hunters	73.5	13.3	12.0	1.2	0.0	100.0	83
Sporadic Hunters	51.5	27.3	21.2	0.0	0.0	100.0	33
Deserters	30.0	30.0	35.0	0.0	5.0	100.0	40
Potential Hunters	7.7	61.5	30.8	0.0	0.0	100.0	13
Nonhunters	11.2	19.4	47.3	10.6	11.5	100.0	330
<u>Monroe County</u>							
Active Hunters	67.8	25.0	3.6	3.6	0.0	100.0	28
Sporadic Hunters	33.3	38.1	28.6	0.0	0.0	100.0	21
Deserters	12.1	27.3	45.5	12.1	3.0	100.0	33
Potential Hunters	25.0	50.0	12.5	12.5	0.0	100.0	16
Nonhunters	5.2	18.0	38.4	16.7	21.7	100.0	401

Table 25. BROOME AND MONROE COUNTY RESIDENTS IN THE TELEPHONE SURVEY WHO TRAPPED FURBEARERS IN 1980.

Type of Hunter	Trapping Participation	
	Broome County	Monroe County
	Percent	
Active Hunters	6.0	7.1
Sporadic Hunters	3.0	0.0
Deserters	2.5	0.0
Potential Hunters	0.0	0.0
Nonhunters	0.3	0.2

Table 26. ATTITUDES OF BROOME AND MONROE COUNTY RESIDENTS IN THE TELEPHONE SURVEY TOWARD TRAPPING, BY HUNTER TYPES.

County/Type of Hunter	Attitude Toward Trapping					Total	
	Strongly	Mildly	Neutral	Mildly	Strongly	Percent	N
	Pro-trapping	Pro-trapping	Anti-trapping	Anti-trapping	Anti-trapping		
<u>Broome County</u>							
Active Hunters	32.6	31.3	22.9	10.8	2.4	100.0	83
Sporadic Hunters	21.2	21.2	36.4	12.1	9.1	100.0	33
Deserters	2.5	22.5	35.0	15.0	25.0	100.0	40
Potential Hunters	15.4	15.4	30.7	30.8	7.7	100.0	13
Nonhunters	5.2	9.7	38.7	17.6	28.8	100.0	330
<u>Monroe County</u>							
Active Hunters	46.5	10.7	21.4	10.7	10.7	100.0	28
Sporadic Hunters	9.5	19.0	47.7	19.0	4.8	100.0	21
Deserters	6.1	6.1	48.4	18.2	21.2	100.0	33
Potential Hunters	0.0	18.8	43.8	18.7	18.7	100.0	16
Nonhunters	3.0	8.5	27.4	12.2	48.9	100.0	402



Table 27. FISH AND WILDLIFE-RELATED RECREATIONAL ACTIVITIES IN 1980 OF COUNTY RESIDENTS IN THE TELEPHONE SURVEY BY HUNTER TYPES.

County/Type of Hunter	Fish and Wildlife-related Recreational Activities					TOTAL N
	Freshwater	Feeding	Observing	Photographing	Saltwater	
	Fishing	Wildlife	Wildlife	Wildlife	Fishing	
	Percent					
<u>Broome County</u>						
Active Hunters	57.8	61.4	55.4	20.5	12.0	83
Sporadic Hunters	27.3	45.5	45.5	15.2	6.1	33
Deserters	22.5	57.5	45.0	10.0	2.5	40
Potential Hunters	53.8	53.8	38.5	23.1	0.0	13
Nonhunters	15.7	51.4	42.9	12.7	1.8	331
<u>Monroe County</u>						
Active Hunters	82.1	75.0	71.4	39.3	3.6	20
Sporadic Hunters	57.1	76.2	57.1	23.8	0.0	21
Deserters	24.2	75.8	42.4	18.2	0.0	33
Potential Hunters	50.0	56.3	37.5	50.0	0.0	16
Nonhunters	17.7	62.9	40.3	20.9	2.0	402

## Socioeconomic Characteristics of Hunters

Mail Survey Respondents: The respondents' ages were well distributed over the entire range from 20 to 60 or more years old for both counties and types of hunters (Table 28). The low percentage of respondents 19 years of age or less was expected due to the legal age necessary to obtain a hunting license and the fact that the mailing list used in the survey was nearly three years old (1977-78 licenses). The mean age of active hunters vs. sporadic hunters in Broome County (40.2 vs. 37.5 years) and Monroe County (41.7 vs. 41.7 years) were very similar, as were the age distributions shown for these groups in Table 28.

Most active hunters and sporadic hunters from Broome County (96.3% and 96.2%, respectively) and Monroe County (96.3% and 88.2%, respectively) were male. The majority of active hunters and sporadic hunters from Broome County (72.7% and 66.7%, respectively) and Monroe County (76.5% and 76.5%, respectively) were also married.

The majority of active hunters and sporadic hunters from both counties reported they had completed high school or one or more years of college (Table 29). The mean years of education completed by active hunters vs. sporadic hunters in Broome County was 12.5 vs. 12.4 years; active hunters vs. sporadic hunters in Monroe County reported completion of 12.9 vs. 12.6 years of education.

Craftsmen-foremen and professional-technical occupations were most common among hunters in Broome and Monroe Counties (Table 30). Similar response distributions were noted for active hunters and sporadic hunters in both Broome and Monroe Counties, with the exception of the low percentage of sporadic hunters from Broome County in the professional-technical category.

Active and sporadic hunters within each county reported a similar distribution of income categories (Table 31). However, comparison of the 1979 household incomes of respondents (Table 31) shows that active and sporadic hunters from Broome County more often reported household incomes of less than \$20,000 (51.7% and 63.0%, respectively) while Monroe County active and sporadic hunters more often had incomes that were \$20,000 or more (65.7% and 62.5%, respectively). The "urban" employment opportunities of Monroe County are probably reflected in the greater representation of higher incomes of Monroe County hunters compared to the hunters from the more "rural" Broome County.

The more urban background of Monroe County hunters and more rural background of Broome County hunters is depicted in Table 32, which shows the residence area population characteristics of respondents when they were between the ages of 6 and 16. However, similar distributions were reported for active and sporadic hunters within

Table 28. 1980 AGE DISTRIBUTION OF 1977-78 HUNTING LICENSE BUYERS IN BROOME AND MONROE COUNTIES RESPONDING TO THE MAIL SURVEY.

Age in Years	County			
	Broome		Monroe	
	Active Hunters	Sporadic Hunters	Active Hunters	Sporadic Hunters
	Percent			
19 or less	6.7	13.5	4.8	3.9
20-29	22.4	21.2	20.2	23.5
30-39	20.9	21.2	26.1	25.5
40-49	20.9	19.2	19.7	15.7
50-59	17.2	15.4	14.9	15.7
60 or more	<u>11.9</u>	<u>9.6</u>	<u>14.4</u>	<u>15.7</u>
	100.0	100.0	100.0	100.0
	(N=268)	(N=52)	(N=188)	(N=51)

Table 29. 1980 EDUCATIONAL ATTAINMENT OF 1977-78 HUNTING LICENSE BUYERS RESPONDING TO THE MAIL SURVEY IN BROOME AND MONROE COUNTIES.

Education	County			
	Broome		Monroe	
	Active Hunters	Sporadic Hunters	Active Hunters	Sporadic Hunters
	Percent			
8 years or less	3.8	7.7	5.9	13.7
9-11 years	13.3	15.4	10.2	7.8
12 years (high school)	44.5	36.5	38.2	39.3
13-15 years (some college)	27.4	32.7	29.0	21.6
16 years (4 yrs college)	5.7	1.9	8.6	7.8
17 or more years	<u>5.3</u>	<u>5.8</u>	<u>8.1</u>	<u>9.8</u>
	100.0	100.0	100.0	100.0
	(N=263)	(N=52)	(N=186)	(N=51)

Table 30. 1980 OCCUPATIONAL CHARACTERISTICS OF 1977-78 HUNTING LICENSE BUYERS  
RESPONDING TO THE MAIL SURVEY IN BROOME AND MONROE COUNTIES.

<u>Occupations</u>	<u>County</u>			
	<u>Broome</u>		<u>Monroe</u>	
	<u>Active</u> <u>Hunters</u>	<u>Sporadic</u> <u>Hunters</u>	<u>Active</u> <u>Hunters</u>	<u>Sporadic</u> <u>Hunters</u>
	<u>Percent</u>			
Professional - Technical	19.5	10.4	25.0	21.7
Managers - Proprietors	5.4	2.1	6.7	8.7
Farmers - Farm Workers	1.6	0.0	0.0	0.0
Clerical - Sales	7.8	10.4	4.4	10.9
Craftsmen - Foremen	19.0	20.8	25.0	26.0
Operatives	9.3	6.3	10.0	10.9
Private Household and Service Workers	8.2	10.4	3.9	0.0
Housewives	0.8	0.0	2.2	2.2
Nonfarm Laborers	5.4	4.2	3.9	2.2
Students	6.6	10.4	4.4	2.2
Retired - Disabled	12.5	8.3	10.6	6.5
Unemployed	3.5	10.4	2.2	6.5
Self-employed, unspecified occupation	0.4	4.2	1.7	0.0
Military Service	<u>0.0</u>	<u>2.1</u>	<u>0.0</u>	<u>2.2</u>
	100.0	100.0	100.0	100.0
	(N=257)	(N=48)	(N=180)	(N=46)

Table 31. 1979 HOUSEHOLD INCOME OF 1977-78 HUNTING LICENSE BUYERS RESPONDING TO THE MAIL SURVEY IN BROOME AND MONROE COUNTIES.

1979 Household Income	County			
	Broome		Monroe	
	Active Hunters	Sporadic Hunters	Active Hunters	Sporadic Hunters
	Percent			
<\$5,000	2.9	4.3	0.6	0.0
\$5,000 to \$9,999	13.2	23.9	6.1	8.3
\$10,000 to \$14,999	14.0	10.9	12.7	14.6
\$15,000 to \$19,999	21.6	23.9	14.9	14.6
\$20,000 to \$24,999	22.3	17.4	23.2	22.9
\$25,000 to \$29,999	9.5	10.9	20.4	14.6
\$30,000 to \$39,999	9.5	2.2	12.7	12.5
\$40,000 or more	<u>7.0</u>	<u>6.5</u>	<u>9.4</u>	<u>12.5</u>
	100.0	100.0	100.0	100.0
	(N=242)	(N=46)	(N=181)	(N=48)

Table 32. RESIDENCE AREA POPULATION CHARACTERISTICS OF 1977-78 HUNTING LICENSE BUYERS IN BROOME AND MONROE COUNTIES WHEN MAIL SURVEY RESPONDENTS WERE BETWEEN THE AGES OF 6 and 15.

Residence Area Population Characteristics During Childhood	County			
	Broome		Monroe	
	Active Hunters	Sporadic Hunters	Active Hunters	Sporadic Hunters
	Percent			
Rural-Farm	21.4	14.3	8.2	21.3
Rural-Nonfarm	15.6	20.4	21.4	8.5
Village of less than 5,000	14.8	20.4	8.8	12.8
Village of 5,000 to 24,999	24.1	28.6	12.6	12.8
City of 25,000 to 99,999	18.7	10.2	9.9	4.3
City of 100,000 or more	5.4	6.1	39.1	40.3
	100.0	100.0	100.0	100.0
	(N=257)	(N=49)	(N=182)	(N=47)

each county. For example, 37 percent of the active hunters and 35 percent of the sporadic hunters from Broome County reported spending their childhood years in a rural area; 30 percent of the active and sporadic hunters in Monroe County also reported spending their childhood years in a rural area (Table 32).

Overall, few socioeconomic differences were noted between active and sporadic hunters within each county. The differences noted in childhood residence area and income data between the respondents from Broome and Monroe Counties relates to the socioeconomic opportunities within the respective counties.

Telephone Survey Respondents: The distributions and mean ages of active hunters and sporadic hunters were similar in both Broome and Monroe Counties (Table 33). The age distribution and mean age of nonhunters tended to be somewhat older than those of active and sporadic hunters, while deserters tended to be substantially older than any other hunter type (Table 33). Potential hunters reported the youngest age distribution and mean age of all hunter types in both counties (Table 33).

Most active and sporadic hunters from Broome and Monroe Counties were male (Table 34). Similarly, potential hunters and deserters in both counties were predominantly male but not as often as were active and sporadic hunters. The majority of nonhunters in both counties were female (Table 34).

The majority of all residents in both Broome and Monroe Counties had at least completed high school (Table 35). The mean years of education and distribution of educational attainment for all respondents were similar; deserters reported somewhat lower levels of educational attainment (Table 35). The older ages reported by deserters were probably related to their educational attainment since educational opportunities were less available in their lifetimes. Additionally, younger residents may not have yet completed their education.

Professional-technical and craftsmen-foremen occupations were most often reported by residents in Broome and Monroe Counties, with two notable exceptions (Table 36). First, the larger percentage of deserters in both counties who reported being retired or disabled would be expected due to their reported older ages. Secondly, the larger percentage of housewives among nonhunters relates to the majority of that group; also, the larger percentage of nonhunters who reported being retired or disabled may represent those females who were in the older age categories (Table 36).

The more urban background of Monroe County residents and more rural background of Broome County residents is shown in Table 37, which reports the residence area



Table 33. 1980 AGE DISTRIBUTION OF BROOME AND MONROE COUNTY RESIDENTS IN THE TELEPHONE SURVEY.

<u>Age in Years</u>	<u>Type of Hunter</u>				
	<u>Active</u>	<u>Sporadic</u>		<u>Potential</u>	
	<u>Hunters</u>	<u>Hunters</u>	<u>Deserters</u>	<u>Hunters</u>	<u>Nonhunters</u>
	<u>Percent</u>				
	<u>Broome County</u>				
19 or less	2.4	0.0	0.0	7.7	2.1
20-29	21.7	30.3	5.0	46.1	20.0
30-39	20.4	21.2	10.0	15.4	14.6
40-49	18.1	18.2	5.0	30.8	14.6
50-59	16.9	12.1	32.5	0.0	17.0
60 or more	<u>20.5</u>	<u>18.2</u>	<u>47.5</u>	<u>0.0</u>	<u>31.7</u>
	100.0	100.0	100.0	100.0	100.0
Mean age	$\bar{x} = 43.7$	$\bar{x} = 43.1$	$\bar{x} = 57.3$	$\bar{x} = 30.6$	$\bar{x} = 48.4$
	<u>Monroe County</u>				
19 or less	3.6	0.0	3.0	12.5	2.5
20-29	17.9	33.3	0.0	31.2	16.4
30-39	21.4	28.6	15.2	31.3	26.2
40-49	28.5	4.8	24.2	25.0	14.2
50-59	14.3	19.0	24.2	0.0	19.5
60 or more	<u>14.3</u>	<u>14.3</u>	<u>33.4</u>	<u>0.0</u>	<u>21.2</u>
	100.0	100.0	100.0	100.0	100.0
Mean age	$\bar{x} = 44.1$	$\bar{x} = 39.5$	$\bar{x} = 53.1$	$\bar{x} = 30.7$	$\bar{x} = 45.0$

Table 34. SEX OF BROOME AND MONROE COUNTY RESIDENTS IN THE TELEPHONE SURVEY.

Sex	Type of Hunter				
	Active	Sporadic	Potential		
	Hunters	Hunters	Deserters	Hunters	Nonhunters
	Percent				
	Broome County				
Male	82.9	81.8	72.5	69.2	19.9
Female	<u>17.1</u>	<u>18.2</u>	<u>27.5</u>	<u>30.8</u>	<u>80.1</u>
	100.0	100.0	100.0	100.0	100.0
	Monroe County				
Male	92.9	85.7	75.8	81.2	30.6
Female	<u>7.1</u>	<u>14.3</u>	<u>24.2</u>	<u>18.8</u>	<u>69.4</u>
	100.0	100.0	100.0	100.0	100.0

Table 35. 1980 EDUCATIONAL ATTAINMENT OF BROOME AND MONROE COUNTY RESIDENTS IN THE TELEPHONE SURVEY.

Education	Type of Hunter			
	Active Hunters	Sporadic Hunters	Deserters	Potential Hunters
			Percent	Nonhunters
Broome County				
8 years or less	4.8	6.1	21.1	0.0
9-11 years	12.0	15.2	15.8	15.4
12 years (high school)	51.9	30.2	36.8	30.7
13-15 years (some college)	15.7	24.2	15.8	30.8
16 years (4 years college)	7.2	15.2	10.5	23.1
17 or more years	8.4	9.1	0.0	0.0
	100.0	100.0	100.0	100.0
	$\bar{x} = 12.7$	$\bar{x} = 13.1$	$\bar{x} = 11.4$	$\bar{x} = 13.1$
				$\bar{x} = 12.8$
Monroe County				
8 years or less	7.1	0.0	15.2	0.0
9-11 years	3.6	0.0	9.1	0.0
12 years (high school)	39.3	42.9	36.3	43.8
13-15 years (some college)	14.3	38.1	18.2	12.5
16 years (4 years college)	14.3	14.3	9.1	31.2
17 or more years	21.4	4.8	12.1	12.5
	100.0	100.0	100.0	100.0
	$\bar{x} = 14.1$	$\bar{x} = 13.5$	$\bar{x} = 12.8$	$\bar{x} = 14.1$
				$\bar{x} = 13.5$



Table 37. RESIDENCE AREA POPULATION CHARACTERISTICS OF BROOME AND MONROE COUNTY RESIDENTS IN THE TELEPHONE SURVEY WHEN THEY WERE BETWEEN THE AGES OF 6 AND 16.

Residence Area Population Characteristics During Childhood	Type of Hunter				
	Active	Sporadic	Potential		
	Hunters	Hunters	Deserters	Hunters	Nonhunters
	Percent				
	Broome County				
Rural-Farm	20.6	18.2	15.0	23.1	16.2
Rural-Nonfarm	32.6	27.2	10.0	7.7	14.1
Village of less than 5,000	12.0	9.1	27.5	15.4	11.3
Village of 5,000 or more	7.2	12.1	10.0	7.7	6.4
City of less than 100,000	16.8	24.3	25.0	23.0	29.3
City of 100,000 or more	<u>10.8</u>	<u>9.1</u>	<u>12.5</u>	<u>23.1</u>	<u>22.7</u>
	100.0	100.0	100.0	100.0	100.0
Monroe County					
Rural-Farm	10.7	14.3	12.1	0.0	5.8
Rural-Nonfarm	14.3	14.3	9.1	12.5	7.3
Village of less than 5,000	7.1	4.8	3.0	0.0	7.8
Village of 5,000 or more	10.7	9.5	12.1	0.0	7.1
City of less than 100,000	3.6	0.0	9.1	25.0	13.1
City of 100,000 or more	<u>53.6</u>	<u>57.1</u>	<u>54.6</u>	<u>62.5</u>	<u>58.9</u>
	100.0	100.0	100.0	100.0	100.0

population characteristics of residents when they were between the ages of 6 and 16. Active hunters and sporadic hunters in both Broome and Monroe Counties were more often from rural backgrounds during childhood than were deserters, potential hunters, or nonhunters (Table 37).

#### METHODOLOGICAL COMPARISON

Throughout the preceding sections of this report, comparisons have been made where possible between results from the mail survey of 1977-78 hunting license holders and the telephone survey of adult residents in Monroe and Broome Counties. In some cases, data generated from the two surveys for seemingly identical variables have differed. These sometimes were indicative of real differences, sometimes reflections of different sampling populations and survey instruments. Many of the differences that can be attributed to the specific survey method (sampling frame or instrument) were foreseen, and therefore expected. These largely are the types of discrepancies that have been observed or experienced many times when such different approaches to data collection are taken.

The methods used in this study were developed predominantly to provide data that would be complementary. However, some parts of the two instruments were designed to collect essentially the same information. The overall evaluation of the two methods, then, can be accomplished by comparing them generally in terms of their efficiency in meeting the information objectives of NYSDEC set for each method. To make the evaluation, comparisons must be made for specific criteria. In Table 38 a set of criteria are listed for the general evaluation, with quantitative and qualitative information relating to both the mail survey and telephone interview included for comparison.

Table 38. MAIL VS. TELEPHONE SURVEY COMPARISONS OF SELECTED GENERAL CRITERIA FOR METHOD SELECTION.

Criteria	Survey Methods	
	Mail (N=1331) (license holders)	Telephone (N=1000) (adult residents)
Implementation time	8 wks (mail procedure)	2-4 wks (variable, depending upon number of interviews)
Cost per usable response (implementation cost where N = 1000)	\$1.50-\$2.50	\$5-\$10
Response efficiency (from Table 1)	48-50%	73-95%
<u>Usefulness/efficiency of method for:</u>		
1. Determining socioeconomic/demographic characteristics of various types of hunters	High	Low
2. Determining participation rates (days), harvest, etc. of hunters	Mod	Low
3. Determining the dynamics of hunting recruitment/desertion (including nonhunting and potential hunter components of pop.)	Low	Mod-High
4. Determining the reasons for hunting	High	Low
5. Determining impediments to hunting and ways to increase number of people participating	Mod	High
6. Monitoring of anti-hunting trend	Low	High
7. Nonresponse biases	Mod	Low

## CONSIDERATIONS/RECOMMENDATIONS FOR FUTURE RESEARCH

In planning further investigations to monitor the dynamics of hunting participation and to determine the reasons why some hunters do not actively participate every year and why others discontinue hunting altogether, those involved in developing the research will need to consider in more detail the following aspects of study design: (1) study area, (2) survey method(s), and (3) instrument content. In view of the pretest effort reported herein, some considerations and recommendations can be suggested to aid the development of future research.

### Study Area

The study area(s) for subsequent research should be chosen to reflect any suspected regional variation in participation/desertion patterns. The general urban-rural dichotomy could be continued, but broader regional variations should be considered too (e.g., northern New York, central/western New York, southeastern New York). This approach complicates and expands sampling procedures and requires larger sample sizes than used in the pretest; however, the sensitivity and generalizability of the results are greatly enhanced. Considering that much of the hunting program is implemented via individual or multi-regional staff efforts, studies that facilitate these people's efforts to improve hunter participation in their geographic area of influence may ultimately yield the greatest dividends.

### Survey Method(s)

The decision to use a mail survey, a telephone survey, or a combination of the two in subsequent studies of hunting participation must be made in light of the most pressing information needs; i.e., which approach gets the essential information most efficiently.

Mail Survey: A mail survey based on a 2- to 3-year-old set of appropriate hunting license receipts will most efficiently (compared to a telephone survey) reach a sample of known recent hunters, even with a 10% to 20% nondeliverable rate because of outdated addresses. However, because of the potential nature of nonresponse bias in this situation (i.e., nonrespondents highly probable to be inactive), we recommend that any mail survey of hunters for this purpose be supplemented by a follow-up telephone survey of a subsample of mail survey nonrespondents. This would allow correction factors to be calculated to compensate for mail survey nonresponse biases, if any such biases were detected.



The mail survey, since it deals entirely with recent hunters, would provide more accurate insights into current factors affecting hunting participation. It would not, of course, allow an evaluation of why dropouts prior to the sample hunting license year remain inactive (their perceptions or misperceptions of hunting impediments), but this information may be of limited programmatic usefulness given the pretest findings that indicate personal reasons as those predominantly seen as barriers to hunting participation by dropouts.

Telephone Survey: The telephone survey method seems best suited for classifying the population of a study area (e.g., region) to the various hunter types. Of course, this is the only method for reaching potential hunters and nonhunters.

While the ability to contact individuals or households selected in the sample areas and to receive complete survey information was better for the telephone survey than the mail survey, the mail survey is better adapted to collect more detailed information on hunter participation and harvest rates because of the reduced pressure of time for recall. These advantages and disadvantages generally were expected prior to conducting these surveys although it was not known to what extent they would be manifest. For example, the number of potential hunters contacted were too few to allow an analysis of their reasons for not hunting in New York State. In contrast to the low percentage of potential hunters was the somewhat unexpected higher percentage of sporadic hunters and deserters. The telephone survey data indicated that the combined percentage of sporadic hunters and deserters in the entire sample population either equaled (Broome County) or exceeded (Monroe County) the percentage of active hunters.

In conjunction with the objective of determining the proportions of the population in the various hunter types, the telephone survey could simultaneously be utilized as an instrument to screen for potential hunters (who could not be contacted in a mail survey of license buyers) and ask their reasons for not hunting to date. Thus, a sample of potential hunters could be contacted (at some additional cost to obtain an adequate sample size) to provide information on the impediments perceived by potential new recruits to hunting.

Information on the proportion of the population represented by each hunter type within various areas of the state could be used to direct Bureau of Wildlife programs aimed at each group. Knowledge of these "market segments" could help set priorities among various approaches. For example (assuming pretest data are indicative of the actual situation):

(1) Since sporadic hunters outnumber potential hunters (Table 5) and only a fraction of sporadic hunters go afield in any one year, it appears that programs encouraging sporadic hunters to participate more regularly or alleviating their impediments to participation (e.g., inadequate or incorrect information, insufficient access) would potentially produce more hunters (license buyers) than programs aimed at new hunters. If sporadic hunters were also considered easier to contact (e.g., via hunting literature, mailing lists from license stubs) and more likely to participate than potential hunters, then they would probably be the highest priority group to consider in a marketing strategy.

(2) Because deserters often stopped hunting for the same reasons sporadic hunters do not hunt regularly (except for deserters reporting advanced age and disabilities) and they represent a similar proportion of the population as sporadic hunters, they might receive a second level priority for programs to promote hunting or to mitigate hunter problems. A market strategy needs to incorporate this along with the consideration that alleviating some of the problems experienced by sporadic hunters and deserters before engaging in a large promotional program will help ensure that new hunters do not quickly become sporadic hunters or deserters by encountering impediments similar to those experienced by previous hunters.

(3) While potential hunters comprise only a small percentage of the population, it should be remembered that the magnitude of this group (Table 6) deserves consideration in any market strategy plan and that continued recruitment is necessary to maintain the hunter population. This group might constitute the third level priority, since as mentioned above new hunters may quickly become sporadic hunters or deserters if they encounter the same impediments as the current group of sporadic hunters and deserters.

This last point emphasizes an important change that should be considered in any subsequent telephone surveys for the purposes described; the sample frame should be expanded from adults to include teenagers of hunting age. This group may have a very different set of impediments, real or perceived, preventing them from hunting. To date we know little about "potential" young hunters, unless they have participated in the hunter training course.

#### Instrument Content

Any future research on this topic should consider two types of modifications to the instruments used in the pretest: (1) more depth to the reasons for discontinuing hunting and (2) questions on hunting satisfactions to balance the instrument and allow a more comprehensive appraisal of the hunting participation-desertion situation.

In-depth Treatment of Reasons for Discontinuing Hunting: A major improvement to the instruments would be the development of more in-depth questions on why hunters discontinue hunting. For example, the survey questions could be redesigned to reflect categories of responses that have more direct implications for Bureau of Wildlife programs (e.g., reasons for not hunting various types of game such as big game, waterfowl, etc.; a ranking of the severity of resource-related reasons vs. personal reasons for not hunting; respondents' perceptions of which Bureau of Wildlife program actions, if any, would alleviate their impediments to hunting). Response categories that yield more detail and help to explain the more specific, underlying reasons for not hunting need to be developed. For example, answers relating to the general reasons of "I don't like to kill game animals" or "I lost interest", if left at that level, are vague and open to many interpretations. These could be pretested in an interpersonal, in-depth interview situation with known deserters in an effort to uncover the underlying causes for such answers. The findings of this limited interviewing could be used to develop more specific response items for either a mail or telephone survey instrument.

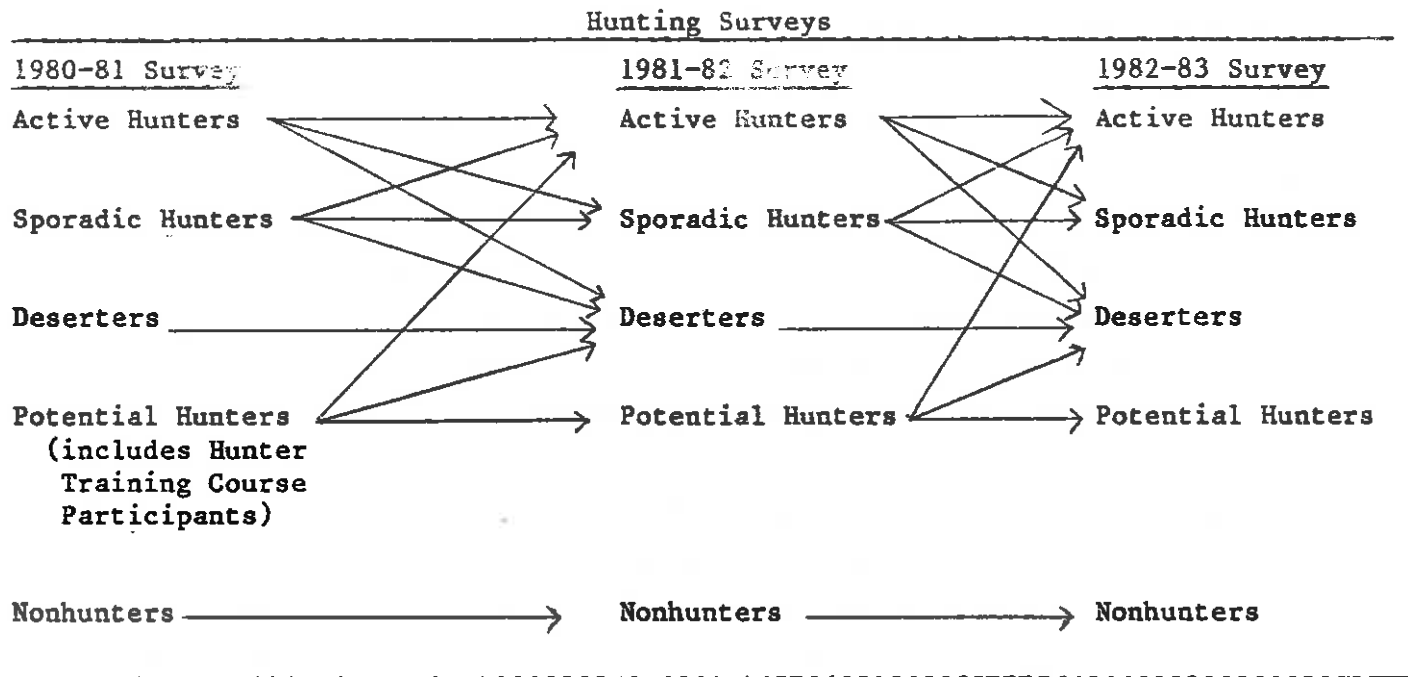
Addition of Hunting Satisfaction Items: Questions related to hunting satisfactions (sought and realized) should be incorporated into subsequent studies. The extent to which various hunting satisfactions are sought by hunters in New York and the degree to which the more salient of these are met by hunting experiences hold much promise in shedding light on the hunting participation-desertion situation in New York. Questions relevant to ongoing, planned, or potential hunting programs may significantly enhance wildlife managers' understanding of hunters' expectations of management programs. A considerable amount of developmental research has been conducted on the multiple-satisfactions involved in the hunting experience (including research by Project 146 staff at Cornell); this research can serve as a theoretical base for future work stemming from this study.

### Summary

The development of a broader, more specific data base, as recommended above, probably would allow for multi-variable cross classifications (see multinomial logit analysis in the "1978 Hunter Training Course Participation Study" by Brown et al., 1981) to construct a model that explains the difference in characteristics between active hunters, sporadic hunters, and deserters. This would permit the evaluation of specific management scenarios, and provide a powerful management decision-making tool for Bureau of Wildlife Staff.

The study data have shown that each hunter type can be identified and that each group is substantial enough in size to warrant consideration. However, the question now becomes "how can this information be exploited?" Each potential approach to maintain or stimulate new participation in hunting challenges wildlife managers to determine which programs are most feasible and practical to achieve the desired results. After this descriptive data and static model of participation (i.e., at one point in time) is better understood, then a study of the trends in participation and hunter type changes over time can focus on a more complex and dynamic model of participation in a longer term study as outlined in Figure 5. However, until adequate descriptive data are analyzed for their utility in formulating new hunting participation promotion or hunter-problem mitigation programs, the cost of accurately determining the trends in participation by hunter types can not be evaluated because the potential benefits are undetermined or unmeasured.

Figure 5. An Example of a Dynamic Model of Hunter Participation Types Over Three Hunting Seasons.



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