AN ANALYSIS OF HUNTER ATTITUDES TOWARD THE STATE OF MICHIGAN'S ANTLERLESS DEER HUNTING POLICY

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ABSTRACT

AN ANALYSIS OF
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In Michigan one of the major resource development controversies involves the management of the deer herd. The Michigan Department of Natural Resources for most of the last seventeen years has used antlerless deer hunting (the hunting of does and fawns) as one device for population control in many areas of the state. As is the case in many northeastern and midwestern states, a large proportion of the hunter population opposes the policy.

Research was conducted using 398 randomly selected hunters from Ingham, Alpena and Marquette Counties. The major thrust of the research was to determine: 1) whether there are discernible patterns of support and opposition among the three regions of the state and among various socio-economic status (SES) groups, and 2) whether specific factors may be identified as being related to the kind and intensity of attitude which individual hunters form.

The study results indicate that indeed there are differences in the degree of support of or opposition to the policy. The greatest regional opposition is found in Marquette County in the Upper Peninsula while the greatest support is in Ingham County in southern Michigan. The highest socio-economic status group is by far the most supportive of the three SES groups considered, while the lowest SES group was least supportive.

Detailed consideration was given to the influence of numerous peer groups on hunter attitudes both on the basis of county of residence and SES. It was found that individual attitudes are definitely linked to the attitudes of relatives and hunting companions both when region of residence and SES are considered. The individual hunter's attitudes are also very similar to those of their immediate family but the direction of influence was difficult to surmise. Neighbors, fellow-workers and social acquaintances do not seem to be very influential in attitude formation. In terms of less common contacts including government officials, Department of Natural Resources employees, other hunters, sportsman club officials, none seemed to have much direct influence, but when hunters talked to DNR employees who opposed the policy that did seem to have some bearing on the attitudes which the hunter held.

Several concepts were tested as to their apparent influence on the attitudes which the hunter formed. These concepts included alienation, status symbolism associated with hunting success, the importance of hunting success to the hunter, general peer group interest in hunting, and the influence of mass media upon attitude.

Clearly, the greatest influence on attitudes came from primary social group influences and not from mass media or secondary social group influences. There is a weak relationship between the attitudes held by individual hunters and the general interest in hunting of his peers. However, when the relationship is considered in the context of region of residence and socio-economic status group, little of the observed differences are explained by this variable.

The fact that some hunters tend to take their hunting more seriously than other hunters did not seem to influence attitudes much except in the northern lower Peninsula. In that region, the more important hunting and hunting success were to the respondents the more likely they were to oppose the policy. This in turn seemed to be associated with a status conferral function in that region.

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Grateful recognition is also given to my doctoral committee for their assistance in this research. The committee included Professor Louis F. Twardzik, Chairman; Professor Milton Steinmueller; Professor Phillip M. Marcus; Professor Sanford S. Farness; Professor Raleigh Barlowe, and Dr. Ralph Blouch, ex-officio committee member.

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PREFACE

In January, 1966 several hundred deer hunters staged a demonstration lasting all one night on the grounds of the Capitol to protest the Michigan Department of Natural Resources' antlerless deer hunting policy. That was my first exposure to the issue. Since that first knowledge of the issue, I have been very intrigued by it. In the course of my graduate studies I did two small studies relating to the controversy. These small efforts represented the seeds of my thinking which have grown into the study reported here.

In political science, economics, sociology and other allied disciplines, including resource development, much is said about the implications of public and private policy decisions upon the social and political forms which evolve. Much effort has also been spent in attempting to define the alternatives available to policy-makers in policy matters ranging from public welfare programs to reducing the military-industrial complex to the subsidy programs to induce farmers and landowners to adopt various land management practices. Less work has been done concerning why individual citizens develop the attitudes which they hold concerning the myriad policy issues and public decisions which confront them and upon which they make basic decisions as to support or opposition.

One obvious explanation for the attitudes which a person holds concerning a public policy is that a person's vested interests bias his thinking in certain directions. But what of the dozens and

perhaps even hundreds of decisions which citizens make concerning policies when no direct benefits accrue to them personally from the course of action which is finally settled upon or when benefits are cancelled by added costs.

The antlerless deer hunting controversy is such an issue. Almost everybody wants more deer (an obvious advantage to all hunters) but the question arises as to what course of action can best accomplish this goal. No presently operative or proposed policy has won the endorsement of all factions in achieving this worthy goal. It is to this issue that this research is dedicated. However, the effort is made in the ultimate hope of gaining deeper insights into the more general aspects of attitude formation concerning such policy issues.

CHAPTER I

INTRODUCTION

The Problem

One of the major natural resources of Michigan is its deer herd.[1] The herd is important from both a recreational and an economic standpoint. Between 575,000 and 650,000 deer hunters have purchased licenses each year for the last six years. These hunters have annually spent an estimated $40,000,000 to hunt deer druing this period.[2] About $3,000,000 of this amount is spent each year to purchase deer hunting licenses. Much of this revenue is in turn used by the state for the management of the deer resource.

Several key issues are associated with the management of this resource. One of these major issues is whether a policy of harvesting

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[1]There are two species of deer found in the United States. Both are classified in the genus Odocoileus. These species are known as (O. virginianus) the whitetail and (O. hemionus) the mule deer. Each of these species has a number of sub-species which are not significant enough for our purposes to discuss here. The only species found in Michigan is the whitetail, so any reference made to Michigan deer in this study will concern the whitetail. A detailed technical discussion of deer and their ecology is found in Walter P. Taylor (ed.), The Deer of North America (Harrisburg, Penn.: The Stackpole Company and The Wildlife Management Institute, 1956), 668 pages. For a less technical treatment see A. H. Carhart, Hunting North American Deer (New York: The MacMillan Company, 1946), 232 pages.

[2]The estimate is based on the average annual expense ($64) of big game hunters surveyed in the U. S. Department of the Interior's 1965 National Survey of Fishing and Hunting.

antlerless deer[1] in addition to antlered bucks should be followed in Michigan. Under most conditions now prevailing in Michigan, antlerless deer hunting is a necessary management tool from the biologist's viewpoint. However, other factors must be considered such as the social and political implications of such a policy. It is with these non-biological aspects that the greatest administrative complexity lies. One administrator pictured the situation this way,

> Deer managers and other conservation administrators often go so far as to say there is no real deer problem; it is a problem of people. This isn't really true of course. It is just that the difficulties of obtaining public support and understanding overshadow the problem of actually managing deer--which is plenty hard enough.[2]

This research focuses upon these social and political aspects of deer management. Special emphasis will be given to attitudes and behavior of hunters with regard to antlerless deer hunting. However, the following section is dedicated to a brief overview of some of the major biological concepts upon which the management of the resource itself rests.

Ecological Principles of Deer Management

Adaptability

Deer are amazingly versatile creatures. They have adapted well to the intrusions of man into their once remote domains. In fact, they are so adaptable to human settlement and human activity that they often live in very close proximity to urban areas. Two situations

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[1] Antlerless deer are defined for purposes of this study as any deer without antlers or with short spiked antlers less than 3 inches in length. About three-fourths of a normal antlerless harvest would be females.

[2] David H. Jenkins and Ilo H. Bartlett, Michigan Whitetails (Lansing: Michigan Department of Conservation, 1959), p. 8.

from different parts of the country exemplify this characteristic of deer-human compatibility. It is reported that a small wild herd lives in the Hollywood Hills completely surrounded by metropolitan Los Angeles and miles from the nearest open country. Also, in New Jersey, Tillett observed a similar close interaction between deer and humans. In his book entitled Doe Day, which dealt with the antlerless deer hunting controversy in New Jersey, Tillett cites numerous examples of deer doing extensive damage to ornamental trees and other plantings on residential properties, many of which were located in residential subdivisions. Tillett attributes much of the support of urban and suburban property owners for a deer-of-either-sex law as a reaction to this damage incurred upon their properties.[1]

Although deer are capable of doing extensive damage to agricultural and ornamental plantings, they have been tolerated near population centers more than most other big game species. Perhaps this is because deer present no real danger to humans except perhaps an occasional semi-wild buck during the rutting season. In contrast, other big game species that live in the same kinds of areas that humans usually inhabit in large numbers are often dangerous. Hence, less tolerance is usually shown toward them.

In order not to overstate a point, however, it should be stated that deer, as well as most game species, are sensitive to uncontrolled hunting and to wholesale habitat destruction. An example of this sensitivity occurred in southern Michigan during the initial settlement period where a sizable indigenous native herd was nearly exterminated.

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[1]Paul Tillett, Doe Day (New Brunswick, N.J.: Rutgers University Press, 1963), pp. 26-29.

This example will be discussed in greater detail later. It will suffice here to say that if given a reasonable chance to thrive, under most conditions, deer will do just that.

Food and Cover

Deer are basically browsers although they do a considerable amount of grazing during the summer. They do not thrive in either a prairie or in a completely forested area. They are most abundant where there is a great variety of low growing shrubs and young trees and where the forest is interspersed with open areas.[1] However, all low growing trees and shrubs are not deer browse. The whitetail can exist only on certain species of vegetation and even then they must have variety in their diet.

There is usually no shortage of food except during the winter, and then only if there are too many deer for the amount of food available. In many areas of Michigan this is the case whenever the snowfall is deep and lasts for more than a few weeks. Winter stress is particularly important during the more severe winters because the deer then migrate into coniferous swamps known as deer yards. These yards offer protection from the wind because they are located in low lying terrain and are generally characterized by dense thickets of coniferous trees. Another factor also contributes to the more temperate conditions of the yards. The thick conifers in these yards tend to absorb more heat from the sun than the bare hardwoods and less dense conifers of the highlands, thus raising the temperature somewhat.

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[1] For a detailed discussion of nutritional requirements, and of the diet and cover requirements of the whitetail, see Taylor, pp. 189-217.

Winter stress is created because these deer yards constitute only about 10 percent of the total range in the Upper Peninsula[1] and 7 to 8 percent in the northern Lower Peninsula.[2] This means that if heavy snows of long duration are experienced, the entire herd is confined almost exclusively to 10 percent or less of its natural food source areas. If the quantity and quality of browse in the yards is decreasing and/or if the herd is increasing at a faster rate than the browse will sustain, the condition of the herd will deteriorate during the winter. As malnutrition increases, the weaker and smaller animals begin to die of starvation.

Mortality Among Deer

What are the common causes of death among whitetails and how do these rank in importance? Bartlett indicated the magnitude of the annual loss and some of the prominent causes of mortality when he stated,

> It is a fact that year in and year out 30 percent of Michigan's deer are removed from the herd by starvation, legal hunting, illegal hunting, road kills, wanton killing by dogs, predators and natural mortality.[3]

The major issue, however, is not what kills the deer, but rather how do these various factors rank in importance. Are hunters over-harvesting the herd? Are disease and parasites a major contributor to losses? Or is starvation the pivotal factor which causes the size

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[1] I. H. Bartlett, Michigan Deer (Lansing: Department of Conservation, 1950), p. 16.

[2] Bartlett, p. 28.

[3] I. H. Bartlett, "Where We Stand After Eight Years," Michigan Conservation (Nov.-Dec., 1960).

of the herd to fluctuate? Many research efforts have been carried out in an attempt to determine the significance of the various factors that Bartlett listed as well as other possible causes which he did not mention.

Disease and parasites have been found to be an insignificant factor as the primary cause of death. However, there is evidence that in cases where deer have been injured or where they are in a severely weakened condition due to malnutrition, disease and parasites can be a significant secondary cause of death.[1] Also, vehicular collisions with deer account for a relatively small part of the estimated total mortality. In 1968, 7,895 deer were reported killed in collisions with motor vehicles.[2] These data are derived from several sources including reports of vehicle killed deer from state and local police agencies, dead deer found by road crews and Department of Natural Resources employees, and reports to the Department of Natural Resources by the public. In summary, the few thousand deer killed by vehicular collision have an insignificant effect upon the herd as a whole.

Little is known about the exact number of deer that are killed by wild predators, but information is sufficient to indicate that the number is insignificant.[3] However, McNeil suggests that dogs may play a significant role as a predator in southern Michigan.[4] But

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[1]Taylor, pp. 169-176. This point is also confirmed by Jenkins, pp. 52-54, for the Michigan herd.

[2]Personal communication from D. A. Arnold, big game specialist, Michigan Department of Natural Resources, March 13, 1969.

[3]Taylor, p. 185.

[4]R. J. McNeil, Population Dynamics and Economic Impact of Deer in Southern Michigan, Michigan Department of Conservation, Game Division Report No. 2395, 1962, p. 58.

when the herd as a whole is considered in relation to human populations and to concentrations of domestic dog populations, it is unlikely that predation of any kind is in itself presently a limiting factor.

Michigan Conservation Department officials,[1] as well as their contemporaries in agencies of neighboring states, agree that hunting and starvation are the two factors which influence herd size the most. The question which will be confronted over and over again in this study is "which is the most important?" Hunting can be classed into two types--legal and illegal. Good data is available on the annual legal kill, but very little is known about the effect of illegal hunting. It has been estimated that the total illegal kill possibly equals or exceeds the lgeal kill.[2] Regardless of the exact figure, most authorities who are close to the matter agree that illegal hunting does play a significant role.

The seriousness of the illegal kill problem lies not so much in the taking of the animals themselves, but in the complete lack of management control. For example, in areas where the size of the herd exceeds the capacity of the range, these kills may be beneficial. On the other hand, illegal kills taking place in areas where the range is understocked would obviously have a detrimental effect upon the herd.

There are two major types of illegal hunters. One type, known as poachers, premeditatedly takes deer illegally both in season and out of season. In contrast, it is quite common for a semi-skilled

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[1]The name of the Department of Conservation was changed in 1969 to the Department of Natural Resources (DNR) and the agency hereafter will be referred to by the new name.

[2]Jenkins, p. 80.

nimrod to shoot first and then look to see what it was afterwards. This second type of hunter, if he happens to kill an antlerless animal and does not have a permit, has committed an illegal act. Under these circumstances, the deer is usually left lying where it fell. There are probably many more of the second type of illegal hunter than of the first.

Through a variety of means the Department of Natural Resources has derived estimates of the annual legal kill for the entire state since 1931. These annual estimates are given in Table 1.

How do these estimates of legal deer kill compare with starvation as a cause of mortality? Data are very limited concerning the actual number of animals which starve each year, except during those years in which dead deer searches have been conducted in the deer yards in the spring.[1] From the data that are available, several facts are evident. First, the annual mortality due to starvation fluctuates a great deal depending upon the severity of the winter. Secondly, the mortality rate is highest among fawns and smaller animals. Thirdly, the rate of mortality varies from area to area, depending upon the size of the deer population and upon the amount of overbrowsing that is occurring. The magnitude of the problem of starvation is reflected in an estimate that more than 50,000 animals starved in 1951.[2] This was one of the arguments which was used to justify the initiation of the large-scale use of antlerless deer hunting as a way of limiting deer populations, which was begun in 1952.

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[1] See L. A. Ryel and C. L. Bennett, Jr., "Technical Report on the Fall 1961 and Spring 1962 Dead Deer Searches," Game Division Report No. 2396, Michigan Department of Natural Resources, October, 1962, pp. 32-33.

[2] Jenkins, p. 21.

Table 1. Legal deer kill since 1931[a]

Year	Total Kill	Year	Total Kill
1931	23,500	1950	83,650
1932	20,500	1951	81,600
1933	25,500	1952	162,160
1934	27,000	1953	97,100
1935	30,000	1954	67,260
1936	42,000	1955	73,770
1937	39,760	1956	73,610
1938	44,390	1957	77,130
1939	44,770	1958	98,890
1940	51,380	1959	115,220
1941	56,250	1960	75,360
1942	61,580	1961	58,030
1943	50,890	1962	95,830
1944	51,010	1963	124,110
1945	84,260	1964	141,340
1946	89,510	1965	112,210[b]
1947	81,480	1966	94,190[b]
1948	63,730	1967	101,620[b]
1949	77,020	1968	89,750[c]

[a]C. L. Bennett, Jr., L. A. Ryel, L. J. Hawn, "A History of Michigan Deer Hunting," Research and Development Report No. 85 (Lansing: Department of Natural Resources, 1966), pp. 32-33.

[b]Figures for 1965-67 reported in Research and Development Report 139, p. 2.

[c]Preliminary estimates, based on road counts for the 1968 season.

The effect of malnutrition upon reproduction is perhaps of equal or greater importance to the deer population than actual starvation.[1] Jenkins summarized the principle in a rule of thumb that, "Ten well fed does will produce at least as many fawns as fifteen half-starved ones."[2]

Influence of Herd Size on the Range

The implications of overpopulation are more serious than just having a certain number of animals die. When there is overcrowding of the habitat resource, the habitat itself is disturbed sometimes to the point of being injured for the life of the stand or even longer if there are adverse effects upon the soil or some other part of the micro-environment. The following examples have broader implications,

> Unfortunately deer take the preferred species first and even though some browsing pressure is removed by killing more deer, the remaining deer still work on preferred foods. To date, species showing signs of recovery after local winter herd reduction have been second and third class (foods).
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> Continued heavy browsing of preferred foods in many areas is gradually eliminating some of them from the forest. Ground hemlock is practically gone and in areas cedar has almost reached a point where it can no longer be considered as a part of the deer food picture.[3]

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[1] Louis J. Verme documents this effect in two different reports of recent research in Michigan. "Reproduction Studies on Penned White-Tailed Deer," The Journal of Wildlife Management, Vol. 29, No. 1, January, 1965, pp. 74-79 and "Influence of Experimental Diets on White-Tailed Deer Reproduction," Research and Development Report No. 100, Michigan Department of Natural Resources, March, 1967, 15 pages.

[2] Jenkins, p. 41.

[3] Jenkins, p. 45.

A Historical Perspective[1]

Before the coming of the white man, northern Michigan, which is now considered "deer country," was not ideal range.[2] It is on the northern edge of North America's deer range and the intensive cold and heavy snows make survival of the deer impossible, except where the protection of the deeryards is available. However, the limiting factor in northern Michigan, before the white man, was the mature stands of conifers and hardwoods that covered most of the Upper Peninsula and the northern Lower Peninsula. As was discussed earlier, the deer are dependent on the early stages of plant succession that are characterized by low growing vegetation and openings in the forest. Since there was little habitat of this kind in virgin forests, there were very few deer because there was very little food. This condition did not exist in southern Michigan, however, and there is evidence that it contained a fairly sizable herd.[3]

All these conditions changed in the last half of the 19th century. Between 1850 and 1890, almost all of the virgin pine and other valuable conifers were cut in northern Michigan and much of the valuable hardwood resource was being harvested throughout the state. Inadvertently, an ideal deer habitat management program was initiated and by 1870

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[1]For information concerning the history of the deer herd in Michigan the author relied heavily upon materials from Whitetails, 1938, pp. 7-12; and Michigan Whitetails, 1959, pp. 10-13.

[2]Geographically Michigan consists of three regions, the Upper Peninsula which is a peninsula jutting out in an easterly direction from Wisconsin, and northern and southern Michigan in the Lower Peninsula with the transition between these two regions usually thought of as being an imaginary line between Muskegon and Bay City.

[3]McNeil, pp. 7-13.

deer were plentiful in the northern Lower Peninsula, and the herd was growing as rapidly as the forests were being cut in the Upper Peninsula. The opposite situation developed in southern Michigan where the bulk of the deer were originally located. This area was almost all pre-empted for agriculture by 1870, and since there were no effective controls on herd harvest, the deer were almost extinct in that area by the time settlement was complete. Deer remained relatively scarce in southern Michigan until about 30 years ago even after stringent controls on harvest were established and enforced.

In northern Michigan, the herd has had its ups and downs since 1870. As logging operations continued--the conifers being taken first and then the hardwoods--a pattern of clear cutting developed which completely eliminated deer cover. The problem was compounded by the fact that these cutover areas created ideal tinder boxes. An average of about 2,000,000 acres burned annually between 1870 and 1900. In this connection Brandreth has pointed out that,

> There is no protection on burnt over lands, and the habits of the whitetail demand that he have cover, especially throughout the rigorous northern winters. Whereas feed is rich and plentiful as is often attested by the weight of bucks shot in the vicinity, the exposure of these desolated regions to the full sweep of wind and storm drives the deer to seek more sheltered environments after the first heavy fall of snow. Occasionally on fine days they will move out of green timber to go foraging in an old "burning" but if the country of this character is extensive it is habitually shunned by the whitetail in cold weather and just so many acres are thus lost to him when he needs them most.[1]

It should be pointed out that one burning is not necessarily bad if a major goal is to create deer habitat. Without fire, much of the pine country would have reverted back to pine reproduction which would

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[1]Paul Brandreth, Trails of Enchantment (New York: G. Howard Watt, 1930), p. 9.

have ultimately recreated the original conditions. However, fires stimulated plant reproduction which created ideal deer habitat. The problem of the recurrence of these fires made the benefits that were created of very short term value. As Brandreth pointed out, the limiting factor in the winter during these years plagued with intermittent fires was not food, but cover. The problem is most acute for the first three or four years after each burning.

In addition to the habitat problem, hunting pressure became a serious threat. With no controls on the number of deer that could be killed or on the methods used, and with the development of markets in the lumber camps, deer meat became a cash commodity. This problem was aggravated when markets for hides developed. However, the intense pressure came when the railroads were completed to link these remote northern areas to the burgeoning cities of Detroit, Chicago, and Milwaukee among others.

A sportsmen's congress held in Saginaw in 1882 produced evidence that over 100,000 deer carcasses were shipped south from northern Michigan for the meat market during the fall of 1880.[1] When it is considered that market hunting for meat was only one aspect of the total harvest, it is not difficult to conceive of possible adverse effects. In addition to commercial hunting, thousands of deer were killed and utilized locally and many additional thousands of deer were slaughtered during the warm months for their hides and the meat left to rot because of a lack of refrigeration.

Uncontrolled hunting pressure and recurrent burnings in time had a predictable effect. The herd reached an all time low since

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[1] Bartlett, Whitetails, p. 12.

before the appearance of the white man, between 1890 and 1915. The stage was set for the legislative developments which followed.

The Evolution of a Management Policy[1]

The first game law came into existence under the English system of law during the reign of Canute in England in 1016.[2] Since then there have been numerous attempts to impose controls on wildlife harvest, both in England and the United States. Michigan's experience with controls of the hunting of deer began in 1859. In that year, the legislature passed an act limiting the deer hunting season to the last five months of the year, instead of year-round. In 1873, the season was reduced to 45 days. The first regulations on methods that could legally be used to kill deer were imposed in 1881. Shooting deer in water and using traps, pitfalls, and pits were forbidden. In addition, deer could be killed only for food and could not be shipped out of state. These were the first efforts to introduce the elements which most hunters now take for granted as inherent in the character of hunting; i.e., sportsmanship in giving the deer a reasonable chance of escape and the minimization of waste.

The 1881 measure also forbade the taking of an animal while in spotted or red coat. For purposes of this study, the phrase referring to "spotted coat" is very important because this represented the first attempt to limit harvest on the basis of the age-sex factor, which is

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[1]Much of the detailed information in this section was taken from Bennett, et al., pp. 9-15, and was supplemented with materials from Michigan Deer, 1950, pp. 10-12, 22-25, 34-39, and 41-48; Whitetails, 1938, pp. 12-16; and Michigan Whitetails, 1959, pp. 14-24.

[2]Michael Brander, The Hunting Instinct (London: Oliver and Boyd, 1964), p. 23.

so much a part of the present issue over antlerless hunting. In 1887, the uses of dogs and artifical lights were added to the list of restricted methods of taking deer. In 1891, the first two counties in Michigan were closed altogether to deer hunting--Allegan and Van Buren. Six more counties were closed to hunting in 1893.

By this time the deer herd was diminishing at such a fast rate that the legislature began to take drastic steps in limiting the sportsman's individual claims on the resource. Before 1895 there were no bag limits on the number of deer that could be taken within the season. However, that year a limit of five was placed on the number of deer that could be taken in any one season by one person. Also, the purchase of a license was required for the first time. In 1901, 1905, and 1915, the limits were reset at three, two, and one deer, respectively. Also, in 1901, market hunting was declared illegal. Specific provisions included abolition of the practice of selling venison in any form or the serving of venison where a charge is made for the meal.

The Conservation Department (now the Department of Natural Resources) was established as a department of state government in 1921. One of its first official actions was to endorse the "buck law" which limited the game eligible to be taken to bucks with antlers extending at least three inches above the head. The measure was passed that same year. Little is known about public reaction to the deer laws passed prior to the "buck law." However, the literature is quite explicit in stating that the 1921 buck law stirred up an opposition very similar to that which was encountered when antlerless deer hunting was reintroduced for a substantial part of the state in 1952. Several arguments were used to appeal for hunter support by the new Department.

The most straightforward appeal was that it would increase the deer herd. Secondly, arguments were made based on emotional appeals on behalf of does as females of the species and their fawns as babies. And thirdly, there were appeals based on safety. Jenkins comments on how acceptance was finally achieved,

> The buck law was finally passed in Michigan in 1921 after much complaining. The sportsmen would not "buy" it as a means to increase deer. It was finally "sold" as a safety measure, "If you have to see horns, you won't shoot a man."[1]

The new law was rather quickly accepted, however, as indicated by a postcard survey in 1925 which showed that 42 percent of the hunter sample supported the "bucks only" law.[2]

The DNR was given discretionary power in recommending deer management policies to the legislature in 1925. But this authority did not extend to the liberalization of the "bucks only" law. Between 1921 and 1941, no changes were made in the antlerless deer hunting policy. A new experimental phase for the policy was begun in 1941. That year, hunters were allowed to take antlerless deer in Allegan County because of the damages being done by deer to the area's intensive agricultural crops. Also, the camp deer law, which authorized a party of four or more hunters to take one buck for camp use, was changed to allow the taking of one deer-of-either-sex. In 1942 this camp deer-of-either-sex regulation was rescinded by the Legislature because of the widespread opposition it generated. However, antlerless deer hunting continued in Allegan County. This represented the first time that the Conservation Department had ever had the

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[1] Jenkins, p. 70.

[2] Personal communication from L. A. Ryel, Michigan Department of Natural Resources biometrician, March 10, 1969.

authority to liberalize deer seasons beyond a buck season and its first attempt to do so was partially thwarted.

In 1948, the whole state was opened for hunting for the first time since 1891. All the counties south of the Bay City-Muskegon line had been closed for the most part since 1926. In fact, all the counties in the state had been closed to hunting for from one to five years except those in the Upper Peninsula and a few counties in the extreme northeastern tip of the Lower Peninsula.

In 1949, a second attempt was made to institute a policy of antlerless deer hunting on a limited scale in the fruit country of the northwestern tip of the Lower Peninsula. Here again, as in 1941, it was initiated because of widespread damage being done to high value agricultural crops. From this point, a new phase in the evolutionary process of the policy was entered--the phase we are still in and to which this research addresses itself. In 1950 and again in 1951, a special any deer season was tacked onto the end of regular season in several counties in the northern Lower Peninsula.

In 1952, the Legislature gave the Conservation Commission authority to set deer hunting regulations, including antlerless deer hunting, for three years for the entire lower Peninsula. That year the Conservation Commission opened the last three days of the regular session to antlerless hunting with no permit required. This resulted in a kill of 162,160--with 115,280 of them being antlerless deer.[1] This stands as the all time kill record for Michigan. This was the first time that the hunting of antlerless deer was used as a management

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[1]Bennett, et al., 1966, p. 32.

technique on a widespread scale to harvest excess deer. Bitter opposition was created to the policy, the crux of the outcry being that the herd would be exterminated. In 1953 and 1954, the policy of taking antlerless deer was continued, but on a more restricted scale as is reflected by the kill in those years.

The three year authorization of the Legislature to the Commission for full discretion in the management of the deer herd was not renewed in 1955. Allegan County was the only area that the Legislature permitted antlerless hunting in 1955. From 1956 to the present the Commission has had discretionary power, but used it only as extensively as they felt they could without jeopardizing the program. In 1961 antlerless deer hunting was suspended by the Commission for one year except in two small areas. This was due to the public reaction to a mediocre season in 1960 after an exceptionally good season in 1959. Nineteen sixty-four was a remarkable deer season during which an estimated kill of 144,280 was recorded. Public acceptance of antlerless deer shooting seemed to be on the rise, but the stage was set for a serious setback in 1965.

On paper, the 1965 season looks good, and it was. The estimated kill of 115,340 was the fourth largest since the widespread adoption of the antlerless deer hunting policy in 1952. Unfortunately, certain circumstances developed before and during the 1965 season which caused the greatest hue and cry in years to emerge in the condemnation of antlerless deer hunting. The hard winter of 1964-65 rather seriously depleted the 1964 fawn crop, which resulted in a noticeable drop in the number of yearling bucks in the fall of 1965. Since the yearling buck kill accounts for a large proportion of the total buck kill, the

opportunity to shoot a buck under these conditions was significantly reduced. This reduction is doubly important when hunter preferences are taken into account. There is an overwhelming preference among hunters to shoot a buck. Since there were fewer bucks available, tempers rose.

Also, the opening and closing dates of the season were altered from previous years. Deer season had traditionally opened November 15 and closed November 30 in the Lower Peninsula. However, in 1965 the opening dates were changed to consecutive Saturdays--November 13 in the Upper Peninsula and November 20 in the Lower Peninsula. This would not have been particularly crucial except that the legislative resolution authorizing the change was not passed until late June, which apparently disrupted the plans of many people; e.g., many workers are required to specify their vacation date preferences early in the year and had planned their vacations to coincide with previous openings of hunting season.

Another factor that contributed to hunter disenchantment was the overcrowding of certain areas in the state. This has always been a problem, but it was especially acute that year because the Saturday openings put more hunters in the field than if the season had opened during the week. Also, in this connection, some hunters started the season in the Upper Peninsula the first Saturday and then came down and hunted the Lower Peninsula when it started on November 20.

A fourth factor is also related to the collective behavior, but the magnitude of the relationship is difficult to determine. It has been observed that during the season following an extraordinarily successful season there is likely to be widespread agitation against

"doe hunting" regardless of the hunter success the second year. For example, both 1959 and 1964 were exceptionally good seasons. On the other hand, 1960 and 1965 were average or above average seasons. Yet, in 1960 and 1965, opposition was far greater than would have been expected from the success of the seasons themselves. In contrast, in 1961 the success was the lowest in a number of years and the success during the 1966 season was lower than in 1964 or 1965. Despite this, no controversy developed. The relationship between success and controversy can be described diagrammatically as follows:

	Cycle 1			Cycle 2		
Year	1959	1960	1961	1964	1965	1966
Success	excellent	good	poor	excellent	good	average
Controversy	none	heated	none	none	heated	none

Part of the lack of controversy in 1961 and 1966 is undoubtedly due to the fact that antlerless hunting quotas were almost eliminated in 1961 and were reduced in 1965. Even with this fact considered, there seem to be more reasons for a controversial season than simply the number of animals that are or are not killed in any given year.

No significant controversies have developed since 1965, and there are indications that the Department is gaining increased support for its antlerless deer hunting policy. Thus, the description of the history of the evolution of the antlerless hunting policy, although sketchy, is complete. The evolution of the policy has taken the pattern of a reversal of direction and of a constant struggle of back-tracking for the DNR. The change from a proponent position for a "bucks only" policy to a position of being in the forefront of those advocating antlerless deer hunting has not been easy.

The Factions

Theoretically the Conservation Commission, a group of five laymen interested in conservation who are gubernatorial appointees, functions as the policy-making body for the Department of Conservation as was authorized by the 1963 Constitution. The policy-making body, by the very nature of its composition, is dependent upon the professional staff of the Department for recommendations and supporting data. These recommendations are usually followed. However, in reality the legislature exercises a great deal of control over policy by virtue of being able to review and to alter the Commission's decisions. Control is also maintained by the legislature because of its power to authorize all appropriations. Thus, the Legislature is the final decision-maker and the Department often must act as an interest group in attempting to elicit a desired response. This dependency on the Legislature has created many headaches for the Department concerning antlerless deer hunting.

Support

The Department has a number of allies who support its approach to deer management. Some of these allying groups are highly organized, while many other supporters act individually or in loosely organized groups of hunters. Primary support is drawn from widely diversified but influential groups. The Michigan Chamber of Commerce, with the exception of a few dissident local chambers, has strongly supported the DNR in its management policies.[1]

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[1] For example, see the Michigan State Chamber of Commerce Special Report entitled "This Is Not The Time To Panic,", December 27, 1965.

Another ally, the Michigan United Conservation Clubs, is a consolidation of many conservation clubs into one state-wide coordinating body. Its primary purpose is to further the cause of conservation through publicizing conservation needs and through lobbying for appropriate political action. Mr. James Rouman, who serves as executive secretary, told the author in an interview that of the over one hundred organizations representing some 102,000 members (1969 membership) in Michigan United Conservation Clubs, there were less than a dozen voting delegates who opposed a resolution endorsing the Department of Natural Resources' antlerless deer policy at the 1965 convention, the last session in which the issue was brought into serious discussion.

A third strong endorsement of the overall methods being employed in Michigan has come from the Federal Bureau of Sport Fisheries and Wildlife in the Department of the Interior. In addition, all the natural resources agencies in neighboring states support the antlerless deer hunting program. In fact, some of these have modeled programs after the one used in Michigan. The fifth and perhaps most important ally is the outdoor editors of the major newspapers in Michigan. No major daily newspaper has raised a strong objection to their policy in many years.

The Department of Natural Resources makes the following claim:[1]

> Who supports the Commission and Department in management of deer? Let's take a look. The outdoor editors of Michigan with few exceptions support them. The Michigan United Conservation Clubs, largest conservation organization of its kind in the country, gives its confidence and backing. The Michigan Bear Hunters Association, and the Bow Hunters. The Federated Garden Clubs of Michigan are on their side.

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[1] I. H. Bartlett, "Ten Years," Michigan Conservation, Nov.-Dec., 1962.

> Every college and university in Michigan, in the United States, if not in the world, that teaches wildlife management is on that same ground. The U. S. Forest Service, the Soil Conservation Service; all federal agencies interested in such things are on it.
>
> There is the support of powerful non-government organizations; the Farm Bureau, the Grange, the National Wildlife Federation, the Wildlife Management Institute, the Wildlife Society, the Society of American Foresters, the Michigan Natural Resources Council, the Michigan Academy of Science, Arts, and Letters.
>
> By formal resolution or informal expression many other organizations indicate their agreement. The Department has stacks of "keep up the good work" letters from concerned individuals.
>
> Every responsible conservation official in every state and provincial agency in the United States and Canada is also on that ground. For a long time the taking of antlerless deer has been part of game management in Maine, Pennsylvania, Minnesota, most western states and all of Canada.
>
> Basic to the entire issue is the law of the land which permits the Commission to manage the deer herd. This is the will of the people as expressed by their representatives in the Legislature of Michigan.

It must be added as a final point that this issue is not limited to a confrontation of organized groups and their institutional supporters. The role of a dispersed and unorganized public which supports the Department of Natural Resources has also been crucial. Without this grassroots support which has repeatedly arisen when the issues have intensified to the point of imminent crisis, the Department and its institutional allies could not have withstood the political pressures that have periodically been brought to bear.

Opposition

It is much more difficult to define explicitly who the dissenters are concerning antlerless deer hunting. There are vestiges of an organized opposition that appear periodically. However, none of these organizations have attained such formidable dimensions as to single-handedly pose a serious threat to the present deer management policies.

There seem to be regional differences in the amount and kinds of support and opposition that exist. This is one of the major propositions that is being tested in this research. Apparently, there is relatively more opposition to deer management policies in the Upper Peninsula and the northern Lower Peninsula than there is in southern Michigan.

What factors could account for these differences if they do exist? One possible explanation is that the interest of the population in general is greater in some areas than in others and that interest is related to opposition. The proportion of the population which hunts deer furnishes one measure of this interest. Table 2 indicates the proportion of deer hunters in 1960 in relation to that part of the total population from which almost all hunters come (males between 15 and 64).

The interest that prompts higher percentages of the population in the northern two regions to hunt may also predispose them to a stronger interest in the way the herd is managed. A significant part of the population of these two northern regions, the exact proportion being indeterminable, is obviously opposed to antlerless deer hunting. The intensity of this opposition varies, but is nevertheless consistently evident.

A second factor which may contribute to regional differences, if they do exist, are differences in values toward maintenance of the status quo (conservatism) as contrasted with change. Several studies suggest that political and social conservatism is greater in rural than in urban areas.[1] There is also evidence that the urban influence

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[1] V. O. Key discusses the distribution of political attitudes in metropolitan areas, cities, towns, and rural areas in Public Opinions and American Democracy (New York: Alfred A. Knopf, 1963) pp. 110-120. Key makes several points that tend to qualify this generalization:

Table 2. Proportion of deer hunters to the male population between 15 and 64 years of age in 1960

Hunter Residence	Number of Deer Hunters[a]	Male Population[b] 15-64 Years	Proportion
Upper Peninsula (Region I)	47,009	88,645[c]	.53
Northern Lower Peninsula (Region II)	101,179	163,140	.62
Southern Michigan (Region III)	294,246	1,996,719	.15

[a]Data taken from 1960 Firearm Deer Survey which is based on a 2 1/2 percent sample of all Michigan deer hunters.

[b]Data taken from the 1960 Census of the Population, Vol. 24, pp. 131-152.

[c]According to the 1960 census, there were 305,952 residents of the Upper Peninsula. The county populations ranged from Marquette County with 56,154 residents, to Keweenaw with 2,417. 1960 Census of Populations, Vol. 24, p. 24, 14. The proportion of the male population to total population in the northern Lower Peninsula and southern Michigan are comparable to the proportion in the U.P.

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(1) On most issues the opinions of rural residents are not often sharply set off from the opinions of residents of Metropolitan areas. Rather people with all shades of opinion inhabit both the city and the country. (2) Whatever differences in opinion distributions exist between different types of population areas, these differences are probably becoming less and less distinct. (3) On many issues, the population size continuum from metropolitan areas to rural areas does not produce consistent evidence that conservatism increases with a decrease in population. For example, on governmental fiscal matters small cities tend to be more conservative than either village or farm populations. (4) The key independent variable may not be population size at all, but rather the proportion of the population in various types of occupations. Examples of other studies which document or allude to the phenomenon of relatively greater conservatism among rural as compared to urban populations are: Irving Crespi, "The Structural Basis for Right-wing Conservatism: The Goldwater Case," Public Opinion Quarterly, Vol. XXIX, Winter 1965-66, No. 4., pp. 523-543 and D. Bell (Editor), The Radical Right (New York: Doubleday and Company, 1963).

on conservative attitudes diminishes with increased distance from these urban centers. If these generalizations are true with regard to conservatism in the case of antlerless deer hunters in Michigan, differences in attitude could reasonably be predicted since southern Michigan is heavily urbanized and the northern Lower Peninsula has no real urban regional centers. The Upper Peninsula is more difficult to classify. The cities of Sault Ste. Marie and Marquette are much more cosmopolitan and influential for their region than are most cities of comparable size. The Great Lakes Locks generate this influence in the case of the former and Marquette has been important for over one hundred years, first as a trade center and later as a headquarters for mining, timber and other natural resources interests.

Thirdly, economic conditions may be an influence on attitudes toward natural resources management. The economies of the Upper Peninsula and the northern Lower Peninsula have lagged substantially behind the highly industrial southern Michigan economy. The already depressed economies of many of these counties depend heavily on the injections of tourist and hunter dollars to keep these areas financially solvent. When the hunting season is bad, or presumed to be bad, dollars which otherwise would have been taken in are lost, or feared lost. In 1964, after a record hunting season in the Upper Peninsula, the Marquette Chamber of Commerce prepared a resolution commending the Department on a job well done in managing the deer herd of Michigan. This represented the first official commendation of the Department's work ever made by such an organization from the Upper Peninsula.

Added to the sting of the present economic disparities among the regions is the reversal in economic fortunes. In the early years of

statehood the exploitation of natural resources which was dominant in the northern two-thirds of Michigan supplied a large proportion of the early economic muscle. When talking to residents in these northern regions, the complaint is regularly voiced that southern Michigan has exploited and is continuing to exploit northern Michigan resources without an equitable exchange of benefits. This situation seems to fit most of the descriptive characteristics of alienation[1] based on these northern Michigan resident's perception of themselves as experiencing relative deprivation.[2] This antipathy may be one of the reasons that Upper Peninsula people feel that local residents have an a priori right to the deer resource. The thought is often implied, if not expressed, that hunters from the Lower Peninsula area are intruders coming in to take game which belong to the people of the Upper Peninsula.

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[1]Alienation in this context takes on a character much like Marx's concept of "Exploitation" as discussed in Daniel Bell, The End of Ideology (New York: Free Press, 1962), pp. 364-67. However, one of Seeman's four typologies of alienation which he defined as powerlessness seems to better fit this situation than Marx's rather extreme characterization of exploitation. Melvin Seeman, "On the Meaning of Alienation," American Sociological Review 24: 783-91, Dec. 1959. Powerlessness in this case is based on (1) an intense feeling that the antlerless deer hunting policy is harmful, and (2) a feeling that resident opposition to the policy is not given fair consideration, and (3) that no course is available for them as an opposition group to alter the policy through political channels because of downstate support of the Department of Natural Resources and because of bureaucratic entrenchment of the Department by protecting itself from outside counter-pressures.

[2]Relative deprivation is defined as "the differences in the sense of loss that are felt by persons who compare their current situation with their previous situation." John T. Zodronzy, Dictionary of Social Science (Washington, D.C.: Public Affairs Press, 1959), p. 283. The concept can be broadened to include a sense of loss that is felt when a person compares his group's social assets and liabilities with other groups and perceives significant disadvantage for his group which is beyond the group's immediate control to change.

A fourth characteristic which might create regional differences is provided by differences in setting. Since southern Lower Michigan is highly urbanized and has a strong agricultural land use base, very little of that part of the State is in a "natural" ecological condition. In contrast, the northern regions of the State have a much more "natural" vegetative cover. This setting leads many Upper Peninsula and northern Lower Peninsula residents to feel that they are much nearer to nature than their southern cousins. This proximity to nature also prompts many of these residents to feel that they know more about the deer herd than the "armchair DNR administrators who sit in an office down in Lansing."

An important part of the analysis of the data generated in this study will be to determine if regional differences in attitudes and behavior with regard to antlerless deer hunting do in fact exist. Secondly, if there are regional variations in attitudes, an attempt will be made to determine if these attitudes are related to regional differences in the following independent variables: a) general interest in hunting, and b) differences in the proportion of the hunting population which feels alienated from the political process, especially with regard to the antlerless deer hunting controversy.

Although they have nothing directly to do with conservation or natural resources, the county boards of supervisors in the Upper Peninsula have been especially active in condemning the deer management programs.[1] Perhaps one of the major motivations is the identification of the DNR with the interests of the Lower Peninsula, rather than the state as a whole.

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[1] Interview with David Arnold, big game specialist, Michigan Department of Conservation, February 23, 1966.

The most organized and vocal opposition has come from the northern Lower Peninsula. For many years, the Greater Michigan Sportsman's Club was the leading opposition group from this area. Since 1965, the most prominent of these groups has been the Michigan Deer Hunters Association, which is based in Oscoda, Michigan. This organization has been active in collecting money, promoting letter writing campaigns, and conducting meetings to generate opposition to the Department's deer management program. This organization was active in organizing and participating in the demonstration that was held by several hundred hunters on the grounds of the State capitol in Lansing early in 1966 to protest antlerless deer hunting.

Southern Michigan has its opposition elements too. Several DNR employees have mentioned to the author that while manning deer check stations, they observed that the Detroit area hunters tend to be more belligerent than hunters from any other area. On the other hand, the intensity of opposition from different areas varies from year to year. In 1965, the primary opposition in southern Michigan came from the Flint-Genesee County area.

There are indications that opposition seems to be particularly high among the membership of certain union locals. These impressions will be checked in this research. Figures on the total number of hunters who are union members are not known, but it is known that in 1964 11% of the hunters were from Wayne County alone.[1] Seventy percent of the licenses sold were from the southern third of the state.

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[1]Michigan Department of Natural Resources "1964 License Sales by Counties," Statistical Bulletin 1355, Oct. 1965.

It is very likely that a large percentage of the hunters from these areas are union men. During the Conservation Commission meeting in February, 1966 following the opposition agitation over the 1965 season, Mr. August Scholle, president of the Michigan AFL-CIO and a member of the commission, commented on the general attitude of union men concerning antlerless deer hunting.[1] He discussed the then current agitation over "doe hunting" within certain locals and pointed out that these union members can scarcely be reasoned with on occasion.

Meetings of the union local and interaction of workers while on the job provide opportunities for expressing mutual grievances about such things as not getting a deer or not even seeing as many deer as in years past. The author has been present on several occasions when such discussions escalated into bitter denunciations of the Department of Natural Resources.

Aside from union opposition, other regional characteristics have probably had an effect upon support and opposition in southern Michigan. The heavily urban nature of southern Michigan, in all probability, has had some influence on hunter attitudes. Urban centers are more immediately dependent upon government services than are rural areas. This could influence hunters from urban areas to be more conciliatory toward the role of the DNR. On the other hand, the rural environment in which the deer resource is found is foreign to the urban milieu; thus, the resource's needs may be more easily misunderstood by these urban users.

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[1] Statements made by August Scholle, one of the five Conservation Commissioners and President of the Michigan AFL-CIO at the February, 1966 meeting of the commission.

The Legislature

As mentioned earlier, the legislature can and does play a significant and active role in influencing the management of natural resources. In fact, it would be a serious mistake to conceptualize the role the legislature has played in the deer management controversy as that of a passive judge waiting for the facts in order to pass judgment. The Department has both its strong supporters and its bitter enemies within the legislature. However, most legislators nominally support the Department because of its professional expertise. Still, they are capable of bringing pressure to bear in order to reverse a management decision if it appears to be more politically expedient to do so.

In actuality, several members of the legislature have served as keynoters in the controversy and have also served as rallying points for establishing continuity for the very dispersed and unorganized opposition. The following note is an example of active opposition outside the normal legislative channels.[1]

> A circuit court summons was served this week upon Conservation Director Gerald E. Eddy and Commission Secretary Clifford Ketcham to show cause why antlerless deer shooting should not be cancelled this fall.
>
> The summons included a bill of complaint filed in the Ontonagon County circuit court by Senator Charles O. McManiman, of Houghton, which declares the proposed shooting of antlerless deer illegal. . . . Because of the pending court action, hunters will receive with their permits a warning that they could be invalidated.

Although the suit was dismissed, the fact that the action was ever taken in the first place by a legislator points to the intensity of certain legislative opposition.

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[1] Department of Natural Resources news release, October 25, 1962.

In 1965 and early 1966, two unique features helped create the climate of active agitation among legislators. Michigan has traditionally been a Republican state. In 1964, large numbers of Democratic office holders were swept into office as a backwash effect from the landslide victory of the national party ticket. With 1966 being another election year, many of these candidates were grasping for issues which would help solidify their bids for reelection. Antlerless deer hunting was particularly well suited to use as a "whipping boy" at that time.

Several Department employees have indicated to the author that certain legislators have told them privately that they support the Department's general management program. However, their public statements at certain crucial times have reflected an opposition stance.

Another group of legislators has acted in what could best be described as opinion initiator roles. In other words, they have attempted to influence public opinion instead of the more conventional tack of reacting to such opinion. This groups of politicians has consistently been opposed to the Department policies that have had any controversial overtones. These legislators are the first to sound the alarm whether it be about timber, water, parks or wildlife.

One example of an attempt by a legislator to influence public opinion occurred during the 1965 season. A legislator from the Upper Peninsula recorded a tape for broadcast on every radio station in his district discussing the poor hunting season. This tape was broadcast during the first week of the season between November 13 and 21. At that time, carcass counts at Mackinac Bridge were running ahead of 1964, a record year.[1] Following the first few days, there was a

[1]Arnold, interview, February 23, 1966.

relatively larger hunter outmigration than would have been expected based on early kill rates. Of course, it would be misleading to claim that these broadcasts could have created the total effect. For one thing, it was to be expected that many hunters would migrate to the Lower Peninsula for its November 21 opening. Nonetheless, these broadcasts at the time they were made could have materially decreased the number of hunter days by causing people to leave early. In addition, some hunters who would otherwise have come from the Lower Peninsula to get in on the early season probably did not make the trip because of the highly publicized "poor season."

In conclusion, three factors seem to play a substantial role in influencing legislative behavior. First, the length of time served in elective office seems to be a better indicator than political partisanship of support or opposition. The less tenure, generally, the more likely the legislator is to oppose the antlerless deer hunting policy. Secondly, legislators from certain areas are more likely to oppose "doe hunting" than those from other areas. This probably pretty well reflects the sentiments of their constituencies. Thirdly, some legislators are so diligent and tenacious in their opposition that it is improbable that either one of the above relationships is a complete explanation. Some of these representatives seem to have personal "axes to grind" with the Department, and antlerless deer hunting provides a ready-made issue.

CHAPTER II

THE ISSUES AND THE RESEARCH PROBLEM

A More Detailed Analysis of the Issues

Thus far, the antlerless deer hunting (doe hunting) controversy has been described in broad general terms. However, more detail must be added in order to understand the frame of reference of the various interests involved. A description of these various points of view in this chapter will include detail regarding the assumptions made by the various factions involved and including consideration of the kinds and sources of available information that have been used to arrive at the various conclusions that have been drawn.

Types of Hunter Attitudes

In the preliminary stages of this research, the author had opportunities to talk to many deer hunters, state game biologists, and other state officials, and academic professionals with an interest or expertise in the area of resource user attitudes and behavior. In addition, an extensive review of the Department of Natural Resources' files containing correspondence from both those who support antlerless hunting and those who oppose it was completed. Finally, a literature review of appropriate studies was included. This literature covered various aspects of the issues involved in the management of both deer and other related natural resources. The situations in states other than Michigan

were also reviewed. In considering this background material, several distinctive hunter attitude types seem to be discernible.

Motivations for Support

A small percentage of hunters support the Department of Natural Resources because the Department's claims concur with their observations. The following letter demonstrates this type of motivation.[1]

> Dear Sirs:
> While I was hunting squirrel I saw a little doe not big enough for a good sized fawn. She had two little fawns that were almost starved to death and no wonder as there was nothing to eat except acorns, no grasses except ferns. Not enough browse to feed her let alone a herd. During the hunting season I killed a little buck that had tiny horns that were big on the base and little stub spikes less than three inches long about 4 or 5 years old. In a person it would be called malnutrition. I saw a long neck doe that probably hadn't had a fawn for several years. Nothing to eat. I went with a friend to get his trailer after the snow came and saw a doe that was about starved to death. Thinner than a snake. I doubt if she ever lasted the winter. Years ago when there were wolves and bobcats and foxes the herd took care of itself and balanced itself and there were nice big deer . . . .
>
> Sincerely:
> (Signature)
> Walkerville
> Michigan R.F.D. No. 1

This hunter recognizes starvation as a very real problem. Like many other hunters, he makes recommendations in the latter part of the letter (part not quoted) for improving the situation which the Department argues are economically unfeasible on the massive scale that is required. Nonetheless, the main point is that he agrees with the Department that there is a serious problem.

The second type of hunter that supports the Department does not do it on the basis of personal observations about deer habitat stress. This type of hunter simply believes that the Department is in the best

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[1]Letter received by the Department of Natural Resources March 11, 1957 amended to the "Special Deer Survey" postcard for the 1956 season.

position to understand resource needs and that it should have both the right and the responsibilities of managing the herd as it sees fit. The following excerpt from a letter illustrates this attitude.[1]

> Dear Sir:
>
> Why should you men, trained in game management, have to ask me, an average deer hunter, what I think about special seasons on deer? That's like a doctor asking the average person what they think about an operation, any operation . . . . I don't think people would have much faith in the medical profession if they did that, do you? But maybe I'm wrong, maybe the conservation department is controlled by politicians. If it is, it's time the sportsmen did something about it. But if it isn't, I don't see where anyone has a right to question what the Conservation Department does as far as game management is concerned.
>
> Personally, I think you fellows are doing a wonderful job . . .
>
> Sincerely
> (Signature)

This type of hunter accepts the claims of the Department of Natural Resources primarily out of respect for professional expertise and not on the basis of the issue itself.

A third type of hunter who supports the Department does so not so much out of respect for professional expertise or because they see it as a method of better managing the herd, but because of tangential considerations. The example below demonstrates the point.[2]

> Dear Sir:
>
> In regards to your special deer survey for last year. This is my opinion on question three. I am for any deer season for the simple reason I think it would do away with the illegal kill of deer that is left in the woods to spoil. I have sat on runway and seen deer come through, they were shot at before they got to me and after they went by. And they were not Bucks . . .
>
> Sincerely yours,
> (Signature)

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[1] Letter received by the Department of Natural Resources March 15, 1957; also amended to the "Special Deer Survey" postcard for the 1956 season.

[2] Letter received by the Department of Natural Resources March 16, 1957; also attached to the postcard concerning the 1956 season.

Among this type of supporters, at one time, the argument was quite common that "all you see in the woods are does and fawns. Therefore, the season should be opened to antlerless hunting so that hunters can have more opportunities to get a deer." This point was commonly mentioned in the correspondence of the 1950's, but during the sixties this argument has been much less frequently mentioned. Another group of conditional supporters believes that deer should be taken through any reasonable device when harm to crops is a serious problem or when deer become a hazard to auto traffic.

Reasons for Opposition

Reasons for opposing antlerless deer hunting are more numerous and are usually used as a series rather than focusing on any one point. Thus, it is difficult to find one or a cluster of points that are used in a mutually exclusive sense to distinguish opposition types. However, there do seem to be at least three meaningful categories of hunters who oppose doe hunting.

The first of these hunter types attributes ulterior motives to the Department of Natural Resources in promoting antlerless deer hunting. One common charge levied is that the Department pushes antlerless deer hunting as a device to sell more licenses. There is an air of credibility to the charge in many people's minds because license sales have in fact increased dramatically since "doe hunting" was instituted on a broad scale. The issue is not a matter of antlerless hunting permits producing revenue in and of themselves since there is no extra charge for license buyers who are chosen to receive antlerless permits.

However, opponents see such permits as an insidious device to lend incentive for purchasing licenses.[1]

Another common argument of this group of opponents is that "Big Timber Interests" are paying off the DNR to have the deer herd "killed off" so that the trees will grow better. The number of hunters who attribute dishonest designs to the Department, such as these which have been mentioned, is quite large, perhaps amounting to a majority of the hunters who oppose "doe hunting."

A second group of hunters, many of which are opposed to Department's deer management policies just as strongly as those who fall in the class discussed above, do not attribute questionable motives to management policies. They feel that the Department is understaffed and otherwise hindered to the point that it cannot get the information necessary to disprove the evidence upon which it has formulated its management program. These hunters feel that the Department is simply honestly mistaken in its policies. This group cannot see how it is possible to kill does and still have adequate fawn production and they cannot understand the Department's contention that it is possible to have both.

The third group is not necessarily mutually exclusive of the other groups because they share some of the same reasons for opposing the antlerless harvest program with other hunters. However, this group seems to be distinct enough in certain of its characteristics to be

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[1]This was one among many of the charges made by Senator Joseph Mack of Ironwood in the Upper Peninsula during a telephone interview with the author on July 10, 1968. Senator Mack is an outspoken opponent of the Department of Natural Resources on many resource management questions, especially having to do with the Upper Peninsula.

worthy of special mention. This group's primary opposition seems to be directed against the administrative procedures associated with antlerless deer hunting rather than with the actual question of whether antlerless deer should be taken. Excerpts from two letters illustrate different aspects of the same point.

> Dear Sirs:
>
> I saw your item in the Detroit News of Oct. 20-68, about Deer Hunting. I for one, am not in favor of the way the Conservation Department handles things.
>
> I have bought a license for over 40 years, and I have applied every year for a doe permit, and never received one. (emphasis in the correspondence).
>
> If they want does and fawns killed why don't they give everyone a chance?
>
> I see this year, anyone can apply for areas away up North- What more are they trying to tell us to do? Let the out of state people travel.
>
> I would like to see someone check and see who has had Doe permitts [sic]?
>
> 3680 permitts this year. That is a lot of hunters for that area.
>
> I am about fed up on deer hunting.
>
> Thank you
> (Signature)[1]
> Harrison, Michigan 48625

The second correspondent expresses a different complaint.

> There are certain areas in Michigan that are over grazed and other areas that are not. I am strickly [sic] against the present way that the season on any deer is being handled. There are too many deer being taken out of some areas and not enough being taken out of others under the present system . . .
>
> Yours sincerely
> (Signature)[2]
> Grosse Ile, Michigan

Recurring Arguments by Opponents

One does not have to talk to many older hunters before some reference such as, "Why I remember in the good old days seeing fifty

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[1]Unsolicited letter received by the author on October 24, 1968.

[2]Note attached to "Special Deer Survey" postcard for the 1956 season, and received by the Department of Natural Resources March 20, 1957.

deer per day," or some such statement is made. Such a statement is usually followed by a contrast with the "poor" contemporary seasons. It can be predicted with a high degree of certainty that such contrasts will be followed by a denunciation of "doe hunting" as the cause of the decrease in deer. Such recounts from old-timers are interesting, but it is fascinating to hear young hunters whose hunting experience could not possibly predate the initial years of antlerless deer hunting refer to those same "good old days." One is often led to believe by such remarks from young hunters that the any-deer policy is of very recent vintage. The foundation for such observations is probably as much the dissemination of folk tales as observations made of biological reality.

The discussion of the historical trends of the Michigan deer herd in Chapter I stopped with the state of the herd in the late teens and early 1920's. The discussion of recent herd trends will be completed here so as to better relate it to contemporary attitudes and behavior. Although the deer were still scarce in the southern Lower Peninsula during the 1920's and 30's, the herd as a whole experienced its peak years during the 1940's. Dr. Ralph A. MacMullan, Director of the Department of Natural Resources, had this to say about the herd population of that era.[1]

> The Michigan deer herd probably reached its peak sometime during the 1940's. I say probably, because we don't really know how many deer we had during those lush years when it was not at all unusual to see them by the twenties, fifties, and hundreds.
> . . . . . .
> We used to say we had a million deer in Michigan in those days. I suspect now that we had at least twice that many, and quite likely more. That was the Golden Era of deer.

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[1]Speech made by Dr. Ralph A. MacMullan to the Michigan Bear Hunters Association at their annual convention on January 22, 1966, p. 6.

This dramatic rise in the deer population between the first decade or two of the 20th century and the early forties is truly amazing.

The one management policy that the public associates most with this spectacular increase of whitetails was the institution and enforcement of the "buck law." However, those close to the biological scene are quick to point out that this was only one of several key factors that contributed to the population growth. Among the other important factors usually cited are the effective control of massive forest fires and the careful control of deer hunting in general, through regulation and enforcement during this period. However, it is not difficult to understand the confusion that exists. If it is assumed that limiting antlerless hunting was the primary factor which allowed Michigan to build its substantial deer population, it is not a very big leap in logic to assume that any alteration of this policy will again jeopardize the herd. Unfortunately on the surface this conclusion seems to have been supported by recent trends. These trends were stated concisely by MacMullan when he said:[1]

> The essential basic facts about Michigan deer can be summed up in two or three sentences. We don't have as many deer as we used to have. We probably are going to have fewer yet before we have more. And there is nothing practical that we can do to produce a lot more right now.

The Department of Natural Resources argues that the herd is decreasing not <u>because of</u> antlerless hunting but <u>in spite of it</u>. Their argument is that the limiting factor is not hunting pressure but rather an increasing shortage of deer browse. Simply stated, if there is little deer food, there will be few deer, hunting or no hunting.

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[1] MacMullan, p. 4.

The fact remains that the herd, as a whole, has decreased concurrently with increased antlerless hunting pressure; an unfortunate coincidence in the eyes of the Department of Natural Resources, but convincing evidence to opponents in their arguments against antlerless hunting. The DNR can point to evidence to counter this claim that hunting pressure is the primary cause of a decreasing herd. In the Upper Peninsula and in areas where there are many hunting clubs antlerless hunting pressure has been relatively very light, but still the population has diminished steadily in these areas. This point has thus far fallen mostly on deaf ears. Opponents charge that antlerless hunting is the cause of herd decline even in areas where it is not heavy. The fact that some antlerless hunting has been permitted makes it difficult to refute the charge.

Another commonly heard question is that, "if starvation is so prevalent why isn't there more evidence in the form of starved animals in the woods?" The Department's response is that there is plenty of evidence in the deer yards in northern Michigan during and immediately following severe winters. Unfortunately, the hunters seldom if ever see this evidence because for the most part, they are in the field only during the deer season which comes in the fall before any food shortages have been experienced. The evidence quickly disappears by spring with scavenger cleanup, and it is as if the mortalities never occurred.

The Department has had many field trips in the very early spring into these deer yards to show hunters the aftermath of severe winters, but only a few hunters have had an opportunity to attend such events. Even among those who do attend there are often skeptics who charge

that the Department has rigged the demonstration area by planting dead carcasses gathered from elsewhere. Other arguments already mentioned also are often enunciated in this context such as: "There's plenty of food; look at all the green plants." Such statements are often made during the lush growing season and perhaps with reference to areas in which deer cannot yard during the critical ninety days of winter.

Statistics have played an important role in the controversy, especially among the more sophisticated opponents of antlerless deer hunting. Several key classes of data and the methods by which they are derived have been traditional targets for criticism. Particular attention has focused upon the matter of local and statewide deer population figures and upon local and statewide deer kill estimates.

It should be emphasized that the DNR has been interested in this kind of information for a long time. Their interest has not been motivated by an attempt to "prove their point" after the fact, but to help in guiding present and future management decisions. Carhart specifies in broad terms the kinds of information that are needed for good management in the statement which follows:[1]

> The first step in a management plan for deer is to secure a good estimate of the number of deer on a given range. This is the game census. The next step is to determine what kinds of foods are the primary preferences of deer in that area and the approximate carrying capacity of those deer foods. Taking a quick glance at the range and judging food supply by the total forage is not enough. Then plans must be made to bring the animals and their food supply into balance, and maintain them there. Finally, having these factors well determined, the annual drain on the herd population by hunting, poaching, predators, and all other causes must be adjusted. There should be less than the annual increment taken where the range is understocked; the annual increase should be killed where carrying capacity is balanced with the herd populations, and more than the season's increase if the range if overloaded with deer.

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[1] Carhart, p. 190.

Such a formulation as Carhart's is most meaningful when one considers that he was outlining a general set of criteria applicable anywhere. That general applicability is reinforced when it is observed that he stated these principles in a book of national scope (Hunting North American Deer).

The following summary outlines the actual procedures that the Michigan Department of Natural Resources uses in setting antlerless deer seasons:[1]

Procedure

1. Data considered in recommending season:
   1. Physical data on condition of the herd
      This information is collected during the current season; age ratios, antler development, hunter success, influence of weather, and hunting pressure are considered.
   2. Winter inspection of deer yards
      Field biologists spend a high percentage of their time during the winter examining winter deer range to determine the status of the number of deer in relation to the amount of deer food present.
   3. Forest cutting records
      Detailed records are kept on the commercial forest cutting on state, federal, and private lands. These records are evaluated in respect to their distribution and the amount and quality of deer food provided. The effects of cutting on the deer range are also evaluated.
   4. Definition of deer problem areas
      Throughout the winter, the extent of the deer problem area is determined. The problem area can be defined as the total range occupied by deer during the fall that is influenced by areas of food shortages or crop damage.
   5. Study of deer productivity rates
      Through the late winter and spring months, accidentally killed does are autopsied by field personnel to determine primarily the reproductive rates of the deer in question. This data is used to estimate the size of the coming fawn crop.

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[1] David A. Arnold, Procedures for Setting Antlerless Deer Seasons, Bulletin released April 13, 1967 by the Game Division of the Michigan Department of Natural Resources.

6. Population indices
   a. The deer pellet count
      This is a comprehensive survey of the northern deer range in Regions I and II which measures the overwinter deer populations.
   b. Summer deer counts
      This is a count made by all field personnel and is done by keeping records of the number of hours spent in the field from May through October (in relation to the number of deer seen). This provides a measure of the trend in the deer population and is based on over 50,000 hours of observation each year.
   c. Highway deer kill
      Number of deer killed by cars in respect to traffic volume and weather conditions is a further indication of the trend in deer numbers.
7. An evaluation of winter losses (if any)
   When losses appear to be extensive and manpower considerations permit, a formal statistically designed dead deer search is conducted. This year, however, the procedure has been to have field personnel estimate the extent of winter losses on the basis of their experience and judgment.
8. Detailed analysis of the previous year's kill
   All possible factors in the hunting kill are considered. The special season kill, the regular season kill, hunter success in both seasons, hunting pressure, trend in the kill, and all the related matters are considered.

II. Development of deer recommendations from the above data:
1. Field biologists, who have the responsibility for initiating the formulation of field recommendations, continually make public contacts in regard to the opinions and information that can be gathered on the deer situation. They also work very closely at all times with other department persons and people of other agencies concerned with deer, such as the U.S. Forest Service and the Soil Conservation Service.
2. Meetings are held with County Board of Supervisors or with individual members of these boards at the pleasure of the boards. Formal contact is made advising the local governmental units that department people are available.
3. Departmental meetings are held at the district level to discuss the accumulated data from the winter and spring.
4. Departmental meetings are held at the regional level to coordinate the recommendations of the districts.

5. The accumulated data and the recommendations of the districts and regions are then considered by the staff and the recommendation to the Conservation Commission is formulated. This is then presented to the Commission. (At the July meeting this year.) The Commission considers the departmental recommendations and acts thereon. The Commission then presents its action to the Interim Committee of the Legislature.

This procedure has satisfactorily utilized the manpower resources of the Department, has sampled and considered public opinion at all levels, has adequately considered the biological aspects of deer management, and has left the final decision with the representatives of the people.

It can be seen from these procedures that the Conservation Department has attempted to implement Carhart's criteria in detail. However, Departmental estimates are suspect among those opposed to antlerless deer hunting regardless of the apparent rigor exercised in developing estimates. Few opposition hunters believe that there are as many as 600,000 to 800,000 deer in Michigan as the Department asserts.[1] There is ambivalence in reaction to annual kill figures. Most opposition hunters believe that the estimates of annual kill by the DNR are much higher than the real kill figures. The assumption is that if the herd is getting smaller and smaller, then so is the kill. However, there is another point of view expressed; that is, that the kill is much higher especially for certain specific areas than the published estimates. In asserting its claim, this group of hunters uses the argument that the high kill has accelerated the decline of the herd. The degree to which one or the other of these theories is adhered to varies from area to area and over time. The conclusion however, is unanimous among opposition hunters--the deer herd is being exterminated. These warnings

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[1] MacMullan, p. 8.

of herd extermination were first made in 1941 with the first liberalization of anti-antlerless deer hunting regulations and have been repeated each session since then.

Because of the public criticism of Department of Natural Resources estimates of deer populations, a contract was entered into with the Statistics Research Division of the Research Triangle Institute of Durham, North Carolina, early in 1966. The contract called for the Institute to audit the methods used by the Department in generating deer population and kill estimates and to make recommendations for improving their methods. The statement which follows is a part of the summary of the final report of the Institute:[1]

> We find the procedures used in those surveys to be technically sound and applied in workman like fashion by a competent staff. The Department deserves considerable commendation for the effort it has expended on its own initiative in appraising the statistical precision and possible non-sampling errors in its various estimates. In general the finding of this review support the Department's own conclusions on the accuracy of its estimates. No claim of perfection is made by the Department itself nor can any review endorse the Department's figures with that mantle--that would be asking for the impossible.

This kind of endorsement has probably not had much of an effect on the attitudes of the average hunter in the woods because most do not know about the report and even if they did, they probably would not understand the implications of such an audit. The report has served to confirm to DNR biometricians that there are no inexcusable weaknesses in their procedures and that under the present state of the art of making statistical applications to game management data, they are doing an adequate job. To government officials who have maintained a neutral

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[1] Review of Procedures for Estimating Deer Population and Deer Kill in Michigan. Final Report by the Statistics Research Division of the Research Triangle Institute, July, 1966.

stance concerning the antlerless deer hunting issue, the report probably strengthened their confidence in the Department. For those in official capacities who have actively opposed the Department, this report from an apparently impartial research body has undoubtedly weakened their claims that completely inadequate data has guided past management decisions.

It would be a mistake however, to imply that this report has changed many official opponents' minds concerning questionable population and kill data. One state senator expressed concern about the credibility of the report itself by asking the author the following question, "If somebody paid you $5,000 to judge their work, would you tell them their work was no good?"[1] Here again, not only is the credibility of the work called into question, but these expressions mirror the skepticism concerning the professional integrity of the persons involved. The seriousness of this skepticism is brought into focus when one considers that faith in the integrity of professionals is the basis upon which all professionals are able to act in behalf of their clientele.

Many hunters have partially accepted the proposition that deer food shortages do exist, at least in parts of the state. However, their answer to the problem has been to argue for habitat improvement and even more commonly, for short term relief measures to carry the herd through severe winters. The assumption is that if these measures were used, no antlerless deer hunting would be necessary. Some of the

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[1] Telephone interview with Senator Joseph Mack, July 10, 1968. Senator Mack was the first person to bring the Institute study to the attention of the author and his strong repudiation of its results prompted the author to look into the matter of hunter rejection of Conservation Department Statistics in greater detail.

more commonly heard recommendations include: (a) trapping animals in high density areas and moving them to lower density areas, (b) feeding the herd hay and other forages, and (c) mass plantings of plant species that are primary deer foods.

The Department of Natural Resources is quick to point out that they have tried all of these techniques with no real success. Furthermore, all these practices have been tried in numerous other states and in every instance they have failed. There are several key reasons for these failures. Of major consideration is the cost for each of these methods. If any of them were used on the scale that is needed, they would cost more than the entire annual budget of the Department for the management of all of Michigan's natural resources.[1] The second reason is closely akin to the first. The magnitude of the need statewide is so great that no significant results could be achieved through these methods with the funds that are available. The Department feels that these funds could better be used in basic research where the payoffs are likely to be greater. Thirdly, introduction of domestic methods into a wild setting is usually doomed to failure because of an inability to adapt or compete; e.g., planting nursery tree stock in the wild or providing forage for an excessive number of animals. The Department's view is that such measures amount to "a treatment of symptoms rather than causes"[2] and that the only realistic approach is to "fit the herd to the range" and not vice versa.[3]

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[1] For a detailed discussion of what has been done in the area of artificial feeding and deer habitat improvement see Jenkins, 1959, pp. 65-69 and Bartlett, 1950, pp. 43-44.

[2] Jenkins, 1959, p. 68.

[3] Bartlett, 1950, p. 44.

One of the weaker arguments that is heard periodically is that nature should be allowed to take its course--in other words the deer herd should not be managed. This often amounts to a subterfuge for opposing antlerless hunting. It appears that some people forget or don't know that Michigan originally had a very marginal deer herd, particularly in what is now thought of as deer country. If little or no thought is given to deer range management, that country will revert back to a deer wasteland except where conditions accidentally occur that are conducive to deer habitat.

A last point which is very commonly espoused is that does are much easier to kill than bucks. The conclusion of those who affirm this point is that only meat hunters are "doe shooters." This idea was endorsed by the Game, Fish and Forest Fire Department of the Department of the Public Domain Commission, the predecessor of the Conservation Department (now Department of Natural Resources), between 1915 and 1920 in their original push to have antlerless deer shooting banned. The following quote is exemplary,[1]

> Buck shooting requires true sportsmanlike skill.
> Hunting does is like shooting cows in a barnyard.

The statement is both true and false. Given one buck and one doe there is no evidence that a hunter will be more likely to kill the doe than the buck. On the other hand, the hunting pressure on bucks where does are protected is tremendous. Even when antlerless deer are legal game,

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[1]Quoted in the Biennial Report of the State Game, Fish, and Forest Fire Department of the Public Domain Commission, 1915-1916. This statement among others was made by Mr. John B. Burnham, President of the New York State League for the Protection of Fish and Game, and was originally published in "Recreation," 1915.

hunters usually prefer to shoot a buck. The average hunter will pass up several shots at does in the hope of getting a buck. They often shoot a doe only as a last resort. Only a very small percentage of bucks live to be three years old,[1] while the percentage of does that live through a season is quite high even where "doe hunting" is allowed. Therefore, if a hunter has a permit the likelihood of his killing a doe is much greater than the probability of getting a buck. In conclusion, the probability of killing a doe and the ease of killing one when compared to bucks should not be confused; they are two different things.

The Point of View of the Department of Natural Resources

Standing out in bold relief from the expressed attitude of many hunters is their behavior. Each year about twice as many special antlerless deer hunting permits are applied for as are allocated. Obviously, many hunters who patently oppose antlerless deer hunting apply for permits.

One example of this inconsistency between attitude and behavior can be seen in an incident that occurred during the 1965 season.[2] The incident occurred on Bois Blanc (pronounced Bob Lo) Island in the Straits. In one special party, seven hunters were asked at the completion of their hunt whether they had special permits. The four who had killed antlerless animals readily admitted the fact and showed the permits. The other three who had not killed an antlerless animal

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[1] For a detailed analysis see Michigan Deer, 1950, pp. 19-21, 32-33, and 40, Michigan Whitetail, 1959, p. 40, Whitetails, 1935, p. 46.

[2] Incident related to the author by David A. Arnold, game biologist, Michigan Department of Natural Resources, in a personal interview February 23, 1966.

said that they did not have permits and, furthermore, that they did not believe in "doe hunting." The license files were later checked and it was found that in fact all seven had antlerless permits. It is a common refrain of hunters to say, "Yes, I'm applying for a doe permit so that if I get one I can tear it up and keep a 'doe shooter' from getting it." There is strong indication that many of these permits are not actually torn up, until after the season closes.

Another observation that is consistently borne out is that the size of the season's kill depends on the weather during the first three days of the season. If the weather is wet or unusually cold, the woods are less likely to be full of hunters than are the cabins and bars. If the weather is warm and dry, or if there is a light tracking snow, the woods are full of hunters and consequently the kill is almost certain to be higher. It should be emphasized that it is the first three days of the season that are critical. Fifty to sixty percent of the kill in an average season occurs during those three days. If there is a small kill on those days it cannot be made up. It is also likely that wet weather affects the movement of the deer as well as the hunters. Thus, the effect is compounded.

Another factor which seems to affect hunting success is hunter proficiency. Certain outdoor skills are helpful and even necessary for productive hunting. There is evidence that this proficiency is decreasing as measured by the total percentage of the hunter population that is successful during any given season. Perhaps this is due to the fact that more and more hunters come from urbanized areas and that the average age of the hunter population is getting younger. These observations help to explain some of the hunting patterns that

have been observed as Department of Natural Resources officials have flown over various areas. For example, there are instances where dozens of hunters were seen within half a mile of a road, while only a few hundred yards further, a number of deer and only one or two hunters were seen.[1] Such patterns can be explained most readily either as a fear of getting lost, a lack of knowledge of the fact that deer movement is influenced by heavy hunting pressure, or laziness. Any of these reasons, if admitted, would tend to tarnish the self-image of these would-be Daniel Boones. Research from North Carolina documents the observation that hunter proficiency is correlated to the distance from a road that one hunts.[2]

> Hunters, in general, apparently hunted closer to access on the Uwharrie Wildlife Management area than on the western areas, showing a decided preference for "close-in" zones. They killed approximately 81 percent of their deer within 600 feet of the nearest road or trail, a zone containing 64 percent of the area. Hunting pressure diminished rapidly beyond 600 feet, with only 19 percent of harvest scattered over the remaining 36 percent of the area. No deer was killed beyond 1800 feet from road or trail.
>
> In contrast, hunters in the mountains appeared to be more uniformly distributed. Here they harvested 54 percent of their deer within 600 feet of the nearest access, a zone containing 62 percent of the area. At the same time the zone from 601 to 1200 feet contained only 22 percent of the area but accounted for 30 percent of kills; the 1201-2400 feet zone contained 14 percent of the area and accounted for 14 percent of the total kill. A few deer in the mountains were killed more than 2400 feet from the nearest road or trail.
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> According to local game managers, the Uwharrie is heavily used by hunters from nearby cities whereas a large percentage of hunters on the western areas are rural residents who spend

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[1] Observations made by Mr. Gene Gazlay, Assistant Director, Michigan Department of Conservation, during a seminar held at Michigan State University on February 23, 1966.

[2] George A. James, et al. "A Key to Better Hunting-Forest Roads and Trails," Wildlife In North Carolina, March, 1964.

> much of their lives in the out-of-doors. It is suspected that differences in hunting habits between urban and rural hunters may account for the differences (in success) between piedmont and mountain areas.

Perhaps the most significant, but least testable, of influences on hunter attitudes is what might be termed a Bambi syndrome. This condition is characterized by a hesitancy of the public to allow a resource to be managed as a resource, in other words to optimize outputs relative to the inputs used, because of the personification of a member of the species. Smokey the Bear and Bambi are both conceptual images that have created almost as many management problems as they have alleviated. Much of the opposition to antlerless deer hunting seems to be in many instances as much an aversion to shooting the female (Bambi's mother) and the young (Bambi) as it is a positive motivation for herd increase through protecting does. The other side of the coin has been expressed thusly:

> Perhaps it is far fetched to suggest that some hunters seek an outlet in the field for an expression of masculinity which would be upset or disturbed by a doe season. To put it crudely, and however unreasonably, some hunters may well be looking for a direct clash with another male. They can find this in hunting bucks even though the deer are somewhat at a disadvantage. They could not find it while hunting for antlerless deer or deer-of-either-sex. Such an attitude, if it exists, is beyond the ordinary means of persuasion open to use by the Division of Fish and Game.[1]

The role which the "Bambi syndrome" has played in the antlerless deer hunting issue is both very real and very significant. The picture in Figure 1 and the newspaper story quoted below give some indication of this influence.

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[1]Paul Tillett, Doe Day (New Brunswick, New Jersey: Rutgers University Press, 1963), p. 114.

Figure 1. The famous picture of George The Orphan Fawn which has crystallized so much opposition to the Antlerless Deer Hunting Policy

Outdoor Editor Reveals Doe shooting Propaganada Picture Was A Fake[1]

How the above picture, that is credited with being the most potent piece of propaganda in the Conservation Dept.'s past anti-doe shooting campaign, has backfired now that special antlerless deer seasons are deemed advisable--and how most ironically, the picture is in reality a fake, was revealed recently by outdoor editor Kendrick Kimball in The Detroit News.

"Michigan's greatest outdoors picture is coming into sharp focus again at the conclusion of the Dec. 1 special 'any deer' season," Kimball wrote.

"The picture is a tear-jerker of prowess. It has probably produced a greater extraction of lachrymose fluid from the eyes than a peck of Bermuda onions in preparation for cookery, or the death of Little Eva in "Uncle Tom's Cabin."

"The picture is that of George the "orphan fawn."

"It was snapped years ago in the Ogemaw State Game Refuge by Walter E. Hastings, pioneer photographer of the State Conservation Department. It represents what is termed by the knights of the lens as a simulated pose. It portrays a scene that could have happened. Simulated is a weasel word for phony. To put it brutally, the picture was a fake.

Good Picture Worth 1,000 Words

"It reveals a fawn presumably cuddled close to its dead mother. The implication is that someone killed the mother and the fawn, bereft of parental care, snuggled up close to her in her dying moments, knowing no other place to go, and no other guidance.

"Mr. Hastings had no desire to "shoot" an untrue picture. A dead doe was found in the refuge. A short distance away was a fawn, whose leg had been crippled by buckshot. A conservation officer placed the fawn beside the dead doe, and Mr. Hastings, as a matter of routine, tripped the shutter.

"The picture as an incidental thing came into the education division of the department and was pounced upon immediately. Thousands of copies were sent out. The picture was reproduced in paintings in scores of bars throughout the north, and built tremendous sentiment against shooting does or fawns.

"There is an old saying that a good picture is more expressive than 1,000 words. That of George proves it.

. . . . . .

"George the 'orphan fawn' is not forgotten. A Flint couple erected a monument to him at the refuge. If the State Conservation Department asks the Legislature next spring for continued authority to control the deer herd the lawmakers are certain to see the picture. And they probably will be moved by it.

"No sportsman would shoot a fawn. But there is an old joke in the North Country which removes some of the curse from such an act. A couple are seated at dinner.

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[1]Story quoted from Michigan Out-of-Doors, February, 1955.

"Says the wife: 'Anybody who would shoot a poor innocent little fawn should be hanged. Pass the lamb stew, dearie.'"

Paquin Explains

C. A. "Frenchy" Paquin, the then chief of the department's education division, was asked by the Michigan Out-Of-Doors editor for comment on the controversial picture.

"Kimball was entirely correct" he wrote. "He told the story pretty much as it happened. Walt not only took black and white stills, but movies as well, and we used the shot in a movie, showing the fawn making vain attempts to get up. Tear Jerker. Reason I played it up so big at the time was because it was a hell of a good piece of propaganda for protecting does.

"Now that the Department is advocating shooting does under certain conditions, they have to start tearing down the sanctity of the doe. That's pretty much true of all conservation propaganda--you have to oversell something to put it over. We had to make the public believe that it is not shooting its own mother when killing a female deer. The late Baline Brennon was in charge of the Ogemaw Refuge at the time Walt got the picture. And as Kim says he raised the fawn which grew up into quite an animal until it was shot [by a poacher].

George is still very much alive in the minds of many deer hunters as is attested to by the official letterhead of the Northern Michigan Deer Hunter's Association which is reproduced in Figure 2.

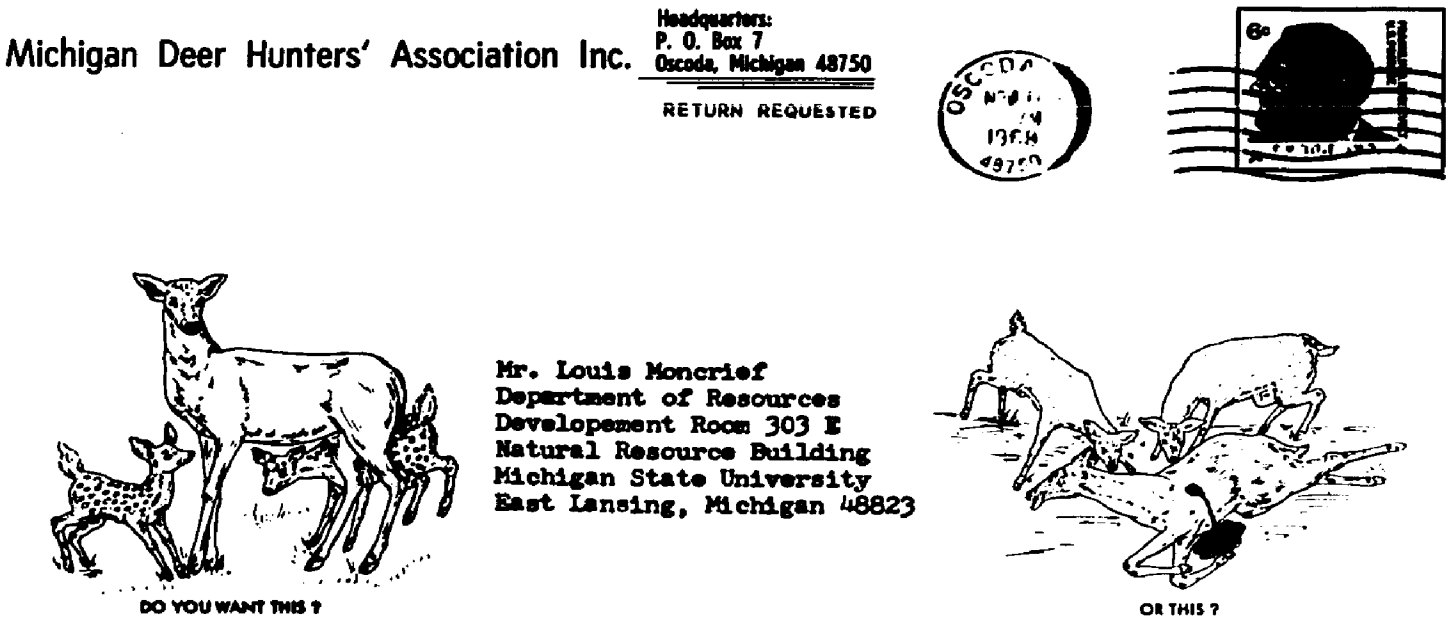

Figure 2. A letterhead exemplifying the emotional appeal of the Antlerless Deer Hunting Issue

The Research Problem

In attempting to study the antlerless deer hunting issue several research designs were considered. Each of these would have contributed to the knowledge necessary for more intelligent management of the resource. But perhaps more important, a variety of theoretical linkages were available for study with each of these designs. The three designs listed below were most prominently considered:

1. An analysis of bureaucratic perception of and reaction to the threat of public intrusion into their professional bailiwick.
2. An analysis of the attitudes and motivations of opinion leaders who influence their peer groups in support of or opposition to the Conservation Department's deer management program.[1] This design would most logically utilize a purposive sample of group leaders and other hunters and non-hunters who are known to take a leading role in advocating a variety of points of view.
3. An analysis of the attitudes, levels and sources of information, and behavior of a random sample of deer hunters concerning the question of what methods should be used in managing the deer herd in Michigan.

Design number three was chosen to be used in this study because it was felt that it offered the greatest immediate payoff for the amount

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[1] Mr. John A. Anguilm, Chief of the Law Enforcement Division, suggested this approach to the author in a personal memorandum dated July 30, 1968. Implicit in his communication are the ideas that the role of non-hunters can be considered in this design and secondly that a better understanding of these opinion leaders "will indicate a line of action necessary to acquaint interested persons with the deer management expectations and goals."

of research resources available. Secondly, this design seems to the author to be conceptually more basic to the understanding of the grassroots support of and opposition to the Department of Natural Resources. It is true that the attitudes and behavior of that segment of the hunting public, which could be termed "average hunters," is likely to be greatly influenced by the filtering process through the Department and through local opinion leaders. However, the establishment of the existence of and the analysis of the import of these influences were deemed less important than an initial exercise in establishing parameters.

CHAPTER III

RESEARCH DESIGN FORMULATION

Review of the Literature

Two basic types of literature were considered in designing this research problem. One class of materials deals with studies involving hunter characteristics and game population characteristics and the relationship of these characteristics to hunter behavior. The second class of literature is basically sociological in nature. This second source is important in creating the theoretical framework into which the study is fitted. It is hoped that the theoretical framework formulated herein will help explain hunter behavior and not simply describe it.

The literature concerning the hunter and hunting falls basically into four categories: (1) biological studies relating to game management; (2) descriptive studies of hunter characteristics; (3) studies of hunter motivation; and (4) studies concerning the issues related to hunting and game management or dealing with public relations of natural resource managing agencies.

Biological Research Literature

Wildlife management, although of relatively recent vintage as a discipline, has been extremely productive both in terms of the quality and quantity of biological research that has been conducted and published. However, for purposes of this study, these materials are of

relatively minor interest. Although the findings concerning the needs of northern deer herds have pointed consistently to a pattern of management which includes the harvesting of antlerless animals, our task in this study is not to argue for a particular management orientation. Instead, the expressed purpose of this study is to examine the social, psychological, and political implications of one deer management tool--namely, antlerless deer hunting.

Considering the traditional orientation of most resource managers, including wildlife biologists, toward the physical sciences, it is somewhat surprising to observe how often coments have been made concerning the need for social scientific inquiries related to management. These comments have been particularly noticeable in recent years. The following examples will serve to point out this concern. In 1960, Mair had this to say in his critique of the 25th North American Wildlife Conference,[1]

> I am disturbed too at the apparent complete lack of research into the social and cultural aspects of the wildlife conservation field. We are spending significant sums of money on wildlife now and plan to spend much more in the future, particularly with respect to the allied field of recreation. But there has been at this conference no mention of research into the mores of people, their motivation and their real needs.

Even stronger emphasis is placed upon the importance of social scientific research in the recommendations enunciated by McNeil at the conclusion of his biologically oriented study of the deer herd in southern Michigan. His final recommendation reads as follows:[2]

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[1] W. Winston Mair, "Natural Resources and American Citizenship: a critique of the 25th North American Wildlife and Natural Resources Conference," 1960. In the Transactions of the 25th N.A. Wildlife and Resources Conference. pp. 487-496.

[2] McNeil, 1962, p. 110.

> Begin intensive studies of the hunter, farmer, and recreationists attitudes, hunter-farmer relationships, and other sociological aspects of deer management. Human attitudes, rather than habitat, are the real key to successful deer management in southern Michigan.

Dr. Stanley A. Cain in his research report to the Outdoor Recreation Resources Review Commission also points to the need for social scientific research.[1]

> State and Federal agencies should reexamine their land-use policies and work toward programs that will give due regard to the requirements of outdoor recreation, including wildlife, game, and hunting, and specific research should be directed to such questions as the quantitative and qualitative demands of the public for outdoor recreation . . . Since game biologists as scientists do not, and should not, have the responsibility for formulating policy and making regulations, their agencies and commissions should cooperate in the development of enlightened public opinion on game matters to assist legislators in their tasks. For example bounty laws, requirements of artificial stocking of selected species, and certain regulations of hunting are not compatible with scientific game management.

The practice of separating the policy formulation role from the education role ("enlightened public opinion") often puts agencies in the position of trying to defend a policy which they feel is inappropriate. Often legislative enlightenment must be achieved before it is meaningful to attempt to enlighten the public. The main point of Cain's statement, however, follows the tone of those previously quoted who urge a thorough study of users as well as the resource itself.

Reservations are sometimes expressed about the inappropriate use of such social scientific studies. It is commonly pointed out that what begins as an attempt to gather relevant social data which can help guide management decisions can easily become the overriding factor

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[1] Stanley A. Cain, Hunting in the United States-Its Present and Future Role, ORRRC Study Report 6, 1962, p. 2, recommendation 3.

in the management of the resource. Don Hayne, who at the time represented the U.S. Fish and Wildlife Service, expressed alarm at this possibility in 1961 in this way:[1]

> A broader comment, and perhaps a more controversial one, would be that we must be very cautious in attempting to tailor our management thoughts and procedures by studies such as this (referring to Peterle's study) or similar studies. I should not really say "studies such as this" because this study seeks information. But if we conduct studies to determine by polls the wishes of sportsmen, then obviously this must be treated with the greatest of care before it is incorporated into a management program.

This statement amounts to a definition of social research limitations and is undoubtedly a valid observation. However, some wildlife biologists harbor even stronger misgivings about the role of sociological research in wildlife management research. This skepticism was verbalized with regard to the present study by a biologist in Michigan when the study was in its formative stage.[2]

> Personal Opinion: I think the Department or any of its employees (in research) ought to be extremely cautious about getting involved in any more "people biology" than is absolutely necessary. It's a symptom of bad science, is non-operational, and does little, if any good. I think our public relations efforts (regarding doe shooting) of the past several years will be jeopardized by these kinds of questionnaires.

This section can be summarized with the observations that: (1) biological literature is not directly germane to this research; and (2) the opinion of most professional biologists seems to be that more social scientific data would be helpful in evaluating alternatives in game management. However, conclusion 2 is not an unanimous opinion.

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[1] Response by Don W. Hayne of the Fish and Wildlife Service to a paper by Tony V. Peterle entitled "The Hunter-Who Is He," from transactions of the 26th North American Wildlife and Natural Resources Conference, 1961, p. 265.

[2] Quoted from a memorandum evaluating the questionnaire which was used in this study of hunter attitudes toward antlerless deer hunting. August 23, 1968.

Hunter Characteristics Literature

Several studies have probed for answers concerning the following types of questions: who hunts, where do they hunt, what do they hunt, and generally, how do they feel about game management and the management agency? It is obvious from the emphasis of hunter characteristic studies that they are basically descriptive and have little theoretical import. However, they do yield valuable information that can contribute to studies attempting to ask "why" the public relates as they do to the management programs of the various states.

The Bureau of Sport Fisheries and Wildlife, in cooperation with the Fish and Wildlife Service, has sponsored three fishing and hunting surveys (1955, 1960, 1965) to find out about participants and their sports. The 1955 survey was conducted by Crossley Surveys while the latter two surveys were administered by the Bureau of the Census. Some of the findings of the most recent survey that are relevant to our study will be presented here.

There were 6,566,000 big game hunters in the United States in 1965. These hunters spent a total of $418,764,000, or a mean of $64 each. They hunted a total of 43,848,000 days, or an average of about 6.5 days per hunter.[1]

The following table indicates that hunting is overwhelmingly a man's sport. The age distribution data also indicates that the percentage of the population which hunts big game is fairly normally distributed, with the peak being about 7.6 percent of the population between ages 25 and 34.

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[1] 1965 National Survey of Fishing and Hunting, U.S. Government Publication 27, 1965, p. 15.

Table 3. Number of big game hunters by sex, age, and place of residence in 1965[1]

Characteristics	Total No. of Persons 12 & Over in U.S.	Total No. of Persons Who Hunted[a]		Hunted Big Game	
	Thousands	Thousands	Percent	Thousands	Percent
U.S. Total	141,928	13,583	9.6	6,566	4.6
Sex:					
Men	67,508	12,804	19.0	6,117	9.1
Women	74,420	779	1.0	446	.6
Age:					
12-15 years	14,634	1,302	8.9	401	2.7
16-17 years	6,920	929	13.4	394	5.7
18-24 years	18,916	2,338	12.4	1,034	5.5
25-34 years	21,444	2,963	13.8	1,632	7.6
35-44 years	23,740	2,588	10.9	1,294	5.5
45-64 years	38,694	2,904	7.5	1,535	4.0
65 and over	17,500	559	3.2	276	1.6
Place of Residence:					
In standard metropolitan areas	93,053	6,200	6.7	3,078	3.3
Not in standard metro areas:					
Non-farm	41,349	6,026	14.6	2,869	6.9
Farm	7,526	1,356	18.0	619	8.2

[a]Includes persons who hunted small game and waterfowl as well as big game.

In addition, certain trends are discernible in comparing the data from the 1955, 1960, and 1965 surveys. In an attempt to get a picture of the scope of hunting nationally, some of the more appropriate findings are given in the following table.

Hunting as a sport seems to have stabilized or is declining according to the differences between the totals for number of hunters,

[1]Ibid., pp. 49, 51.

Table 4. Comparison of major findings of the 1955, 1960, and 1965 national surveys of hunting[1]

Major Findings	1955 Thousands	1960 Thousands	1965 Thousands
Number of hunters	11,784	14,637	13,583
Small-game	9,822	12,105	10,576
Big-game	4,414	6,277	6,566
Waterfowl	1,986	1,955	1,650
Expenditures of hunters	$936,687	$1,161,242	$1,121,135
Small-game	494,033	726,118	615,234
Big-game	323,909	345,694	418,764
Waterfowl	118,745	89,431	87,136
Number of recreation days spent hunting	169,423	192,539	185,819
Small-game	118,630	138,192	128,448
Big-game	30,834	39,190	43,845
Waterfowl	19,959	15,158	13,526
Passenger miles traveled by automobile for hunting	6,072,296	7,612,615	8,365,881
Small-game	3,094,974	3,962,020	4,010,499
Big-game	2,222,373	2,998,178	3,718,767
Waterfowl	754,949	652,417	636,615

participant expenditures, and number of recreation days spent in the 1960 and 1965 surveys. However, hunters do seem to be traveling farther to do their hunting. At the same time big game hunting, which includes deer hunting, has increased consistently according to all four indicators of growth (number of participants, expenditures, recreation days and miles traveled). In each class there was an increase from 1955 to 1960 and again from 1960 to 1965. On the other hand, waterfowl and small-game hunting have both experienced a decline or stabilization in most growth indicator data classes. In fact, waterfowl hunting has

[1] Ibid., p. 65.

steadily decreased according to all measures since 1955. Small-game hunting statistics increased in all classes between 1955 and 1960, but then decreased in all classes of data except miles traveled between 1960 and 1965.

Several other statistics of the National Surveys will be appropriate for comparison with the data generated in this study in later chapters.

Studies of greater detail than the National Survey have been conducted in several different regions and states. One of the more extensive studies was done recently in six northeastern states in trying to describe the social and economic characteristics of hunters and fishermen.[1] This study utilized a mailed questionnaire to 10,000 respondents in New York, Maine, Massachusetts, Pennsylvania, Vermont, and West Virginia.

Differences in earnings and in unemployment rates among the states seem to be significantly related to the responses of the sportsmen to specific questions. "Earnings were highest in New York, followed respectively by Pennsylvania, Maine, New York, Vermont, and Massachusetts."

Seventy-two percent of the hunters had a rural background while 59% were at least high school graduates. Incomes averaged $7,058 among the respondent sample, with 39% of the sample being white collar workers. Thirty-seven percent of the hunters were less than 30 years of age. "In comparison--only 30 percent of the fishermen were in this group." This may partially explain the higher average income of almost $300

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[1] Malcolm I. Bevins, et al., Characteristics of Hunters and Fishermen in Six Northeastern States, Ag. Experiment Station Bulletin 656 University of Vermont, Burlington, Vermont, 1968.

for fishermen. As with the National Survey, about 95% of the hunters were males. However, there were proportionately more women who hunted in the more rural states. A number of other findings of a more detailed nature concerning general characteristics of hunters will be used later for comparison with the findings of this study.

William Davis conducted an economic study of hunting and fishing in 1965 in Arizona.[1] However, his most original contribution to knowledge was in the area of motivation rather than in economic measurement. The motivational aspect of the study will be examined more thoroughly under the motivational study subheading below. Davis's study also made a significant contribution in the area of research concerning hunter attitudes toward and knowledge of the resource management agency. No unique contribution was made in the area of identifying the general attributes of the hunter population in this Arizona study.

In 1964, a "Hunter Preference Survey" was conducted in New Hampshire.[2] The data reported by the survey does not constitute an in-depth analysis at all. However, one species preference index was used which demonstrated more sophistication than a simple single response tabulation. This index indicated that deer were preferred by almost 3 to 1 when compared to the next most preferred species of game.

Peterle did a widely cited study of Ohio hunters in 1960. His findings were later published in two articles. In his article entitled

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[1]William C. Davis, Values of Hunting and Fishing in Arizona in 1965 (Tuscon: University of Arizona, 1967).

[2]Harcold C. Lacaillade, New Hampshire Hunter Preference Survey 1964, Game Management and Research Division of the New Hampshire Fish and Game Department, 1968.

"The Hunter-Who Is He," Peterle attempts to do just what the title implies; i.e., describe the Ohio hunter in detail.[1] His findings are typical of those found in the previously cited studies with the exception that he more effectively demonstrates characteristic differences between hunters of different types of game. He found that "deer hunters began their hunting experiences earlier than the other types of hunters." Also, he indicates that deer hunters in contrast to some other kinds of hunters prefer to hunt with several companions rather than just one or two. This finding is consistent with findings from other studies and indicates the highly social nature of deer hunting.

Peterle summarizes some of his findings in his article "Characteristics of Some Ohio Hunters" by comparing hunters to the general male population of Ohio and by comparing attitudes expressed by hunters of the various socio-economic levels.[2]

> The occupational areas of farm, service, labor, and crafts were represented more frequently among the hunters than were the clerical, sales, operations, managerial and professional areas . . . . Only about one-third have read any technical books about wildlife but frequently read outdoor magazines. They favor wilderness preservation, know how to contact their game protector, usually hunt with the same companions from year to year, and object to any infringement of the right to own firearms . . . . Hunters who favor a sound biological approach to game management probably are not from a rural background . . . . The license buyer who feels that to stock game is the only way to improve his sport probably was never a member of any such group as the Boy Scouts, Future Farmers of America, Grange, or Izaak Walton League.

This article contains a detailed catalog of other statistically significant relationships that will be mentioned later at relevant junctures

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[1]Tony V. Peterle, "The Hunter-Who Is He," Transactions of the 26th North American Wildlife and Natural Resources Conference, 1961.

[2]Tony V. Peterle, "Characteristics of Some Ohio Hunters," The Journal of Wildlife Mangement, Vol. 31, no. 2, April 1967, pp. 375-389.

in order to compare the results of the research in Ohio with the study of Michigan deer hunters.

Hunter Motivation Literature

There has been a great deal of theorizing as to why hunters hunt, but there has been very little empirical research to clarify the matter. Much that has been written, especially in sportsmen's magazines and other such publications, is very romanticized and sensational in nature. Since much of this material is of little value and since the subject of participant motivation is not central to the problem which is addressed in this research, only cursory treatment will be given to hunter motivation. Such superficial examination of motivation should not be interpreted as implying that attitudes and behavior are not related to motivation. Motivation undoubtedly is an important independent variable. It was simply not possible in the context of this study to delve into it as much as it deserves.

Many researchers of recreation related behavior seem to assume that if they can describe a set of socio-economic characteristics of recreation participants in relation to behavior, then they have--as if by magic--explained a set of causal linkages. For example:

> The first set of analyses (Table 1) attempted to relate the hunter's basic social and economic status to his interest and success in hunting as a sport. Age, marital status, occupation, income, education, age at time of first hunt, and type of game hunted were all tested to determine how they influenced (emphasis added) the number of days spent afield and the total kill.[1]

In the article from which this quote is taken, one is left to interpret for himself the meaning of the phrase "determine how they influence." To state the reader's dilemma from another perspective, "Even if statistically significant relationships are demonstrated

[1] Ibid., p. 381.

between certain social characteristics and participant motivation and attitudes--so what?" Are there any theoretical pointers that would predict these relationships? What logic is used to affirm that the relationships are not spurious? The answer to both these questions is none. This lack of theoretical concern is almost unanimous in the published social research dealing with recreation which the author has reviewed. Perhaps this disregard is a product of parochialism, on the part of recreation researchers who are unwilling or untrained to recognize that recreation is a setting for a variety of behavior which we generally term "recreation" and that many of the same behavior processes and motivations which are associated with recreation concern psychologists, sociologists, social-psychologists, and other social scientists who have traditionally studied these patterns in different settings, such as the home, the job, the educational institution, etc. In fact, it is probably a testable proposition to assert that there are no motives, attitudes, or values which are unique to recreation.

In terms of the goals which researchers can most productively set for themselves and kinds of problems which offer the greatest payoff in explaining human behavior, R. K. Merton argues effectively the case for developing and testing what he calls "middle range theories."[1] His discussion is designed primarily to argue against the grandiose, all-encompassing kinds of theories which are difficult, if not impossible, to test. In contrast this discussion is designed to use his ideas of theory building to expose a common fallacy on the other extreme of macro-theory, i.e., of testing no theory at all. One of

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[1] R. K. Merton, Social Theory and Social Structure (New York: The Free Press, 1957), pp. 4-12.

Merton's most persuasive points is that macro-theorists have produced little tangible evidence of productivity in spite of all their speculations. Carrying this analogy of contrasts one step farther, with all of our minute descriptiveness, recreation researchers have but little to show for the efforts.

No studies which deal with hunting will be cited as an ideal type of theoretical model for researching motivation because the author knows of none that deserve such a citation. However, Davis makes a good, if admittedly preliminary, start in attempting to explain hunter motivation. He found that hunters typically begin to participate in their early teens. Upon further investigation, he found that an overwhelming majority of hunters were introduced to the sport by a close relative. By means of a series of open ended questions, he elicited a series of statements concerning the various values derived from participation. Table 5 depicts the results from his two surveys.

Table 5. Motives satisfied by hunting and fishing in 1956 as compared with 1960[1]

	Frequency of Reasons Given and Percentage Total			
	1965		1960	
Types of Motives	Times Mentioned	Percent	Times Mentioned	Percent
Recreation	1728	37	1740	41
Bodily health	466	10	996	23
Aesthetic	483	11	552	13
Association	639	14	467	11
Economic	708	15	212	5
Intellectual	467	10	127	3
Character	100	2	85	2
Religious and other	36	1	85	2
Total	4636	100	4244	100

[1]Davis, p. 44.

He interprets these comparative data thusly:

> The differences between 1965 and 1960 are believed in some cases to be more apparent than real, due probably to differences in editorial interpretation. In the judgment of the researcher, the 1965 pattern is similar to 1960. The true economic values, for example, probably lie somewhere between the 1965 and the 1960 percentages.

The author amplifies each of these points a bit in his analysis, but he does not relate these values to any theoretical propositions.

Game Management Controversies Literature

Several important studies have been done on controversies and public relations problems associated with deer management. These studies have been due to, perhaps as much as anything else, public pressures exerted against the managing agencies. Public pressures have at times forced these agencies to react to widespread criticism and one aspect of this reaction has been to encourage and at times to fund research to study hunter attitudes and behavior that is related to different management issues. Among the more controversial issues of this type are: antlerless deer hunting, hunter-landowner relationships, bounty payments, and lack of general support for resource management agency programs.

The problem of lack of public understanding or support has prompted many articles and professional papers which have speculated as to causes and solutions. Gilbert has written a book on public relations with immediate application to resource management agencies.[1] Early in the book, he makes the astute observation concerning historical ideologies in resource management that,

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[1] D. L. Gilbert, Public Relations in Natural Resources Management (Minneapolis, Minn: Burgess Publishing Co., 1964).

> During this period (1900-1935) conservation chiefly meant protection rather than "wise use." As Les Pengelly, an articulate extensionist in Montana, recently commented, "conservation was like a boomerang. We liked the new idea of management, but we had sold the old ideas of preservation and protection so well that we couldn't throw them away. In other words we did such a good job of 'selling' males-only seasons, artificial propagation and stocking, bounties on predators, and restricted hunting that many people simply will not accept anything contrary as being good management."[1]

This analysis describes the situation very well in Michigan with regard to antlerless deer hunting. Between 1915 and 1921 the predecessor of the Conservation Department (now the Department of Natural Resources) in their appeals for public support of a law to prohibit antlerless deer hunting (a form of strict preservation) implied that such a prohibition was inherently beneficial. Such implications were reinforced by the Conservation Department during the early years of the new Department. Many problems have been created because this overstated implication was accepted and has persisted. When ecological changes occurred or conditions developed where hunting pressure was not the limiting factor, the credibility of the Department's new arguments for supporting antlerless deer hunting were open to question.

Obtaining laws compatible with scientific game management seems to be a widespread problem with regard to various types of game. Cain found in his survey of problems encountered by wildlife management agencies that legislative support for scientific management is a problem in 42 states.[2] It is an important problem in 23 of those states and a very serious constraint in 4 others.

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[1] Gilbert, p. 4.

[2] ORRRC Report No. 5, p. 44.

Gilbert makes some interesting observations as to why he feels that wildlife managing agencies are particularly vulnerable to inadequate public support.

> Problems of human management seem to be greater in wildlife management than any comparable natural resource professions. Wildlife managers do not know, or have control of, their users as do the foresters and range managers. Public interest in hunting and fishing is inherent and is greater than in harvesting forest and range crops. Wildlife harvesters are more numerous than range and forest harvesters. With greater numbers, and often a lack of professional interest, hunters may be less experienced and may have fewer scruples than users of other natural resources. Political influence appears to be stronger in wildlife agencies than in range and forest agencies. In the past, wildlife workers often have been less qualified for their jobs, due to less stringent employment qualifications, than professional foresters. Also, hunters and fishermen, more than stockmen and timber cutters, use lands that are not publicly owned and are thus less subject to agency control. Law enforcement problems certainly are greater in wildlife management than in forestry and other allied professions.[1]

If Gilbert's insights are correct, and there is every indication that they are, then it is clear that wildlife management agencies are continually walking a political tightrope.

The focus of our study is upon controversies dealing with antlerless deer hunting, but before reviewing studies of this issue we shall review two studies dealing with hunter-landowner relationships. This is a problem in almost all parts of the country and in all types of hunting because a great deal of the total hunting occurs on private land not owned by the hunters. Barclay studied the availability of private lands for hunting in Pennsylvania in 1966.[2] Of the sixteen variables he tested, he found that the "educational level" of the

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[1] Gilbert, p. 13.

[2] J. S. Barclay, "Significant Factors Influencing the Availability of Privately Owned Rural Land to the Hunter," M.S. Thesis in the Department of Wildlife Management at Pennsylvania State University, 1966.

landowners was the only consistently significant influence. He amplified this finding by pointing out that:

> The data indicate that landowners in the study area are becoming better educated, have fewer local ties and are less sympathetic toward hunting. Such landowners do have a heightened appreciation for their "rights" as landowners, are cognizant of the values of their property, and are intolerant of indiscriminate use of their land by others.[1]

He closes his study with the warning that the owners' ability to withstand "the predicted increases in hunter numbers and economic weight of urbanization without assistance is doubtful." Although this study is descriptive in nature, it nonetheless represents a good preliminary effort.

Dice contributed significantly to a better understanding of hunter-landowner relationships in Michigan in his doctoral dissertation in 1967.[2] His use of several research design techniques which are common to social research but which are seldom applied to resource development research, is particulary noteworthy. He used an experimental design in which he exposed one group of sportsman club members to a series of informative lectures dealing with hunter-landowner relationships. Attitudinal changes which took place following the treatment were compared with the experience of a carefully supervised control group in order to identify the effect of the treatment. The following concepts were proposed as possible components of the attitudes for which attempts were made to induce changes:

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[1] Ibid., p. 92.

[2] Eugene Dice, "The Influence of an Educational Awareness Experience on Components of Psychological Position," Doctor of Education dissertation from the University of Michigan, 1967.

> The premise that position is really a profile of component variables provides a basic structure with which the assumed components may be identified. Five have been identified for this study. These include: an ideological rationale for understanding the issue, a disposition to act, a perception of the facts involved with the issue.[1]

A major hypothesis of the study was that "if positions of groups and individuals regarding a natural resource issue can be described as being different then position may be regarded as a measurable dimension."[2] He found that:

> In the present investigation, it was specific to the component structure that the three dealing with behavior, i.e., disposition to act, perception of appropriate action, and perception of facts, were not as critical to change and issue solving in the needs of space age community and resource development as were the time bound attitudes toward change and opinions toward the technical advice relative to change by talented experts.[3]

As is easily discernible, Dice is primarily interested in cognitive processes of educating for resource development. Nevertheless, several of the concepts which he used are directly applicable to this investigation.

To date, Tillett's study in New Jersey is the only behavioral and attitudinal study that has focused explicitly upon an antlerless deer hunting controversy. Tillett's work is altogether a qualitative discourse dealing primarily with the specific events and people who were a part of that unfolding issue in his state. Since Tillett is a political scientist, it is not surprising that his purpose is to study the political implications of public policy formation and implementation

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[1] Ibid., pp. 21-22.

[2] Ibid., p. 45.

[3] Ibid., p. 144.

using this issue as a case study. A statement in his conclusions captures the essence of his purpose:

> While this case began with a narrow focus on the problems . . . concerned with deer in the state of New Jersey, it ends with an issue which cuts across nearly every aspect of present-day American political life: How to cut the lead time between discovery and application of scientific knowledge? . . . If nothing else, this study documents the inadequacies of the interest group theory of American politics-whether that theory is considered in its descriptive, normative, or operational aspects.[1]

The thrust of his treatise leads to certain normative conclusions--one major conclusion being that the clash and conflict of special interest groups in this particular issue are not "good" because they did not protect the "public's interests." However, nowhere in his discourse does the author attempt to specify the causes for the political courses which happened to evolve within the institutional structure which existed as compared to other possible alternative forms. He raises no question as to the sources of the attitudes evidenced by the members of the different factions, or as to how these attitudes were disseminated to the various segments of the population which held the different views, or again, why the different groups behaved as they did, or of even a more basic dimension, why some were predisposed to action while other groups were not. Any or all of these questions, if successfully researched, could contribute to a greater understanding of the specific behavior which Tillett described. Of even greater importance is the possibility that concepts and insights of a more generalizable nature might be generated which could be tested under a variety of conditions. Since no such formulations were evident from Tillett's book, the primary value to this study is in its

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[1]Tillett, p. 116.

insights--some of which seem intuitively to have relevance to meaningful theoretical propositions[1] which one might wish to develop and test.

Conceptual Foundations

Two polar and undoubtedly overstated and much simplified models are summarized below. Each of these models could conceivably be used as a starting point in a study of the formation and crystallization of attitudes toward antlerless deer hunting. Likely empirical reality lies somewhere between these extremes. Various selective characteristics from these two preliminary models will probably prove meaningful in a unified model which hopefully will be developed from this study.

Once conception is that attitudes toward the deer resource and its management are deeply embedded in the cultural traditions of the state. These attitudes are passed from generation to generation and are fairly stable over many years. For the individual, his attitudes are almost an expression of a value orientation rather than that of a loosely held set of opinions of little consequence or importance to him.

The other model conceives the hunter as being basically uninformed and dependent upon information sources of various kinds in order to form his opinions concerning antlerless deer hunting. This model assumes a less intense emotional commitment to the resource which in turn prompts the hunter to be more passive in seeking information.

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[1] Bereleson and Steiner have defined theory as "an intellectual creation explaining the sum of the observed facts, by means of a general principle from which these observations can be deduced as consequences. Theory furthermore, provides the guidelines for future research." Bernard Berelson and G. A. Steiner "Methods of Inquiry," in Human Behavior: An Inventory of Scientific Findings (New York: Harcourt, Brace and World, Inc., 1964), pp. 15-33. Implicit in the above definition is the idea that these concepts must be testable.

Under the assumptions of this model coincidental exposure to various information sources plays a signfiicant role in the information which the hunter has at hand and upon which he bases his opinions. In turn exposure to different sources will vary among different population groups so that attitudes can be predicted if two things are known: (1) The difference in source and amount of information that are available to various social aggregates, and (2) the message that is being conveyed by each information source.

Several observations were mentioned earlier which tend indirectly to support each of these two models.

It was noted in Chapter I that there seem to be regional variations in the amount and degree of existing opposition to the Department of Natural Resources' antlerless deer hunting policy. One explanation that was suggested in the earlier discussion was that hunting generally is more important to the resident population in the northern two-thirds of the state than in southern Michigan as measured by the proportion of the total population which buys a license. It does not necessarily follow that hunting is less important to individual hunters in southern Michigan.

It is known from numerous studies as well as from everyday observation that not conforming to commonly held attitudes of one's peer group often induces sanctions, whether subtle or obvious. In a sense such sanctions are an attempt to induce the non-conformist to conform. It is reasonable to expect that where hunting is not so important to the population as a whole, more diversity of opinion would be tolerated without sanction. Thus one would expect opposition

to be less intense in Ingham County than in the northern counties because interest generally is not so widespread.

This formulation indirectly lends support to the first model sketched above.

We also observed in the earlier discussion that there appear to be attitudinal differences among different socio-economic status (SES) groups. It appears that people in higher status groups tend to support the DNR's position concerning antlerless deer hunting more than do the lower status groups. Since these observations are based on the unstructured observations and impressions of many people, we propose to carefully test this proposition to see if a relationship between status and attitudes does exist.

As one possible explanation for such a relationship, we can hypothesize that the various status groups depend on different sources for information which they accept as credible concerning deer management. If hunters from different social groups are exposed to different information sources and in turn to different messages, then these groups would be expected to have different attitudes. Such a formulation if proven would lend support to the information source model (the second model outlined above).

Another variable which may explain the differences in attitude is education. The hypothesis seems reasonable that professional people and others with high education will have a greater predisposition to support the judgment of professionals within the DNR than will less educated hunters. The author suspects, however, that education will not explain all the differences in attitude and that a tighter data fit will be achieved by considering the effect of education in concert

with those parts of the models formulated above which prove to be viable.

Communications and Attitudes

Katz and Lazarsfeld effectively demonstrated in Personal Influence that personal relationships act as an intervening variable between mass media and audience response in the form of attitudes and behavior.[1] According to their findings, which have since been corroborated, there is a "two-step flow of communications" between the source and receiver. The important link between the source and the receiver was dubbed "opinion leaders" by the authors. They explain the role of the opinion leaders in the two-step flow of communications in this way.

> 1. Interpersonal relationships seem to be "anchorage" points for individual opinions, attitudes, habits and values. That is, interacting individuals seem collectively and continuously to generate and maintain common ideas and behavior patterns which they are reluctant to surrender or modify unilaterally . . .
> 2. Interpersonal relations imply networks of interpersonal communications, and this characteristic seems to be relevant for (mass media) campaign effectiveness in several interlocking ways: The "two-step flow" hypothesis suggests, in the first place, that these interpersonal networks are linked to mass media networks in such a way that some people, who are relatively more exposed, pass on what they see and hear, or read to others with whom they are in contact who are less exposed. Primary groups, in other words, may serve as channels for mass media transmission; this might be called the relay function of interpersonal relations. Secondly, it is implied, person-to-person influences may coincide with mass media messages and thus either counteract or reinforce their message. This might be called the reinforcement function; and, there is substantial reason to suspect, when reinforcement is positive, the communications in question is likely to be particularly effective.[2]

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[1] Elihu Katz and Paul Lazarsfeld, Personal Influence (New York: The Free Press, 1955).

[2] Ibid., pp. 44-45.

An example of such a two-step flow of communication is the method by which people decide who to vote for in political elections. The results of one of the first modern studies which produced evidence of the existence of opinion leaders is published in The People's Choice.[1] The research indicated that there were influentials in all strata of society who expose themselves to information needed to make political decisions and then influence their less exposed peers by relaying their conclusions to them. This evidence tended to weaken the widely held misconception that represented the voting public as atomized individuals who all make decisions on how they should vote from their personal and individual interpretations of mass media information.

At this point, it may be logically questioned as to what the concepts discussed above have to do with the antlerless deer hunting controversy. We propose now to relate the issue and these concepts.

But first a qualification must be stated. The principles developed by Katz and Lazarsfeld probably have definite limitations in their application to this study. The authors made it clear that they were attempting to minimize the influence of the socialization and other complex effects which are deeply embedded in human personalities and behavior. Their thinking is stated in the following way:

> There is no doubt, for instance, that what our parents told us in early childhood has an everlasting influence on our adult life in terms of the beliefs, prejudices, habits and fears with which we approach every situation . . . . We, however, take these general attitudes for granted and shall be concerned only with minor variations on this basic theme of opinion and attitude formation, as they are played out over relatively short periods

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[1] P. Lazarsfeld, B. Berelson, and Goludet, The People's Choice, (New York: Columbia University Press, 1954).

> of time. Thus, we will not be concerned with why a man has Republican opinions if he has held them for a long time; but if he has changed them quite recently, we will be.[1]

This is precisely where the basic emphasis described in Personal Influence differs significantly from the focus of this study. Undoubtedly, many people have been influenced in their thinking concerning antlerless deer hunting by a cluster of complex influences perhaps over a period of many years. We have set as one of our goals, as described explicitly in the hypotheses stated below, the task of examining the formation of these deeper seated attitudes and opinions. This objective contrasts sharply with the studies which deal with decisions concerning product purchases or choices of entertainment. Obviously, the mechanics of deciding which soap to buy is a less complex decision process than deciding whether antlerless deer should be shot or not.

Now to the matter of the relationship between interpersonal influence and attitude formation concerning antlerless deer hunting. The DNR is charged with the responsibility of managing most of the state owned or controlled natural resources, including the deer herd. The agency is centralized in Lansing as are most other state agencies. However, the DNR has strong grass roots contact with the public through its several hundred field personnel who live in all parts of the state. The situation with regard to antlerless deer hunting is best described, however, by pointing out that only a small percentage of these field workers are engaged in full-time jobs involving deer herd management. Therefore, it is likely that the total force of active advocates of the antlerless deer hunting policy within the Department is quite small.

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[1] Katz and Lazarsfeld, p. 162.

There is also evidence that many Department employees, especially at non-professional levels, for years did not support antlerless deer hunting themselves after it was introduced on a broad scale in 1952. Probably such a group of employees still exists within the Department. One explanation for such behavior may be that these individuals' desire for local community acceptance outweighs the benefits of identifying with the values and attitudes of their employer--in this case, the DNR and its antlerless deer hunting policy.

Generally, the aggressive front-line advocates of antlerless deer hunting policy within the Department are the professional game biologists and biometricians located primarily within the Game and Research and Development Divisions. Strong support is provided by the Division of Information and Education and by the top administrative staff of the Department with secondary support given by the professionals within the other Divisions such as Parks, Fish, and Forestry. To summarize the point, although the DNR is a large agency, it is unlikely that its message concerning antlerless deer hunting has been widely spread by its employees through face-to-face contact with the deer hunting public.

This leads to a second point--that the DNR is dependent upon mass media and group contacts to present its case and that, by all measures, they have done a good job through these media. As previously mentioned, almost all the mass media support the Department and almost all the general conservation and business organizations do not represent a cross section of the state population, or of the hunting population either, for that matter. All these groups have a disproportionate number of professional members and/or members from higher SES groups.

Because the DNR has been able to concentrate upon such groups and because they have had relatively easy access to these groups to present the Department's case, important support has been won. It has already been hypothesized that this access is available because of the predisposition of these leaders and group members to accept or at least listen sympathetically to the DNR's point of view because of the Department's professional credentials.

With this strategic mass media and institutional support, it is altogether fitting to ask why such a significant percentage of Michigan deer hunters, estimated at 48% in 1967, continue to oppose antlerless deer hunting after at least 16 years of getting used to the idea? It is at this point that the idea of a "two-step flow of communications" seems relevant.

It is evident that for many hunters, their hunting party is a primary social group in terms of stability, closeness of the members, and commitment to the group. Because of the high regard that many hunters have for their hunting group or hunting club, they will tend to conform to the attitudinal expectations of the group. According to Katz and Lazarsfeld, this conformity is not necessarily achieved at the expense of independent thinking or by the suppression of previously held opinions on the part of the conformist. For most issues or subjects, a preponderance of the members of most social groups, including those interested in hunting, will have neither the access to relevant information nor the interest to seek it. The information needed to form and support opinions is gathered, interpreted and then disseminated by opinion leaders to the other group members. Needless to say, these opinion leaders are often selective

in the kind, amount, and source of information they are willing to receive. Even more important, they are often very selective in the information that they pass on to other group members after they have interpreted it.

These opinion leaders usually have some unique characteristic that endows them with a special measure of credibility to the group. The role of opinion leader is usually conferred upon a person because of some advantage such as special training or unique access to information sources including, in this case, mass media. These special credentials allow the other members to accept his interpretations without serious challenge.

The above stated propositions lead to the postulation that the strength of hunting group relationships will be a key predictor of attitudes toward antlerless deer hunting. It is hypothesized that hunters with strong hunting group ties and who are from a lower socio-economic status level will not only tend to consider hunting more important to them than will their counterparts from higher SES levels, but they will consider hunting success as a symbol of status within their group. These attitudes will in turn, prompt or intensify opposition.

However, there are undoubtedly thousands of hunters who do not hunt with a special group. There are probably also several thousand hunters who hunt only by themselves or at most with one or two other people. If the data from this study is characteristic of the results found in a number of other states, these two groups of deer hunters

will be a minority, because deer hunting involves definite social as well as recreational motivations.[1] On the other hand, identity with and commitment to the group has probably diminished from what it was two or three decades ago. At one time deer hunting was a major endeavor in that almost everyone who hunted was a member of a deer camp somewhere and each individual usually stayed in the woods for up to one or two weeks. The duration of the average hunt has probably decreased markedly because of the good transportation system which allows a hunter to travel anywhere in the state in a matter of hours. Also, the strong urban orientation of many hunters probably predisposes them to not want to stay away from modern conveniences for very long at a time. In addition, many loners or small hunting parties are the result of hourly workers who cannot take time off from work and therefore hunt only after work or for a day or two on weekends.

These people, without a strong primary group identity with respect to deer hunting, must depend either directly upon the mass media for information concerning antlerless deer hunting or upon information passed on to them through some social collectivity of which they are a part, such as their work group or some organization in which they hold membership. If interest in hunting and status achieved through hunting success are associated with SES, we would expect a larger proportion of lower status individuals to hunt and to base their satisfaction upon the success which they and their acquaintances achieve. Thus we would expect people from lower status groups to depend upon information from their social peers while higher status

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[1] Peterle, "The Hunter-Who Is He" p. 263; Davis, Values of Hunting and Fishing in Arizona in 1965, p. 54.

individuals--because fewer of their acquaintances hunt, because success per se is not as important to them, and because they are more predisposed to respect the expertise of professional game managers--will be more dependent upon the mass media for their information.

Regional differences become a factor not so much from a micro influence within specific groups, but from the macro effect of the social milieu. The effect can most readily be seen in the opposition found within the two northern regions of Michigan. It is expected that there will be generally less support among all SES levels in the northern two-thirds of the state as compared to the same groups in the southern third of Michigan.

Summary

In essence this research problem involves the determination the role of primary social influences, the mass media and secondary reference groups in the formation of opinions and attitudes concerning antlerless deer hunting.

An Assumption

Information concerning antlerless deer hunting is the primary basis upon which opinions toward the issue of whether antlerless deer should or should not be shot are formed (as opposed to personal observation).

Hypotheses

Regional Differences

1. Hunters from Ingham County, as a group, will be most supportive of the antlerless deer hunting policy when compared to hunters from the other counties. Alpena hunters will be least supportive.

A. Significant differences will exist among the counties in the degree of alienation (powerlessness) regarding the governmental process among hunters who oppose the antlerless deer hunting policy. Alpena hunters will manifest the greatest amount of alienation, and Ingham hunters will manifest the least alienation.

B. Significant differences will exist among the counties in the importance of success in killing a deer to individual hunters. The importance of success will be most evident among hunters from Alpena County and least evident among Ingham County hunters.

C. Significant differences will exist among the counties in the status symbolism associated with success in the minds of hunters. Hunting success will have the strongest status symbolism for Alpena hunters and the least status symbolism for Ingham hunters.

D. Significant differences will exist among the counties in the importance of hunting to the hunters. The hunting experience will be most important to Alpena County hunters and least important to Ingham County hunters.

E. Significant differences will exist among the counties in the proportion of peers who hunt. Alpena hunters will have the largest proportion of peers who hunt while hunters from Ingham County will have the smallest proportion of peers who hunt.

F. Significant differences will exist among the counties in hunter perception of the proportion of peer group opposition to antlerless deer hunting. Alpena County hunters will perceive

the largest proportion of peer group opposition to antlerless deer hunting while Ingham County hunters will perceive the least.

G. Significant differences will exist among the counties in hunter exposure to information concerning antlerless deer hunting derived from mass media. Alpena hunters will be least exposed to mass media information while Ingham hunters will be most exposed to mass media information sources.

Socio-Economic Status (SES)

2. Hunters from the highest SES level, as a group, will be most supportive of the antlerless deer hunting policy when compared to the other SES groups. Low SES hunters will be least supportive.

A. Significant differences will exist among the three SES groups in the degree of alienation regarding the governmental process among hunters who oppose the antlerless deer hunting policy. Low SES hunters will manifest the greatest degree of alienation, and high SES hunters will manifest the least alienation.

B. Significant differences will exist among the SES groups in the importance of success in killing a deer to individual hunters. The importance of success will be greatest among low SES hunters and least important to high SES hunters.

C. Significant differences will exist among the SES groups in the status symbolism which is associated with hunting success in the minds of hunters. Hunting success will have the strongest status symbolism for low SES hunters and the least status symbolism for high SES hunters.

D. Significant differences will exist among the SES groups in the importance of hunting to the hunters. The hunting experience will be most important to low SES hunters and least important to high SES hunters.

E. Significant differences will exist among SES groups in the proportion of peers who hunt. Low SES hunters will have the largest proportion of peers who hunt while high SES hunters will have the smallest proportion of peers who hunt.

F. Significant differences will exist among SES groups in hunter perception of the proportion of peer group opposition to antlerless deer hunting. Low SES hunters will perceive the greatest proportion of peer group opposition to the policy while high SES hunters will perceive the least opposition.

G. Significant differences will exist among the SES groups for sources of information concerning antlerless deer hunting. Low SES hunters will have the least exposure to mass media information concerning the issue while high SES hunters will be most exposed to mass media information sources.

3. Ingham County hunters will have the largest proportion of high SES hunters while Alpena County will have the largest proportion of low SES hunters.

A. The differences in attitude among the hunters of the three counties will be explained by the differences in the proportion of hunters from the three SES groups in the three counties.

CHAPTER IV

RESEARCH ADMINISTRATION AND SOME GENERAL FINDINGS

The Interview Schedule

Early in the formulation of this study, it was decided to focus on the attitudes and behavior of a cross-section of Michigan deer hunters regarding antlerless deer hunting. A preliminary interview schedule was prepared in the fall of 1967, and after two revisions, was administered as a pretest to thirty-two randomly selected firearm deer license buyers in Jackson and Ingham counties. These pretest interviews concentrated upon testing the relationship between socio-economic status and the attitudes and behavior associated with antlerless deer hunting. The results indicated that there was a fairly strong statistical association between attitudes and socio-economic status as measured by chi square tests.

This pretest interview schedule did not contain very many questions designed to elicit data concerning information sources and reference groups because the relevance of such information was not apparent at that time. Based on the results of this initial effort, a number of items was eliminated and others were added to fill the data gaps. At this early stage it was not possible to test for the magnitude of regional differences because the pretest was confined to one area of Southern Michigan.

In the spring of 1968 a concerted effort was made to refine the instrument and to determine a set of plausible hypotheses to test which might account for the differences in expressed attitudes. After concluding that reference groups and sources of information might be the explanatory concepts of greatest fruitfulness, a battery of questions were introduced to explore these relationships. After further pretesting using a non-probablistic sample of respondents from Lansing and after review by several faculty members at Michigan State University and professionals of the Department of Natural Resources, the interview schedule was completed and ready for administration in August of 1968.

The Sample Counties

Very early in the development of the study it became apparent that it was not feasible to choose a sample of hunters from throughout the state because of a limited research budget. Because regional differences may be an important variable, it was felt that it would be necessary to include at least one county from each of the regions. This meant that only one county could be used in two regions and possibly two counties in the other region. This limitation complicated the selection of the counties because it has often been observed by those close to the issue that there are significant differences in attitudes within the regions as well as among them. Thus, if the counties were chosen on the basis of a stratified random sample with such a small sample of counties, there would be serious question as to the representativeness of any one county for its regions.

It was decided, after consultation with several professional statisticians who are also knowledgeable about the geography and demography of Michigan, to purposively select the counties from which

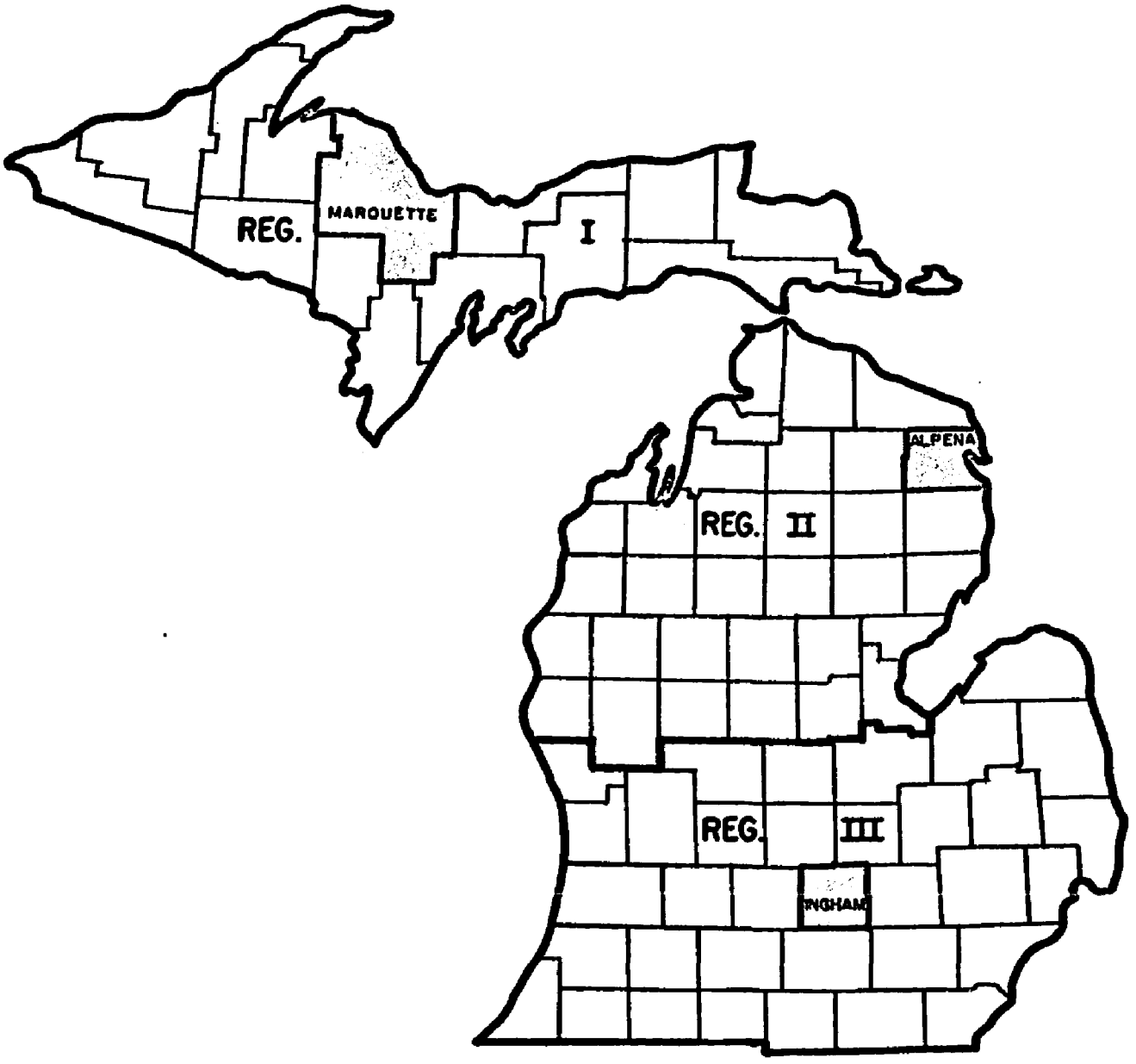

Figure 3. Survey study counties and Michigan Department of Natural Resources administrative regions

the respondent sample would be chosen. The following criteria were used:

1. Urban and Rural - No county selected should have an urban or a rural population greater than 85% of the total.

2. Hunter Success - Different areas of a region differ as to their deer harvest productivity. Counties should be chosen which fall in the median range of animals harvested per season--neither areas in which a very high proportion of hunters kill a deer each year nor areas in which a very small proportion of hunters are successful should be included.
3. Interviewers - Thirdly, a college or university should be located in the vicinity in order that local interviewers will be available.
4. Representativeness - The counties to be included in the sample should typify their regions with regard to economic conditions, land-use, population density, and population size for the region it is to represent. An example of an area that was considered but later rejected as being atypical of the region was Grand Traverse in the northern Lower Peninsula.

On the basis of these criteria, Marquette County was chosen to represent the Upper Peninsula and Alpena was selected for the northern Lower Peninsula. Southern Michigan's representative county was more difficult to choose. Ingham County was finally chosen because of its median size which allowed the urban and the rural to co-exist in close proximity. Its central location within the Lower Peninsula was also a factor. Apparently Ingham County hunters disperse more in a fan-shaped pattern as they go north to hunt than hunters from some of the other urban centers. For example, Detroit, Flint, Saginaw and Bay City hunters seem to concentrate on the eastern side of the northern Lower Peninsula and hunters from the Grand Rapids area travel north and disperse in a pattern that is much more concentrated in the northwestern and western

areas of the state. If the location in which a person hunts affects his attitude toward antlerless deer hunting, it was felt that the more dispersed pattern of Lansing hunters would tend to hold this variable constant which in turn would allow for greater generalization from the study results.

On the other hand, several professionals within the Department of Natural Resources with whom the matter of the sampling frame was discussed felt that the presence of the state government agencies in Lansing would modify attitudes in a favorable direction through more contact with Department personnel. This point was considered but was rejected because of a lack of evidence of a significant effect of such an influence on attitudes in the pretest interviews. This observation seems to have been further supported by the fact that only two people out of the 108 in the Ingham sample that were interviewed were reported to have said something to the interviewers which indicated a significant contact with Department personnel.

The Respondent Sample

The Department of Natural Resources cooperated in the study by drawing a sample of 133 deer hunters from each of the three counties of Ingham, Alpena and Marquette. In order to have a chance of being included in the study, the respondents had to reside in one of these three counties and had to have purchased a firearm deer license in 1967.

The data reported in this study were obtained from this sample of hunters. The following statement describes in precise terms the procedures that were followed in selecting the three county sub-samples.

We first isolated all carbon copies of licenses sold and returned by all license agencies located in the three counties of interest, Marquette, Alpena, and Ingham. License numbers distributed by the Department to agencies in each county are consecutive. The numbers we sampled from were not solidly consecutive within a county because of unsold licenses or unreturned license copies. Licenses reordered by dealers were not included in the universe since they were distributed on an asked-for basis from left over high-numbered licenses and thus were not easily found in files of carbon copies. Some few residents of these counties probably purchased licenses in other counties and thus had no chance of being included in the sample. Likewise, many licenses sold by agencies located within a county are sold to residents of other counties.

Every license number distributed to license agents in a county of interest (reorders excepted) was given an equal chance of selection. This was done by: (1) subtracting the last license number distributed in the previous county from the last license number distributed in the county of interest, giving a total of the number of licenses distributed to the county; (2) selecting a random number from the book A Million Random Digits, prepared by the Rand Corporation, between one and the total number of licenses distributed; (3) adding the license number from the last license distributed in the previous county to the selected random number; (4) locating the actual license by number and determining if the chosen licensee is a resident of the county; (5) repeating the selection process until approximately 133 names have been selected for each country.[1]

Conducting the Interviews

The research was timed so as to begin about October 1 and to be completed before November 15. By that time, the 1967 season had been completed almost a year earlier. It was felt that in this length of time the success or lack of success of the respondents during the 1967 season would be diminished enough so that overall attitudes would not be affected unduly by one season. It was also hoped that the excitement of the inpending 1968 season (which was to begin November 15) might induce greater cooperation from the respondents.

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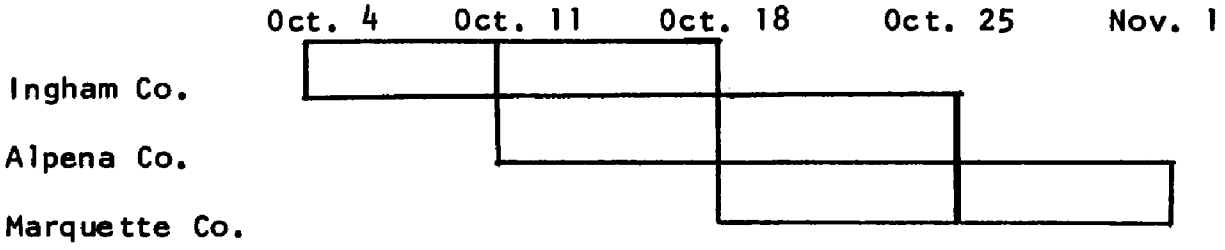
[1] The sampling procedure was formulated by and carried out under the direction of Louis Hawn, Biometrician in the Research and Development Division, Department of Natural Resources. July 1968. One hunter from another county was inadvertently included in the Alpena sample and later had to be deleted making a total of 132 names for the Alpena sample and a total of 398 for the three county sample.

The research plan was designed so that as many interviews as possible would be completed in each county during the first two weeks that interviews were scheduled for the county. The plan called for a staggered weekly schedule of interview initiation and termination as depicted graphically below.



Such a schedule allowed time for a follow-up of the interviews that had not been completed during the two weeks allotted for each county and before the deer season began.

Response and Non-response

There was a total of 398 respondents included in the sample. Completed usable interviews amounted to 336, or about 85% success for the total sample. This was a lower rate of completion than was initially expected since a personal interview technique was being used. However, much of the respondent attrition can be accounted for by the fact that the names were obtained from 1967 deer license forms which were more than a year old by the time the interviews were conducted. During this period a number of hunters moved, died, or for other reasons were not available for interview.

Response and non-response differed substantially for the Upper Peninsula and the two regions of the Lower Peninsula as the following table indicates. Approximately 90% of the interviews in the Marquette sample were completed while only about 81%

Table 6. Interviews completed and reasons for uncompleted interviews by county

Status of the Interview	Ingham	Alpena	Marquette	Total	% of Total
1. Completed interview	108	109	119	336	84.5
2. Moved and unable to follow up	10	11	1	22	5.5
3. Military	2	4	3	9	2.0
4. Died	2	2	2	6	2.0
5. Unable to contact	5	3	3	11	2.5
6. Contacted but unable to interview	4	2	4	10	2.5
7. Unaccounted for	2	1	1	4	1.0
Total	133	132	133	398	100.0

were completed in the other two counties. The major variation seems to have been caused by differences in mobility. Only one person had moved from Marquette and was not available to be interviewed. On the other hand, the residents of Alpena and Ingham counties were much more mobile. It was not possible to interview 11 people in Alpena because they had moved out of the county. Two others had moved out of the county, but follow-ups at their new homes resulted in completed interviews. As might be expected, several Ingham residents had made intra-county moves whose new addresses could not be determined. Also, a number of people had moved to new addresses in other counties and could not be followed up. In each of the three counties approximately the same number of respondents were uninterviewable in every category of reasons for incomplete interviews except mobility.

One factor should be noted because it was one which was not expected to appear. The respondents were surprisingly cooperative in

their willingness to be interviewed. Only three people in the total sample explicitly refused to be interviewed. An initial assumption that respondents would not be this cooperative probably cost the study several completed interviews in Ingham County. In Ingham County, the interviewers were instructed not to telephone for an appointment until they were unsuccessful in making at least one unannounced contact at the door. About half way through the Ingham County interviews the policy was changed so as to allow the interviewers to call for appointments because the respondents were not attempting to avoid the interviews. Consequently, the interviewers in Ingham County required many more trips to accomplish the same number of interviews as in the other two counties. The interviewers in Lansing took longer to complete their interviews, were more tired, and had lower morale near the end of the interview phase of the research than the interviewers in the other locales at the same stage due to these extra demands that were made of them. There was no evidence that making appointments had any adverse affect, although this can be partially explained by the fact that the respondents already knew that the interviewers were coming since they had received a letter announcing that they had been chosen to participate in the study.

Approximately sixty interviewers were used in the three counties. For the most part, they were students from Michigan State University, Alpena Community College, and Northern Michigan University. The quality of the interviews was generally good, although a few of the Alpena interviews were somewhat sub-par. This can be attributed to the fact that most of the interviewers in Alpena were second year students in a two year college as compared to upper classmen

interviewers at the other two schools. The number of interviews completed per interviewer ranged from 20 to 1. In all, there were approximately 45 interviewers who could be termed productive in that they completed 5 or more interviews. The average among these productive interviewers was approximately 7 per person.

General Findings

Enough information is available on the characteristics of deer hunters from a number of studies from various areas of the country to offer a general comparison with the results of this research. One possible measure of the reliability of the data reported in this study will be for the results of the descriptive data on the respondents in the Michigan study to be similar to the results of comparable data in other studies. It does not necessarily follow, however, that if there are significant differences between Michigan hunters and hunters from other areas that this indicates that there is a lack of data reliability. It may simply indicate that there are real differences between the various hunter populations.

It will also be our purpose in this section to compare and contrast the general social and economic characteristics of the hunter populations from Ingham, Alpena, and Marquette counties with those of the general populations from the same counties. The U.S. Census data and the data from this study will be used to draw comparisons and contrasts between these two population types.

Sex

Very few women hunt. In our random sample of deer hunters from Ingham, Alpena and Marquette counties, seventeen interviews were

completed with women, or about five percent of the total completed interviews. A somewhat higher percentage of the total sample originally drawn were women but a smaller percentage of these interviews were completed. Part of this lack of interview success was due to a hesitancy on the part of several women to be interviewed because, as they put it to the interviewers, "I don't know enough about hunting to be interviewed."

This small percentage of female hunters corresponds to the results of several other studies. In the National Survey of Fishing and Hunting in 1965, it was found that about 5% of the total hunter population were women.[1] In a major study in the northeastern U.S. about 95% of all hunters were males.[2] In Peterle's study of Ohio hunters about 1% of the returned questionnaires were from female hunters.[3]

Age

The age distribution for the three counties is given in Table 7. The average age is approximately 39 years. This compares with Ohio hunters[4] who were approximately 35 years old and with hunters from the northeastern U.S.[5] whose average age was 38. It should be noted with reference to these two studies cited that the data are for hunters who hunt all types of game.

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[1] National Survey of Fishing and Hunting for 1965, p. 17.

[2] Bevins, et al., Characteristics of Hunters and Fishermen in Six Northeastern States, p. 15.

[3] Peterle, "The Hunter-Who Is He," p. 259.

[4] Peterle, "Characteristics of Some Ohio Hunters," p. 380.

[5] Bevins, p. 16.

Table 7. Age distribution by county

Groupings	Ingham No.	Ingham %	Alpena No.	Alpena %	Marquette No.	Marquette %	Combined Total	% of Combined Total
10-19	12	11	15	14	12	10	39	12
20-29	24	22	20	18	26	22	70	21
30-39	27	25	24	22	26	22	77	23
40-49	15	14	26	24	19	16	60	18
50-59	20	19	14	13	21	18	55	16
60-69	9	8	8	7	11	9	28	8
70-79	0	0	2	2	4	3	6	2
80-89	1	1	0	0	0	0	1	Negligible
Total	108	100	109	100	119	100	336	100

The older average age for deer hunters may be partially explained by the conclusion that an interest in hunting of various types of small game evolves into an interest in hunting bigger game such as deer. Perhaps rabbit hunting and such like furnishes a training ground for future deer hunters. Also in some states including Michigan, there is a minimum age of 14 for deer hunters but no minimum age for small game hunters. This would also create some disparity between the average age of the two groups of hunters. It is not known if there are age regulations in the states cited above which would influence the average age of the hunters of different types of game.

Race

The racial composition of the hunter sample which was interviewed in Michigan was overwhelming white. Less than one-half of one percent of all those interviewed were classed as non-white by the interviewers. This finding coincides with the results of Peterle's survey which

indicated that only about two percent of all hunters in Ohio were non-whites.[1]

The table below shows the racial composition of the hunter population and the general population of potential hunters for the three counties included in this study.

Table 8. Racial composition by county

County	White		Other		Indeterminate[2]	
	No.	%	No.	%	No.	%
Ingham						
Hunters	104	97	2	1.5	2	1.5
General Pop.[3]	NA	96	NA	4	NA	NA
Alpena						
Hunters	109	100	0	0	0	0
General Pop.[4]	NA	99.9	NA	.1	NA	NA
Marquette						
Hunters	116	98	0	0	3	2
General Pop.[5]	NA	96	NA	4	NA	NA

NA = Not applicable

As can be seen from this table, the proportion of white and non-white residents when compared to white and non-white hunters differs

[1] "The Hunter-Who Is He," p. 259.

[2] The racial characteristics of several respondents were not known due to the failure of the interviewer to indicate whether the respondent was white or non-white in the appropriate space on the interview schedule.

[3] U.S. Census of Population, 1960, Vol. 24, p. 155.

[4] Ibid., p. 153.

[5] Ibid., p. 157.

significantly only for Marquette County. The 4% non-white population for Marquette consists primarily of American Indians. By chance, apparently none of these persons were drawn in the study sample for Marquette County.

Hunting Experience

Some indication of the experience and perhaps even the proficiency of the hunter population may be furnished by knowing how many years Michigan hunters have hunted. It should be added that it cannot be asserted at this point that there is a direct relationship between experience and skill; however, it is worthwhile to check the experience distribution for this sample and compare it with the amount of experience of hunters from other studies.

Data from two other studies furnish a basis for comparison.

Table 9. Length of participation for hunters from several studies

	Length of Participation[a]				
Study	10 years or less	11-20	21-30	Over 30	Total %
1. Michigan Deer Hunters	42%	28%	16%	14%	100
2. Ariz. Big-Game Hunters[1]	40	33	14	14	100
3. NE Hunters[2]	30	28	18	24	100

[a]These data are not strictly comparable because Davis aggregated his data as follows: Under 10 yrs; 10-19; 20-29; 30 and over. This causes his data for the 10th year to be aggregated in column two, whereas the tenth year data is aggregated in column one for the other two studies. The same disparity exists for the 20th year and the 30th year.

[1]Davis, Values of Hunting and Fishing in Arizona in 1965, p. 12.

[2]Bevins, p. 29.

The number of years of participation by Michigan and Arizona hunters is quite similar. In contrast, the proportion of hunters with less than ten years experience in the Northeast is much lower than in the other two areas while the proportion of hunters with more than 20 years experience is significantly higher for the NE. These differences are difficult to explain except to speculate that perhaps fewer young adults are taking up hunting in the heavily urbanized NE than in the other two less cosmopolitan regions.

It is interesting to note the apparent differences in the amount of hunting experience in the three regions in Michigan. The following table depicts these differences.

Table 10. Length of participation by county

County	10 Years or Less	11-20	21-30	Over 30	Total %
Ingham	49%	33%	15%	3%	100
Alpena	38	26	19	17	100
Marquette	39	26	15	20	100

In this matter of hunting experience, Alpena and Marquette Counties are very similar. However, the data from Ingham County differs from that of the other counties in that the proportion of hunters with less than 20 years is much higher while the proportion with more than 30 years experience is much lower.

Occupation

In coding the occupation categories of the respondents in the Michigan Deer Hunter Attitude Survey, the classification system of the

U.S. Bureau of the Census[1] was used. Table 11 reports the data from Michigan and compares it with data from similar studies. The more elaborate categories as used in the U.S. Census were collapsed into White Collar, Blue Collar, Farming, and Miscellaneous groupings in this table.

Table 11. Occupation of respondents for several studies

Occupation	Michigan Deer Hunters	Ohio[2] Hunters	Arizona[3] Hunters	North-eastern[4] Hunters	National Survey[5]
White Collar Professional Technical Managerial Clerical Sales Service	32%	26%	40%	39%	35%
Blue Collar Crafts Foreman Operators Laborers	52	56	45	42	51
Farm Farmers Farm Managers Farm Laborers	3	6	4	7	9
Other Retired Unemployed Housewives Widows Students	13	12	10	12	5
Total	100	100	100	100	100

[1]This system of classification is discussed in detail in Charles H. Backstrom and G. P. Hursh, Survey Research (Chicago: Northwestern University Press, 1965), p. 99.

[2]"The Hunter-Who Is He," p. 260.

[3]Davis, p. 13.

[4]Bevins, p. 21.

[5]National Survey, p. 58.

There are marked differences in the proportion of blue collar and white collar workers among some of these hunter populations but there is little difference between the farm and miscellaneous populations. Part of the variation can be explained by noting the fact that in the Michigan and Ohio studies the respondents were asked to indicate their specific job and their responses were later coded into appropriate categories, while in the Northeastern study the respondents were asked to classify their jobs themselves as to whether they were white collar, blue collar, etc. It is very possible that blue collar workers could have given an exaggerated opinion of their job classification when they were asked to classify themselves. If this response behavior did occur, this fact could explain the higher proportion of persons with job classification as blue collar in Michigan and Ohio. On the other hand, there may be real differences in the number of people who are attracted to hunting from the various job type groupings from different regions. Or it could be that there is a larger proportion of white collar to blue collar workers from which to draw hunters in the Northeast and Arizona as contrasted with Michigan and Ohio.

At this point the occupational characteristics of the hunter populations in the three Michigan counties under study will be compared with the occupational characteristics for the general male population for their respective counties.

Table 12 indicates that there are few differences between the hunter and the general male populations in the three counties. The major differences are in the "Crafts and Foremen" categories in Ingham and Marquette Counties and between "Operatives" in Alpena County. Part of this difference can perhaps be explained as a function of the

Table 12. Occupational characteristics of the hunter sample and the general male population for Ingham, Alpena, and Marquette Counties

Occupation	Percentage of the Total in Each Occupational Class[a]					
	Ingham (Hunter)	Ingham[1] (General)	Alpena (Hunter)	Alpena[2] (General)	Marquette (Hunter)	Marquette[3] (General)
1. Prof., Tech.	9%	16%	6%	8%	9%	11%
2. Farm & Farm Mgr.	4	2	4	6	0	1
3. Managers, Officials, & Proprietors	10	10	13	11	3	10
4. Clerical	1	7	3	6	3	5
5. Sales	7	8	6	5	3	4
6. Crafts & Foremen	33	19	24	22	32	20
7. Operatives	19	20	15	24	27	29
8. Private Household Workers	0	Neg.	0	Neg.	0	Neg.
9. Service	7	8	8	4	9	8
10. Farm labor and Foremen	0	1	1	1	0	1
11. Laborers	1	4	4	2	2	6
12. Other	8	5	17	11	12	5
Total[b]	99%	100%	101%	100%	100%	100%

[a]It should be kept in mind that the data for the general population was collected in 1960 while the deer hunting study was done in 1968.

[b]Deviations from 100% are due to errors in rounding.

[1]U. S. Census of Population, p. 311.

[2]Ibid., p. 309.

[3]Ibid., p. 313.

vagaries of coding. For many respondents, it was difficult to determine whether they should be classed as craftsmen or operatives based on their descriptions of their occupations. Part of the difference is probably attributable to chance differences in the sample. However, I am not willing to discount these apparent differences altogether. This consistent over-representation among craftsmen and foremen and under-representation among operatives in these hunter samples may lend support to the proposition that there are pockets of strong interest in hunting among certain socio-economic classes and a lesser interest among others. It has already been asserted in Chapter III that differences in interest in hunting may influence the attitudes among members of these various groups.

Similarly the "Professional and Technical" part of the work force is under-represented in the hunter population in Ingham County and the "Manager, etc." category is also under-represented in the hunter population. These differences support the earlier assertion that white collar workers may be less committed to deer hunting as a group than are blue collar workers in the same counties.

Income

Almost all the major hunter studies reviewed for this section have data on the annual income of hunters. However, it is difficult to develop comparisons because of two reasons. First, it is very difficult to compare absolute levels of income from various studies because the data were generally collected in different years. When the studies are conducted more than one or two years apart, comparisons are not very meaningful because of annual income increases in excess of 5% in the last few years. Secondly, inconsistencies in

aggregating data present serious problems. For example, in the National Survey of Hunting and Fishing conducted by the Bureau of the Census and in the data from this study of Michigan deer hunters aggregation took the following form: Less than $3000; $4000-5999; $6000-7999; $8000-9999; $10000-14999; $15000 and over. On the other hand many of the other studies aggregated at different break points, e.g., $7000-8999. These differences in recording and reporting data make it impossible to meaningfully compare data among studies and points to a need for establishing standardized guidelines (preferably of national scope) for recording data from these kinds of studies.

The following table displays data from the National Survey and from our Michigan data. Also included is the aggregated data from the U.S. Population Census for 1960 for Ingham, Alpena and Marquette Counties.

Table 13. Income distribution for two studies

	Data from Various Studies		
Income Categories	Michigan Deer Hunters	National Survey of Hunting[1]	Census Data for the Three Mich. Counties Combined[2]
Less than $3000	4%	13%	15%
$3000-5999	4	32	36
$6000-7999	19	16	22
$8000-9999	27	16	13
$10000-14999	28	13	11
Over $15000	8	4	4
Not ascertained	5	6	-
Total	100	100	101

[1]National Survey, p. 62.

[2]U.S. Census of Population, 1960, pp. 327, 325, and 329.

Bearing in mind that the data in Table 13 were collected in 1968, 1965, and 1960, respectively, pronounced differences are apparent. The data from the National Survey of Fishing and Hunting and the general U.S. Census data for the three Michigan counties is quite similar. However, the income distribution for Michigan deer hunters is radically different from the other two groups. If the data were depicted on a distribution curve, the Michigan distribution would be skewed to the left while the curves for the other two studies would be skewed to the right. This characteristic of the data seems to indicate that deer hunting in Michigan attracts a disproportionately large number of higher income participants.

Now we shall see if there are substantial differences for income distribution among the counties.

Table 14. The income distributions for the deer hunters and general populations of Ingham, Alpena and Marquette Counties

Counties	Less Than $3000	$3000-5999	$6000-7999	$8000-9999	$10000-14999	Over $15000	Total
Ingham							
Deer Hunters	3%	6%	12%	26%	40%	13%	100%
General Pop.	13	32	22	14	13	5	99
Alpena							
Deer Hunters	4	13	21	30	26	6	100
General Pop.	18	39	24	10	7	2	100
Marquette							
Deer Hunters	5	10	28	28	23	6	100
General Pop.	19	46	20	8	5	2	100

As with the previous table, the data indicate that the lower income groups are markedly under-represented in the hunting population and the higher income groups are substantially over-represented. But again these differences should be taken cautiously because the data are not absolutely comparable. These data differ markedly from the results of other studies. For example, in the Ohio study it was found that only 8% of hunters earned more than $9000[1] while in the Michigan study 36% earned more than $10000. The main difference in the two studies was that, in Ohio hunters of all types of game were sampled indiscriminately, while in Michigan the study focused upon deer hunters. If data were available just for deer hunters in Ohio, even though deer hunting is not as important as in Michigan, the income distribution might be quite similar. It seems likely that the key variable here is not the state of residence but the game which the hunter seeks.

The contrast in data between Arizona and Michigan is somewhat less pronounced but is nonetheless very evident. In Arizona 22% of the hunters and fishermen in Davis' study earned more than $10000 as contrasted with the 36% for Michigan.[2] This high income level for Michigan deer hunters may furnish a clue as to where to check first in our analysis in Chapters V and VI.

Education

Since the level of income for Michigan hunters is higher than would have been expected if hunters were attracted proportionately

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[1] "The Hunter-Who Is He," p. 259.

[2] Davis, p. 15.

from all income strata, it is not unreasonable to expect educational levels to be greater for the hunter population than for the general population. This can be expected because the two variables are usually very closely related. If in fact we do find that there are major differences in education, then we can be somewhat more confident that the income differences discussed above are real. The logic involved is that: (1) since income and education have been found to have an extremely high direct correlation in study after study, and (2) since educational levels are not as dynamic as income in a five to ten year period, we can assume that if there are substantial differences in the educational levels as well as the income levels for the same data, then real differences probably exist in both variables.

Now we shall check this proposition. The following table displays the data from the Michigan study and from the 1960 U.S. Census of Population.

Table 15. Educational levels for the general population and for the hunter population for Ingham, Alpena and Marquette Counties

County and Population Represented[1]	Grade School	Some High School	High School Grad.	Some College	4 or More Years of College	Total
Ingham						
Hunters	21%	15%	36%	20%	9%	101%
Gen. Pop.	30	19	25	11	16	101
Alpena						
Hunters	25	15	44	13	3	100
Gen. Pop.	51	18	21	4	5	99
Marquette						
Hunters	21	29	34	10	7	101
Gen. Pop.	40	21	25	7	8	101

[1] Statistics reported for the general male populations of Ingham, Alpena and Marquette Counties are from the 1960 U.S. Census of Population, Vol. 24, pp. 303, 301, and 305, respectively.

The problem of comparing 1960 data with 1968 data is still present but this time we can be a little less concerned for the reasons discussed above. This table depicts very clearly a general pattern in which the proportion of hunters who did not finish high school is under-represented, while high school graduates and those with some college are over-represented in comparison with the general population. The contrast between Ingham County and the other two counties for respondents with four or more years of college is quite interesting and perhaps important. In Ingham County these highly educated hunters are greatly under-represented while in the other two counties their representation in the hunting population is similar to their representation in the general population. This finding also lends support to the assertion in Chapter III that greater general interest will be shown[1] for hunting in the northern regions even among groups for which hunting is less important because of the generally higher value placed upon hunting. In this case, it has been hypothesized that hunting will be less important among higher socio-economic status groups of which education is one indicator. This hypothesis will be tested in Chapter VI.

The table also indicates that the ecuational level for the general male population is highest in Ingham County and followed in order by Marquette and Alpena Counties. The median value for the number of years of education for the general male population is 12.1 for Ingham County followed by 10.5 and 9.0 for Marquette and Alpena

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[1] In this case the proportion of the hunting population to the general population for each SES group is used temporarily as a proxy for interest.

Counties, respectively.[1] The median level of education is approximately 12 years for deer hunters in Ingham County while in Alpena and Marquette Counties average number of years the education for deer hunters is approximately 12.5 and 12 years, respectively. The data also tends to support the idea that people with less education are less likely to be deer hunters than residents with more education.

Summary

The hunter populations for Ingham, Alpena and Marquette seem to be very similar to the general population with respect to age, occupation and race. For sex, income and education, the hunter population differs significantly from the general population for the three counties. About 5% of the Michigan deer hunters interviewed in this study were women. Deer hunters were somewhat better educated than the general population from their counties. The most pronounced difference was in income although the differences are diminished considerably because of the time variable. The approximate median incomes were as follows:

Table 16. Median income of deer hunters and general population for Michigan counties

Population Sampled	Ingham	Alpena	Marquette
Deer Hunters	$10,530	$8,995	$8,835
General Population[2]	6,715	5,691	5,114

[1] U.S. Census of Population, pp. 303, 301, and 305.

[2] Ibid, pp. 327, 325, and 329.

The results of this study of Michigan deer hunters were found to be very similar to the findings of other hunter studies in terms of hunter sex, age and race. Significant differences were apparent for the number of years hunted, distribution within occupation types and income. The income of Michigan deer hunters was much higher than the national average for hunters. The Michigan, Ohio and the National surveys were quite similar in the proportion of blue collar and white collar workers. On the other hand, Arizona and the Northeastern U.S. had a much smaller representation of blue collar workers than in the other three studies.

The findings taken together seem to indicate that the greatest deviation from the expected is related to income, education and hunting experience. These variables will be central to our analytical focus in Chapters V and VI.

CHAPTER V

TESTING THE HYPOTHESES

An Assumption

It is necessary to make an assumption regarding the analytical model to be developed in this chapter in order to begin the development. The assumption, which was previously stated in Chapter III, is that most hunters are dependent on a variety of secondary information sources in order to form opinions concerning whether antlerless deer should be shot or not. This contrasts with an alternative assumption that hunters personally see enough in the field to arrive at what, to them, seems to be valid conclusions; and to arrive at these conclusions without consultation with any other person or exposure to any other information source. This alternative assumption is rejected on the grounds that most hunters probably see very little deer habitat except during hunting season. Even then for most hunters it is only for a few days and only during one season. For those hunters who have firsthand knowledge of the condition of the deer habitat, it is inconceivable that they would not test their ideas in the give and take of conversation with other hunters and that they would not be exposed to a variety of facts and points of view from mass media and other information sources. Each exposure to information could and probably would influence and modify original self conceived opinions, if such opinion formation patterns based on personal observation exist in the first place.

Our thesis, which must take the form of an assumption because adequate data are not available to test it empirically, is that almost no hunters form their opinions strictly or even primarily from what they have seen while hunting or while they are in the out-of-doors for other reasons. According to this assumption personal observations have the affect of confirming, or in some instances, altering opinions which were originally formed by information from and attitudes of his peers and from information via various other sources.

There is one bit of data from this study which indirectly sheds some light on the hunters' perception of hunter opportunities to make valid observations and then to make meaningful interpretations of what they have seen. The respondents were asked the question, "106. Please tell which group listed, in your opinion, knows the most about the deer herd. (THEN ASK THE RESPONDENT WHICH GROUP IS SECOND, THIRD, FOURTH, ETC. ACCORDING TO KNOWLEDGEABILITY.)"[1]

1. Expert hunters ____
2. Conservation Department biologists ____
3. Foresters and others who work in the woods ____
4. Sportsman's club officials ____
5. Business men who have an opportunity to talk to many different hunters ____

According to hunter rankings expert hunters, biologists and foresters were given the highest rankings overall. Data for the first three rankings for each of the three were as follows:

	Ranking		
	1	2	3
Expert hunters	62	82	114
CD biologists	178	76	41
Foresters and other woodsmen	87	140	71

[1]See question 106 in the Interview Schedule in Appendix A.

Clearly hunters rank hunters (expert hunters at that) as third most knowledgeable. Thus indirectly it can be reasoned that since, (1) hunters see themselves as less knowledgeable than two other observer groups which have more intimate contact with the resource, and (2) since almost all hunters have an opinion concerning the antlerless deer hunting policy, one could conclude that hunters are more heavily dependent upon secondary information than, for example, biologists. The large volume of rejoinders and replies to published work and the replication of studies to verify the findings of colleagues, testifies to the fact that biologists are very dependent upon one another for validation of individual conclusions.

Data Analysis

In analyzing these data it was decided that extensive use should be made of indices to test the hypotheses stated in Chapter III. Zeisel suggests that indices are valuable in measuring attributes for which one response to a single question would not serve as an adequate indicator.[1] Such indices are particularly important when trying to measure such attributes as socio-economic status (SES) or trying to assign a single value for each respondent on a rating scale for multi-dimensional behavior such as, for example, political activism. An index of political activism would likely include a measure of voting behavior, but

[1] Hans Zeisel, Say It With Figures (New York: Harper and Row, 1957) pp. 91-127. In Chapter V Zeisel discusses in detail index development and the four problems commonly associated with index-building. These problems involve validity, utility, economy and clarity. Throughout the analysis which follows, where indices have been used, careful attention has been given to Zeisel's suggestions and warnings. Chapters VIII and IX were also very helpful in the actual analysis of tabular data. Extensive use was also made of A. E. Maxwell, Analyzing Qualitative Data (New York: John Wiley and Sons, Inc. 1961) for the actual application of contingency analysis techniques to this study.

would undoubtedly include other things such as activity in political campaigns, and attempts to influence governmental decisions.

Attitude Toward Antlerless Deer Hunting Policy

Hunter opinion surveys have been conducted regularly by the DNR since antlerless deer hunting was instituted. On a short mailed questionnaire which is sent out each year to a randomly selected sample of deer hunters, the question is asked: "We would like your opinion about hunting antlerless deer. Do you think it is necessary to shoot a limited number of does and fawns, as well as bucks in some parts of Michigan?" The following table depicts the results between 1956 and 1966.

Table 17. Hunter opinions between 1956 and 1966[1]

Response	Year 1956 (%)	1957 (%)	1958 (%)	1959 (%)	1960 (%)	1961 (%)
Yes	47.4	47.2	60.3	60.8	42.5	52.9
No	46.1	47.8	37.1	35.8	55.4	46.2
No Answer	6.5	5.0	2.6	3.4	2.1	.9
	1962 (%)	1963 (%)	1964 (%)	1965 (%)	1966 (%)	
Yes	57.3	65.2	70.0	42.4	47.7	
No	41.1	31.0	29.1	54.6	49.2	
No Answer	1.6	3.8	.9	3.0	3.1	

[1] L. A. Ryel, "Deer Hunter Opinion Survey, 1966" Michigan Department of Conservation Research and Development, Report No. 119, 1967.

Ryel observes that, "Hunter responses each year have been closely related to the nature of the various deer seasons. There is a high significant correlation (.89) between buck kill and the percent of "yes" replies for the 11 surveys."[1]

The same question was asked in this study. The response was: Yes - 65.4%; No - 29.9%; No Response - 4.7%. This distribution had a much higher proportion of "yes" responses than for most years of the DNR surveys. However, the two groups of data are not strictly comparable because the respondent sample is much smaller for this study and is restricted to three counties while Ryel's data is from a random sample of hunters from throughout the state. Also, the sample for this study unduly weights the attitudes of U.P. and northern Lower Peninsula hunters because only about one-third of the respondents were from southern Michigan but the actual proportion of hunters from that area is much larger than one-third. (See Table 2, page 25.

It is somewhat misleading to interpret the "yes" response as an endorsement of the policy. This response simply indicates that this proportion of respondents agrees that under certain unspecified conditions does and fawns should be shot. A probe question was included in the interview for this study to measure in greater depth the attitudes of the respondents who indicated "yes." The probe question asked which of the following responses best fitted the respondent's opinion.

29.9% 0. A "no response in the question above.

6.5% 1. More antlerless deer be taken than in the last few years.

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[1] Ibid.

36.8% 2. Less antlerless deer be taken than in the last few years.

22.0% 3. About the same number of antlerless deer be taken as in the last few years.

4.7% 4. No opinion.

Total 99.9%

In reality responses 0 and 2 both indicate disagreement with the policy. The difference is one of degree. The respondents who answered "no" to whether some antlerless deer hunting should be allowed are extreme in their opposition. The second group agrees that some antlerless deer probably need to be taken but that the magnitude of such kills in recent years is greater than they are willing to support. In effect the responses to the two questions when combined yield an attitude scale as follows:

29.9% - Strong opposition - No antlerless deer should be taken.

36.8% - Moderate opposition - Fewer antlerless deer should be taken.

22.0% - Moderate support - About the same number of antlerless* deer should be taken.

6.5% - Strong support - More antlerless deer should be taken.*

It is logically correct to assert that approximately two-thirds of the hunters interviewed for this study actually oppose the antlerless deer hunting policy as it is presently being administered.

Regional Differences

Hypothesis 1. Hunters from Ingham County, as a group, will be most supportive of the antlerless deer hunting policy when compared to

*The "moderate support" and "strong support" responses were combined to form the "support" category in the Index of Attitude Toward Antlerless Deer Hunting.

the other regions. Northern Lower Peninsula hunters will be least supportive.

The above hypothesis in effect makes two assertions:

(1) Significant differences exist among the counties in the magnitude of support and opposition to antlerless deer hunting.

(2) That the direction of these differences is in the order of Ingham County most supportive and Alpena County least supportive. This hypothesized ordering is based upon the discussion in Chapter I on attitudinal differences among the regions.

The first implication is supported by the data which indicates that significant differences do exist among the three counties. However, the hypothesized rank order of support is not supported.

Table 18. · Attitude toward antlerless deer hunting policy by county

	Attitude Toward ADP			
Counties	Strongly Opposed (%)	Moderately Opposed (%)	Support (%)	Total
Ingham				101
	.277	.288	.495	100%
Alpena				105
	.276	.467	.257	100%
Marquette				114
	.377	.456	.167	100%

Chi Square = 32.3167 4 D.F., P < = .001

As hypothesized, Ingham County hunters are most supportive of the three groups of hunters. In fact, there is a greater statistical difference between Ingham County hunters and the other two counties than there is between Alpena and Marquette Counties' hunter attitudes. On the other hand, Alpena hunters are somewhat more supportive than Marquette hunters. This observed relationship runs counter to the hypothesized relationship. However, the data indicate that the hunters from both the counties are overwhelmingly opposed to the policy.

This finding necessitates an altering of the ordering of counties according to support and opposition in the sub-hypotheses below. The main reason for including the sub-hypotheses is to try to explain some of the observed differences in attitude among the counties.[1] Thus, we will expect the independent variables to have the greatest affect upon respondents according to the revised order.

Hypothesis 1-A

A. Significant differences will exist among the counties in the degree of alienation (powerlessness) regarding the governmental process among hunters. Marquette County hunters will manifest the greatest amount of alienation, and Ingham County hunters will manifest the least alienation.

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[1]The inference should not be made here that we are necessarily referring to a cause-effect relationship when the term explanation is used. There is justification, within the constraints of the research methods used in this study, to develop reasonable hypotheses based on the assumptions of variable independence and dependence and to seek to demonstrate different kinds of relationships within the relevant conceptual array. In short, it is perhaps fair to say that this study is more an exercise in hypothesis development than of hypothesis testing.

In order to obtain an indication of the role of general political alienation in the formation of specific attitudes the respondents were asked, "101. Does the Federal government represent the interests of the pople or the interest of the leaders?" The distribution of responses was:

	Number	Percent
People's interest	177	.61
Leader's interest	114	.39
Total	291	1.00

For hunters who believe that the Federal government serves primarily the interests of national leaders, a serious lack of confidence in the governmental process can be assumed. After all, the assumption is built into our political system that the government should be responsive to the citizenry. Powerlessness in achieving responsiveness is certainly implied by the belief that the Federal government does not serve the interests of the people.

Table 19 indicates that there are no significant statistical differences in respondent alienation among the counties.

Table 19. An indication of alienation among the counties

County	Not Alienated (%)	Alienated (%)	Total
Ingham			92
	.598	.402	100%
Alpena			97
	.567	.433	100%
Marquette			102
	.657	.343	100%

Chi Square = 1.7458, 2 D.F., P > .05

The data below also indicate that there are no significant statistical differences in attitude toward the policy between those who are alienated and those who are not.

Table 20. Attitude toward the policy among the unalienated and the alienated

	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Not alienated				171
	.252	.409	.339	100%
Alienated				106
	.368	.397	.245	100%

Chi Square = 4.9839, 2 D.F., P > .05

In this case a trend seems to be evident, however. Those who show no evidence of alienation from the government process tend to be more supportive of the policy while alienated respondents seem generally to be more opposed to the policy.

Now in order to see how alienation is interacting with attitude among the counties, the two variables were tested against each other holding county constant. In Ingham County there seems to be little, if any, relationship between respondent feelings of alienation toward the governmental process and the attitudes which he holds toward the antlerless deer hunting policy.[1] In Alpena County the differences in attitude were not great but there was some indication that non-alienated

[1] See Table 1, Appendix B.

people were more supportive of the policy than alienated respondents.[1] In Marquette County, however, there was clearly a relationship between alienation and opposition to antlerless deer hunting.[2] Hunters who showed evidence of alienation were much more likely to oppose the policy than non-alienated hunters in Marquette County.

Summary: There is some evidence of a relationship between alienation toward the governmental process and the attitude which the hunter holds concerning whether the state should permit does and fawns to be shot. In other words, if the hunter thinks the Federal government does not act in his best interests, he is also likely to believe that the state is not acting in his best interests either regarding the state's wildlife management program. It is not very surprising to find that Marquette hunters feel the most alienated from the governmental process because this is the area of Michigan where many people feel that their interests are not represented as fully by the government as are the interests of other parts of the state.

Hypothesis 1-B

B. Significant differences will exist among the counties in the importance of success in killing a deer to individual hunters. The importance of success will be most evident among Marquette County hunters and least evident among Ingham County hunters.

An Index of the Importance of Success was developed which included the following items:[3]

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[1] The Index of Importance of Success is discussed in detail in Appendix C.

66. Would you think more highly of a fellow-worker if he got a buck during the deer season?

Yes ____ No ____

107. (HAND RESPONDENT CARD) How do you feel about it when you do not get a deer?

1. Not much bothered.
2. Somewhat disappointed.
3. I feel very disappointed.
4. It makes me mad.

118. One can get almost as much satisfaction from a hunt even if he doesn't kill a deer.

1. Disagree.
2. Partially agree.
3. Agree.

Responses 66-1; 107-3,4; and 118-1 were taken as indicating a high value orientation regarding hunting success. It was assumed that responses 107-2 and 118-2 indicate intermediate interest with obtaining a trophy of the hunt while responses 66-2; 107-1; and 118-3 were regarded as indicating that a successful kill was not the primary measure of value derived from the hunt.

The rationale for testing this hypothesis is that if a hunter attaches great significance to his success in killing a deer then any factor which he perceived as reducing his chances of success will antagonize him. It is postulated that these hunters are more likely to oppose antlerless deer hunting and in those cases where opposition is mutual, to more strongly oppose it than other opponents who attach less value to success.

When Importance of Success is plotted for each county, the distribution is highly significant.

Table 21. The importance of success to hunters from the three counties

County	Importance of Success: Little Importance (%)	Moderately Important (%)	Highly Important (%)	Total
Ingham				108
	.685	.176	.139	100%
Alpena				109
	.413	.303	.284	100%
Marquette				119
	.403	.261	.336	100%

Chi Square = 24,1318, 4 D.F., P < = .001

Hunting success is most important to Marquette hunters and least important to Ingham hunters.

Next, the relationships between attitude and the importance of success is shown.

Generally those respondents who place a small amount of value upon success are most supportive and those who place a great deal of value upon success are generally most likely to oppose antlerless deer hunting.

When the importance of success to the hunters is related to hunter attitudes toward the antlerless deer hunting policy for each county, much of the relationship observed in Table 22 disappears.[1] The only

[1] See Tables 4, 5, and 6, Appendix B.

Table 22. The effect of the importance of success upon hunter attitudes

Importance of Success	Attitudes			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Little				157
	.242	.389	.369	100%
Intermediate				79
	.380	.367	.253	100%
High				84
	.381	.405	.214	100%

Chi Square = 10.2043, 4 D.F., P < = .05

county in which the importance of success seems to affect attitudes toward the policy is Alpena.[1] Hunters in Alpena who seem to place a high degree of importance upon success are most likely to oppose the policy and hunters for which success is a less important part of the hunt are less likely to oppose the policy.

Summary: The importance of success to the hunters is a relevant influence of opposition in Alpena County but does not seem to be a significant influence in the other two counties.

Hypothesis 1-C

C. Significant differences will exist among the counties in the status symbolism associated with success in the minds of hunters. Hunting success will have the strongest status symbolism for Marquette hunters and the least status symbolism for Ingham hunters.

[1] See Table 5, Appendix B.

To further probe the question of whether the desire for success plays a role in the kind or intensity of attitude toward the policy which is formed, the concept of status symbolism is considered here. What is it about killing a deer which makes such success important to so many people? One explanation is that the status position of hunters in some peer groups is enhanced by their killing a deer.

The respondents were asked the question,

"66. Would you think more highly of a fellow-worker if he got a buck during the deer season?"

Yes ____ No ____

This indicator was considered a rather conservative measure of status symbolism since the respondents were asked about the respect they would feel toward the accomplishment of another person. It seems safe to assume that anyone whose respect for another would be increased by that person's success would also feel that his own status would be increased by his hunting accomplishments.

When respondent response to question 66 is used in a contingency table with county of residence there are significant differences among the counties in the status which is conferred upon people because of success.

Marquette hunters showed the highest regard for success in hunting and Ingham County hunters esteemed hunting prowess the least. However, it should be pointed out that less than half the hunters in any of the counties were willing to admit that they would think more highly of a successful fellow-worker. Thus esteem in this connection is more a matter of degree than it is a matter of absolute differences.

Table 23. Status of success among the counties

County	Status (%)	Little Status (%)	Total
Ingham			105
	.238	.782	100%
Alpena			109
	.431	.569	100%
Marquette			117
	.487	.513	100%

Chi Square = 15.6102, 2 D.F., P < = .001

When all the respondents are considered together, the conferral of high status seems to be associated with opposition to the policy while for respondents who do not esteem peers more highly for their success as a hunter tend to be more supportive of the policy.[1] When the counties are analyzed separately status seems to be associated with attitude as described above, only in Alpena County.[2] It seems that these differences persist in Alpena County primarily because it is a transitional county between the other two. Ingham County hunters generally are most supportive of the policy regardless of how they feel about status while Marquette hunters tend to oppose the policy, regardless of how they feel about status.

Summary: Status consciousness does seem to be related to the attitude which the respondent has toward antlerless deer hunting even

[1] See Table 7, Appendix B.

[2] See Tables 8, 9, and 10, Appendix B.

though the relationship is masked in two of the county sub-populations. It is necessary to make an inference from the data available in order to assert that status consciousness may prompt some hunters to oppose the policy because it is perceived as a threat to the attainment of additional status. At best, however, such an explanation offers only a partial explanation for why some hunters oppose the policy while others do not. The opposition of Alpena hunters is partially explained by the status aspiration concept but we must look further for the causes of opposition in Ingham and Marquette Counties.

Hypothesis 1-D

D. Significant differences will exist among the counties in the importance of hunting to the hunters. The hunting experience will be most important to Marquette hunters and least important to Ingham County hunters.

An Index of Deer Hunter Interest was developed to give some indication as to whether the importance of hunting to the respondent has anything to do with the kind of attitude which he has toward Michigan deer hunting policies. The Index of Deer Hunter Interest is described in detail in Appendix D.

This index should be clearly distinguished from the other indices which have been used. The Deer Hunter Interest Index is designed to measure the hunter's commitment to hunting irrespective of his compulsions for getting a trophy from the hunt. In other words, the hunt may be very important to hunter even though he does not care whether he kills a deer or not. For many people just seeing a deer is an incomparable thrill. It seemed relevant at the outset of this research

to ask what the effect of such devotion to hunting would be upon hunter attitudes toward the state's deer hunting policies.

Table 24 shows that the distribution of deer hunter interest is approximately the same in each of the three counties.

Table 24. Deer hunter interest in the three counties

County	Deer Hunter Interest			
	Low (%)	Medium (%)	High (%)	Total
Ingham				108
	.259	.677	.074	100%
Alpena				109
	.202	.670	.128	100%
Marquette				119
	.143	.740	.067	100%

Chi Square = 8.2531, 4 D.F., P > .05

Deer hunter interest does seem to affect attitudes, however, as is shown below.

Table 25. The effect of deer hunter interest upon attitudes toward the policy

Deer Hunter Interest	Attitudes Toward the Policy			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				66
	.439	.212	.349	100%
Medium				228
	.285	.434	.281	100%
High				26
	.231	.423	.346	100%

Chi Square - 12.0970, 4 D.F., P < = .05

When we look at the relationship between deer hunter interest and attitudes toward the policy among the counties, the following results obtain: There are no significant differences in attitudes among the three interest groups in Ingham County.[1] In all interest groups there is strong support for the policy. In both Alpena and Marquette Counties significant differences are not evident in attitudes among the respondents with different levels of interest.[2] In Marquette County a trend of increased support with increased interest is observable, however.[3]

Summary: The conclusion derived from these data is that hunter interest does not play a significant role in inducing opposition attitudes toward wildlife harvest policies among the residents hunter populations using the county as the unit of analysis. In fact, the small amount of evidence which exists suggests there is increased support with increased interest in the two northern counties.

Hypothesis 1-E

E. Significant differences will exist among the counties in the proportion of peers who hunt. Marquette hunters will have the largest proportion of peers who hunt while hunters from Ingham County will have the smallest proportion of peers who hunt.

The hunters were asked in two different questions to estimate the proportion of their fellow-workers, whom they know, who hunt and the proportion of close friends who hunt. It was felt that these two

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[1] See Table 11, Appendix B.

[2] See Table 12, Appendix B.

[3] See Table 13, Appendix B.

questions would give some indication of the interest in hunting within two of the hunter's peer groups. Implicit in the expectation of this hypothesis is the idea that there is a relationship between interest of peers in the activity and the attitude which the individual develops.

Table 26. Proportion of fellow-workers who hunt among the counties

County	Proportion of Fellow-Workers Who Hunt			
	Small (%)	Medium (%)	Large (%)	Total
Ingham				95
	.495	.231	.274	100%
Alpena				100
	.130	.240	.630	100%
Marquette				116
	.293	.241	.466	100%

Chi Square = 34.9827, 4 D.F., P < = .001

The hypothesis, as it relates to fellow-workers, is generally supported although there is generally greater working group interest among Alpena hunters than among Marquette hunters. The differences in peer group interest among close friends for the counties were not as great as for work group peers but nonetheless are statistically significant.

Again a somewhat larger proportion of close friends of the Alpena respondents were hunters than in Marquette which is counter to the hypothesized order.

Thus the hypothesis is supported that differences exist among the hunter populations of the three counties in the proportion of peers who

Table 27. The proportion of close friends of the respondents who hunt from the sample counties

County	Proportion of Close Friends Who Hunt			
	Low (%)	Medium (%)	High (%)	Total
Ingham				106
	.292	.255	.453	100%
Alpena				108
	.120	.241	.639	100%
Marquette				118
	.169	.246	.585	100%

Chi Square = 12.2774, 4 D.F., P < = .05

hunt. However, the order is not as predicted. Ingham County hunters have the smallest proportion of fellow-workers who hunt while Alpena hunters have the largest. This observation follows the same pattern as Table 2 which gives the proportion of the total population from the three regions who hunt.

To test whether there is a relationship between peer group interest (as measured by the number peers who hunt) and the attitudes which the respondents hold concerning antlerless deer hunting, the following attributes were compared by correlation analysis:

1. Work group interest x respondent attitude.
2. Friendship group interest x respondent attitude.
3. Each of the above holding county constant.

No significant differences in attitude were found among the various interest level groups in either work or friendship groups.[1] When county was held constant for the variables no relationship was evident for any of the counties.

Summary: Apparently peer group interest in hunting per se, has no bearing on whether a hunter supports or opposes antlerless deer hunting.

Hypothesis 1-F

F. Significant differences will exist among the counties in hunter perception of peer groups opposition to antlerless deer hunting. Marquette hunters will perceive the largest proportion of peer group opposition to antlerless deer hunting while Ingham County hunters will perceive the least.

The possible tie between the attitudes of a person's peers and his own attitudes may offer a very direct explanation for observed differences in respondent attitudes among the counties. It seems reasonable to expect that a larger percentage of the peers of Marquette hunters will oppose antlerless deer hunting than will the peers of Ingham hunters if there is a relationship between personal attitudes and peer group attitudes.

The hunters in the three county sample were asked a series of questions[2] concerning whether they had discussed the antlerless deer hunting question with any of the following types of persons:

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[1] See Table 14 for data regarding fellow-workers and Table 15 for results for friends.

[2] The question format is found in Appendix A, question 44.

1. Relatives
2. Fellow-workers
3. Government officials
4. Conservation Dept. employees
5. Social acquaintances
6. Neighbors
7. Immediate family
8. Hunting companions
9. Other hunters
10. Sportsman club officials

If the respondent indicated he had talked to any of the above types of people he was asked approximately how many he had discussed the controversy with and how many supported the policy.

In terms of peer group influence on attitude formation[1] the list has been divided into two groups; (1) those who would likely have an important role in influencing the respondents' attitudes and (2) those who would likely influence the respondent in a less direct manner, i.e., those who would either confirm existing opinions or who could introduce a counterpoint of view but who would not necessarily be in a position to exercise social pressure to achieve attitude conformity.

The former group includes: relatives, fellow-workers, neighbors, immediate family and hunting companions. The second group includes: government officials, Conservation Department employees, social acquaintances, other hunters, and sportsman club officials.

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[1]When reference is made to the influence (or to the effect of, or to the impact of, or to numerous other synonyms) of a peer group's attitudes upon individual attitudes we are not necessarily asserting a direct causal relationship. It does, however, seem reasonable to interpret close congruence between individual and group attitudes as indicating that an interaction of some kind is occurring. In most cases the group attitude can be considered the independent variable and the individual's attitude is reasonably regarded as the dependent variable. This seems logical in light of the fact that people are more likely to be influenced to conform to group norms than groups are to shift their thinking unilaterally to conform to any given individual's attitudes.

One of the most noticeable characteristics of these responses is the large number of hunters who had not talked to each of the types of persons.

Primary Influences

	Number of hunters who had not talked to the following:
Relatives	96
Fellow-workers	112
Neighbors	208
Hunting companions	142
Immediate family	181

Primary Sources of Influence
Relatives

Secondary Influences

	Number of hunters who had not talked to the following:
Social acquaintances	203
Other hunters	225
Government officials	315
Conservation Dept. officials	250
Sportsman club officials	181

Detailed explanations will be given here regarding the analysis of the influence of the opinions of relatives upon individual hunter attitudes. For the rest of the group influences we shall simply state our conclusions with reference to the appropriate tables in the appendix. The logic of the analysis is relatively straightforward and the rationale for each group influence is the same as that outlined for relatives.

The distribution of favorable and negative attitudes of relatives among the counties is similar to the distribution of respondent attitudes toward the policy. In Ingham County about one-half of those interviewed indicated that more than 50% of their relatives supported the policy while the other half indicated that more than 50% of their relatives whom they had talked to about the policy opposed it.

Table 28. The attitude of relatives toward the policy in the three counties

	Attitude Distribution of Relatives		
County	Majority Oppose (%)	Majority Support (%)	Total
Ingham			61
	.492	.508	100%
Alpena			82
	.805	.195	100%
Marquette			93
	.882	.118	100%

Chi Square = 31.9528, 2 D.F., P < = .001

However, in both Alpena and Marquette Counties the relatives as well as the respondents were overwhelmingly opposed.

Now we want to see if there is any relationship between respondent attitudes and the attitudes of his relatives toward the issue.

A relationship between the two is obvious. When one's relatives oppose the policy, the individual is very likely to oppose too, and when his relatives support the policy, he is likely to support it also.

Table 29. The comparison of hunter attitudes with the attitudes of relatives

Distribution of Attitudes Among Relatives	Respondent Attitudes			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose				171
	.345	.480	.175	100%
Majority Support				56
	.107	.286	.607	100%

Chi Square = 39.8930, 2 D.F., P < = .001

Now the question becomes, "What is the relationship of the counties to this observed strong correlation?" By holding county constant and measuring the effect of the attitudes of relatives upon individual attitudes, we can determine where the coincidence of the two attitude attributes is high and where it is low. Where the individual respondents' attitudes conform closely to the predominant attitudes of their relatives, we can assume the latter influenced the former to one degree or another. Where they are not very similar it is obvious that the attitudes of relatives is not a dominant factor in influencing respondent attitudes.

Hunters in Ingham County conform to family attitudes for the most part except that more hunters support the policy although their families oppose it, than would be expected.

Conformity is even greater in Alpena than in Ingham County.

Table 30. The relationships between respondent and the attitudes of relatives regarding antlerless deer hunting in Ingham County

Distribution of Attitudes Among Relatives	Respondent Attitudes			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose				29
	.310	.379	.310	100%
Majority Support				30
	.100	.200	.700	100%

Chi Square = 9.2562, 2 D.F. P < = .01

Table 31. The relationship between respondent and attitudes of relatives in Alpena County

Distribution of Attitudes Among Relatives	Respondent Attitudes			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose				65
	.292	.569	.139	100%
Majority Support				15
	.000	.400	.600	100%

Chi Square = 16.5724, 2 D.F., P < = .001

Two features of the data add insight into the problem of analyzing attitude formation. In the first place, attitudes are more moderate than would have been expected for those hunters who have relatives with predominantly opposition views. Secondly, for those hunters whose

relatives generally support the policy there is almost a religious overtone. Where a minority adheres to unpopular beliefs greater solidarity is observed in the group. This is certainly the case here. For example, nobody opposed the policy whose relatives generally support it.

Marquette is a different case. Here individual conformity to family attitudes is not as consistent.

Table 32. The relationship between respondent and the attitudes of relatives in Marquette County

Distribution of Attitudes Among Relatives	Respondent Attitudes			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose				77
	.403	.441	.156	100%
Majority Support				11
	.273	.364	.364	100%

Chi Square = 2.8412, 2 D.F., P > .05

In this case there is no apparent significant difference in effect. Here the non-conformity is among those whose relatives support the policy. These respondents are almost as likely to oppose the policy as to support it. Perhaps the pressure to conform to the beliefs commonly held in the region is more than these hunters can resist.

Summary: The attitudes of relatives toward the policy appear to have a strong influence on the attitude which individual hunters demonstrate in the various counties.

Fellow-Workers

There is a significant difference among the counties in the proportion of work group peers of the respondents which supports and opposes the policy.[1] The proportion of respondents with fellow-workers who generally support the policy in Ingham County is almost as great as the proportion of hunters whose work group peers generally oppose the policy. However, in the other two counties, in almost nine cases out of ten, more than half of the respondent's fellow-workers oppose the policy.

There is also a strong correlation between hunter attitudes and group attitudes.[2] If a hunter's work group generally supports the policy then it is very likely that he will too. When the group opposes the policy the hunter is likely to oppose it too, although a larger number of hunters do support the policy in spite of group opposition than one would expect given the strong relationship between the two variables.

In order to measure the effect of work group attitudes upon respondent attitudes among the counties, county of residence was held constant and the two attitudinal attributes were run against each other.[3] The result was that the high degree of conformity between individual attitudes and group attitudes tended to diminish in Ingham and Marquette Counties and disappeared altogether in Alpena. As in the general table, the attitudinal deviants in Alpena were in large measure supporters whose fellow-workers generally oppose the policy.

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[1] See Table 16, Appendix B.

[2] See Table 17, Appendix B.

[3] See Tables 18-20, Appendix B.

Summary: The attitudes of fellow-workers do not seem to have a significant effect on the formation of individual hunter attitudes among the counties.

Neighbors

As with previously discussed groups, the proportion of the respondent's neighbors who support policy is very close to the proportion who oppose the policy in Ingham County while in the other two counties the proportion of hunters with a majority of neighbors who support the policy is very small.[1]

As before, when the respondents from the three counties are lumped together and the congruence between group and individual attitudes is observed the relationship is quite strong.[2] However, when the counties are analyzed separately Ingham is the only county in which their relationship persists. One reason for the lack of statistical significance in the two northern counties is because very few of the hunters questioned support the policy and neither do most of their neighbors.

Summary: The influence of neighbor attitudes upon individual attitudes appears to be negligible.

Immediate Family

This question was intended to be more group specific than the earlier question concerning the attitude of relatives. This group involved principally parents, spouses and children. As would be

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[1]See Table 21, Appendix B.

[2]See Table 22, Appendix B.

expected, the hunters and their close families agreed with one another very consistently about the policy both when respondents from the three counties were combined[1] and when they were analyzed separately.

Summary: There is strong agreement between the respondents and their close relatives concerning the policy. However, it is difficult to rationalize a dependent-independent relationship. It is difficult to tell whether the respondent influenced his close family to form the opinion which they hold or whether they influenced him in his attitude, or both. Since most of the respondents were heads of households who undoubtedly have great influence with their spouse and children and some influence upon their parents, it is probable that in many instances individual attitude is the independent variable in this soical group and group attitude is the dependent variable. This is opposite to the direction of influence which has been rationalized for the other relationships.

Hunting Companions

It was expected that the attitudes of hunting companions would significantly influence individual attitudes, when this study was being planned. The results confirm this hunch.[2] In fact, it appears that there is greater congruence between individual and group attitudes than for any other relationship analyzed.

Government Officials

The intent of this question was to see if the respondent had any notion of how his elected officials felt about the policy. The

[1] See Table 23, Appendix B.

[2] See Tables 24-27, Appendix B.

thinking here was not so much that the attitudes of government officials had significantly influenced respondent attitudes but that such knowledge might offer some measure of support to the respondent who perceives the attitude of his intimate reference groups as being quite variable. It turned out that only a minute percentage of the hunters had talked to a government official concerning the issue and there was no evidence that these discussions had a significant influence on the personal convictions of the hunters.[1] It is noteworthy that almost twice as many of the respondents who had talked to an official were told by the official that he opposed the policy as were told that he supported it.

Summary: Not enough evidence is available to say conclusively whether the attitudes of government officials have influenced those hunters who have talked to them, but it does seem to be a fact that very few people could have been influenced by them in any personal way concerning the policy.

Department of Natural Resources Employees

Again a primary influence is not expected to be present in the relationships between a DNR employee and hunters. However, in those cases where a hunter has been told by an employee that he personally opposes the policy it could not help but influence his attitude regardless of what prompted the employee to disagree with the policy.

More than 40% of the hunters indicated that most of the DNR employees that they had talked to opposed the policy.[2] In Marquette

[1] See Table 28, Appendix B.

[2] See Table 29, Appendix B.

a majority of the hunters who had talked to an employee claimed that more than 50% of the employees opposed the policy.

Summary: Although many people felt that a majority of Department of Natural Resources employees that they had talked to opposed the policy, there is little evidence available to assess the influence of such perception on the formation of attitudes.

Social Acquaintances

Generally, the attitude of the respondent is quite similar to those of his social acquaintances.[1] However, the data indicate that the effect is substantially less uniform when each county is considered separately.

Summary: The attitudes of individual respondents do not seem to have been unduly influenced by the position taken by their social acquaintances.

Other Hunters

In addition to those whom he hunts with, many hunters likely have talked to other hunters in bars, stores, and other meeting palces. The data indicate that most of the hunters the respondents have talked to oppose the policy.[2] Apparently, hunters who support the policy are not very talkative to strangers about their support.

Summary: There is no evidence that these conversations with other hunters have had any real effect on attitudes of the individuals.

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[1]See Table 30, Appendix B.

[2]See Table 31, Appendix B.

Sportsman Club Officials

Only a small number of hunters have talked to hunting club officials. Interestingly enough, the club officials whom Ingham County hunters have talked to generally support the policy while the club officials whom hunters from the other counties have talked to overwhelmingly oppose the policy.[1] Significant impact from these conversations is not indicated by the data, however.

Sub-Hypothesis Summary

Significant influence on personal attitudes seems to exist in relation to the attitudes of: 1) relatives, and 2) hunting companions.

It seems plausible also that when a DNR employee tells a hunter that he opposes the policy that this has significant influence particularly in reinforcing opposition attitudes. The data are not very illuminating on this point, however. There is also strong congruence of attitude between the hunters and their immediate families. It is difficult to argue either way as to which is the independent variable, however.

Hypothesis 1-G

1-G Significant differences will exist among the counties in hunter perception of support or opposition to antlerless deer hunting by the mass media. Marquette hunters will perceive the mass media as being less supportive while Ingham County hunters will perceive the mass media as most supportive of the policy.

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[1] See Table 32, Appendix B.

The respondents were asked three questions (90, 92, 94) concerning their exposure to different types of mass media which often contain detailed information concerning deer hunting. The media included newspapers, radio and television, and hunting magazines. Each question was followed by questions (91, 94-A, 96) asking the respondent whether the media that he was exposed to supports or opposes antlerless deer hunting.

By looking at exposure to media, and perception of media position in relation to the individual's attitude, some measure of whether the media has had any real influence on attitude might be inferred. In other cases, where congruence is evident, respondent selective perception rather than actual media position may be what is being observed.

There were no significant differences among the three counties in exposure to any of the three forms of mass media. For magazines and radio and television there were no significant differences in the respondents' perception of the media's support and opposition to the policy.[1] However, there is some evidence that respondents who oppose the policy tend to believe that their local newspaper opposes the policy while hunters who support the policy generally tend to perceive their newspaper as supporting the policy.[2]

When the relationship between mass media support and opposition and individual attitudes is analyzed for each county, perception of mass media position seems to have very little to do with the attitude which the respondent has internalized concerning the policy.

Summary: The mass media apparently have played an insignificant role in the formation of hunter attitudes toward hunting policies.

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[1] See Tables 33 and 35, Appendix B.

[2] See Table 34, Appendix B.

CHAPTER VI

TESTING THE HYPOTHESES CONTINUES

Socio-Economic Status

The socio-economic status index consists of three attributes: education, occupation, and income. For each one of these attributes respondents were placed into one of three classes: high, medium and low according to the following data aggregations.

Table 33. Socio-economic status

Attribute	Low	Medium	High
Education	0-11 grades	High school grad-some college	College grad - grad work
Occupation[1]	Clerical, sales, operatives, farm workers, laborers	Farmers and farm managers, craftsmen, foremen, service workers except household	Prof., teachers, managers, officials, proprietors
Total Annual Family Income	Less than $7,999	$8,000-$9,999	$10,000 or above

In combining the data to form the index the following criteria were used:

(1) If the respondent has the same rating on two or more variables, assign him to that SES group.

[1]These occupational categories were derived on the basis of discussion in O. D. Duncan and P. M. Blau, The American Occupational Structure (New York: John Wiley, 1967) 520 pages; and R. Bendix and S. M. Lipset, Class, Status, and Power (New York: The Free Press, 1966) with special attention to pp. 309-334.

(2) If respondent has a different rating on each of the three variables, assign him to the medium SES group (Example: High income, Medium occupation, Low education - assign to medium SES).

(3) If data is not available for one variable, assign the respondent an SES rating according to the following criteria:

Low + High = Medium

Low + Medium = Medium*

Medium + High = High*

(4) If data are not available for two variables, assign the respondent according to the value for the variable that is known.

Using these criteria, every respondent (336) was assigned to an SES category. Credibility is added to the index by noting the fact that data were available for all three variables for 308 respondents. Twenty-seven of the respondents with missing data did not respond to one question. Most of these non-responses had to do with income. Only one respondent did not respond to two questions.

It can be demonstrated with regard to this index that no one variable could unduly affect the respondents overall SES rating even if the respondent were assigned to the inaccurate status group

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*The decision to weight the respondents toward the upper end of the continuum in the latter two combinations above was based on the assumption that if the respondent has achieved a higher status according to one attribute that that attribute is the better indicator of his overall status. The assumption is defensible because personal normative goals in the United States usually include the emphasis on getting as much education as possible, getting a good job that will increase people's respect for you, and making as much money as possible. If a person achieves more of one than another then he would try to use the higher achievement attribute to advantage while trying to reduce the effect of the low achievement attributes. In seeking to optimize his ranking in the social order the individual would by definition be exposing himself to a different social context which might significantly influence his perspective for forming his attitudes and beliefs.

according to one of these attributes. For example, it is obvious that all sales personnel in reality should not be lumped together for analytical purposes. A clerk in a dime store, who as a high school dropout makes $4,000, should not be aggregated with a pharmaceutical salesman who is a college graduate with perhaps some graduate work who makes $25,000 per year.

The flexibility and, I believe, the validity of the index can be demonstrated by using the examples above. Even though the pharmaceutical salesman is assigned to the low status group occupationally, he is assigned a high status value for both income and education and, thus, would be assigned to the high SES group when the variable values are combined. On the other hand, the sales clerk above is assigned a low status value for SES as prescribed by the fact that he has a low score on each of the three variables independently.

Status Differences

Hypothesis 2. Hunters from the highest socio-economic status level will be most supportive of the antlerless deer hunting policy when compared to the other SES groups. Low SES hunters will be least supportive.

The data bear out the hypothesis. Clearly there is a strong association between SES and attitudes toward antlerless deer hunting. With each increase in the SES level a greater proportion of hunters support the Department of Natural Resources policy. Also notice that in the "strongly opposed" column, strong opposition decreases with each increase in SES level. This indicates that there is a moderating effect of some kind associated with increased SES.

Table 34. Attitude toward antlerless deer hunting policy among the SES groups

SES	Attitude			
	Strongly Opposed (%)	Moderately Opposed (%)	Support (%)	Total
Low				119
	.429	.403	.168	100%
Medium				146
	.288	.390	.322	100%
High				55
	.127	.346	.527	100%

Chi Square = 28.3961, 4 D.F., P < = .001

Hypothesis 2-A.

A. Significant differences will exist among the three SES groups in the degree of alienation regarding the governmental process among hunters who oppose the antlerless deer hunting policy. Low SES hunters will manifest the greatest degree of alienation and high SES hunters will manifest the least alienation.

The influence of alienation on attitudes seems like a fruitful concept to consider in relation to SES groups as well as among the counties. As the directional hypothesis above indicates, it was expected that respondents from the low SES group would feel the greatest alienation (powerlessness) with respect to political processes. In turn, if alienation negatively influences attitudes toward specific governmental policies including "doe" hunting, it was expected that low SES respondents would most oppose the policy as demonstrated in

the previous hypothesis. The criteria for linking attitude to alienation is to establish that increased opposition is correlated with increased alienation, preferably for the hunter population as a whole, but necessarily for one or more SES groups. Table 35 does not support the idea that attitudes of alienation vary among the different SES groups.

Table 35. Alienation among different SES groups

SES	Attitude Regarding Political Processes		
	Unalienated (%)	Alienated (%)	Total
Low			105
	.610	.390	100%
Medium			134
	.612	.388	100%
High			52
	.596	.404	100%

Chi Square = 0.0403, 2 D.F., P > .05

Also it has already been shown in the discussion of alienation among the counties in sub-hypothesis I-A that alienation apparently does not significantly influence the attitudes of the hunting population as a whole (Table 19 in Chapter V). When the three SES groups are analyzed separately for the effect of alienation on attitude still no relationship can be discerned.[1] As a check on these results, those

[1]See Tables 36-38, Appendix B.

who strongly or moderately oppose the policy were isolated out and a check on the distribution of alienation among the SES groups was made. Still there were no significant differences so the results above were considered partially reaffirmed.[1]

Summary: Apparently the presence or lack of respondent alienation toward the political process contributes very little to the observed differences in attitude toward the policy among the various SES groups.

Hypothesis 2-B.

B. Significant differences will exist among the SES groups in the importance of success in killing a deer to the individual hunters. The importance of success will be greatest among low SES hunters and least important to high SES hunters.

The Index of Importance of Success will be helpful in analyzing this hypothesis as it was in analyzing hypothesis 1-B. Table 36 indicates that there is no significant association between the socio-economic status and the importance of success to the hunters.

A trend can be detected in spite of the lack of statistical significance. The proportion of hunters who view success as being of little importance decreases with decreasing SES while among hunters who place a high value on success the proportion decreases with increasing SES. Simply stated there is some indication that success is most important to low SES respondents.

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[1] See Tables 39-40, Appendix B.

Table 36. The importance of success to respondents from the various SES groups

SES	Level of Importance of Success: Little Importance (%)	Moderately Importance (%)	Very Important (%)	Total
Low				126
	.436	.262	.302	100%
Medium				154
	.500	.260	.240	100%
High				56
	.625	.179	.196	100%

Chi Square = 6.0010, 4 D.F., P > .05

Persons who highly esteem success are somewhat more likely to oppose antlerless deer hunting than are the hunters who are indifferent to success. When the SES groups are analyzed individually, respondent orientation to success seems to have no relationship to attitude in any of the three groups.[1]

Summary: The importance of success does not seem to contribute much to the observed differences among SES groups in their attitudes toward the policy.

Hypothesis 2-C.

C. Significant differences will exist among the SES groups in the status symbolism which is associated with hunting success in the minds of hunters. Hunting success will have the

[1] See Tables 41-43, Appendix B.

strongest status symbolism for low SES hunters and the least status symbolism for high SES hunters.

Differences do, in fact, exist among the SES groups in the status symbolism associated with hunting success.[1] The low SES group attributes the greatest proportion of deference to success while the high SES group, on the whole, is least impressed by hunting success. When the effect of status symbolism is measured against attitude for the three SES groups only the medium SES respondents seem to be significantly influenced in their attitudes by status aspirations.[2] Low SES hunters generally oppose the policy regardless of how they feel about status while high SES respondents are less likely to oppose the policy regardless of whether or not success has any status connotations to them.

Summary: Although status symbolism is associated with attitude, these results indicate that only a small part of the observed differences in attitude among the SES groups can be explained by differences in status symbolism attributed to success by the different SES groups.

Hypothesis 2-D.

D. Significant differences will exist among the SES groups in the importance of hunting to the hunters. The hunting experience will be most important to low SES hunters and least important to high SES hunters.

No significant differences in deer hunter interest are discernible among the SES groups.[3] However, it seems meaningful to go further and

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[1]See Table 44, Appendix B.

[2]See Tables 45-47, Appendix B

[3]See Table 48, Appendix B.

consider the relationship between deer hunter interest and attitudes. We previously noted in hypothesis 1-D that there is a tendency for hunters with the greatest interest to support the policy while hunters with the least interest are generally less supportive. However, when the three SES groups are analyzed separately, there is little evidence that interest plays much of a role in predisposing hunters to support or oppose the policy.[1]

Summary: Deer hunter interest seems to be related to attitudes, but it does not assist much in explaining the observed differences in attitude among the SES groups.

Hypothesis 2-E.

E. Significant differences will exist among SES groups in the proportion of peers who hunt. Low SES hunters will have the largest proportion of peers who hunt while high SES hunters will have the smallest proportion of peers who hunt.

Both fellow-workers and relatives were considered with respect to their importance as reference groups for respondents from the SES groups. The proportional distribution of peer group hunting activity was approximately the same among the SES groups for both fellow-workers and for close friends.[2] Thus, the hypothesis is not supported. This does not tell us, however, whether peer group interest, as measured by the proportion of peers who hunt, has anything to do with the kinds of attitudes which are formed by the respondents.

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[1] See Tables 49-51, Appendix B.

[2] See Tables 52-53, Appendix B.

When the amount of peer group activity for the two types of peer groups is measured against individual attitudes holding SES constant, none of the six tables display a significant difference.

Summary: Apparently, peer group interest does not furnish much of an indication as to why people feel the way they do about antlerless deer hunting.

Hypothesis 2-F.

F. Significant differences will exist among SES groups in hunter perception of the proportion of peer group opposition to antlerless deer hunting. Low SES hunters will perceive the greatest proportion of peer group opposition to antlerless deer hunting while high SES hunters will perceive the least opposition.

We have already discussed the influence of peer groups attitudes upon individual attitudes within the counties in that part of Chapter V entitled "Hypothesis 1-F." In this section we will analyze the same influences among the various SES groups.

Primary Sources of Influences

Relatives. There do not appear to be any statistically significant differences among hunters from the three SES groups in the proportion of relatives who support or oppose the policy.[1] However, there is clearly a trend of a larger proportion of relatives supporting the policy with each increase in status level. When the effect of group attitudes on individual attitudes is considered for each SES group, the following relationships were observed:

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[1] See Table 54, Appendix B.

1. For low and medium SES respondents there is significant conformity of individual attitudes with group attitudes.[1]
2. High SES respondents tended to be more supportive of the policy regardless of how their relatives felt about the policy.[2]

Summary: Among low and medium SES groups the attitudes of relatives seem to play an important role in influencing opinions. However, among the high SES group no significant influence is apparent.

Fellow-Workers. It was found that the amount of support and opposition among relatives is not statistically different among the three status groups. However, when fellow-workers are considered, we find that there are significant differences among the groups.[3] These findings do not come altogether as a surprise. A person's relatives likely would come from various socio-economic levels, while on the other hand, it is likely that a person's work peers generally have about the same education, income, and occupational status as the respondent; thus, by definition they would be from the same status group. It has already been demonstrated that among the respondents, high SES persons were most likely to support the policy and low SES persons were least likely to support it. Thus, if a person's work peers are from the same SES group and SES influences attitudes, then we would expect a person's work peers to have many of the same attitudes as the respondents.

When SES is held constant and the groups are carefully analyzed, the data indicate that:

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[1]See Tables 55-56, Appendix B.

[2]See Table 57, Appendix B.

[3]See Table 58, Appendix B.

1. Low and medium SES respondents tend to conform to the attitudes of their work group.[1]
2. High SES persons, however, tend to support the policy in spite of the attitudes of their fellow-workers.[2]

Summary: Among low and medium SES groups the attitudes of fellow-workers seem to have strong influence on the attitudes of the individual hunters. On the other hand, very little influence is apparent among high SES groups.

Neighbors. There are no significant differences in the attitudes of the neighbors of the three SES groups.[3] In all cases, these neighbors are generally opposed to antlerless deer hunting.

As previously noted in the discussion of neighbors in hypothesis 1-F, generally respondents tend to agree with the majority opinion of their neighbors.[4]

As before, by holding SES constant, we can see the interaction between individual and group attitudes more clearly. As in the analysis of the influence of relatives and fellow-workers, the low and the medium SES respondents generally tend to conform to the consensus attitude of their neighbors. Again, however, high SES persons tend to be more supportive of the policy in spite of widespread opposition among neighbors.

Summary: Among low and medium SES groups the attitudes of respondents seems to be associated with the attitude of neighbors, while the

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[1] See Tables 59-60, Appendix B.

[2] See Table 61, Appendix B.

[3] See Table 62, Appendix B.

[4] See Table 21, Appendix B.

attitude of neighbors does not seem to affect attitudes among high SES groups perceptibly.

Immediate Family. As one might expect there is a high degree of congruence between family and individual attitudes both for the group as a whole and for each SES group. It remains difficult, however, to rationalize the matter of which is the independent variable and which is dependent.

Summary: Clearly there is a relationship between family and individual attitudes but it is not known in the case of this policy which influences which or to what degree some kind of cyclic interaction occurs.

Hunting Companions. The relationship between the individual hunter's attitude and the attitude of this hunting companions is strongest of all the relationships, when considering low and medium SES groups.[1] In the high SES group we find again, as we consistently have previously, that hunters from high SES groups tend to be more supportive of the policy in spite of the attitudes of their hunting companions.

Summary: Among low and medium SES respondents, the attitudes of hunting companions tend to exert great influence on hunter attitudes. On the other hand, the attitudes expressed by high SES respondents seem to be independent of hunting companion attitudes.

Secondary Group Influences

Government Officials. Apparently the attitudes expressed by government officials which the respondents from the various SES groups

[1] See Tables 63-65, Appendix B.

have talked to have played a small role, if any, in influencing opinions regarding the policy. Two factors are the basis for this conclusion:

1. Very few hunters have talked to such officials, and
2. There is very little congruence between the attitudes of the hunters and the attitudes of the government officials that they have talked to.

Department of Natural Resources Employees. There is some evidence of a relationship between hunter attitudes and the attitudes expressed by Department of Natural Resources employees with whom the hunters have talked. When this influence is analyzed in more detail by holding SES constant the findings are variable. Among low SES hunters their responses indicated that more than half the employees with whom the matter had been discussed opposed the policy.[1] There was little variability of attitude between respondents who had talked to supportive employees and those who had talked to employees who opposed the policy. Generally, low SES respondents oppose the policy regardless of the position of the employee or employees that they had talked to. One explanation for the high amount of employee opposition which this group reported might be that they were talking to local DNR employees of non-professional status. It is to be expected that many hunters from the two northern counties would know such employees personally. The type of employee that the respondent had talked to cannot be ascertained because such detailed information was not requested of the respondents. Among high SES groups the reverse was true.[2] Almost

[1] See Table 66, Appendix B.

[2] See Table 67, Appendix B.

all these respondents reported support for the policy by the employees they had talked to regardless of the respondent's personal attitude. It seems reasonable to suggest that such respondents might have talked with a professional employee in some capacity which would put the hunter in more impersonal contact with the employee.

The medium SES respondents seem to have been influenced by the attitudes which were expressed by the employees that they had talked with.[1] Such influence is inferred because of the observation that hunters who have talked to employees who generally support the policy tend to support it themselves while those who have talked to employees who generally oppose the policy also generally oppose it themselves.

Summary: There appears to be some influence on hunter attitudes when the employees which the respondents talked to express an opinion concerning the policy. I suggest that part of this influence is predisposed by the kinds of employees which the hunter knows personally or inadvertently meets. Low SES hunters would be more likely to know non-professional employees socially while high SES hunters would be more likely to know professional employees socially. On the other hand, it seems reasonable that employees who talked to hunters whom they did not know would be more likely to defend the policy.

Social Acquaintances. The social acquaintances of the low SES hunters generally oppose the policy while the social acquaintances of high SES hunters generally support the policy. In both cases, the respondents generally agreed with their peers. On the other hand, the acquaintances of medium SES persons were more variable in their support

[1] See Table 68, Appendix B.

and opposition. In this case influence is clearly discernible because if most of their peers tend to support the policy so do they, but if most peers oppose, the respondent is likely to also.

Summary: Social acquaintances seem to exert the greatest reference group influence in those situations where a variety of attitudes concerning the policy are held by the respondents' more intimate peers.

Other Hunters. There are no significant differences among the three SES groups in the attitudes which other hunters have expressed to them. It seems that the overwhelming majority of the more vocal hunters which the respondents had discussed the policy with are opposed to it.[1] Hunters do seem to have been more exposed to attitudes similar to their own when they have talked to other hunters. When the hunters are analyzed according to SES groups the only group which seems to have been influenced by the attitudes of the hunters which they have inadvertently met from time to time are those in the low SES group.

Sportsman Club Officials. Sportsman club officials seem to have had little influence on hunter attitudes among the different SES groups even though most of the officials which the respondents had talked to oppose the policy.

Summary of sub-hypothesis 2-F: High SES respondents tend to support the policy even though in almost all cases a majority of their peers from the various groups analyzed oppose the policy. In contrast, most of the peers of low and medium SES hunters oppose the policy and generally the hunters interviewed from these groups do too.

The most influential peer groups appear to be: relatives, fellow-workers and hunting companions. Department of Natural Resources

[1]See Table 69, Appendix B.

employees and social acquaintances also seem to have some secondary influence perhaps in the dimension of confirming attitudes rather than in the formative stages of attitude development. Neighbors, government officials and other hunters which the hunters have talked to seem to have little impact on personal attitudes.

Hypothesis 2-G.

G. Significant differences will exist among the SES groups in hunter perception of support or opposition to antlerless deer hunting by the mass media. Low SES hunters will perceive the mass as being less supportive while high SES hunters will be most likely to perceive the mass media as supportive of the policy.

The hypothesis is not supported. There are no significant differences among the SES groups in exposure to the three media considered--newspapers, radio and television, and sports magazines. When the influence of the media on individual attidues is considered, as reported in hypothesis 1-G, only the position which newspapers are perceived as having taken seems related to individual attitudes.

When each SES group is analyzed individually with regard to the effect of mass media upon attitudes, very little influence is discernible except among the medium SES hunters who perceive their local newspapers as supporting or opposing antlerless deer hunting. Respondents in that SES group who support the policy are more likely to believe that their local newspaper supports the policy while opposition hunters have a tendency to perceive their newspaper as opposing the policy.

Summary: Although some selective perception seems to be occurring with regard to mass media information, the mass media do not appear to be having much of an influence on the kind of attitude which is developed by respondents in the different SES groups.

Hypothesis 3. Ingham County hunters will have the largest proportion of high SES hunters while Marquette County will have the largest proportion of low SES hunters.

Table 37 supports the hypothesis.

Table 37. SES distribution among the counties

County	SES			
	Low (%)	Medium (%)	High (%)	Total
Ingham				108
	.269	.518	.213	100%
Alpena				109
	.349	.495	.156	100%
Marquette				119
	.496	.370	.134	100%

Chi Square = 13.5209, 4 D.F., P < .01

Hypothesis 3-A.

A. The differences in attitude among the hunters of the three counties will be explained by the differences in the proportion of hunters from the three SES groups in the three counties.

This hypothesis can be tested by holding SES constant and testing for differences in attitude among the three counties. If differences persist among the counties when SES is held constant then hypothesis 3-A would be rejected.

For the low and medium SES groups the significant differences noted in the table above persist.

Table 38. Attitude toward the antlerless deer hunting policy by county for low SES respondents

	Attitude Toward ADP			
County	Strongly Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Ingham				26
	.500	.154	.346	100%
Alpena				38
	.316	.500	.184	100%
Marquette				55
	.473	.454	.073	100%

Chi Square = 14.8774, 4 D.F., P < = .01

Table 39. Attitude toward the policy by county for medium SES respondents

	Attitude Toward ADP			
County	Strongly Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Ingham				52
	.231	.231	.538	100%
Alpena				51
	.294	.471	.235	100%
Marquette				43
	.349	.488	.163	100%

Chi Square = 18.5885, 4 D.F., P < = .001

These two tables demonstrate that the differences in attitude among the counties is not just an artifact of an unequal SES distribution among the counties. However, among the high SES respondents the differences among the counties disappear.

Table 40. Attitude toward the policy by county within the high SES group

	Attitude Toward ADP			
County	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Ingham				23
	.130	.304	.565	100%
Alpena				16
	.125	.375	.500	100%
Marquette				16
	.125	.375	.500	100%

Chi Square = 0.3044, 4 D.F., P > .05

The fact that no differences are found within the high SES group among the counties perhaps indicates that these people are reacting to the same general stimuli for attitude formation. Regardless of whether the stimuli are the same or not, obviously the results are the same--they generally support the policy.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study has attempted to answer two basic questions: Who supports and who opposes the antlerless deer hunting policy, and more importantly, why do the various hunters feel the way they do about the policy?

Two basic independent variables were considered in studying these questions, region of residence and socio-economic status. It has been established by this study that attitude formation regarding the policy is very much a social and social-psychological phenomenon. Based on where the hunter lives and the social context within which he circulates, his attitude toward the policy can be predicted with a relatively high degree of accuracy.

The fact that southern Michigan hunters are much more supportive of the DNR than either Upper Peninsula hunters or hunters from the northern lower Peninsula seems to be partially attributable to higher educational levels, a more active economic climate and an urban atmosphere which requires greater direct dependency upon governmental activity and responsibility in all spheres of life. In contrast, a general distrust of state and federal government is evident in the Upper Peninsula and this distrust seems to be associated with specific attitudes toward the antlerless deer hunting policy.

Clearly more is involved in attitude formation than simply the facts and perceived facts related to this resource development controversy. There was little difference in the actual level of knowledge of the individual hunters concerning the deer resource in Michigan and the attitude which they held. In other words, the level of biological and ecological information which the hunter knew about was not itself a good predictor either of support or opposition for the policy. The mediating factor seemed to be emotionally and socially based. For instance, except for high SES hunters, regardless of the region, there was a close correlation between individual attitudes and the attitudes of several primary groups with which they were associated; e.g., immediate family and other close relatives, fellow-workers and hunting companions. Other contacts such as neighbors, public and agency officials and secondary social acquaintances had little, if any, influence.

The fact that some hunters tend to take their hunting more seriously did not seem to influence attitudes much except in the northern lower Peninsula where the general importance of hunting and especially the importance of success in getting a deer seemed to be closely correlated to attitude toward the policy. The more important hunting and hunting success were to the respondents, the more likely they were to oppose the policy. Further analysis seemed to indicate that a status function was associated with hunting and particularly with hunting success. Apparently for many hunters status is conferred by success and many of them see the antlerless deer hunting policy as a threat to their opportunity to be successful thus diminishing their status.

With regard to antlerless deer hunting, the mass media seem to have played a relatively insignificant role in influencing attitudes although newspapers do seem to have been important in disseminating facts which were used to reinforce a variety of points of view.

In some cases social circumstance is the dominant variable while in other cases region of residence is more important in influencing attitudes. High SES hunters tend to support the policy regardless of the county in which they live. On the other hand, it appears that the attitudes of various social strata is more homogeneous in Alpena than in the other two counties. Apparently the regional influence is dominant in the northern Lower Peninsula. It appears that SES is the dominant independent variable influencing attitudes in Ingham County. In Marquette both the regional influence and SES seem to be contributing some affect to the observed relationships. Greater opposition regionally is the consistent pattern in Marquette, but clearly higher SES groups have a more moderate position toward the antlerless deer hunting policy.

In conclusion, it is evident that a two-step flow of communication is operative in the formation of attitudes concerning this issue; differences in the attitudes held being based on credibility of the source, receptivity based on the degree of conflict with previously held convictions and previous sources and types of information, and the degree of trust of professional expertise.

Recommendations

One of the most surprising response distributions of the study resulted from the question, "108. Does the Conservation Department claim the deer herd is increasing, decreasing, or is stabilized for the State as a whole?" The distribution was:

		Number	Percent
1.	Increasing	114	33.9
2.	Decreasing	38	11.3
3.	Has stabilized	144	42.9
4.	Don't know	38	11.3
	No response	2	.6
	Total	336	100.0

Only about ten percent of the respondents knew that the Department of Natural Resources claims that the deer herd as a whole is decreasing. In light of this bit of information, it is not surprising that many people are so dubious of the integrity and/or the professional competence of the Department's game biologists. Much of the antagonism of hunters toward the DNR would be blunted if it were made clear that the Department is not trying to insist that the herd is increasing when it is common knowledge that in many areas the herd is down significantly from what it was twenty years ago.

In talking with numerous DNR professionals it is very clear that the fact is recognized that the herd is generally declining. However, from the vantage point of Joe Q. Average Citizen it may not be clear that this is the position of the Department. Except for two or three publications of restricted circulation and one publication of fairly widespread distribution, I don't remember having read or heard of this official conclusion in any information source.

> Recommendation 1: The Department of Natural Resources should make a concerted effort to make it clear to the public through every means at its disposal that the fact is recognized that in many areas of the state the deer herd is diminishing.

Once this point is clearly made then the air will be cleared so that the Department can proceed to explain the causes of the herd's diminution. Until this is done hunters will continue to rage that the DNR officials are "fools", or worse, "lying manipulators."

The most effective medium for telling the story of Michigan deer herd management is through personal contact with the public. The problem is that with a comparatively small staff of biologists and other competent professionals it is difficult to reach a significant number of people.

> Recommendation 2: A carefully planned attempt should be made to expand public group contacts among the low and medium SES segments of the population which would be missed in the easily accessible groups such as civic clubs, conservation groups, and groups representing the business community.

Suggested groups would include union locals, hunting clubs, open forum meetings in northern Michigan communities, and perhaps even church groups at social events, etc. In short, the case needs to be presented to those segments of the population where the greatest cynicism is evident.

Obviously, such presentations would need to be made by persons who could effectively portray the ecological situation and who could handle hostile reactions. Such a program could probably be most effectively executed as an information and education function.

Since status seems to play an important role in the development of attitudes toward the policy, perhaps one of the effective means of generating greater understanding for the policy is to encourage interested hunters and hunting groups to assist the DNR in numerous ways.

> Recommendation 3. Involve hunters through various means such as in habitat and wildlife population reconnaissance and as assistants at checking stations and in other field work that would bring them into direct contact with the resource management situation. Such involvement should be invited without regard to support or opposition to the policy.

Special public and personal recognition should be given for such assistance so that it too can fulfill the same kind of desire for recognition and status which hunting success generates. A conservation

aide program should be at least as feasible as recruiting volunteer firemen or civil defense voluntary personnel. The status fulfillment function is very evident in these latter two programs. Two benefits are possible from such a program. First, valuable information and assistance would become available and, second, greater exposure to biological and ecological reality for these hunters should generate support for the policy to the degree that it is supported by readily observable facts.

One of the more serious problems is a lack of support of the policy among many DNR employees. This lack of solidarity, in my judgment, does much to counterbalance the information and education programs of the Department. Two of the leading opponents of the policy who were informally interviewed in the preliminary stages of this research mentioned opposition from within the Department as significant evidence to them that the policy is inappropriate. Numerous respondents also indicated that they knew employees who did not support the policy. In looking at the situation through the eyes of a partially informed citizens, serious damage would be done to the policy image by employee criticism whether the criticism came from a mechanic in a motor pool, or a radioman in fire protection or a laborer in the Parks Division.

> Recommendation 4: A serious attempt should be made to inform as many employees as possible of the reasons behind the official position of the Department regarding the policy.

This could be done through half-day seminars and field trips. Such efforts should include employees with little regard for whether they work directly with wildlife or not. Special effort with non-professionals might be particularly fruitful.

Admittedly, such a program would be expensive and only partially successful but it could pay significant dividends by increasing team spirit by making these quasi-informed employees feel that they are more a part of an informed inner circle.

The DNR presently makes a special effort to work with the county boards of supervisors in establishing antlerless permit quotas for the various areas of the state.

> Recommendation 5: Such a program of intensive contact with key leaders should be expanded to include informal contact with important opinion leaders in all areas of the state.

Such a program would attempt to present the Department's case in a face-to-face situation which would offer a real opportunity for extended influence if the opinion leader could be helped to understand the DNR's point of view.

The final recommendation is perhaps in many ways the most difficult to implement.

> Recommendation 6: A concerted attempt should be made to work more closely on a personal basis with legislators who nominally oppose the policy or who are relatively uninformed about the conditions which have prompted the policy.

In this recommendation stress is laid upon the personal nature of such efforts. Little will be accomplished where publicity is involved for either party. Legislators need votes and some believe opposition to DNR programs produces votes. Therefore, it is advisable not to hold hearings or even small group forums with these people. Even working with a small group of such legislators is not likely to prove effective because of the reinforcement of resistance among the legislators. Another positive benefit might also come from such interaction. The DNR may also receive helpful, and perhaps even much needed information in designing more effective management programs in the future. However,

it is fully recognized that such efforts would probably be wasted with the several legislators who have built their careers in public service mainly on opposition to the antlerless deer hunting policy and other DNR policies. Little effort beyond what has already been expended with these people can probably be justified given the limited resources and monumental task with which the Department is confronted.

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APPENDICES

APPENDIX A

APPENDIX A

DEER HUNTER ATTITUDE SURVEY

Interviewer _____

Respondent _____

County _____

Date _____

Hello, is (PROSPECTIVE RESPONDENT'S NAME) home? (TO RESPONDENT) I am part of a research team from Michigan State University interviewing hunters in the (INGHAM - ALPENA - MARQUETTE) area. You probably remember receiving a letter last week from the research director. May I ask you a few questions?

1. In most years which of the following hunting licenses have you bought?

   1. Small game license ___
   2. Archery deer license ___
   3. Firearm deer license ___
   4. Bear license for early season ___
   5. Duck stamp ___

2. Have you bought a deer license for the 1968 season?

   Yes ___

   No ___ Do you intend to buy one? Yes ___ No ___ Don't know ___

   (GO TO QUESTION 4)

3. Have you applied for an antlerless deer permit for the 1968 season?

   Yes ___ No ___

4. How good a hunter would you say that you are compared to other hunters you know?

   1. Above average ____
   2. Average ____
   3. Below average ____

5. What effect do you think the Conservation Department's present deer management practices will have on the deer herd? _____

   _____

6. How many deer have you killed in all since you have been hunting in Michigan? _____ (number)

   1. How many bucks ____
   2. How many does ____

7. How often have you applied in the past for an antlerless permit when they were available in the area where you hunt?

   1. Every time ____
   2. Most of the time ____
   3. Sometimes ____
   4. Never ____ (GO TO QUESTION 10)

8. Could you give me the approximate number of times you have <u>applied</u> for an antlerless permit?

   _____ (number)

9. How many times have you <u>received</u> one?

   _____ (number) (GO TO QUESTION 11)

10. Why haven't you applied for one? _____

    _____

11. Do you usually hunt in any special county or counties? No ____

Yes ____ (ORDER ACCORDING TO TIME SPENT HUNTING)

1. _____
   Nearest community County

2. _____
   Nearest community County

3. _____
   Nearest community County

12. Do you think there is sufficient food during the winter in the area(s) in which you usually hunt every year to support the deer population there?

Yes ____ No ____ Don't know ____

13. In your opinion, do most of the local people in areas where you have hunted support or oppose antlerless hunting?

Most support it _____

About 1/2 support and 1/2 oppose ____

Most oppose it ____

Don't know _____

14. When you go deer hunting, are you usually gone from home over night? No ____

Yes ____

On an average trip how many consecutive days are you usually gone from home? _____ (number)

How many such trips do you take in an average season? _____ (number)

15. How many days during an average deer season do you hunt? _____ (number)

16. Could you tell me how many deer the Conservation Department estimates are legally killed each year. (QUESTION APPLIES TO PAST FEW YEARS)

_____ (number) Don't know ____ (GO TO QUESTION 19)

17. Do you agree with their estimate? Yes ____ No ____

18. How many would you estimate are killed each year as compared to their estimate? _____

19. Approximately how many years have you hunted deer in Michigan?

_____
(number)

20. Of all the people you personally know who hunted deer this past season (1967), how successful were they in getting a deer?

Above average ____

About average ____

Below average ____

21. From your own knowledge, how successful do you think Michigan hunters in general were this past season? (1967 season)

Above average ____

About average ____

Below average ____

22. What was the last year that really stands out in your mind as a bad season?

1. _____
(date)

2. Can't remember the year ____

About how many years ago was it? _____ (number)

What makes you think of it as a good season? _____

_____

3. Don't know of a specific good year. ____

24. While hunting, if you had not seen any deer and your hands were so cold that even with gloves on you couldn't keep them out of your pockets for very long at a time, would you feel that it was worthwhile to keep hunting?

Yes ____ No ____

25. Do you sometimes carry a compass when hunting? Yes ____ No ____

26. Would you like your son(s) to grow up to be a hunter(s)?

I have no sons ____

Yes ____ No ____

If makes no difference to me ____

27. Have you ever hunted big game in any other state or province besides Michigan? No ____ (GO TO QUESTION 28)

Yes ____

Which state(s) LIST STATES THEN ASK Does (state) permit any antlerless hunting?

1. _____ Yes ____ No ____ Don't know ____
2. _____ Yes ____ No ____ Don't know ____
3. _____ Yes ____ No ____ Don't know ____

28. Do you know of any states which do not allow any antlerless hunting?

_____ (State) _____ (State)

Don't know ____

29. (HAND RESPONDENT CARD) In your opinion, which of the factors listed on the card kills the most deer each year? (AFTER HE INDICATES WHICH KILLS THE MOST GET HIM TO RANK THE REST).

1. Disease ____
2. Legal kill of antlerless deer ____
3. Starvation ____
4. Illegal kill of deer____
5. Legal kill of bucks____
6. Predators (coyotes, wolves or dogs) _____

30. (HAND RESPONDENT CARD) The Conservation Department claims there are more deer in some parts of Michigan than there is necessary winter food for them. How do you feel about this?

1. Strongly agree ____
2. Agree _____
3. Disagree ____
4. Strongly disagree ____
5. Don't know ____

31. Why do you think the Conservation Department makes these claims?

_____

_____

_____

32. In your opinion are more deer killed illegally in season or out of season?

1. In season ____
2. Out of season ____
3. About the same number killed in and out of season ____
4. Don't know ____

33. Who do you think kills more illegal deer in the area where you hunt, local people or hunters who don't live in the area?
Local ____ Outsiders ____ No opinion ____

34. Some people say the legislature should have the final say as to hunting rules in Michigan, while others say the Conservation Department should decide, and some feel local governing bodies, such as County Boards of Supervisors, should decide. Who do you feel should decide?

1. Legislature ____
2. Conservation Dept. ____
3. Local governing body ____
4. No opinion ____

35. It has been proposed that the legislature pass a law abolishing antlerless deer hunting. Do you think they should? Yes ____
No ____

36. Do you think the legislature will pass such a law? Yes ____
No ____

37. If you saw someone that you personally know shoot a deer out of season, would you report him if he would not find out that it was you who reported him? Yes ____ No ____ It depends on who it is ____ Don't know ____

38. The hunting of antlerless deer in Michigan has been a controversial subject in the past. Some hunters have engaged in various activities to support or oppose antlerless deer hunting. Have you taken any of the listed actions on this issue? (PROBE FOR SUCH THINGS AS WHEN, WHERE, WHO, WHAT RESULTS WERE OBTAINED, AND ASK FOR RESPONDENT'S EVALUATION OF WHETHER IT DID ANY GOOD OR NOT)

1. Writing or talking to a legislator _____

2. Writing or talking to the Conservation Department _____

3. Writing to the governor _____

4. Signing a petition _____

5. Donating money _____

6. Making a speech or conducting a meeting _____

7. Trying to persuade your friends to your viewpoint _____

(ASK IF FRIEND WAS NEUTRAL OR OPPOSED TO HIS VIEWPOINT)

8. Participating in a demonstration _____

9. None ____ (PROBE: IS THERE ANY SPECIAL REASON WHY YOU HAVEN'T?)

(IF NONE, GO TO QUESTION 42)

(IF THEY DID ANY OF THE ABOVE ASK:)

39. Did you take your action as an interested individual or were you acting as a member of an organization or group?

____1. Group (ASK NAME OF GROUP) _____
(name)

(GO TO 40)

____ 2. Individual

(MENTION WHATEVER HE MENTIONED ABOVE AS HAVING DONE)

As an interested individual, did any group or individual encourage you to do it?

No ____ (GO TO QUESTION 42)

Yes ____ Who was it? _____

(ASK NAME OF ORGANIZATION AND ITS REPRESENTATIVE'S RELATIONSHIP TO RESPONDENT, OR IF IT WAS AN INDIVIDUAL NOT REPRESENTING A GROUP ASK HIS RELATIONSHIP TO THE RESPONDENT)

_____

_____

(IF AN INDIVIDUAL GO TO QUESTION 41)

40. (HAND RESPONDENT CARD) Different associations interested in this issue have used different means to express their opinions. Which of the following activities were used by the association you belonged to?

1. Collecting money ____
2. Holding public meetings ____
3. Having demonstrations ____
4. Writing to governmental officials ____
5. Signing petitions ____
6. Making public statements ____
7. Other ____

41. Did it (they) favor or oppose antlerless deer hunting?

1. Favor ____
2. Oppose ____

42. Do you know anybody around here who usually knows a lot about deer hunting?

Yes ____ No ____ (GO TO QUESTION 44)

How do you happen to know them? _____

Have you ever asked them for information or advice? Yes ____ No ____

Do you know whether they support or oppose antlerless deer hunting?

Support ____ Oppose ____ Don't know ____

43. How strongly would you say they feel about antlerless deer hunting?

Strongly support it ____

Moderately support it ____

Moderately oppose it ____

Strongly oppose it ____

44. Have you talked to any of the following about the antlerless deer controversy? (Did they oppose or support antlerless hunting?)

	How Many	What percentage: Support it	Oppose it
1. Relatives	_____	_____	_____
2. Fellow-workers	_____	_____	_____
3. Government officials	_____	_____	_____
4. Conservation Dept. employees	_____	_____	_____
5. Social acquaintances	_____	_____	_____
6. Neighbors	_____	_____	_____
7. Immediate family (wife and children)	_____	_____	_____
8. Hunting companions	_____	_____	_____
9. Other hunters	_____	_____	_____

10. Sportsman club officials _____ _____ _____

11. Other _____ _____ _____ _____

45. (HAND RESPONDENT A CARD) The card I have just handed you contains a number of opinions concerning the size of the deer herd in relation to the range. Please tell me the number of the statement that best expresses your attitude about the subject.

____ 1. The deer herd is just the right size for the range.

____ 2. The deer herd is too small for the range.

____ 3. The deer herd is too large for the range.

____ 4. I don't agree with any of the above.

____ 5. No opinion.

46. Have you ever attended a meeting, hearing, or deer yard demonstration sponsored by the Conservation Department to discuss deer hunting policies?

1. Yes ____

If yes: How many? ____

2. No ____

47. We would like your opinion about hunting antlerless deer. Do you think it is necessary to shoot some does and fawns, as well as bucks, in parts of Michigan?

No ____

Yes ____ (HAND RESPONDENT A CARD)

48. Which number on the card best fits your opinion?

____ 1. More antlerless deer be taken than in the last few years.

____ 2. Less Antlerless deer be taken than in the last few years.

____ 3. About the same number of antlerless deer be taken as in the last few years.

____ 4. No opinion.

49. Have you always held your present opinion about antlerless deer hunting, or did you have a different opinion in the past?

1. Always had same opinion ____

2. Held different opinion ____

What influenced you to change your mind the most?

1. A television or radio program _____
2. A newspaper or sports magazine article _____
3. What I personally have seen in nature _____
4. Another person persuaded me _____

How do you happen to know this person _____

Could you tell me where he got his information to base his opinion upon? _____

5. Other (specify) _____

50. If you were to hear something on the radio or television or read something in a newspaper or in a sports magazine that was controversial about deer hunting, would you want to talk it over with somebody before you made up your mind?

Yes ____ No ____

1. Who (WHAT IS THEIR RELATIONSHIP)? _____
2. Sex _____ Age _____ Occupation _____

51. Compared to other hunters you know are you more or less likely than most to be asked your advice or information about:

1. Good places in the state to hunt. More ____ Less ____
2. Hunting regulations. More ____ Less ____

3. The best kind of hunting gear to buy. More ____ Less ____

4. Whether the hunting of antlerless deer should be permitted.

More ____ Less ____

52. Do you usually go alone or do you go with others on deer hunting trips?

1. Alone ____ (GO TO QUESTION 56)

2. With other persons ____

How many others _____
(number)

53. Do the same people go in your party almost every year? Yes ____

No ____

54. I would like to ask you about the people who hunt in this group.

How many are relatives _____
(number)

Could you give me their relationship to you

_____

_____

How many are fellow-workers _____
(number)

How many are friends who do not work with you _____
(number)

How did you happen to get to know these friends

_____

55. Does the group usually hunt as a unit or individually?

Unit _____ Individually _____ It varies _____

56. About what percentage of your fellow-workers that you know personally are deer hunters? _____ (percentage)

57. About what percentage of your close friends, not including people that you work with, are deer hunters? _____ (percentage)

58. Can you tell the differnce between the tracks made by a buck or a doe? No ____

Yes ____ How do you tell the difference? _____

59. Do you personally know of anyone else who can tell a buck track from a doe track? No ____

Yes ____ How does he tell the difference? _____

60. I'm going to read a list of outdoor recreational activities. In which of these types of recreation do you rather frequently participate?

Snow skiing _____ Fishing _____

Tennis _____ Ice fishing _____

Camping _____ Hiking _____

Swimming (not in pools) _____ Golfing _____

Boating or canoeing _____ Skeet shooting _____

Bow and arrow hunting _____ Snowmobiling _____

Visiting state and national parks _____

Others (specify) _____

_____

61. If the deer season were longer, do you think you would:

Hunt less _____

Hunt about the same _____

Hunt more _____

62. (HAND RESPONDENT CARD) The card I have just handed you contains three groups of three statements each. Let us <u>suppose</u> that these facts were published in a local newspaper concerning the areas in

which you hunt. Please tell me the one statement in each group which would discourage you the most and the one which would discourage you the least.

I. ____ 1. Hunting conditions are crowded this season.

____ 2. Low game populations are predicted.

____ 3. Hunting for a deer of either sex is not permitted in that area.

II. ____ 1. An increasing number of hunters have been shot in the last few seasons in that area.

____ 2. Early hunter success is very low.

____ 3. The license fee is doubled to $10.00.

III. ____ 1. Sleet and rain are predicted.

____ 2. A large number of deer were reported to have starved the winter before.

____ 3. Regulations prescribe shorter hunting hours.

63. Do you plan your hunting trips "weeks in advance"? Yes ____ No ____

64. Would it embarrass you to come home to your family without a deer? Yes ____ No ____

65. Do you know where or how to contact the game protector who is employed by your county? Yes ____ No ____

66. Would you think more highly of a fellow-worker if he got a buck during deer season? Yes ____ No ____

67. Do you frequently recall hunting experiences when talking with friends? Yes ____ No ____

68. Do you load your own shotgun shells or rifle shells? Yes ____

No ____ Sometimes ____

69. (HAND RESPONDENT CARD) On what type of land do you usually hunt deer?

____ 1. Your own farm or property. ____ 7. Don't know

____ 2. State owned land.

____ 3. Federally owned land.

____ 4. Private hunting club.

____ 5. Privately owned forest areas.

____ 6. Private farm land.

70. Would you say that the owner of the property is a good friend of yours? Yes ____ No ____

71. When you (or if you were to) bring a deer home, would you and/or your family eat most of it or would you give most of it to others?

____ Family would eat it

____ Give it away

____ Eat about half and give about half away

____ Couldn't say until I kill one

72. In your opinion is the summer deer range larger than the winter deer range in Northern Michigan? No ____ Don't know ____

Yes ____

Could you make an estimate as to what percentage of the total summer range is used as winter range in Northern Michigan

_____ Don't know ____

(percentage)

73. At what age did you begin to hunt with a gun? ____

74. Do you own a cabin for vacationing? Yes ____ No ____

Now I would like to ask you some questions about yourself.

75. How long have you lived in the _____ area?
(Lansing-Alpena-Marquette)

1. 2 years or less ____
2. 3 to 5 years ____
3. 6 to 10 years ____
4. 11 to 20 years ____
5. 21 or more ____
6. All of my life ____

76. Where were you brought up? (In or near what town) _____

77. When you were growing up did you live mostly in a town or in a rural area? Town ____ Rural area ____

78. What year did you complete in school?

1. 6 years or less ____
2. 7th-9th grades ____
3. Some high school ____
4. Finished high school ____
5. Some college ____
6. Finished college ____
7. Some graduate work ____
8. Finished graduate degree or professional degree ____

79. Did you attend a civilian trade or specialized training school?

No ____

Yes ____ For how many years _____
(number)

What type of trade or specialized training school? _____

_____

80. (HAND CARD TO RESPONDENT) Would you please tell me the number on this card that corresponds to your family's total annual income?

1. Under $3,000 ____
2. $3,000 - $5,999 ____
3. $6,000 - $7,999 ____
4. $8,000 - $9,999 ____
5. $10,000 - $14,999 ____
6. $15,000 - $24,999 ____
7. $25,000 and over ____

(IF INTERVIEWING A WOMAN ASK ABOUT HUSBAND OR FATHER IN QUESTIONS 81 - 86)

81. What is your main occupation? _____

If retired, what was your occupation before retirement? _____

82. Do you regularly work at two different paid jobs? Yes ____ No ____

83. Are you often unemployed for a week or more at a time? Yes ____ No ____

84. As a result of your work or your training are you a member of a union or professional organization? Yes ____ No ____

85. What is its name? _____

86. Do most of the members of your (professional organization) (local union) oppose or support antlerless deer hunting?

1. Oppose ____
2. Support ____
3. Don't know ____

87. How often did you discuss public affairs or governmental matters with friends during the last year?

1. Often ____ 2. Once in a while ____ 3. Not at all ____

88. Have you attended any meetings during the past two (2) or three years in which public affairs or governmental matters were a major subject of consideration, such as city council, board of supervisors, or school board meetings? Yes ____ No ____.

89. Have you ever done anything to try to influence any type of governmental decision, such as writing a letter or signing a petition? Yes ____ No ____

(BEFORE CHECKING IF YES ASK SPECIFIC ACTION. IF NO RESPONSE CHECK NO.)

90. Do you take or buy a newspaper? No ____

Yes _____ How often do you read it?

1. Daily ____
2. About once or twice a week ____
3. From time to time ____
4. Seldom ____

91. Does the newspaper you read oppose or support antlerless deer hunting? 1. Support ____ 2. Occasionally ____ 3. Never ____

92. Do you read any news magazines, such as Time or Newsweek?

1. Regularly ____ 2. Occasionally ____ 3. Never ____

93. How frequently do you listen to news programs on radio or television?

1. Nearly every day ____
2. About once a week ____
3. From time to time ____
4. Never ____

94. Do you listen to radio and television programs specifically concerned with hunting or outdoor life in general?

1. Regularly ____ 2. Occasionally ____ 3. Never ____

Do you know if any of these radio or television programs on outdoor life have taken a position of support or opposition concerning antlerless deer hunting?

Yes ____ No ____ Don't know ____

Support (names) _____

Oppose (names) _____

95. What about magazines specifically concerned with hunting? Do you read this kind of magazine?

1. Regularly ____ 2. Occasionally ____ 3. Never ____

96. Do any of these magazines support or oppose antlerless deer hunting?

1. Oppose (names) _____
2. Support (names) _____
3. Don't know ____

97. To your knowledge have any of the state legislators who represent your district taken a position on antlerless deer hunting?

Yes ____ No ____

Do you remember their names? Do they favor or oppose it?

Names	Favor	Oppose
_____	____	____
_____	____	____

98. Are you a registered voter?

Yes ____ Do you intend to vote in the presidential election in November? Yes ____ No ____ Haven't decided ____

No ____ Do you remember why you did not register? _____

Don't know ____

99. Do you usually think of yourself as a Democrat, an Independent, a Republican, or what?

1. Democrat ____
2. Republican ____
3. Independent ____
4. Other _____

If independent, toward which party do you lean? 1. Democrat ____
2. Republican ____
3. Other _____

100. Have you ever been active in a political campaign? That is, have you ever worked for a candidate or party, contributed money, or done any other active work?

Yes ____ No ____

101. Does the Federal government represent the interests of the people or the interest of the leaders?

1. The people's interests ____
2. The leaders' interests ____
3. Other _____

102. In your opinion what percentage of Michigan deer hunters are opposed to antlerless deer hunting? _____ (percentage)

103. Do you think that most hunters who say they are opposed to antlerless deer hunting apply for an antlerless deer permit?

No ____ Don't know ____

Yes ____

Why do you suppose they apply even though they say they are opposed? _____

_____

Is there any other reason? _____

_____

Anything else? (PROBE HARD) _____

104. How many guns do you have that are used for deer hunting _____ (number)

105. What type of guns are they?

1. Shotguns _____ (number) gauge _____
2. Rifles _____ (number) calibre _____

106. (HAND RESPONDENT CARD) Please tell me which group listed, in your opinion, knows the most about the deer herd. (THEN ASK RESPONDENT WHICH GROUP IS SECOND, THIRD, FOURTH, ACCORDING TO KNOWLEDGEABILITY).

1. Expert hunters ____
2. Conservation Dept. biologists ____
3. Foresters and others who work in the woods ____
4. Sportsman's club officials ____
5. Business men who have the opportunity to talk to the many different hunters ____

107. (HAND RESPONDENT CARD) How do you feel about it when you do not get a deer?

1. Not much bothered ____
2. Somewhat disappointed ____
3. I feel very disappointed ____
4. It makes me mad ____
   Whom does it make you mad at: _____
5. Other _____

108. Does the Conservation Department claim the deer herd is increasing, decreasing, or is stabilized for the state as a whole?

1. Increasing ____
2. Decreasing ____
3. Has stabilized ____
4. Don't know ____

109. (HAND RESPONDENT CARD) This card is for the next 4 questions. What kind of job do you think the State is doing with <u>parks and recreation</u>?

1. Excellent ____
2. Good ____
3. Adequate ____
4. Poor ____
5. Bad ____

110. What kind of job do you think the State is doing with its <u>fishing</u> programs?

1. Excellent ____
2. Good ____
3. Adequate ____
4. Poor ____
5. Bad ____

111. What kind of job do you think the State is doing with its forests?

1. Excellent ____
2. Good ____
3. Adequate ____
4. Poor ____
5. Bad ____

112. What kind of job do you think the State is doing with the deer herd?

1. Excellent ____
2. Good ____
3. Adequate ____
4. Poor ____
5. Bad ____

113. What did it cost you to hunt deer in Michigan last year? _____

I'll read off a list of items you may have purchased or spent some money on to help you estimate the total cost. Which of the items did you spend the most money on? _____

1. Food and beverages
2. Lodging
3. Clothing
4. Shells
5. Guns
6. License fee
7. Gas and oil for your car
8. Costs to process and freeze your deer
9. Entertainment

114. If you wanted to know about something concerning the antlerless deer hunting controversy where would you go first to get information?

1. Friends ____
2. Members of your family ____
3. Newspapers ____
4. Sports Magazine ____
5. Fellow-workers ____
6. Conservation Department ____
7. Other _____

Now I want to give you some statements and I want you to indicate whether you disagree, partially agree, agree.

115. Scientific studies should form the basis for a game management program. Disagree ____ Partially agree ____ Agree ____ No opinion ____

116. Stocking deer is one of the best answers to having more game to shoot at. Disagree ____ Partially agree ____ Agree ____ No opinion ____

117. Most deer would die of old age if man did not hunt them. Disagree ____ Partially agree ____ Agree ____ No opinion ____

118. One can get almost as much satisfaction from a hunt even if he doesn't kill a deer. Disagree ____ Partially agree ____ Agree ____ No opinion ____

119. I would just as soon shoot a doe as a buck if they were the same size. Disagree ____ Partially agree ____ Agree ____ No opinion ____

120. Game biologists are as important to wildlife management as doctors are to medicine. Disagree ____ Partially agree ____ Agree ____ No opinion ____

121. How do you feel about this statement: I would willingly pay an increased deer license fee if assured the money would be used for wildlife research and management. Disagree ____ Partially agree ____ Agree ____ No opinion ____

INTERVIEWER'S OBSERVATION SHEET

1. Sex

   1. Male ____

   2. Female _____

2. Race

   1. White _____

   2. Negro _____

   3. Other ____

Did the respondent seem: (Circle appropriate designations)

Truthful	1
Evasive	2
Untruthful	3
Could not be determined	4

How would you rate the hunting knowledge of the respondent.

Very knowledgeable	1
Knowledgeable	2
Not very knowledgeable . .	3

APPENDIX B

APPENDIX B

TABLES FOR CHAPTER V

Appendix Table 1. Attitude toward the policy among the unalienated and the alienated in Ingham County

	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Unalienated				51
	.255	.216	.457	100%
Alienated				35
	.286	.257	.457	100%

Chi Square = 0.4438, 2 D.F., P > .05

Appendix Table 2. Attitude toward the policy among the unalienated and the alienated in Alpena County

	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Unalienated				54
	.259	.426	.315	100%
Alienated				39
	.282	.564	.154	100%

Chi Square = 3.3098, 2 D.F., P > .05

Appendix Table 3. Attitude toward the policy among the unalienated and the alienated in Marquette County

	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Unalienated				66
	.242	.545	.212	100%
Alienated				32
	.563	.313	.125	100%

Chi Square = 9.7460, 2 D.F., P< = .01

Appendix Table 4. The effect of the importance of success upon hunter attitudes in Ingham County

Importance of Success	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Little				68
	.250	.235	.515	100%
Intermediate				18
	.389	.111	.500	100%
High				15
	.267	.333	.400	100%

Chi Square = 3.1517, 4 D.F., P > .05

Appendix Table 5. The effect of the importance of success upon hunter attitudes in Alpena County

Importance of Success	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Little				43
	.140	.488	.372	100%
Intermediate				31
	.452	.419	.129	100%
High				31
	.290	.484	.226	100%

Chi Square = 10.9022, 4 D.F., P< = .05

Appendix Table 6. The effect of the importance of success upon hunter attitudes in Marquette County

Importance of Success	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Little				46
	.326	.522	.52	100%
Intermediate				30
	.300	.467	.233	100%
High				38
	.500	.368	.132	100%

Chi Square = 4.5327, 4 D.F., P > .05

Appendix Table 7. The influence of status symbolism upon hunter attitude

Status Value	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Important				124
	.411	.387	.202	100%
Not Important				192
	.245	.396	.359	100%

Chi Square = 13.0531, 2 D.F., P< = .01

Appendix Table 8. The influence of status symbolism upon hunter attitude

Status Value	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Important				24
	.333	.250	.417	100%
Not Important				75
	.267	.227	.507	100%

Chi Square = 0.6320, 2 D.F., P > .05

Appendix Table 9. The influence of status symbolism upon hunter attitudes in Alpena County

Status Value	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Important				46
	.413	.435	.152	100%
Not Important				59
	.169	.492	.339	100%

Chi Square = 9.2374, 2 D.F., P< = .01

Appendix Table 10. The influence of status symbolism upon hunter attitudes in Marquette County

Status Value	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Important				54
	.444	.407	.148	100%
Not Important				58
	.293	.517	.190	100%

Chi Square = 2.7602, 2 D.F., P > .05

Appendix Table 11. The influence of deer hunter interest upon attitudes in Ingham County

Hunter Interest	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				39
	.256	.128	.615	100%
Medium				58
	.276	.293	.431	100%
High				4
	.500	.250	.250	100%

Chi Square = 5.6770, 4 D.F., P > .05

Appendix Table 12. The influence of hunter interest upon attitudes in Alpena County

Hunter Interest	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				13
	.385	.231	.385	100%
Medium				85
	.247	.529	.224	100%
High				7
	.429	.143	.429	100%

Chi Square = 7.2380, 4 D.F., P > .05

Appendix Table 13. The influence of hunter interest upon attitudes in Marquette County

Hunter Interest	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				25
	.400	.560	.040	100%
Medium				87
	.368	.437	.195	100%
High				2
	.500	.000	.500	100%

Chi Square = 5.8807, 4 D.F., P > .05

Appendix Table 14. The relationship between respondent attitudes and the proportion of fellow-workers who hunt

Proportion of Fellow-Workers Who Hunt	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				87
	.333	.322	.345	100%
Medium				71
	.282	.451	.268	100%
High				138
	.290	.435	.275	100%

Chi Square = 3.6952, 4 D.F., P > .05

Appendix Table 15. The relationship between respondent attitudes and the proportion of close friends who hunt

Porportion of Close Friends Who Hunt	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				63
	.317	.333	.349	100%
Medium				78
	.321	.372	.308	100%
High				175
	.303	.417	.280	100%

Chi Square = 1.7399, 4 D.F., P > .05

Appendix Table 16. The position of fellow-workers toward the policy among the counties

County	Position of Fellow-Workers		Total
	Majority Oppose (%)	Majority Oppose (%)	
Ingham			64
	.563	.438	100%
Alpena			75
	.893	.107	100%
Marquette			85
	.882	.118	100%

Chi Square = 29.6188, 2 D.F., P< = .001

Appendix Table 17. The effect of work peer group attitudes upon hunter attitudes

Policy Position of Fellow-Workers	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.312	.503	.185	173 100%
Majority Support	.205	.227	.568	44 100%

Chi Square = 26.9709, 2 D.F., P< = .001

Appendix Table 18. The effect of work group attitudes upon hunter attitudes in Ingham County

Policy Position of Fellow-Workers	Attitude			
	Oppose (%)	Moderatley Oppose (%)	Support (%)	Total
Majority Oppose	.314	.371	.314	35 100%
Majority Support	.231	.115	.654	26 100%

Chi Square = 7.8492, 2 D.F., P< = .05

Appendix Table 19. The effect of work group attitudes upon hunter attitudes in Alpena County

Policy Position of Fellow-Workers	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.242	.561	.197	66 100%
Majority Support	.125	.375	.500	8 100%

Chi Square = 3.7350, 2 D.F., P > .05

Appendix Table 20. The effect of work group attitudes upon hunter attitudes in Marquette County

Policy Position of Fellow-Workers	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.375	.514	.111	72 100%
Majority Support	.200	.400	.400	10 100%

Chi Square = 5.9955, 2 D.F., P< = .05

Appendix Table 21. The position of neighbors toward the policy among the counties

County	Position of Neighbors: Majority Oppose (%)	Majority Support (%)	Total
Ingham			23
	.522	.478	100%
Alpena			45
	.800	.200	100%
Marquette			59
	.881	.119	100%

Chi Square = 12.8507, 2 D.F., P< = .01

Appendix Table 22. The effect of the attitude of neighbors upon hunter attitudes

Policy Position of Neighbors	Attitude: Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose				98
	.347	.531	.122	100%
Majority Support				26
	.154	.346	.500	100%

Chi Square = 18.4494, 2 D.F., P< = .001

Appendix Table 23. The relationship between individual and family attitudes concerning the policy

Policy Position of Immediate Family	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.351	.495	.155	97 100%
Majority Support	.182	.182	.636	44 100%

Chi Square = 33.3930, 2 D.F., P< = .001

Appendix Table 24. The effect of the attitudes of hunting companions upon hunter attitudes

Policy Position of Hunting Companions	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.361	.541	.098	122 100%
Majority Support	.180	.246	.574	61 100%

Chi Square = 48.1872, 2 D.F., P< = .001

Appendix Table 25. The effect of the attitudes of hunting companions upon hunter attitudes in Ingham County

Policy Position of Hunting Companions	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.389	.500	.111	18 100%
Majority Support	.216	.162	.622	37 100%

Chi Square = 13.3343, 2 D.F., P< = .01

Appendix Table 26. The effect of the attitudes of hunting companions upon hunter attitudes in Alpena County

Policy Position of Hunting Companions	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.283	.565	.152	46 100%
Majority Support	.067	.333	.600	15 100%

Chi Square = 12.1437, 2 D.F., P< = .01

Appendix Table 27. The effect of the attitude of hunting companions upon hunter attitudes in Marquette County

Policy Position of Hunting Companions	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.414	.534	.052	58 100%
Majority Support	.222	.444	.333	9 100%

Chi Square = 7.7571, 2 D.F., P< = .05

Appendix Table 28. The relationship between the attitudes expressed by government officials and the attitudes of hunters with whom they had talked

Policy Position of Government Officials	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.167	.750	.083	12 100%
Majority Support	.167	.500	.333	6 100%

Chi Square = 1.8750, 2 D.F., P > .05

Appendix Table 29. The relationship between the attitudes expressed by employees of the DNR and the attitudes of hunters with whom they had talked

Policy Position of Cons. Dept. Employees	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.357	.536	.107	28 100%
Majority Support	.135	.405	.459	37 100%

Chi Square = 10.4202, 2 D.F., P< = .01

Appendix Table 30. The relationship between the attitudes expressed by social acquaintances and the attitudes of hunters with whom they have talked

Policy Position of Social Acquaintances	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.326	.511	.163	92 100%
Majority Support	.313	.219	.469	32 100%

Chi Square = 13.8370, 2 D.F., P< = .001

Appendix Table 31. The relationship between the attitudes of other hunters whom the respondents have talked to and the respondents' attitudes

Policy Position of Other Hunters	Attitudes			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.329	.471	.200	85 100%
Majority Support	.176	.294	.529	17 100%

Chi Square = 8.1210, 2 D.F., P< = .05

Appendix Table 32. The policy position of sportsman club officials who have talked to respondents from the various counties

County	Policy Position of Club Officials		
	Majority Oppose (%)	Majority Support (%)	Total
Ingham	.222	.778	9 100%
Alpena	.923	.077	13 100%
Marquette	.962	.038	26 100%

Chi Square = 25.4183, 2 D.F., P< = .001

Appendix Table 33. The relationship between the position toward the policy which the magazines that the hunters read have taken and hunters' attitudes

Magazine Policy Position	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Oppose				24
	.333	.458	.208	100%
Support				33
	.152	.333	.515	100%
Don't Know				253
	.332	.387	.281	100%

Chi Square = 4 D.F., P > .05

Appendix Table 34. The relationship between the position toward the policy taken by the newspaper which the hunters read and hunters' attitudes

Newspaper Policy Position	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Oppose				32
	.469	.375	.156	100%
Support				73
	.288	.260	.452	100%
Don't Know				212
	.297	.439	.264	100%

Chi Square = 16.0751, 4 D.F., P< = .01

Appendix Table 35. The relationship between the position toward the policy taken by local radio and television stations and hunters' attitudes

Radio and TV Policy Position	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Oppose				25
	.440	.480	.080	100%
Support				52
	.212	.308	.481	100%

Chi Square = 12.1960, 2 D.F., P< = .01

TABLES FOR CHAPTER VI

Appendix Table 36. Attitude toward the policy among the unalienated and the alienated in the low SES group

	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Unalienated				60
	.333	.500	.167	100%
Alienated				39
	.513	.333	.154	100%

Chi Sqaure = 3.4202, 2 D.F., P > .05

Appendix Table 37. Attitude toward the policy among the alienated and unalienated in the medium SES group

	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Unalienated				80
	.250	.388	.363	100%
Alienated				47
	.319	.404	.277	100%

Chi Square = 1.1954, 2 D.F., P > .05

Appendix Table 38. Attitude among the unalienated and alienated in the high SES group

	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Unalienated				31
	.097	.290	.613	100%
Alienated				20
	.200	.450	.350	100%

Chi Square = 3.4702, 2 D.F., P > .05

Appendix Table 39. The distribution of alienation among the SES groups for those who strongly oppose the policy

SES	Unalienated (%)	Alienated (%)	Total
Low			40
	.500	.500	100%
Medium			35
	.571	.429	100%
High			7
	.429	.571	100%

Chi Square = 0.6635, 2 D.F., P > .05

Appendix Table 40. The distribution of alienation among the SES groups for those who moderately oppose the policy

SES	Unalienated (%)	Alienated (%)	Total
Low			43
	.698	.302	100%
Medium			50
	.620	.380	100%
High			18
	.500	.500	100%

Chi Square = 2.1726, 2 D.F., P > .05

Appendix Table 41. The effect of the importance of success upon attitudes in the low SES group

Importance of Success	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Little				52
	.365	.423	.212	100%
Intermediate				31
	.516	.387	.097	100%
High				36
	.444	.389	.167	100%

Chi Square = 2.6718, 4 D.F. P > .05

Appendix Table 42. The effect of the importance of success upon attitude in the medium SES group

Importance of Success	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Little				70
	.229	.371	.400	100%
Intermediate				39
	.333	.359	.308	100%
High				37
	.351	.459	.189	100%

Chi Square = 5.6443, 4 D.F., P > .05

Appendix Table 43. The effect of the importance of success upon attitude in the high SES group

Importance of Success	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Little				35
	.086	.371	.543	100%
Intermediate				9
	.111	.333	.556	100%
High				11
	.273	.273	.455	100%

Chi Square = 2.7027, 4 D.F., P > .05

Appendix Table 44. The distribution of status value among the SES groups

SES	Status Value		
	Important (%)	Not Important (%)	Total
Low			124
	.476	.524	100%
Medium			153
	.346	.654	100%
High			54
	.315	.685	100%

Chi Square = 6.3445, 2 D.F., P< = .05

Appendix Table 45. The effect of status symbolism upon attitudes among low SES respondents

Status Value	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Important				55
	.509	.364	.127	100%
Not Important				63
	.349	.444	.206	100%

Chi Square = 3.3262, 2 D.F., P > .05

Appendix Table 46. The effect of status symbolism upon attitudes among medium SES respondents

Status Value	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Important				52
	.385	.442	.173	100%
Not Important				93
	.226	.366	.409	100%

Chi Square = 9.1818, 2 D.F., P< = .05

Appendix Table 47. The effect of status symbolism upon attitudes among high SES respondents

Status Value	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Important				17
	.176	.294	.529	100%
Not Important				36
	.111	.389	.500	100%

Chi Square = 0.6823, 2 D.F., P > .05

Appendix Table 48. Deer hunter interest among the SES groups

SES	Deer Hunter Interest			
	Low (%)	Medium (%)	High (%)	Total
Low				126
	.175	.770	.056	100%
Medium				154
	.266	.695	.039	100%
High				56
	.268	.732	.000	100%

Chi Square = 6.5048, 4 D.F., P > .05

Appendix Table 49. The effect of deer hunter interest upon attitudes among low SES hunters

Hunter Interest	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				21
	.429	.333	.238	100%
Medium				91
	.418	.440	.143	100%
High				7
	.571	.143	.286	100%

Chi Square = 3.6209, 4 D.F., P > .05

Appendix Table 50. The effect of deer hunter interest upon attitudes among medium SES hunters

Hunter Interest	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				41
	.317	.317	.366	100%
Medium				99
	.273	.434	.293	100%
High				6
	.333	.167	.500	100%

Chi Square = 3.1625, 4 D.F., P > .05

Appendix Table 51. The effect of deer hunter interest upon attitudes among high SES hunters

Hunter Interest	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Low				15
	.200	.133	.667	100%
Medium				40
	.100	.425	.475	100%
High				0
				100%

Chi Square = 4.3036, 4 D.F., P > .05

Appendix Table 52. The proportion of fellow-workers who hunt deer among the SES groups

SES	Proportion of Fellow-Workers Who Hunt			
	Low (%)	Medium (%)	High (%)	Total
Low				116
	.293	.276	.431	100%
Medium				142
	.317	.211	.472	100%
High				53
	.283	.226	.491	100%

Chi Sqaure = 6.1484, 4 D.F., P > .05

Appendix Table 53. The proportion of close friends who hunt deer among the SES groups

SES	Proportion of Close Friends Who Hunt			
	Low (%)	Medium (%)	High (%)	Total
Low				125
	.136	.304	.560	100%
Medium				151
	.245	.185	.570	100%
High				56
	.174	.286	.536	100%

Chi Square = 8.6730, 4 D.F., P > .05

Appendix Table 54. The distribution of position of relatives of respondents from the three SES groups

SES	Position		
	Majority Oppose (%)	Majority Support (%)	Total
Low			90
	.811	.189	100%
Medium			107
	.738	.262	100%
High			38
	.684	.316	100%

Chi Square = 2.7332, 2 D.F., P > .05

Appendix Table 55. The relationship between the attitudes of low SES hunters and the predominant attitudes of their relatives

Relative's Position	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Opposed	.435	.493	.072	69 100%
Majority Support	.118	.353	.529	17 100%

Chi Square = 21.7545, 2 D.F., P< = .001

Appendix Table 56. The relationship between the attitudes of medium SES hunters and the attitudes of their relatives

Relative's Position	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.329	.474	.197	76 100%
Majority Support	.115	.269	.615	26 100%

Chi Square = 16.2777, 2 D.F., P< = .001

Appendix Table 57. The relationship between the attitudes of high SES hunters and the attitudes of their relatives

Relative's Position	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.154	.462	.385	26 100%
Majority Support	.000	.250	.750	12 100%

Chi Square = 4.9692, 2 D.F., P > .05

Appendix Table 58. The distribution of position of fellow-workers of hunters from the three SES groups

SES	Policy Position of Fellow-Workers		
	Majority Oppose (%)	Majority Support (%)	Total
Low	.878	.122	82 100%
Medium	.775	.225	111 100%
High	.667	.333	30 100%

Chi Square = 6.8463, 2 D.F., P< = .05

Appendix Table 59. The relationship between the attitudes of low SES hunters and the attitudes of their fellow-workers

Policy Position of Fellow-Workers	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.400	.486	.114	70 100%
Majority Support	.400	.200	.400	10 100%

Chi Square = 6.3492, 2 D.F., P< = .05

Appendix Table 60. The relationship between the attitudes of medium SES hunters and the attitudes of their fellow-workers

Policy Position of Fellow-Workers	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.277	.506	.217	83 100%
Majority Support	.130	.217	.652	23 100%

Chi Square = 15.9251, 2 D.F., P< = .001

Appendix Table 61. The relationship between the attitudes of high SES hunters and the attitudes of their fellow-workers

Policy Position of Fellow-Workers	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.150	.550	.300	20 100%
Majority Support	.100	.300	.600	10 100%

Chi Square = 2.5178, 2 D.F., P > .05

Appendix Table 62. The position of neighbors among the SES groups

SES	Policy Position of Neighbors		
	Majority Oppose (%)	Majority Support (%)	Total
Low	.855	.145	55 100%
Medium	.774	.226	53 100%
High	.667	.333	18 100%

Chi Square = 3.1479, 2 D.F., P > .05

Appendix Table 63. The effect of the attitudes of hunting companions upon hunter attitudes among low SES respondents

Policy Position of Hunting Companions	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.396	.528	.075	53 100%
Majority Support	.556	.000	.444	9 100%

Chi Square = 13.3378, 2 D.F., P< = .01

Appendix Table 64. The effect of the attitudes of hunting companions upon hunter attitudes among medium SES respondents

Policy Position of Hunting Companions	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.400	.560	.040	50 100%
Majority Support	.118	.324	.559	34 100%

Chi Square = 29.8751, 2 D.F., P< = .001

Appendix Table 65. The effect of the attitudes of hunting companions upon hunter attitudes among high SES respondents

Policy Position of Hunting Companions	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.158	.526	.316	19 100%
Majority Support	.059	.235	.706	17 100%

Chi Square = 5.4772, 2 D.F., P > .05

Appendix Table 66. The effect of the attitudes of Conservation Department employees upon the attitudes of hunters with whom they had talked from the low SES group

Policy Position of Cons. Dept. Employees	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.455	.455	.091	11 100%
Majority Support	.286	.571	.143	7 100%

Chi Square = 0.5343, 2 D.F., P > .05

Appendix Table 67. The effect of the attitudes of Conservation Department employees upon the attitudes of hunters with whom they had talked from the high SES group

Policy Position of Cons. Dept. Employees	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.000	.750	.250	4 100%
Majority Support	.000	.500	.500	12 100%

Chi Square = 0.7619, 2 D.F., P > .05

Appendix Table 68. The effect of the attitudes of Conservation Department employees upon the attitudes of hunters with whom they had talked from the medium SES group

Policy Position of Cons. Dept. Employees	Attitude			
	Oppose (%)	Moderately Oppose (%)	Support (%)	Total
Majority Oppose	.385	.538	.077	13 100%
Majority Support	.118	.294	.588	17 100%

Chi Square = 8.6022, 2 D.F., P< = .05

Appendix Table 69. The policy position of "other hunters" with whom the respondents from the various SES groups have talked

SES	Policy Position of "Other Hunters"		
	Majority Oppose (%)	Majority Support (%)	Total
Low			41
	.854	.146	100%
Medium			51
	.824	.176	100%
High			16
	.813	.183	100%

Chi Square = 0.2072, 2 D.F., P > .05

APPENDIX C

APPENDIX C

INDEX OF THE IMPORTANCE OF SUCCESS TO THE RESPONDENT

The following items were used in the index of the Importance of Success:

66. Would you think more highly of a fellow-worker if he got a buck during the deer season?

	Response Distribution
Yes	129 (38.4%)
No	202 (60.1%)
No response	5 (1.5%)
Total	336 (100%)

If the respondent indicated "yes," he was assigned a value of "2," for other responses a value of "0" was assigned.

107. (Hand respondent card) How do you feel about it when you do not get a deer?

	Response Distribution
1. Not much bothered	166 (49.4%)
2. Somewhat disappointed	139 (41.4%)
3. I feel very disappointed	15 (4.5%)
4. It makes me mad	9 (2.7%)
5. Other	5 (1.5%)
6. No response	2 (.6%)
Total	336 (100.1%)

If the respondent indicated a "3," "4," or "5" he was assigned a value of 2. If the response was a "2," he was assigned a value of 1. If his response was "1," he was assigned a 0 value.

118. One can get almost as much satisfaction from a hunt even if he doesn't kill a deer.

	Response Distribution
1. Disagree	272 (81.0%)
2. Partially agree	45 (3.0%)
3. Agree	45 (13.4%)
4. No opinion	9 (2.7%)
Total	336 (100.1%)

If a "1" was coded a value of 2 was assigned. If the coded value was "2" a 1 was assigned. All other responses were given a 0 value. The logic for assigning the specific values is discussed in the text.

The maximum possible value for the combined items is 6 and the minimum is 0. The respondent was assigned a high, moderate, or low rating on the IMS index according to the following criteria:

			No. of Respondents
High	-	(3 - 6)	86 (25.6%)
Moderate	-	(2)	83 (24.7%)
Low	-	(0 - 1)	167 (49.7%)
		Total	336 (100%)

APPENDIX D

APPENDIX D

INDEX OF DEER HUNTER INTEREST

The Index of Deer Hunter Interest contains three indicators; number of days the respondent hunts during an average season, whether he reads periodicals related to hunting, and if so, how often he reads them, and thirdly, what I call a sub-index of potential hunting opportunity which will be discussed below.

15. Number of days hunted.

The respondents were assigned to a high, medium or low class relative to this variable according to the following criteria.

Low - 1 - 5 days

Medium - 6 - 10 days

High - over 10 days

95. Reading hunting periodicals.

Low - Never reads such periodicals

Medium - Occasionally reads such periodicals

High - Regularly reads hunting periodicals

Potential hunting opportunity.

It was felt that some measure of the actual amount of deer hunting the respondent has done relative to the amount he could theoretically have done would furnish one measure of his interest. In other words, if a hunter is 45 years old, he could under Michigan law have hunted for 31 years. If he did not take up hunting until he was 40 or if he hunts only one year out of every five years, then this could be taken as one indicator of his interest. Granted a hunter could take

up the sport at 35 and become extremely enthusiastic but as Davis has documented[1] this seldom is the case.

The equation developed was as follows:

$$\frac{\text{Number of years hunted}}{\text{Age} - 14^2} = \text{Potential hunting opportunity}$$

The range of values possible were .0 - 1.0. The distribution of such values clustered into a tri-model pattern. These three clusters were divided into three classes according to the following criteria:

Low	-	.0 - .55
Medium	-	.56 - .86
High	-	.87 - 1.0

At this point the method of combining the three values for the three indicators becomes exactly the same as that employed in the SES Index.

Criteria for combining values into one index:

1. If the respondent has the same rating on two or more variables then assign him to that class.
2. If the respondent has a different rating on each of the three variables assign him to the <u>medium</u> class.
3. If data is not available for one variable then assign to a class according to the following criteria for know values:

   Low + High = Medium

   Low + Medium = Medium

   Medium + High = High

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[1] Davis, p. 11.

[2] Fourteen is the minimum legal age for deer hunting in Michigan.

4. If data is available for only one variable then assign that value class to the respondent.

The distribution according to the index is:

		Response Distribution
Low	-	67 (19.9%)
Medium	-	239 (71.1%)
High	-	30 (9.0%)
	Total	336 (100%)