

Pheasant Brood Study  
Rose Lake Wildlife Experiment Station  
June 26, 1939 to August 5, 1939

By Warren Shapton

On June 26, 1939 a pheasant brood study was set up at the Rose Lake Wildlife Experiment Station, Clinton county, Michigan. This study was continued until August 5, 1939 at which time further brood counts were considered unreliable. The area upon which the experiment station is located consists of 765 acres of land typical of much of the poorer grade farm land found in southern Michigan. The purpose of the study was to show, (1) the relation of pheasant broods to the haying season, (2) to obtain information on the size of broods, (3) to determine brood habitat preferences, and (4) to investigate the relation of broods to woody cover.

In this study pheasant broods were observed 96 times. In as much as the study was carried on only during one summer, the conclusions arrived at should not be accepted as final but should indicate trends which can be checked in succeeding years. The brood study was carried on in connection with other work and does not represent the full time efforts of one individual. The broods were recorded on maps whenever seen, by each member of the station personell, and were later transferred to a master map. The author worked at random on the whole area, working more intensively those sections which were seldom covered by the farm hands. His records were also recorded on a map which was later used as the master map. A card index containing all available information was kept for each brood. A dog was used by the author in the latter part of the study, because it was believed that a dog could flush a larger percentage of the birds in each brood than a man on foot. Counts which were taken after August 5, are not included here because at that time it became difficult to distinguish young birds from the adults, and also, because there seemed to be considerable shuffling of birds from one hen to another.

#### Relation of Broods to Haying

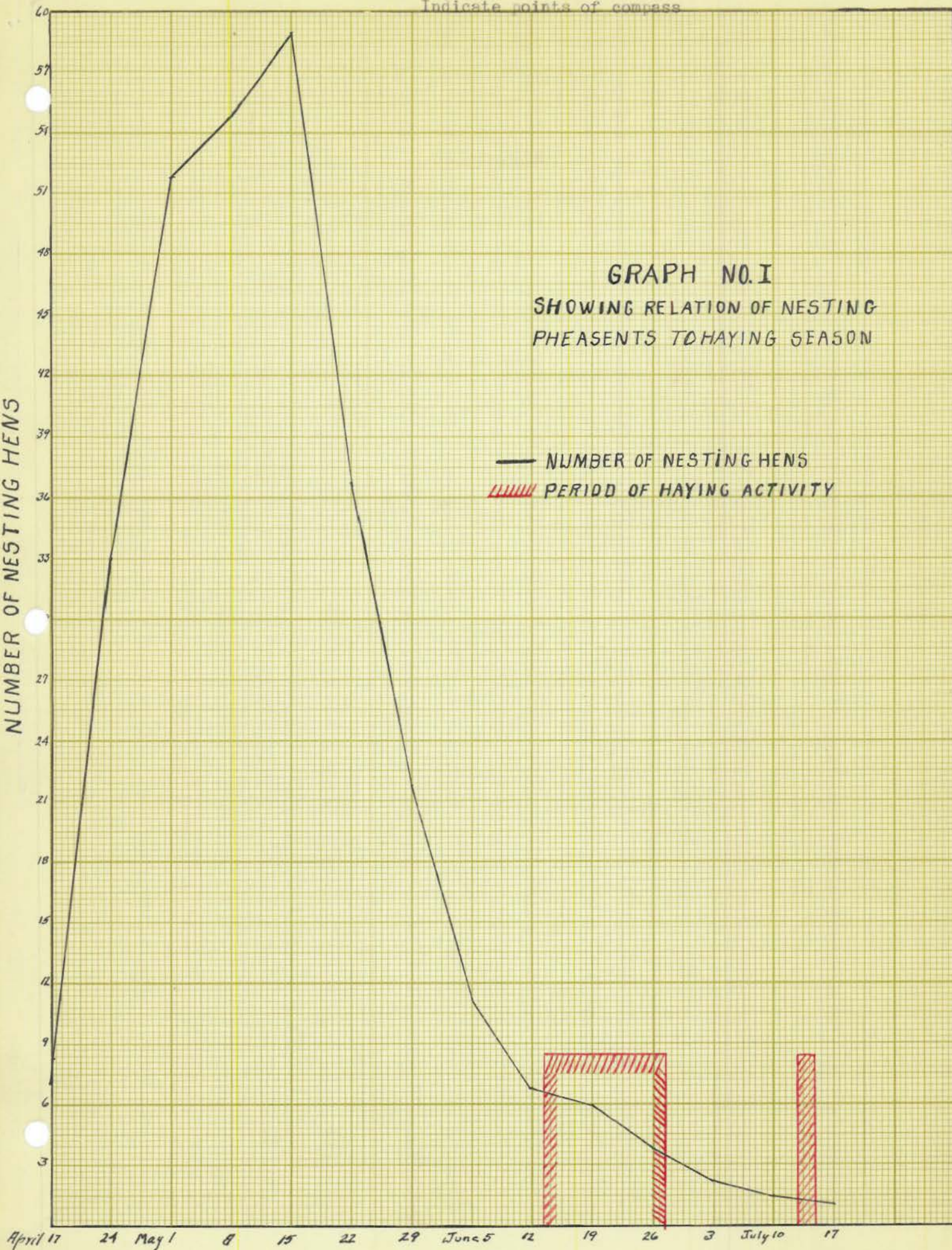
In showing the relation of the broods to the haying season, or to the time that the hay was cut, it was first necessary to determine when the hens were nesting. This was done by the use of a chart upon which all the broods were plotted with respect to age size and the time at which they were observed. When this was done the date that each brood hatched was calculated. To calculate the hatching date a 1/4 grown bird was considered to be five weeks old. The age of five weeks for a 1/4 grown bird was adopted after consulting men from the game farm. Since a 1/4 grown bird is five weeks old, a full grown bird would be twenty weeks old, a half grown bird ten weeks and a 1/3 grown bird seven weeks old. Young birds unable to fly were considered as 1/10 grown (0 to 4 weeks old). The date upon which each brood hatched was figured from the date it was seen and the size of the birds. A 23 day incubation period was then plotted before each hatching date to show the time that each bird was on the nest. From this data graph No. 1 was drawn to show the number of pheasants nesting during any given week. The graph represents weekly periods because the nesting dates could not be more accurately arrived at by the method used. The graph does not represent all the hens that nested on the area but does show the nesting periods of a random sample, therefore, it should give an index to the nesting periods as found on the whole area.



NUMBER OF NESTING HENS

GRAPH NO. I  
SHOWING RELATION OF NESTING  
PHEASANTS TO HAYING SEASON

— NUMBER OF NESTING HENS  
//// PERIOD OF HAYING ACTIVITY





The date that the hay was cut is represented on the graph in red. It shows that the nesting season had reached its peak before the meadows were mowed. The graph shows the relative number of pheasants nesting on the whole area, 765 acres, while in haying the whole area was not cut. It also shows that if the whole area had been cut only 8% of the total number of hens nesting would have been cut over. From earlier nesting studies it was found that of sixteen nests observed only five were found in hayfields, (31.2%). Now it follows that if 8% of the nests would have been cut over had the whole area been cut, and if only 31.2% of the nests found were found in hayfields, which were in reality the only areas cut, then, 31.2% of 8% which is 2.5% should represent the percentage of nests cut over in cutting the hay.

During the course of the summer extensive work was carried on with the flushing bar. We encountered great difficulty in making a bar that would not break and did not construct one that was satisfactory. Furthermore, at the time the flushing bar was used there did not seem to be any setting hens to flush. The above data explains why. This data however, differs greatly from that which English collected in Williamson Township during 1931 in that 62.2% of his birds nested in hayfields. Whether the nest site preference is a local condition or represents conditions during different years will have to be ascertained in the near future.

It appears from the work done at the Wildlife Experiment Station that the flushing bar, at least during this year, was of little value because, (1) a bar was not developed that could be used satisfactorily, and (2) only 2.5% of the birds were nesting in the hayfields at the time the hay was cut.

#### Brood Size

Brood sizes were calculated for each age class. All the broods were recorded on a chart, Chart NO 2, as to their size and the date seen. From this data a very definite decrease in brood size with increasing age was noticed. The birds decreased from an average of 8.2% birds per brood when 1/10 grown to 6.4% birds per brood when 2/3 grown. This decrease is 21.9%. Wight (1929 and 1930, unpublished) found that the summer loss of young was 17.7% and 17% respectively. English (Thesis 1932) found the average loss in Williamson Township to be 20% of the original flock. This loss is not uniform for all broods however, as an examination of the chart will show that some broods must have retained nearly all of their original number while others suffered heavy losses.



Address

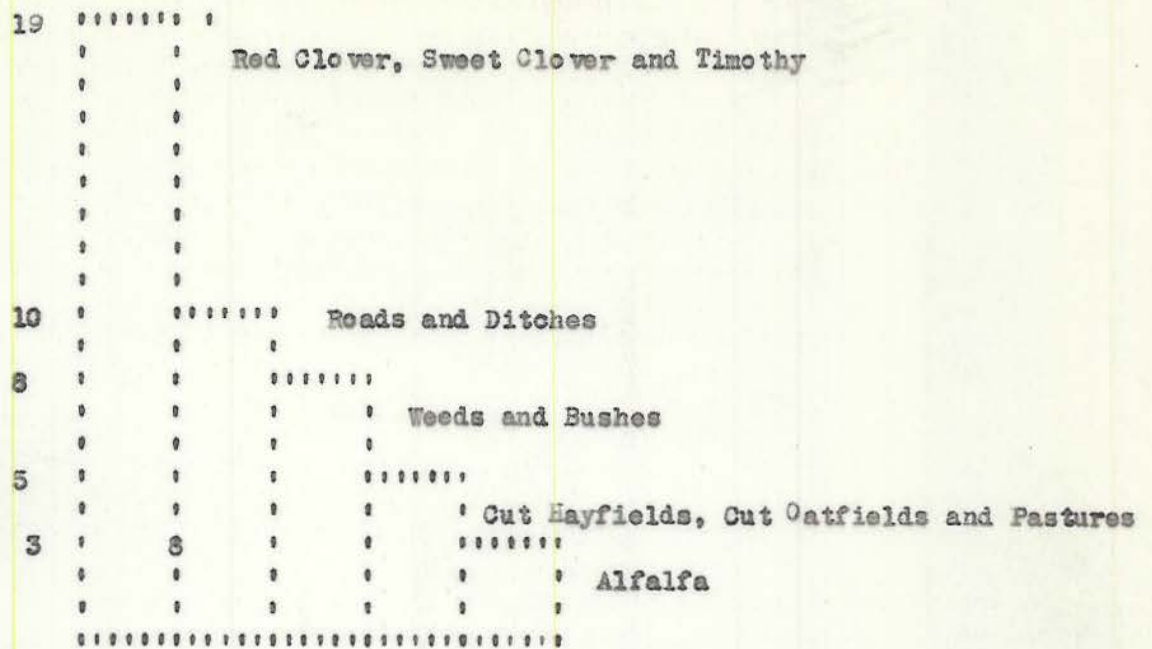
Indicate points of compass

Week of	Chart NO. 2					
	Birds 1/10 Grown	Birds 1/5 Grown	Birds 1/4 Grown	Birds 1/3 Grown	Birds 1/3 Grown	Birds 2/3 Grown
June 12-19	7					
June 19-26	7	7	10, 9			
June 26- July 2	7	12	9, 8, 4, 7, 4, 12 10, 7.	6.		
July 2-9	9	10, 7.	12, 3, 7, 3, 9, 6.	10, 6.	2.	
July 9-16		6, 6.	8.	9, 7, 5.	7, 5, 7, 8.	
July 16-23					7, 10, 6, 10.	
July 23-30				5, 8, 8.	3, 7, 7.	11, 4.
July 30- August 5			8, 5.		10, 8, 12, 8, 7, 6, 3.	3, 10, 4.
Average	8.2	8.0	7.5	7.1	7.0	6.4



## Brood Habitats

Graph showing brood occurrence in relation to cover types.



The above graph shows, from the several different types of summer cover available, the degree of preference shown for each type, or, the relative ability of the different cover types to hold birds.

It is apparent from the graph that nearly twice as many birds were seen in a mixture of red clover, sweet clover, and timothy as in either of the other four types. This cover type held or attracted 42.2 % of all the broods observed. It may be that the holding power of such a mixed stand lies in its diversification. It was noted that in these mixed hayfields the sweet clover generally grew spotty, that is, it grew in small patched or clumps and these were taller and furnished better cover than the surrounding hay. The timothy on the other hand tended to run-out, thereby leaving small spots which were almost open. With sweet clover providing the tall protective cover, timothy producing the open spots and red clover supplying the intermediate cover, there seems to be produced a cover type which is superior to a pure stand.

Roads and ditches were listed as a separate unit because it represents a special type of habitat. In the vicinity of the Experiment Station the cover along the roads consists of elderberry bushes, thick tangles of grape vines, plum thickets and tall grass. In this type of cover 22.2% of the broods were seen. This figure at first might seem to be high because the roads are traversed more than the other cover types, thus more birds being observed, but, I do not believe that the error is significant because of the special attractions which this cover offers. It provides better places for dusting, excellent escape cover with the numerous vines and bushes, and larger and more exposable quantities of food than the surrounding cultivated fields.

Weeds and bushes represents the type of cover found in swales, old abandoned hayfields and along over-grown fence rows. In this cover type 17.6 % of the broods were observed. This type of cover is valuable only for the protection which it affords, it generally being necessary for the birds to go elsewhere for their food.

### Broods in Relation To woody Cover

It was thought at the outset of this brood study that there might be a correlation between the age of the small birds and the distance that they might be found from woody cover. By woody cover is meant any type of cover cover that would include woody shrubs or trees, or both. Examples are, fence rows that contain bushes and vines, swamps, woody swales, and upland woods. Such a cover would be something that could be used as protection against a raiding hawk.

The data given below represents the distance in yards that each brood was seen from woody cover during each week of the brood study. The chart represents data that was collected on forty-one broods.

Week	Average distance in yds. from woody cover.
June 26	
July 2	39
July 2-9	16
July 9-16	31
July 16-23	20
July 23-30	15
July 30-Aug. 6	22

From the above data the only conclusion that can be arrived at is the fact that all the birds were within an average distance of 40 yds. from some kind of over-head protection. This does not necessarily indicate that woody cover is essential to the raising of pheasant broods. Another correlation was also tried between the size of the birds and their average distance from woody cover. The data is given below and it likewise gives no indication that the young birds move closer to, or away from woody cover as they grow older.

<u>Size of Birds</u>	<u>Average distance from woody cover</u>
1/4 grown birds	33 yds.
1/3 grown birds	45.5 yds.
1/2 grown birds	11 yds.
2/3 grown birds	21 yds.

Of sixteen nests found on the area thirteen or 81% were found within 50 yds of some type of woody cover, and only three or 19% were found over 50 yds from woody cover. This seems to correlate with the data found in the brood studies.



Cut hay and grain fields along with grazed pastures represent the shortest type of summer cover available. 11.1 % of the broods studied were observed on these areas. Such an area was used chiefly as a feeding <sup>Ground</sup> in the early morning and late evenings, upon which the birds picked up grasshoppers, crickets and fallen grains.

One of the surprising facts shown by the graph is the poor showing of alfalfa as to the holding or attracting powers for young pheasants. This is even more significant when it is remembered that alfalfa is one of the principal hay crops of southern Michigan. In trying to account for this apparent little use of alfalfa by the young birds it might be well to remember that this crop is usually cut three times, it doesn't grow very tall to begin with and it does <sup>not</sup> produce or furnish seeds that can be used as food until late in the season.

#### Cover Preferences and Age of Birds

Using the same data as used above an attempt was made to see if there was any correlation between the age of the birds and the type of cover in which they were found. But, as can be seen from the accompanying chart there appears to be no correlation. The mixed-hay type of cover held more birds all through the six month period than did any of the others. There were brood records in the mixed-hay type every week and in addition, the number of broods seen generally equalled or exceeded the closest competitor for any given week.

	Alfalfa	Red Clover Sweet " Timothy	Cut Hayfields Cut Oatfields Pastures	Roads Ditches	Weeds Bushes
June 26					
July 2	1	2	1	2	1
July 2-9		1		2	2
July 9-16	1	7		4	1
July 16-23	1	1			2
July 23-30		4	2		2
July 30		4	2	2	
August 5					
	<u>66</u> 3	<u>19</u>	<u>5</u>	<u>10</u>	<u>8</u>