

MICHIGAN DEPARTMENT OF CONSERVATION
Game Division

Report No. 2400
October 31, 1962

Technical Report on the 1955 and 1956 Dead Deer Searches
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INTRODUCTION

The first survey conducted over a large area of Michigan to determine the total number of dead deer on the ground was conducted in the spring of 1955. It covered the northern Lower Peninsula (Region II), an area of 18,500 square miles. A paper on the method, results, and the management implications was presented at the twenty-first North American Wildlife Conference (Whitlock and Eberhardt, 1956).

In 1956 the dead deer survey was expanded to also include the Upper Peninsula (Region I), an area of 16,200 square miles.

Game Division Reports Nos. 2050 and 2094, and Information Circular No. 101 are summaries of the results of the dead deer surveys. The present report which includes minor corrections will present details of computation, statistical analyses, and basic data for use in planning future surveys. The original plot records and deer autopsy records are on keysort cards and on file in Lansing.

SAMPLES

The areas were stratified into 5 strata by field men, each in his respective area. One-half section samples were picked at random for each stratum with the number of half-sections per stratum depending upon the expected variability within, and the area of, the stratum. The total number of plots was 114 (Fig. 1) in 1955 and 140 (Fig. 2) in each region in 1956.

The plot within a half-section for the 1955 survey was a rectangular plot 1 mile long and 1/4 mile wide. The area searched was 4 chains wide along this rectangle, forming in effect a plot 4 chains by 2-1/2 miles and covering 80 acres (Fig. 3). The 1956 plot was basically the same except 3-man crews were used, thusly forming a plot 2-1/2 miles long by 3 chains wide and covering 60 acres (Fig. 4).

NUMBERS

For the 1955 survey, allocations were made for the five strata on the basis of the 1951 large-scale survey in connection with a study of the value of rye patches as an emergency deer food (see Game Division Report No. 1114). These earlier searches were restricted to edges of deer yards in generally overbrowsed areas. It was assumed that: (1) these earlier searches were in areas that would be included in the highest expected deer loss stratum only; and (2) that the other strata would have about the same degree of variability within the limits set by the stratification. Table 19 compares the 1955 assigned allocations and the optimal allocations based on the survey results.

The 1956 allocations (Table 20) were made on the basis of the 1955 survey which allowed greater refinement in the survey.

Figure 1

Location of Plots
Dead Deer Survey, 1955

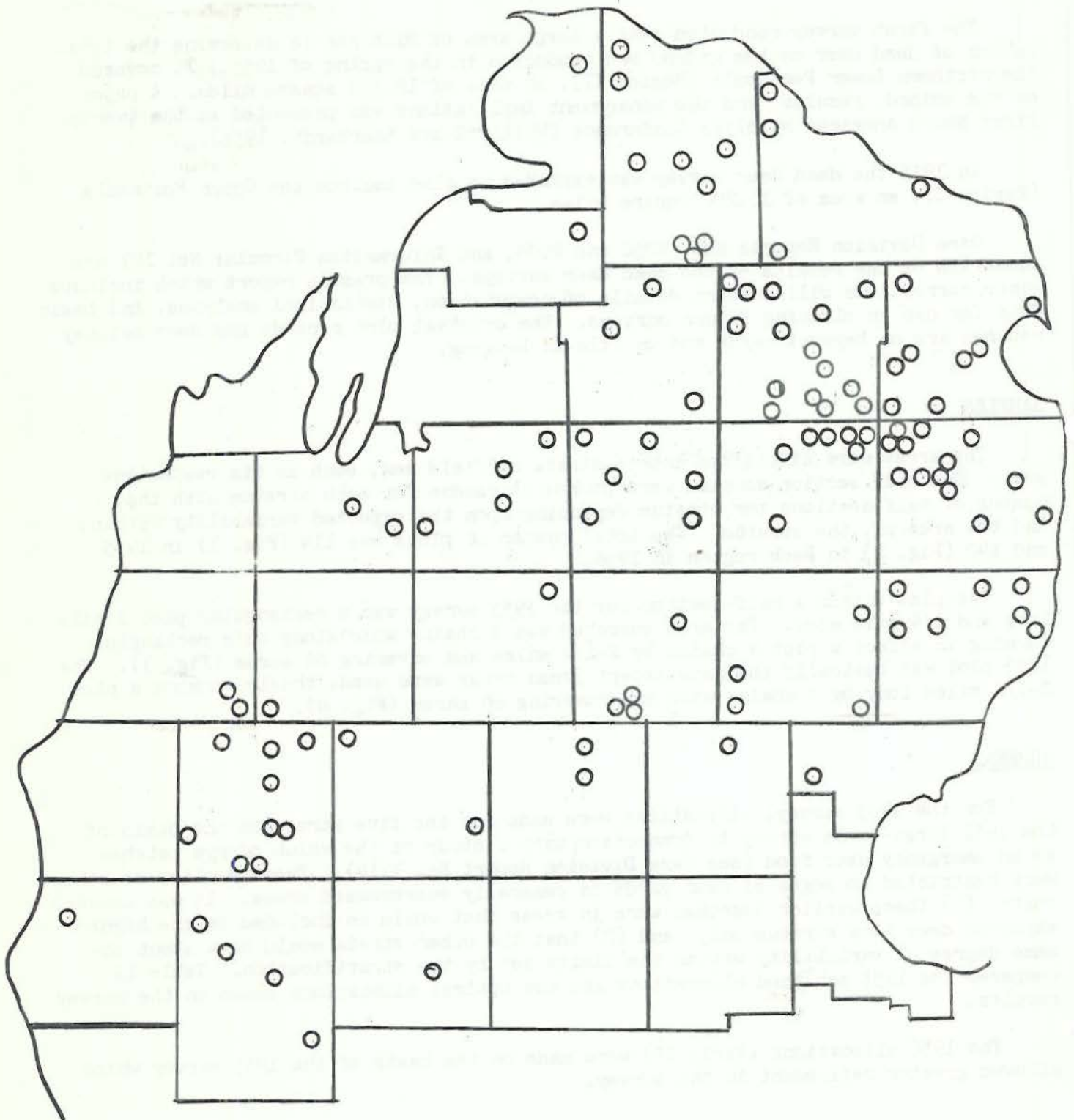


Figure 3

Dead Deer Plot, 1955

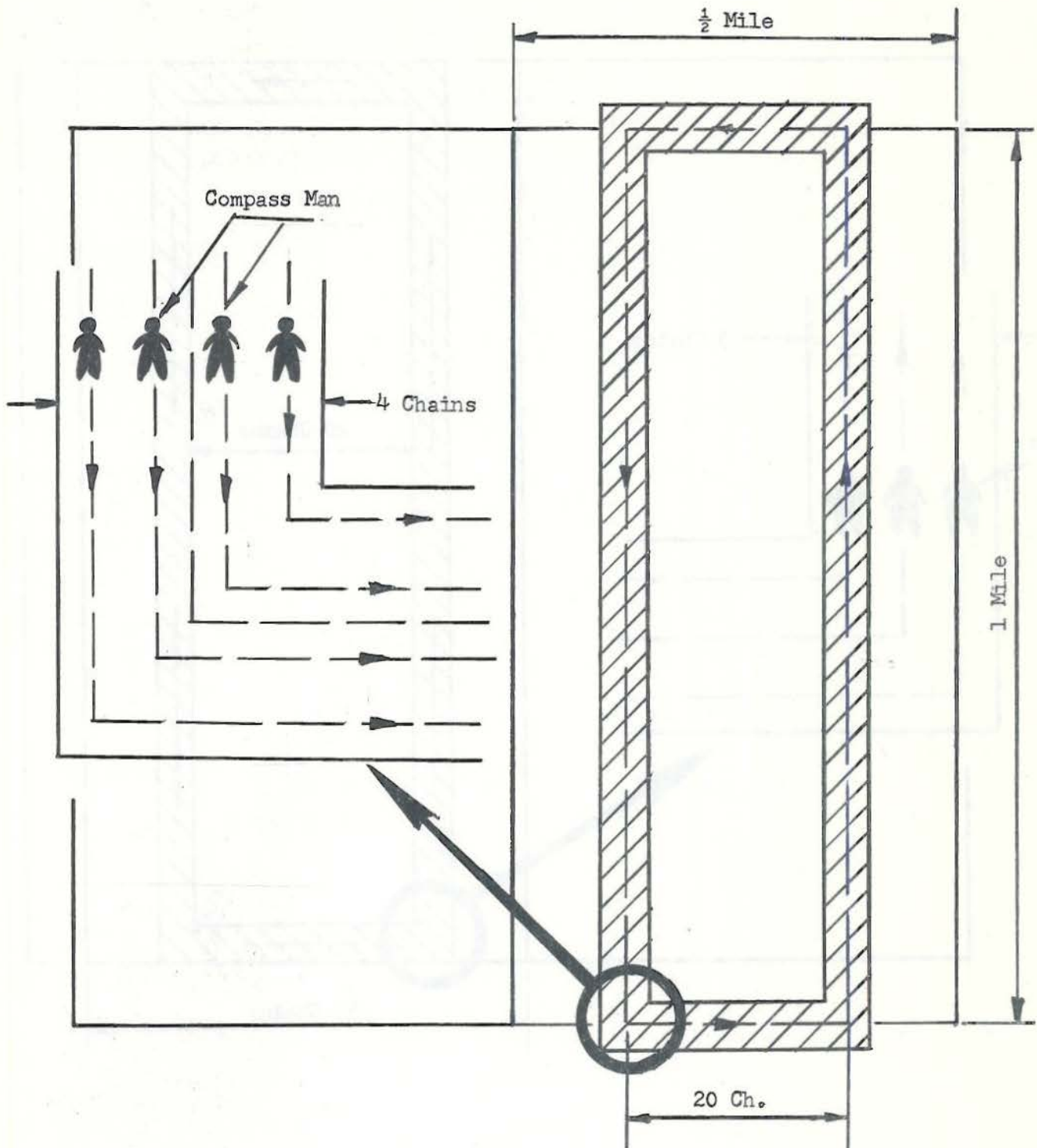
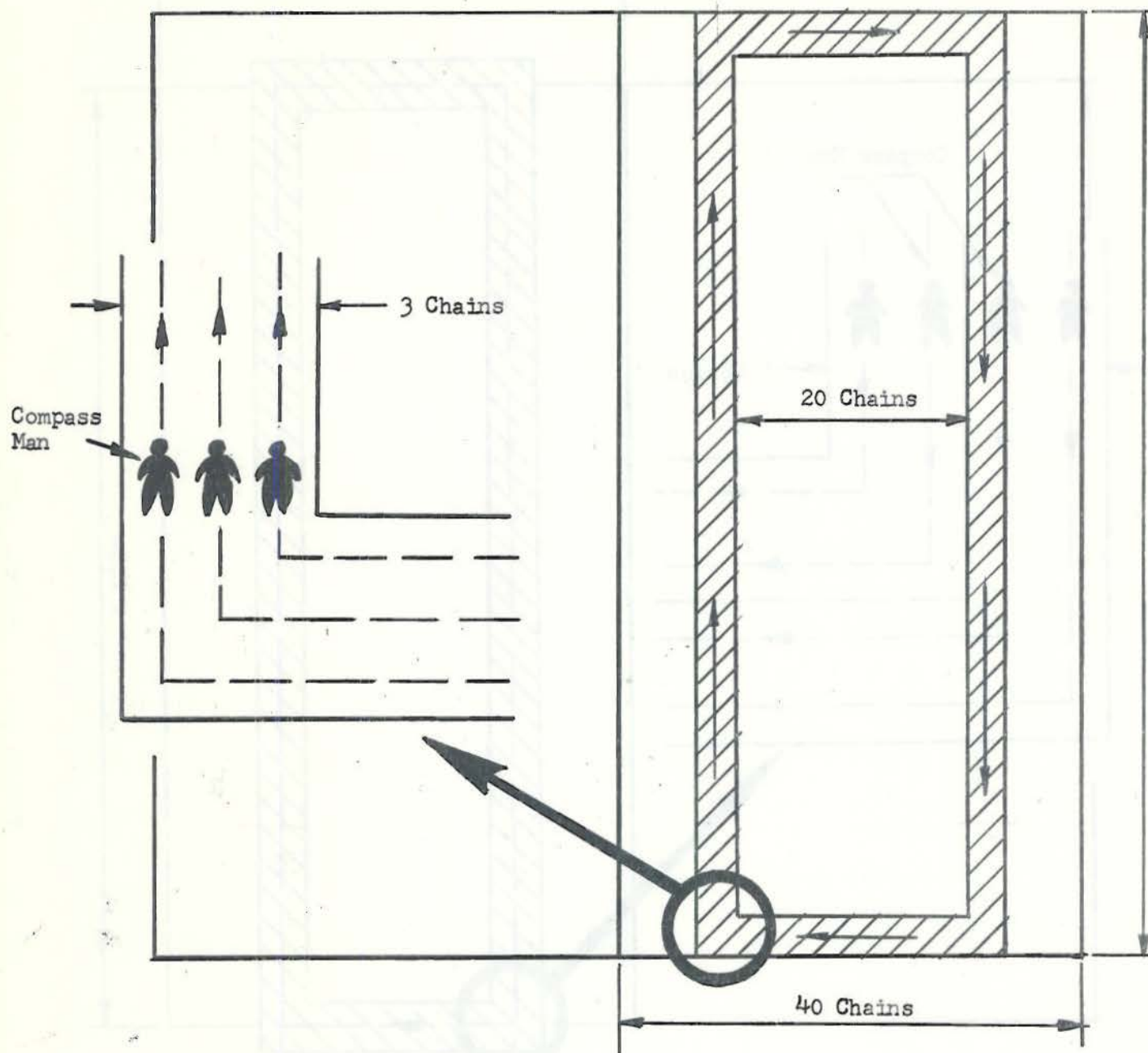


Figure 4

Dead Deer Plot, 1956



PROCEDURES

The plots were run on compass lines and the distances paced with one man acting as compass man and pacer. The other members of the crew aligned themselves at one chain intervals either side of the compass man. Each man then searched an area of 1/2-chain either side of his line of travel.

All deer found on plots were carefully autopsied by biologists on the crews to determine the cause of death. Approximate times of death were determined later from the information on the autopsy cards.

MANPOWER

The survey was an inter-departmental venture with personnel from several divisions participating in the field work.

Each crew consisted of four men in 1955 and 3 men in 1956, with at least one biologist (Game Division) per crew. The remainder were conservation officers, fire officers, forestry personnel, and occasionally interested private individuals. Summaries of the manpower are given in Tables 1 and 2.

Analyses of the number of plots done per crew day are shown in Tables 3 and 4 for the two years. The average plots ran per crew day are about the same for the northern Lower Peninsula for the two surveys.

In 1955 about 103 different individuals participated in the survey and walked a minimum of 1,140 man-miles actually searching plots. About 199 individuals participated in the 1956 survey and walked a minimum of 1,493 miles. Not included are unknown numbers of miles walked getting to and from the plots.

RESULTS OF THE 1955 SURVEY

A total of 86 dead deer were found on the survey plots (Table 5). All deer found were used in computing estimates of total dead deer on the ground; this total was then subdivided into those deer that died prior to Nov. 15, 1954 and those deer that died after Nov. 15, 1954. The median date that plots were searched was April 13.

The estimated total dead deer on the ground at the time of the survey was 33,098 \pm 35.194 per cent* (Table 6). The estimated post Nov. 15 deaths were 27,095 \pm 35.530 per cent* (Table 7).

RESULTS OF THE 1956 SURVEY

A total of 142 deer in the Upper Peninsula and 109 in the northern Lower Peninsula was found on the survey plots (Table 8). All deer found were again used to compute the estimates of total dead deer on the ground. The total for each region was further subdivided into those deer that died prior to Nov. 15, 1955 and those deer judged to have died after Nov. 15, 1955. The median date that plots were searched in the Upper Peninsula was May 3 and in the northern Lower Peninsula was April 12.

The estimated total dead deer on the ground at the time of the survey was 89,939 \pm 35 per cent* for the Upper Peninsula and 60,331 \pm 31 per cent* for the Lower Peninsula (Table 9). The estimated number of post Nov. 15 deaths for the Upper Peninsula

*Confidence limits of 2 standard errors.

Table 1
Summary of Effort
Dead Deer Surveys, 1955

Source	Man-days by district					Total	Proportion
	5	6	7	8	9		
Game	35	12	21	22	2	92	.360
Field Administration	57	4	63	14	6	144	.564
Forestry	4					4	.015
Other	3.5	12				15.5	.061
TOTAL	99.5	28	84	36	8	255.5	1.000

Table 2
Summary of Effort
Dead Deer Surveys, 1956

Source	Man-days by district									Total	Proportion
	1	2	3	4	5	6	7	8	9		
Game	46	33	24	29	24	5	25	20	6	212	.351
Field Ad.	44	30	25	29	62	7	35	11	8	251	.415
Forestry	31	24	22	29	10		2	5		123	.203
U.S.F.S.	14	3								17	.028
Other									2	2	.003
TOTAL	135	90	71	87	96	12	62	36	16	605	1.000