SOME EXPERIENCES WITH MOURNING DOVES IN CAPTIVITY

Margaret Morse Nice, 1920.

The following brief notes were made on two young male western mourning doves (*Zenaidura macroura marginella*) which we had in captivity from the fall of 1919 until the spring of 1920.

The older bird, F, was given to us September 25, 1919, when about two months old; he had been injured by blue jays and a dog, and for a week or so did not seem able to fly well. He was always very tame with people, liking to sit on their hands and preen their fingers. We used to take him outdoors in the fall letting him ride on the baby carriage. He was however, entirely undiscriminating

in his relations with people, being equally friendly with strangers as with those who cared for him His lack of intelligence—and this was true of all the mourning doves we had—showed itself also in an absence of curosity; he never examined anything about the house, he almost never explored any place; as a rule he merely stayed on the window sill and the feeding table. This is just the opposite of the behavior of my pet bobwhite who always experimenting on things (Nice, 1911). F. showed "fear" twice (Craig, 1909) by raising his wings as high as he could; the first occasion was September 25 upon the introduction into his cage of two hopping toads, one of which he tried to peck; the second time was later in the same day when the first of the young doves was put with him. He paid no attention to a quiet frog, nor, later to young doves.

Although the epitome of gentleness with people, he was cruel to the younger doves, pecking them especially viciously when they annoyed him by "begging" from him. After D. grew big enough to peck back, the two birds seemed to be good friends most of the time, but April 15, D. was feeling droopy and F. started to peck him so unmercifully that I had to shut the tyrant up. About a week before this, F. had been very affectionate to D., caressing and preening him, apparently trying to make a mate of him; D., however, usually hurried away.

On April 21, 1920, we gave him his freedom; he quickly flew out of sight, but came back twice, once in the afternoon of the same day when he was so tame that he let neighbors catch him, and again the next day. He is banded with the number 20480.

D. was taken from the nest Oct. 1, 1919, when he appeared to be about 9 days old. He learned to drink milk in 5 days, to pick up seeds in 7 days and to eat bread and milk in 11 days. He was tame as long as he was dependent on me for food, but just as he was becoming independent—about the age of 3 weeks—he began to show fear by striking at me with his wing when I tried to feed him, and two or three days later he was thoroughly timid and remained so as long as we kept him. At 4 weeks of age he still begged frantically from F. when the latter returned after an hour's absence, but that was the last instance I saw. At this time his head was entirely bare due to the treatment he had received from F. When 3 months old he sometimes got the better of F. but in general they were peaceable. March 31, when F. seemed sick, D. did not molest him. D. was banded with the number 20481 and given his freedon April 21, since which time we have not seen him.

NOTES OF MOURNING DOVES

Craig (1911) describes five different notes that these birds utter: the begging note, which is "a musical sibilant, sliding up the scale, and easily imitated by whistling sssst" the alarm cry—" a single, short, emphtic ejaculation;" the copulation-note, the song or coo; and the nest-call. Of the song he says: "For romantic sweetness there is no pigeon song I have ever heard which can approach that of our mourning dove. The female also utters the perch-coo, though less often than the male, and in a thin, weak voice and staccato tones." The nest call "is much shorter than the song and much fainter, so that the field observer may fail ever to hear it. Its typical form is of three notes, a low, a high, and a low." It is given "usually in the nest, or in some post which is likely to be chosen as a nesting site."

With our birds we heard the begging note ,the alarm cry, the coo and a conversational "putt" which was entirely juvenile. The begging note was used by D. until 4 weeks old. We found the alarm note uttered much more frequently by the doves when young than when adult. The conversational "putt" we noticed from the time D. was 7 weeks old till he was 4 months; but it was seldom used during the latter part of the period.

On November 5, I watched the birds for 50 minutes; D. was 7 weeks old and F. about 3 months.

2:20 F. and D. sunning themselves on the window sill. F. apparently sees something to scare him and gives alarm note loudly 67 times in succession. His bill is closed and his tail is jerked slightly at each note, his neck feathers being ruffled. D. does not seem disturbed; he says "putt" softly once.

2:24 F. gives soft "putts" with bill closed; then a dozen or more alarm grunts, sounding something like a toy when it is squeaked. D. says "putt, putt".

2:27 F. gives 3 alarm grunts; then 5 soft "putts".

2:28 Another grunt; then more "putts", his tail is jerked slightly with each "putt".

2:30 They lie contentedly in the sun. F. utters 4 "putts" in 20 seconds.

2:35 Both say "putt" a number of times. F. preens himself.

2:45 F. much frightened at pigeons flying by; he says "oo-oo-oo-oo" at least 200 times. D. pays little attention to F's excitement but is standing still all this time.

2:55 F. still at it: "oo-oo-oo-oo". D. says "putt, putt, putt".

3:00 F. still giving alarm note; while D. utters "putts".

3:10 F. quiet at last; D. saying "putt, putt".

3:12 D. gives an alarm note.

It will be noted that both birds gave the alarm note, although D. uttered it only once in contrast to the hundreds of times that F. indulged in it. Both used the "putt" about eqallly. They were lying or standing still all the time. This may be a homologue of the "kah" of the young ring dove as described by Craig (1909) where he notes they "have an intermittent call. It is in the same tone as the ordinary squeak of the young and hence resembles the contented chirrup of a chicken. It seems to be given when the birds are moving about and sociable."

In contrast to their conversational mood in November was their almost complete silence in February, March, and April. On February 25, I was with the birds for ten minutes and neither made a vocal sound. On March 10, I noted "they are perfectly silent birds even refraining from 'oo-oo' when they are alarmed."

Bobwhites are also more talkative when young than when adult; my pet bobwhite at the age of one month "talked all the time," but soon gave up this excessive loquacity (Nice, 1911).

We heard the first coo from F. on February 7, in the early morning, but it was only a partial song, "coo-oo-oo". February 18 we heard the full coo of four notes. This was repeated February 19 and 20, but was seldom heard after that. D. was heard to coo for the first time March 19, when six months old; this was the complete song. Both birds cooed very little, perhaps because there were no females present to stimulate them. We heard the first wild dove coo March 10, and the height of cooing came from March 30 to April 16; none of the wild doves, however, were on our grounds, so F. and D. heard only each other.

AGE OF REACHING MATURITY

How long does it take for a mourning dove to become fully adult? Of course our conditions were unnatural, but since both birds seemed healthy almost all of the time they probably developed at much the same rate as they would have if wild. D. at 8 weeks had practically his adult weight; at 3 1-2 months he had all his adult plumage except that his tail was not full length; at 5 months he began to show a very little iridescence on his neck feathers; at 5 1-2 months he began to "whistle" with his wings; and at 6 months he cooed. F. had all the adult plumage the middle of November; he showed iridescence early in December; he "whistled" with his wings first on December 13 and he first cooed February 7. Our estimation of his age would bring these

different evidences of maturity at about the same ages as with D. except with cooing which appeared at about 7 months; this of course, was dependent on the season as well as the development of the bird.

If it takes a mourning dove five or six months to mature, it is evident that the "young of early spring broods" will not be nesting by September of the same year as is suggested by Taylor (1916).

FOOD OF MOURNING DOVES

In Nature

The mourning dove lives principally upon the seeds of weeds, the rest of their food being grain. Beal (1904) says, " the dove does not eat insects or other animal food so far as known. The few traces of insects found in the stomachs are believed to be the remains of weevils contained in seeds which the birds had eaten." The young are fed upon "pigeon milk" which is regurgitated from the parents' crops. Apparently, however, as the young are nearly ready to leave the nest, whole seeds from a portion of the diet. Judd (1910) reports that of five squabs "examined in the laboratory of the Biological survey, 30 per cent of their food was composed of seeds, while the remaining 70 per cent consisted of irregular endosperm fragments of the above seeds from 0.5 to 3 mm. in diameter, probably the regurgitated matter commonly known as "pigeon's milk". Townsend (1906) tells of a nestling mourning dove about 12 days old, that had only 2 per cent of pigeon milk in its crop, the bulk of the food being 1,200 weed seeds.

As to the food of the adults, Beal (1904) reports after the examination of 237 stomachs, that weed seeds "constitute 64 per cent of the annual food supply and show very little variation during any month. Wheat, oats, rye, corn, barley, and buckwheat were found in 150 of the stomachs, and constituted 32 per cent of the total food. However, three-fourths of this amount was waste grain picked up in the fields after the harvesting was over."

As to the numbers of weed seeds taken at a single meal, Eaten (1909) says: "I have taken several thousand seeds of the foxtail or pigeon grass from the crop of a single dove which was shot from a flock of thirty that were coming from an oats field in Ontario County. By measurement it was evident that this company of doves had just picked up about two quarts of weed

seeds for their afternoon meal." Beal's (1904) often quoted birds had the prize appetites; one had eaten 6,400 seeds of barngrass or foxtail, another 7,500 seeds of yellow wood-sorrel and a third 9,200miscellaneous weed seeds. No wonder the authorities consider the mourning dove a highly beneficial bird.

IN CAPTIVITY

The best substitute for pigeon milk for young doves that we could think of was bread and milk; we stuffed this down the throats of the unwilling victims until they learned to eat it themselves. We continued giving them bread and milk for most of the time that we kept them. In the spring both the birds occasionally seemed droopy, but a diet of buttermilk benefitted them. Weed seeds that they liked were barnyard grass, crabgrass, foxtail, lambsquartrs, pigeon grass, pigweed, sunflower, and vervain. Neither would touch ragweed nor giant ragweed, although the former at least, is eaten by wild doves. What we fed them generally was wheat and bird seed, as it was easier to buy these at a store than laboriously to collect weed seeds. Of the bird seed they liked the millet and canary seed, but never eat the rape. Another food which they disdained was earthworms.

FEEDING TESTS.

When conducting a feeding test, I weighed the birds both before they had had anything to eat and after their supper. A series of weights of both birds in November and December is shown in Tables I and II.

Table I

Morning and Evening Weights in Grams of F.

From Nov. 17-26			From Dec. 28-Jan. 1.		
Morning	Evening	Grain	Morning	Evening	Grain
99.0	107.5	8.5			
98.0	108.5	10.5			
97.0	107.0	10.0			
97.2	107.8	10.6			
98.2	109.6	11.4			
98.7	106.7	8.0	103.8		
98.4	108.1	9.7	105.3		
99.7	108.0	9.3	104.7	115.4	10.7
98.7	106.5	7.8	105.7	112.7	7.0
98.9			104.4	113.9	9.5
98.4	108.0	9.5	104.8	114.0	9.1

TABLE II.

Morning and Evening Weights in Grams of D.

Nov. 17-23, 2 months old.			Dec. 28-31, 3 months old.		
Morning	Evening	Grain	Morning	Evening	Grain
99.5	106.5	7.0			
99.0	107.3	8.3	99.0	107.5	8.5
99.4	107.2	7.8	98.0	108.0	10.0
100.1	107.8	7.7	99.3	107.2	7.9
98.2	106.0	7.8	97.5	106.5	9.0
99.2	107.0	7.7	98.4	107.3	8.9

D. in December, when 3 months old and F. in November, when about 4 months weighed almost the same; exactly the same in the morning—98.4g—but during the day F. gained 0.6g. more than D. Curiously enough, D. weighed slightly more at 2 months than at 3, for at the former time his morning weight averaged 99.2g. F. on the other hand, had grown 6.8g. during the first four weeks of December. It seems surprising that these birds should gain from 7.8 to 9.7 per cent of their weight each day and then lose it all during the night. F. gained 9.7 per cent of his own weight during November on an average each test day, and 8.7 per cent in December. D. gained 7.8 per cent of own weight during November each test day and 9 per cent a day during the December tests.

Table III gives the results of four feeding tests in which bread and milk, grain and seeds were used, and six in which grain and seeds alone were given to the birds.

TABLE III.

Amount in Grams Eaten by One Mourning Dove in One Day

Mixed Diet				Seed and Grain	
Date	Bread & Milk	Seed & Grain	Total	Date	Seed & Grain
				Oct. 24*	9.6
				Oct. 28*	15.0
Nov. 18	4.8	10.8	15.6	Nov. 17	10.3
Nov. 19	3.0	10.6	13.6	Dec. 29	11.7
Nov. 21	5.8	8.5	14.3	Dec. 30	12.9
Nov. 22	6.2	8.6	14.8	Dec. 31	11.2
Average	5.0	9.6	14.6	Av.	11.8

*These tests were on F. alone; in all the others both birds participated and the results were divided by two.

In the mixed diet tests, each bird ate an average of 5g. of bread and milk and 9.6g of seeds and grain, making a total of 14.6g. The six feeding tests of seeds and grain alone average 11.8g. a day for each bird. If we average D's. and F's. November morning weights we find they ate 14.7 per cent of their weight each day when on a mixed diet. If we average their weights for both November and December we find that the ate 11.8 per cent of their weight each day when given grain and seeds alone.

I found (1910) that bobwhites in captivity ate on an average 15g. of seeds and grain in a day, and 24.5g. of seeds, grain and grasshoppers a day, i. e. 12g. of grain and 12.5g of insects. Counting 170g. as an average weight for an adult bobwhite, we find they ate 8.8 per cent of their weight each day when confined to seeds and grain, but 14.4 per cent of theirweight when on a mixed diet. This is almost exactly the same as the mourning doves for mixed diet but bobwhites ate less of grain and seeds alone in proportion to their weight than the doves.

TABLE IV.

Proportion of Daily Food to Body Weight in the Mourning Dove and Bobwhite.

Mourning Dove			Bobwhite		
Wt. of one day's food	Wt. of bird	Percent of bird's wt.	Wt. of one day's food	Wt. of bird	Percent of bird's wt.
Seeds and grain					
11.8g.	98.8g	11.8	15g.	17g.	8.8
Mixed diet					
14.g.	100.2g.	14.7	24.5g.	170g.	14.4

It must be remembered that birds in captivity take comparatively little exercise and doubtless eat less than those that are wild.

If one cares to make calculations on the basis of 11.8g. a day, 64 per cent of which should be weed seeds, and counting 1096 seeds to a gra, which I found to be the average of 23 different kinds of weeds seeds (1910), the result will be 8,275 weed seeds eaten a day by a mourning dove and 3,020,375 eaten in a year.

SUMMARY.

1. One dove was always tame and gentle with people, but cruel to weaker members of his kind. The other dove became timid as soon as he could feed himself. Neither bird showed curiosity nor discriminated between persons.

2. D. used the begging note until four weeks old; a "puttt"

from seven weeks till four months; employed the alarm cry much more frequently when to coo when six months old.

3. D's. neck feathers showed iridescence for the first time when he was five months old; at 5 1-2 months be began to "whistle" with his wings and two weeks later he cooed.

4. The birds gained regularly from 7.8 to 9.7 per cent of their weight each day and lost it again during the night.

5. Each bird ate an average 11.8g. of weed seeds and grain a day, and 14.6g. of bread and milk, seeds and grain a day. These amounted to 11.8 and 14.7 per cent of their body weightts.

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