DISTRIBUTION OF DEER HUNTERS ON THE MINESITE AREA*

> Man has been primarily a hunter during most of his time on earth. Modern sport hunting, performed properly, reenacts a drama as old as man himself. In this day and age when many rely upon others to provide their sustenance through the killing of animals, hunting serves to keep man in closer touch with environmental realities and enliven his interest in his heritage as part of nature. (Portion of the Wildlife Society's policy statement on Sport Hunting.)

DEER HUNTER SURVEY

Introduction

Each November over 300,000 hunters take to the forest and farmlands of Minnesota in pursuit of the white-tailed deer. Within the boundaries of the MINESITE area, deer hunting is an important form of terrestrial recreation. (This is based on the number of persons involved and total man-days spent in the field.)

We investigated existing state-wide methods used by the MDNR to census hunters and hunting pressure and concluded that we required a more specific technique to delineate hunter concentration on specific portions of the study area.

Traditional methods currently used on a state-wide basis include the following (Karns, 1979); 1) hunter report cards voluntarily required of all license holders; 2) telephone census of randomly picked hunters to determine, among other things, the hunting success ratio. Other methods used (hunter check stations and pellet counts) or under

* MINESITE Area--a 560 square mile area defined by the MDNR as the area having the highest potential for copper-nickel mining development.

investigation (summer track census and examination of does killed by vehicles to determine reproductive conditions) are techniques used to determine the survivability, size, age structure, and condition of the deer herd, and are not direct statistics on hunting pressure for a given area.

Methods

The deer hunter survey we devised had five principle goals; 1) to determine the number of vehicles (which was then expanded to the number of hunters) per mile of selected forest roads throughout the study area to provide hunter density estimates; 2) since hunters try to maximize their success, we assumed that hunter densities would provide another indirect method of assessing relative deer numbers on various portions of the study area; 3) to provide data for evaluating the potential loss of certain parcels of land to mining operations on the regional deer population; 4) to determine the proportion of "local" to "non-local" hunters to evaluate whether the potential loss of certain areas would affect recreation for residents only, or hunters from the entire state; 5) finally, the method had to fall within the limited manpower of the project.

Nineteen routes were established from the far northwestern portion of the study area to the extreme southeast (Figure D-1). Each route was established along accessable (improved gravel) USFS or county roads. In all, 164 km of roads were censused in a period of 6-7 hours for three consecutive days, with a total trip of 272 km required to return to base.

Hunters were censused on opening weekend (November 13 and 14) and the first Monday (November 15) of the state's rifle season. The number of vehicles observed and hunter density estimates are thus the maximum expected for the area. The 19 routes were censused from north-south on the 13th and 15th, and from south-north on the 14th to reduce any time bias that may be present.

The main census technique employed was to record license plate numbers from all vehicles observed. For each observation, the following information was recorded; road number, square mile number, license plate number, time seen, odometer reading and whether the vehicle was stopped (parked with no person(s) nearby or moving (Table D-1). License numbers were checked with the state to determine where each vehicle was registered for the breakdown of "local" and "non-local" hunters. Each vehicle parked was considered to be that of a deer hunter , since use of the study area by non-hunters during summer and fall was very limited. We then calculated the number of cars/kilometer route for the three days of the census, with an average for all three days.

The actual density of hunters per km and per hectare was determined by: 1) calculating the number of hunters per vehicle. This was done by counting hunters per moving vehicle and asking persons seen hunting near roads the size of their hunting party (person/vehicle); 2) calculating the number of hunters per hectare. Mech (1971) has estimated that the average distance hunters are willing to deer hunt from an access road in the Superior National Forest is one-quarter mile. The area hunted was calculated by multiplying the length of each route (to the nearest 0.1km) x 80.4 hectares (the area of a rectangular 1000 m long x 805 wide (¼ mile on either side of the road)).

In addition, when hunters were encountered near their vehicle they were asked whether they had hunted the area before or if this was the first time, and how they would rank the area as to deer seen per hunting effort (Table D-1).

A total of six man days (2 persons for 3 days) was required to complete this hunter survey.

Results

White tailed deer are associated with successional forest, primarily represented on the study area by the aspen community type. An area of approximately 115 square miles (29,500 hectares) adjacent to and south of the St. Louis River to County Road 16 contains the largest continous aspen stand on the study area. This area is represented on Figure D-1 by the land adjacent to and south of FR 120. The area has a variety of size and age classes and represents what we consider to be the most productive deer habitat in the MINESITE area.

Roads that provide access to this area and were censused during this survey are FR 420, 120, 569, 128, 130 and County Road 16 (Tables D-2 and D-3). These roads were generally far above average with regard to vehicles/km (Table D-2) and estimated hunters/100 h (Table D-3). The only northern route that was used extensively was FR 181 (known as the Spruce Road, Figure D-1). This area is not as diverse and does not have nearly the aspen resource found in the southern area. However, habitat adjacent to FR 181 is some of the best deer habitat available in the northern portion of the area. The proximity of this road to Ely may also explain the high hunter density.

The northern area, represented by FR 181, 173, 178, and portions of 112 and 424 (Route 5), has a large percentage of conifer forest (20-30 year old red and jack pine plantations and natural, extensive areas of black spruce) and are generally maturing forest types. The central portion of the area (FR 112 (Route 8), 1431, 114, 116 and 113) has been heavily cut over and is growing back to red or jack pine plantation, stands of trembling aspen or other upland shrub forest types.

Deer hunters encountered on the roads or near their vehicles were interviewed to determine whether they had hunted on the area before, or whether this was their first time on the area. A total of 54 different persons were interviewed. Eleven of these (20 percent) used the area for the first time, while the majority (43, 80 percent) had hunted in the area before.

When asked to rank the area as good, fair or poor for deer hunting, 62 responses were divided as follows: (1) good (17, 27 percent); (2) fair (22, 36 percent); (3) poor (23, 37 percent). The majority of the "good" responses (12 of the 17) were on the southern one-fifth of the area.

Conclusion

A deer hunter survey conducted during the first three days of the 1976 season (November 13, 14 and 15) provided information on the distribution and intensity of deer hunting on the MINESITE area. The heaviest concentration of hunters was in the southern portion of the study area, a region dominated by the aspen and aspen-birch ecosystems. Hunter densities in this area were 5 to 10 times that found along most northern and central census routes (Tables D-2 and D-3).

LITERATURE CITED

Karnes, P.D. 1971. Censuses and Harvests. In The white-tailed deer in Minnesota Symp. Proc., Edited by M.M. Nelson. Minn. Dept. Nat. Resour., St. Paul, Minn. P. 16-18.

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TERRESTRIAL BIOLOGY
REGIONAL COPPER-NICKEL STUDY

BIG-GAME HUNTER CENSUS

SEASON__________ DATE__________ ODOMETER READINGS: START______
FINISH______
TOTAL MILES______

Road No.	Sq. Mile No.	Vehicle License No.	Time (Military)	Odometer Readings (000.00)	Vehicle		Success			No. of Hunters In or Near Vehicle	Use of Area		Hunter Eval. of Area		
					Stopped	Moving	Deer	Bear	Moose		First Time	Used Before	Good	Fair	Poor
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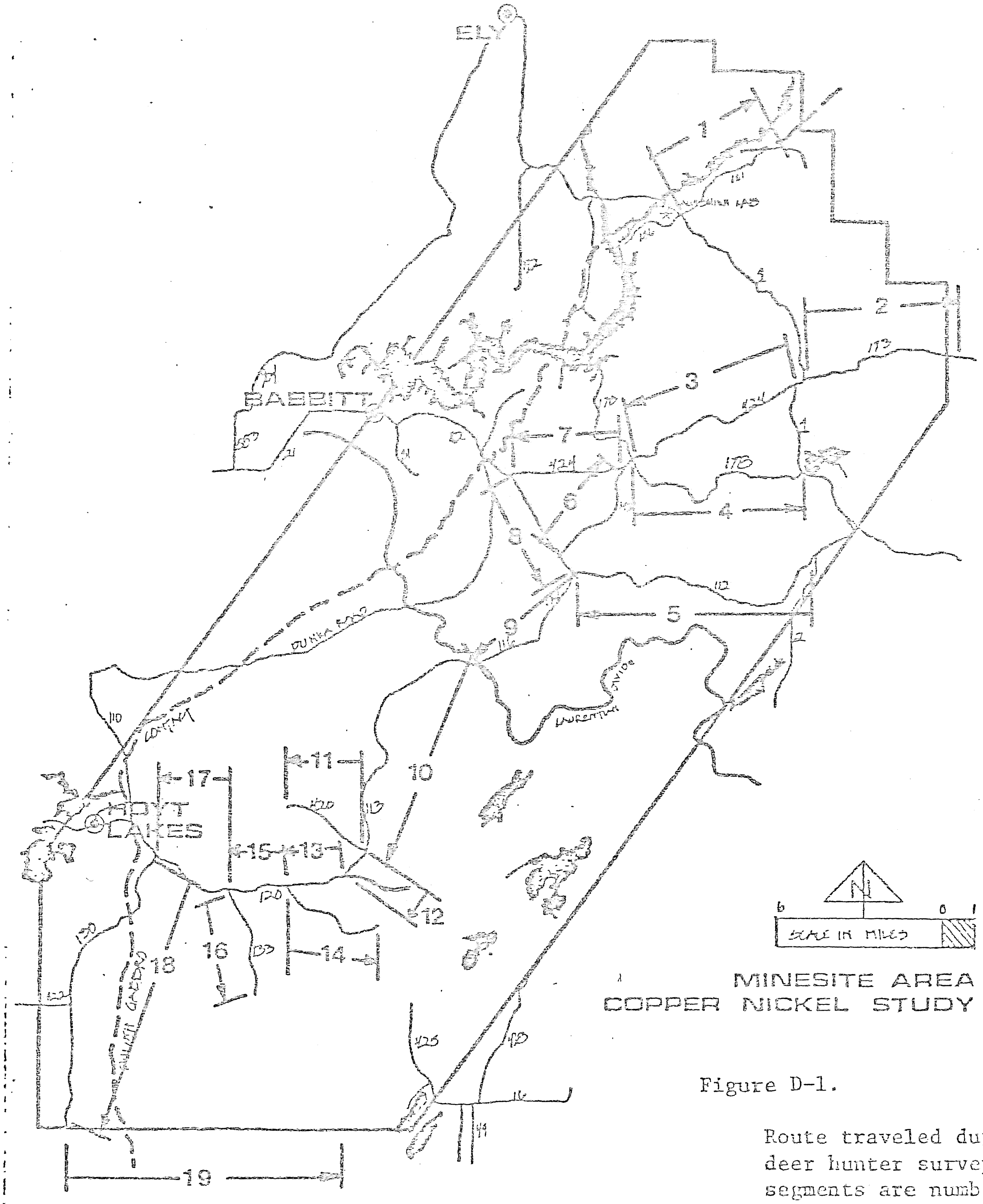

Figure D-1.

Route traveled during 1976 deer hunter survey. Route segments are numbered separately, along with the direction they were driven.

Table D-2.

The number of deer hunter vehicles per kilometer by route number and date for the 1976 season[a].

Road No.[b]	Route No.[c]	Route Length(km)	Nov. 13 (cars/km)	Nov. 14 (cars/km)	Nov. 15 (cars/km)	Average for 3 days (cars/km)
FR181	1	8.2	4.4*	1.2	1.6*	2.4*
FR173	2	9.9	0.8	0.0	0.2	0.3
FR424	3,7	16.6	1.4	0.6	0.3	0.8
FR178	4	12.5	1.5	0.2	0.6	0.8
FR112	5,8	22.2	0.9	0.8	0.7	0.8
FR1431	6	6.2	1.2	0.4	0.4	0.7
FR114,116	9	8.3	0.9	0.9	0.3	0.7
FR113	10,12	16.8	1.1	0.6	0.1	0.6
FR420	11	5.6	1.8	1.4	0.9*	1.4
FR120	13,15,17	11.8	1.5	2.0*	1.3*	1.6*
FR569	14	6.1	3.4*	3.4*	0.8	2.5*
FR128	16	7.2	6.4*	5.3*	2.1*	4.6*
FR130	18	16.5	2.2*	3.7*	1.7*	2.5*
County Road 16	19	16.0	3.4*	4.5*	1.1*	3.0*
Totals & Averages	19 routes	163.9 km	2.2 cars/km	1.8 cars/km	0.9 cars/km	1.6 cars/km

a only parked vehicles used in these calculations.

b FR is the Forest Road number designated by the USFS.

c see Figure D-1 for location of route in study area.

* Routes at or above the average.

Table D-3.

The number of deer hunters per 100 hectare by route number and date for the 1976 season.

Road No.	Route No.	Area of Route in Hectares[a]	Nov. 13 (hunters/100H)[b]	Nov. 14 (hunters/100H)[c]	Nov. 15 (hunters/100H)[d]	Average for 3 days (hunters/100H)[e]
FR181	1	659.3	1.40*	0.38	0.41*	0.73*
FR173	2	796.0	0.21	0.00	0.04	0.08
FR424	3,7	1334.6	0.22	0.09	0.04	0.12
FR178	4	1005.0	0.31	0.04	0.10	0.15
FR112	5,8	1784.9	0.10	0.09	0.07	0.09
FR1431	6	498.5	0.51	0.17	0.14	0.27
FR114,116	9	667.3	0.28	0.28	0.08	0.21
FR113	10,12	1350.7	0.17	0.09	0.01	0.09
FR420	11	450.2	0.84*	0.65*	0.34*	0.61*
FR120	13,15,17	948.7	0.33	0.44	0.23*	0.33
FR569	14	490.4	1.46*	1.46*	0.28*	1.07*
FR128	16	578.9	2.32*	1.92*	0.62*	1.62*
FR130	18	1326.6	0.35	0.58*	0.22*	0.38
County Road 16	19	1286.4	0.55	0.73*	0.15	0.48*
Totals & Averages	19 routes	13177.5 hectares	0.65 hunters/100H	0.49 hunters/100H	0.19 hunters/100H	0.44 hunters/100H

a area calculated by route length(km) x 80.4 hectares (the area of a rectangle 1000m long x 804m wide (one quarter mile hunted on either side of the road)). An average in area between routes was not describe

b 2.1 hunters/vehicle from Nov. 13 sample.

c 2.1 hunters/vehicle from Nov. 14 sample.

d 1.7 hunters/vehicle from Nov. 15 sample.

e 2.0 hunters/vehicle from Nov. 13, 14, and 15 sample, averaged.

* Routes at or above the average.

TERRESTRIAL BIOLOGY
REGIONAL COPPER-NICKEL STUDY

BIG-GAME HUNTER CENSUS

SEASON____________ DATE____________ ODOMETER READINGS: START________
FINISH________
TOTAL MILES________

Road No.	Sq. Mile No.	Vehicle License No.	Time (Military)	Odometer Readings (000.00)	Vehicle: Stopped	Vehicle: Moving	Success: Deer	Success: Bear	Success: Moose	No. of Hunters in or Near Vehicle	Use of Area: First Time	Use of Area: Used Before	Hunter Eval. of Area: Good	Hunter Eval. of Area: Fair	Hunter Eval. of Area: Poor
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HUNTING AS A RECREATIONAL ACTIVITY ON THE MINESITE AREA

> Man has been primarily a hunter during most of his time on earth. Modern sport hunting, performed properly, reenacts a drama as old as man himself. In this day and age when many rely upon others to provide their sustenance through the killing of animals, hunting serves to keep man in closer touch with environmental realities and enliven his interest in his heritage as part of nature. (Portion of the Wildlife Society's policy statement on Sport Hunting)

DEER HUNTER SURVEY

Introduction

Each November over 300,000 hunters take to the forest and farmlands of Minnesota in pursuit of the white-tailed deer. Within the boundries of the Minesite area, deer hunting is probably the single most important form of terrestrial recreation, This is based on the number of persons involed and total man-days spent ~~on~~ in the field.

We investigated existing methods used by the MDNR to census hunters and hunting pressure and concluded that we required a more specific technique to delineate hunter concentration on specific portions of the study area.

Traditional methods currently used ~~in~~ on a state-wide basis include the following (Karns, 1971); 1) hunter report cards volunteerily required of all license holders; 2) telephone census of randomly picked hunters to determine, among other things, the hunting success ratio. Other methods used (hunter check stations and pellet counts) ~~are~~ are under investigation (summer track census and examination of does killed by vehicles to determine reproductive conditions) are techniques used to determine the survivability, size, age structure, and condition of the deer herd, and are not direct statistics on hunting pressure for a given area.

plate number, time seen, odometer reading and whether the vehicle was stopped (parked with no person(s) nearby) or moving (Table D-1). License numbers will be checked with the state to determine where each vehicle was registered ~~the area of registration~~ for the breaksown of "local" and "non-local" hunters. Each vehicle parked was considered to be that of a deer hunter's, since use of the study area by non-hunters during summer and fall was very limited. We then claculated the number of ~~hunter's~~ cars/kilometer/route for the three days of the census, with an average for all three ~~these~~ days.

The actual density of hunters per km ~~of route~~ and per hectare was determined by: 1) calculating the number of hunters per vehicle. This was done by counting hunters per moving vehicle and asking persons seen hunting near roads the size of their hunting party (person/vehicle); 2) Calculating the number of hunters per hectare. Mech (1971) has ~~was~~ estimated that ~~the~~ the average distance hunters are willing to deer hunt from an access road in the Superior National Forest is one-quater mile. The area hunted was calculated by multiplying the length of each route ~~by taking the number of kilimeters~~ (to the nearest 0.1 km) ~~per route~~ x 80.4 hectares (the area of a rectangular 1000M long x one half mile, 804m, wide).

In addition, when hunters were encountered near their vehicle they were asked whether they had hunted the area before or if this was the first time, and how they would rank the area as to ~~the quantity of~~ deer seen per hunting effort (Table D-1).

A total of six man days (2 persons for 3 days) was required to complete this hunter survey.

Results

White tailed deer are associated with early successional forest, ~~types~~

~~which are~~ represented on the study area by the aspen community type. An area of approximately 115 square miles (29,500 hectares) adjacent to and south of the St. Louis River to County Road 16 contains the largest contiguous aspen type on the study area. This area is represented on Figure D-1 by the land adjacent to and south of FR 120. The area has a variety of size and age classes and represents what we consider to be the most productive deer habitat on the Minesite area.

Roads that provide access to this area that were censused during this survey are FR 420, 120, 569, 123, 130 and County Road 16 (Tables D-2 and D-3). These roads were generally far above ~~the~~ average ~~for the entire transect~~ with regard to vehicles/km (Table D-2) and estimated hunters/100 h (Table D-3). The only northern route that was used extensively was FR 131 (known as the Spruce Road, Figure D-1). This area is not as diverse and does not ~~contain~~ nearly the aspen as the southern area. However, some of the best deer habitat available in the northern portion of the area, ~~and its~~ nearness to Ely may explain the high hunter density.

The northern area, represented by FR 181, 173, 424, 178 and 1120 (Route 5), have a large portion of the ~~total area~~ in coniferes (20-30 year old red and jack pine plantation and natural, extensive areas of black spruce) and a generally maturing forest type. The central portion of the area (FR 112 (Route 8), 1431, 114, 116 and 113) have been heavily cut over and ~~are~~ either growing back to pine plantations or ~~show~~ a slow growing, shrub forest type.

Deer hunters ~~that were~~ encountered on the roads or near their vehicles were interviewed to determine whether they had hunted on the area before, or whether this was ~~their~~ THE first time ~~they had deer hunted here.~~ ON THE AREA. A total of 54 different persons were interviewed. Eleven of these (20.4 percent) used the area for the first time, while ~~a~~ THE large majority (43, 79.6 percent) had hunted here before.

When asked to compare the area as good, fair or poor for deer hunting, 62 responses were divided as follows: (1) good (17, 27.4 percent); (2) fair (22, 35.5 percent); (3) poor (23, 37.1 percent). The majority of the "good" responses (12 of the 17) were on the southern one-fifth of the area.

~~The~~ License plate numbers have not yet been ~~given to~~ CHECKED THROUGH the State ~~which will~~ TO allow us to determine the proportion of "local" vs "non-local" deer hunters on the area. The results of this check will be presented in future papers.

Conclusion

A deer hunter survey conducted during the first three days of the 1976 season (November 13, 14 and 15) provided information on the distribution and intensity of deer hunting on the Minesite area. The frequency of hunters was related to the distribution of the aspen ecosystem on the study area. Most hunters were encountered in the southern one-fifth of the area, with hunter densities in this area 5 to 10 times that found along most northern and central census routes (Tables D-2 and D-3).

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[illegible] use patterns of the [illegible] area [illegible] [illegible] for supporting a [illegible] regarding [illegible] (of the recreation associated with it) are [illegible] the [illegible] of the study area. This [illegible] area of approximately 115 square miles (29,900 hectares) currently provides the majority of this form of recreation on the study area.

LITERATURE CITED

Karnes, P.D. 1971. Censuses and Harvests. In The white-tailed deer in Minnesota Symp. Proc., Edited by M.M. Nelson. Minn. Dept. Nat. Resour., St. Paul, Minn., P. 16-18.

Mech, L.D. 1971. Wolves, coyotes and does. IN The white-tailed deer in Minnesota Symp. Proc., Edited by M.M. Nelson. Minn. Dept. Nat. Resour., St. Paul, Minn., P. 19-22.

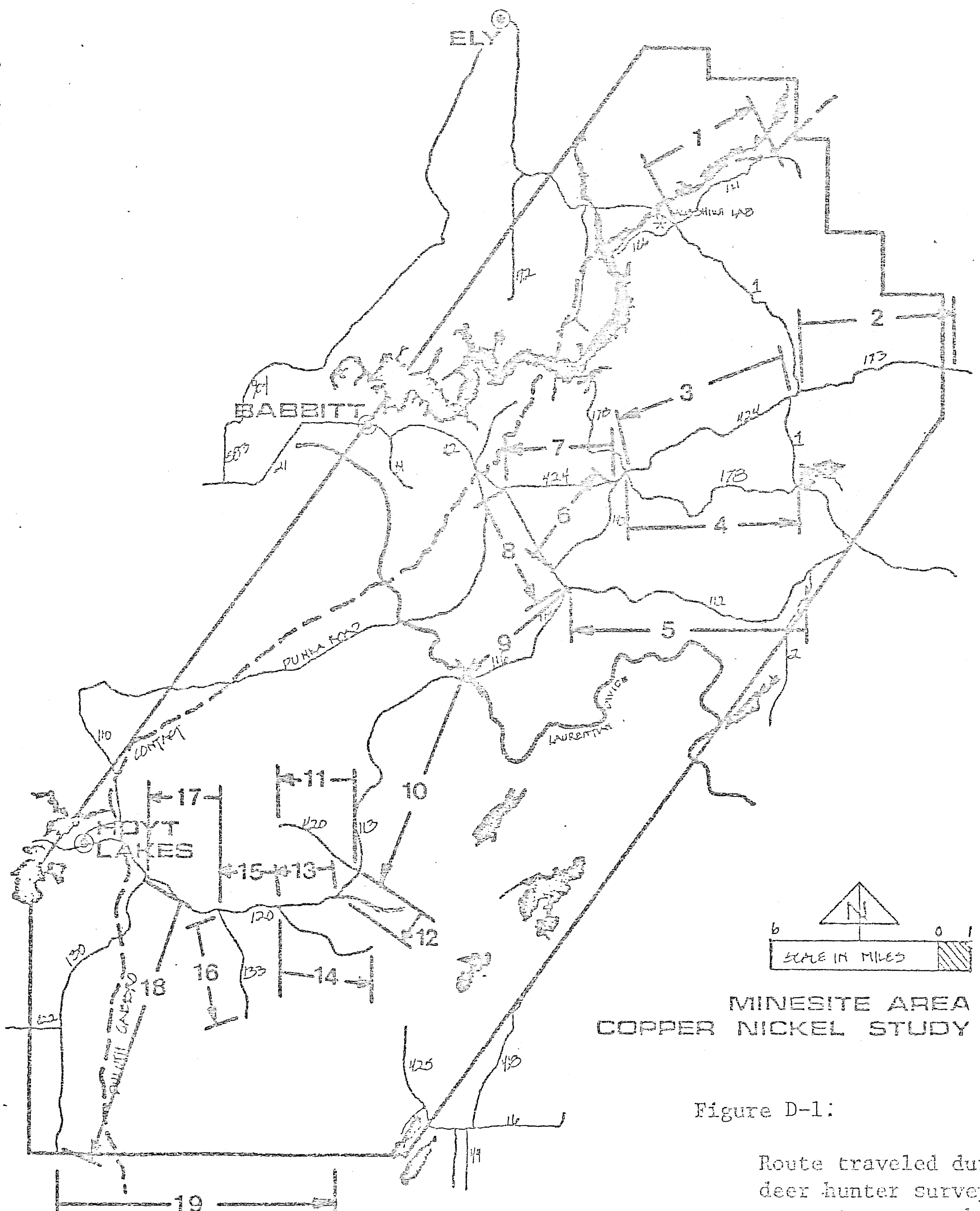

Figure D-1:

Route traveled during 1976 deer hunter survey. Route segments are numbered separately, along with the direction they were driven.

Table D-1. Deer hunter survey form.

TERRESTRIAL BIOLOGY
REGIONAL COPPER-NICKEL STUDY
BIG-GAME HUNTER CENSUS

SEASON ________ DATE ________ ODOMETER READINGS: START ________
FINISH ________
TOTAL MILES ________

Road No.	Sq. Mile No.	Vehicle License No.	Time (Military)	Odometer Readings (000.00)	Vehicle		Success			No. of Hunters In or Near Vehicle	Use of Area		Hunter Eval. of Area		
					Stopped	Moving	Deer	Bear	Moose		First Time	Used Before	Good	Fair	Poor
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