THE EFFECT OF HUNTING ON THE DOVE POPULATION

FRANK A. WINSTON, Florida Game and Fresh Water Fish Commission

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To the question, "What effect has hunting on the Mourning Dove," probably the most accurate, brief answer is, "With our present regulations, none."

This conclusion has been arrived at quite unexpectedly as the outcome of our analysis, just completed, of the results of four years of intensive study of the dove in Florida, as a part of the coordinated southeastern dove study. Since our conclusions, emerging from the study, ran quite contrary to what has been the prevailing pattern of thought in establishing hunting regulations on the dove during recent years, we feel that it is desirable to present both findings and conclusions for as widespread critical comment as possible.

All of the cooperating southeastern states simultaneously employed most of the same steps in developing methods and techniques for collection of data for three principal phases: trapping and banding, population counts and hunter bag checks. Probably a combination of fortuitous circumstances allowed Florida to finish with more conclusive data than was possible in most of the other states. First of all, geographically, Florida is relatively "self-contained." With the exception of a comparatively short northern boundary, the state is surrounded by broad water barriers. Second, we were able to draw on an extensive backlog of earlier banding records, unparalleled in any other state; notably, records on some eight thousand doves banded by Demeritt in Key West during the '30s. And finally, during the course of the present study, we have been able to develop two outstanding sources of volume banding, at West Palm Beach in southern Florida and at Franklin County in northwest Florida, which not only has enabled us to band some nine thousand birds, but also has made possible the identification of at least two distinct migratory segments within the state. In other words, we in Florida have available for analysis a greater volume of band recovery records than has any other individual state.

Our conclusion that hunting under present regulations has no effect upon the dove population can be arrived at through the development of ten steps which I shall outline and enlarge upon briefly. For some of the steps, it has been necessary to make assumptions which I believe could be focal points for serious critical attack. The assumptions had to be made on phases for which, unfortunately, neither we nor, as far as I know, anyone else has any extensive reliable data.

Steps leading to our conclusion are as follows:

1. There are two general causes of dove mortality:
    a. hunter kill
    b. natural causes (disease, predation, accident, etc.)
2. Band recoveries from hunting will tend to be a reasonably accurate reflection of mortality due to hunting activity.

Now admittedly, some birds will not be recovered; but fundamentally, the death of the bird occurs in the vicinity of and with the awareness of the hunter, and definite effort will be made to recover the specific bird. By contrast, recovery of a bird dead from natural causes is dependent upon a chain of remote

coincidences which results in bringing an observant human and the dead bird into an extremely limited spacial area (probably a few feet radius) and during a very brief time interval, before the bird has disintegrated.

You will notice from Table 1 that one third of the West Palm Beach recoveries are not taken by the gun. We believe this is an unique record made possible by the fact that extensive banding operations have been carried on in close proximity to a large town, so that dead doves are found in private yards of the town. Under the circumstances, the data cannot be considered representative of the results normally anticipated from most trapping operations, but we also feel that it is a fortunate step toward enabling us better to define the tremendous range of natural mortality in doves.

No attempt has been made to estimate the relationship of total illegal kill to total kill; no statistics are available. It is my personal belief, based on my own experience as well as on such information as I could gain from the law enforcement branches, that the total illegal kill in Florida is relatively negligible. For that reason, at this time, no allowance has been made for illegal kill. Furthermore, it cannot be assumed that band recoveries from illegal kill will not be reported. We know definitely that at least one of our recovery records was the result of out-of-season hunting.

The recovery rate on dove bands always has been low, and an intensive, well publicized and dramatized campaign on band returns during three years resulted in no observable change in recovery rate. Therefore, we believe that such band recoveries as are not reported must be considered negligible.

3. All evidence of this study indicates that "crippling loss" will not exceed 25% of the total birds brought to bag.

Averages of statistics collected from hunters in the field, both by the dove project and by a harvest and inventory project maintained by the state, indicate that crippling loss ran generally at less than 25% of the total bag. Furthermore, it is the considered opinion of the field workers that hunters tend to use crippling loss figures as a cover-up for their own poor marksmanship, and that a true figure would run considerably less than the reports given.

4. Total band recoveries from all causes since 1920 have averaged less than 4% of the birds banded (3% for Florida). Therefore, if all recoveries were assumed to be due exclusively to hunting (which they are not — 18.8% to 36.0% of recoveries being from birds dead of natural causes) and the recovery rate were increased by one quarter to allow for crippling loss, the total volume of kill due to hunting action would not exceed 4% of the total population. If one felt it necessary, or desirable, to double, or even triple, this 4% figure to allow for illegal kill and non-return of bands, the resultant total still would remain a very small percentage to account to the gun.

It might be noted here, that most of that recovery rate is based on past years, when both bag limit and hunting season were considerably greater than they are today.

5. Accumulated recovery records over many years indicate that the dove is short lived, that 70% to 80% die within the first year; that approximately 50% die within the first 90 days.

Analysis of all dove band recoveries countrywide since 1920 shows that 70% of all recoveries are made within one year of banding. For Florida, the figure has been higher, more than 80% being recovered within one year of banding. Since

Table 1. Analysis of band recoveries: Florida.

Days after banding	Statewide – 4 year recoveries		West Palm Beach – 4 year recoveries		Key West – 8 year recoveries	
	No.	%	No.	%	No.	%
30	58	21.3	16	11.8	49	30.4
60	41	15.0	17	12.5	25	15.5
90	42	15.4	25	18.4	15	9.3
120	17	6.2	10	7.4	7	4.3
150	17	6.2	12	8.8	1	0.6
180	15	5.5	9	6.6	2	1.2
210	10	3.7	10	7.4	2	1.2
240	5	1.8	5	3.7	2	1.2
270	4	1.5	2	1.5	2	1.2
300	9	3.3	5	3.7	6	3.7
330	6	2.2	6	4.4	11	6.8
360	8	2.9	5	3.7	11	6.8
390	7	2.6	2	1.5	5	3.1
420	2	0.7	1	0.7	3	1.9
450	7	2.6	1	0.7	1	0.6
480	2	0.7			1	0.6
510	4	1.5	3	2.2		
540	1	0.4	1	0.7	1	0.6
570	2	0.7				
600	2	0.7	1	0.7	1	0.6
630						
660	1	0.4	1	0.7	4	2.5
690	2	0.7	1	0.7	1	0.6
720					2	1.2
750	3	1.1			1	0.6
780	1	0.4			2	1.2
810					1	0.6
840	2	0.7	2	1.5		
870	1	0.4				
900	1	0.4	1	0.7		
930						
960	1	0.4				
990	1	0.4				
1080					2	1.2
Number doves banded			8896	5271	8000 (approx.)	
Number of band recoveries			272	136	161	
% of recovery			3	2.6		
Number taken by gun			221	87		
% taken by gun			81.2	64.0		
Number from natural mortality			51	49		
% from natural mortality			18.8	36.0		
% return within 90 days			51.7	42.7	55.2	
% return within 1st year			85.0	90.0	82.0	

records from banding are considered to be representative of the total dove population, it can be said therefore that only 20 - 30% of the doves survive beyond one year of banding, and that mortality is 70 - 80% the first year.

Table 1 shows that the recovery records for the State of Florida have been broken down into greater detail, by 30 day intervals, indicating further that approximately 50% mortality occurs within 90 days after banding. The same pattern also was displayed by Demeritt's banding during the '30s.

If banding is done immediately prior to the time the birds go before the gun, i.e., within 90 days, a much greater rate of band recovery can be expected than when recoveries are based on bandings done some time previously or at random throughout the preceeding year. This principle particularly is demonstrated by results from our Franklin County banding. For two years, hunting dates were such that the birds moved from banding to before the gun for considerable intervals both at the start and at the end of the 90 day period, and recovery rates were consecutively 9% and 8%. In 1952, a shortened hunting season allowed a very brief period at the start and only slightly longer period at the end of the 90 day interval, and the band recovery rate slumped to 5%, which still remains more than twice the national average recovery rate of 2.3%.

It has been suggested (Austin's work at Cape Cod) that the mortality of juveniles is greater proportionately than that of adults. Thus, theoretically, the greater than average recovery rate for Florida might be explained by saying that more juveniles were banded in Florida immediately prior to the hunting season. It would seem, however, that similar conditions would occur in other states, since there is a tendency for more birds to be banded at times when more birds are present in an area, and the period toward the end of the nesting season and just prior to hunting would best conform to those conditions.

Insofar as it is desirable to know as much as possible about any game species, it is desirable to learn more about the causes of natural mortality for the dove. However, it is my opinion that if we could learn exactly the causes of mortality, probably not much could be done about them. The wildlife technician concerned with dove management instead should be more concerned with the relationships between the time of peak population and the time of the hunting season.

Hunting seasons set early, as close as possible to population peaks will allow the harvest primarily of doves which would be dead anyhow in approximately 90 days. The later the season is set, the greater the probability is that the kill will cut into that proportion of the population on which the next season's production is dependent. It also follows that a very great kill during an early hunting season will be equivalent in value to a much smaller kill during a late season. The size of the maximum total kill allowable moves in an inverse ratio to the lateness of the season.

Very probably, the rate of mortality will decline gradually over a period of time as the survivors gain in experience, but the overwhelming majority of the peak population flocks which occur in the fall are birds of the year, and therefore for the first 90 to 180 days, the formula would be most applicable.

6. Even if an entire hunting kill of 4% were concentrated within the first 90 days, the toll would be insignificant compared to the mortality toll due to natural causes.

7. Therefore, during a period of peak populations, within a 90 day interval, 50% of the doves will die, regardless of whether they are left to die unharvested, or are taken by the hunter limited by our present regulations.
8. It is believed that it may be assumed safely that the peak population for all doves in the country is reached sometime in late summer (toward the end of the nesting season). This places the time approximately that the greatest actual number of doves, regardless of geographic location, will be dying from natural causes, during the months of September, October, and November.
9. September, October, and November are the months during which the bulk of the hunting seasons are placed. Therefore, hunting toll at this time would be least significant to the overall dove population.
10. It follows that although the actual total number of doves in the country could be half as great by December as it was earlier, a similar rate of mortality will be comparatively operative, and the toll from December shooting will be only slightly more significant to the overall dove population.

Therefore, we have arrived at our conclusion that, with our present regulations, hunting activity does not just "not harm" the dove, it makes no difference to the population. Furthermore, the earlier the hunting season can be set, the greater the take which can be allowed without making any difference in the total dove population.

It will be noted throughout, that the phrase "with present regulations" has been emphasized. There is no question that at the present time the hunter is being limited in his take far beyond any requirements for perpetuation of the species. Present regulations do not protect the dove, and place unnecessary restrictions on the hunter, this much we believe this study has shown. However, there also is no way of predicting from the results of the study what the effect of total relaxation of dove hunting regulations would be.

Therefore, we have recommended that there be a gradual relaxation of regulations, subject to the constant surveillance of population status which is possible with the techniques which have been developed. If at any time these techniques for evaluating population status should indicate the appearance of a dangerous condition locally, the regulations should be sufficiently flexible to provide as much protection as possible for the dove within the geographic area affected, i.e., within a certain state or fly-way.

Relaxation of regulations is dependent primarily on two factors: extension of the season and increase in bag limit. During the course of this study, we have found that the average bag per hunter has been less than 4 birds per day, and that the average dove hunter goes out only five time, regardless of the limits allowed legally. Therefore, since both average bag and average number of days hunted have proven to be far below the limits allowed legally, there is no way of calculating how much relaxation of regulations would be neccesary to show any effect whatsoever upon total kill.

It is quite probable that these direct techniques for controlling total kill are in themselves meaningless, that their greatest use is purely subjective, insofar as they make the prospect of dove hunting more or less enticing to the hunter. The greatest effect from extension of the season may come primarily through the inclusion of more "job-free" days (weekends and holidays), plus or minus the

influence from competition from other game species. It looks very much as though the real determinants of total kill will be: 1) how many times the hunter goes into the field; 2) how many hunters are induced to either start or quite hunting doves.