

MICHIGAN DEPARTMENT OF CONSERVATION  
Game Division

Report No. 1179  
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RESULTS OF PELLET GROUP SURVEYS - 1953

The preliminary figures on the results of the pellet group surveys were inflated because pellet groups from deer that were killed in deer season were counted. Upon completion of the post card survey of the deer kill in the regular and special seasons we calculated the deductions which should be made for each area sampled this spring. The corrected figures are as follows:

Source	No. of Plots	Average Groups Per Plot	Deer Per Square Mi. (Spring Pop.)	Error Limits Deer/Mi. <sup>2</sup>	Error As %	Av. Known Population Deer/Sq. Mi.
Lake County	370	1.10	10.6	3.4-17.8	68.2	
Mio Range Dist.	340	2.22	27.2	19.7-34.6	27.4	
Tawas Ranger Dist.	460	1.61	19.9	13.8-26.1	30.6	
Houghton Lake	450	1.20	11.3	7.1-15.4	37.2	
Casino Enclosure	440	3.35	39.8	28.9-50.7	27.5	28.8
George Reserve	219	2.24	30.6	23.1-38.1	24.5	30.9*

\* A close approximation

The error estimates given might be termed "possible error" or "expected error" since they indicate only the limits within which we have fairly good assurance that the true value will fall. That is, the figure given for deer per square mile is the best available estimate but since the sample amounts to only  $\frac{1}{4}$  acre in each township we should expect to be somewhat off through chance alone.

We have used a probability or "risk" level which insures that the error limits given will include the true value in 19 out of 20 such surveys. Thus for Lake County, the best estimate of spring deer population is 10.6 deer per square mile and we may be fairly confident that the actual population is between 3.4 and 17.8 deer per square mile. The "error as per cent" value of 68.2% is only another way of expressing the error limits since 68.2% of 10.6 is 7.2 and the limits of error are 10.6  $\pm$  7.2 deer per square mile.

The results given above take into account the variability or "error" associated with;

- (1) The sampling (number of plots, etc.)
- (2) Deer removal (deer kill during season)
- (3) Date of deer removal (during season)

They do not include any allowance for variability associated with;

- (1) The estimate of average pellet groups per deer per day.
- (2) The estimate of leaf fall dates.
- (3) "Pellet life" (some pellets may carry over from before leaf fall, etc.)

The error limits we've calculated as if the last three items above were exactly measured and not subject to "chance" errors and possible biases. This was necessary simply because we do not at present have any way of estimating the possible variation of these three items. Also the computations of error are only approximations since time has not permitted application of the best statistical methods.

Some of the above items may explain why the Cusino enclosure estimate does not quite fall within the error limits or, very possibly the "one in 20" chance has come off and the estimates do not agree through chance alone.

B. C. Jenkins  
Lee Eberhardt

BGJ/nlp