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The Mourning Dove: Processing, Cooking, Freezing

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THE MOURNING DOVE

PROCESSING

COOKING

FREEZING



Cathy H. Baker
Curtis C. Melton
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THE UNIVERSITY OF TENNESSEE
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THE MOURNING DOVE

PROCESSING • FREEZING • COOKING

by Cathy H. Baker, Curtis C. Melton, and Ralph W. Dimmick*

INTRODUCTION

The mourning dove, *Zenaida macroura*, an important game bird in Tennessee and the Southeastern United States, is harvested in large numbers during early autumn and winter (2, 4). Its dark, sweet flesh is prized by many while others consider it strong or "wild." In either case, the palatability of dove and other wild game meat may be greatly influenced by the treatment given after harvest and the degree of carcass damage sustained when killed.

This study was designed to determine which freezing method most favored retention of dove carcass palatability. Other factors evaluated for influence on palatability included age, sex, length of time the carcasses were frozen, and methods of cooking.

MATERIALS AND METHODS

Doves used in this experiment were captured in live traps baited with wheat or procured from cooperative hunters. Birds killed by hunters were cooled in ice chests before processing at the University of Tennessee Food Technology and Science Laboratories.

Trapped birds were decapitated by grasping the body in front of the wings with one hand and pulling off the head with the other. The birds were hung on racks by their feet while they bled. The trapped and hunter-killed birds were classed as adults if no buffy tipped coverts were present and the tenth primary feather had molted, or as juvenile if the replacement of the tenth or outer primary feathers had not occurred. Sex was determined by internal examination. The following data were recorded as each bird was processed: wing band number, age class, sex, breast weight, whether trapped or hunter-killed, date and time of kill, and crop content.

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The breast was removed by making a slit into the body cavity with poultry shears at the tip of the posterior end of the sternum. The skin, with feathers intact, was rolled back to the neck. The slit was enlarged to a joint above the shoulder girdle and the ribs cut away from the underside of the breast. Muscle tissue and the coracoid bone near its juncture with the sternum were severed with the shears on a horizontal plane (See pictures A-E). This method produced a carcass which is characteristic of doves dressed by Tennessee hunters.

The breast was rinsed well in cold water, cleaned of shot pellets (if any) and weighed. A numbered aluminum poultry wing band was pushed through the cartilaginous tip of the breast to serve as permanent identification during storage, cooking, and evaluation by the taste panel.

Two groups of 18 birds each were soaked in plain water at 34°F for 8 hours before freezing or frozen immediately without soaking. A preliminary study (n=30) by taste panel showed no discernible difference between soaked vs. not soaked and no difference between trapped vs. hunter-killed birds stored in ice chests. As a result, the birds were not soaked for the remainder of the study, nor were the hunter-killed birds separated from trapped birds for purposes of analysis.

A total of 144 breast halves were included in the primary study to determine the effect of age, sex, packaging methods, and length of frozen storage on palatability. Doves were packaged for freezing by the following methods:

- 1) wrapped in aluminum foil
- 2) vacuumized in polyethylene bags
- 3) frozen in water-filled half pint cardboard cartons

Birds in each group were stored either 0, 3, or 5 months at 0°F before sensory evaluation.

Samples were removed from the freezer, allowed to defrost 2 hours at room temperature, salted, peppered, and coated with plain flour. The dove breasts were fried 7½ minutes on each side in 1 inch of preheated corn oil in a covered skillet. After cooking, the breasts were drained on absorbent paper and divided in half to provide two replicate samples from each breast for sensory evaluation.

Each sensory panelist always received birds from the same age-sex classification; e.g., a panelist sampling adult females on the first test would receive adult females on later tests. This approach permitted evaluation of the effect of packaging without the influence of differences attributable to sex and/or age. Panelists scored each sample on a hedonic scale from 1 to 6 (1 = excellent, 6 = very poor).

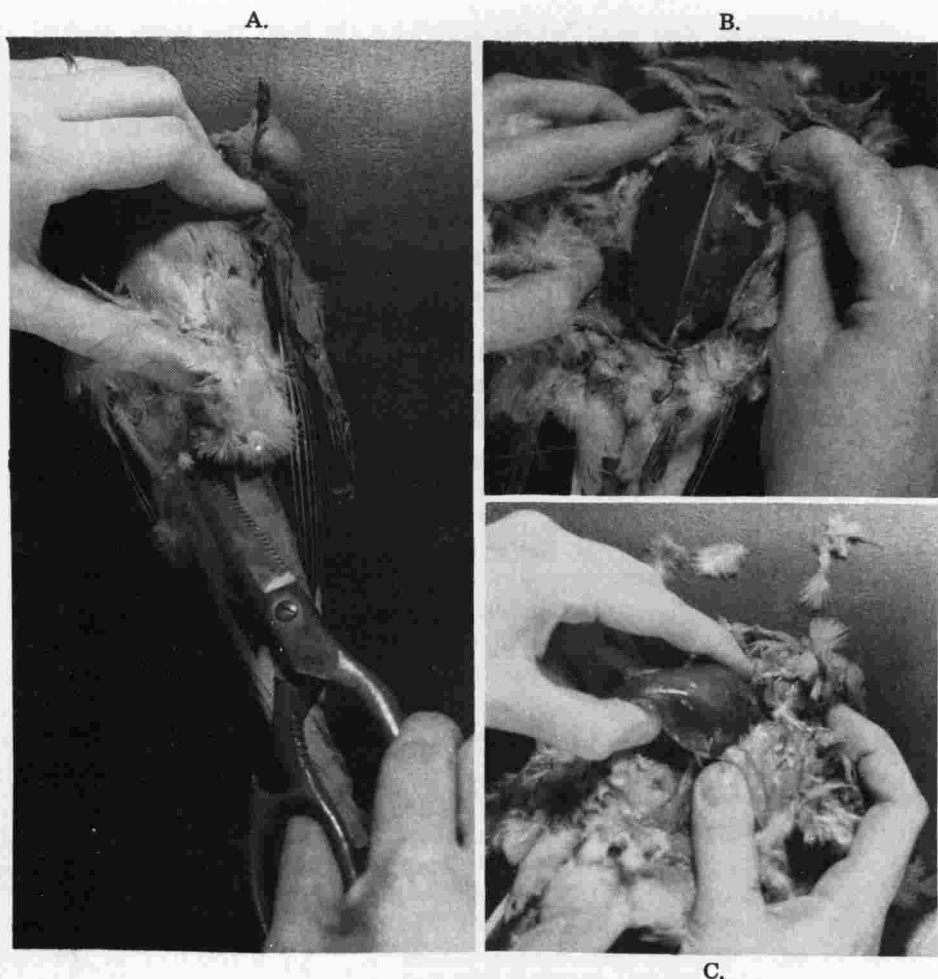
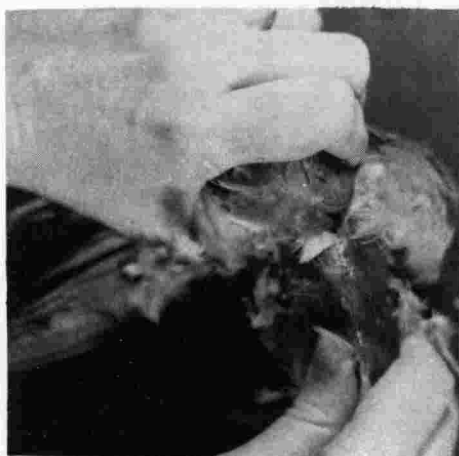


Figure 1. Efficient removal of the breast of the dove in the field:

- A. Make a tiny slit through the skin with shears or knife.
- B. Roll back the skin and feathers to expose dove breast.
- C. Enlarge slit along edge of dove breast while breaking off ribs.

Expressible Moisture

Four samples from each quadrant of the dove breast were taken with a 3/8-inch diameter cork borer and weighed. Each core of meat was placed in the center of a square 6-inch sheet of No. 1 Whatman filter paper. Each prepared core was then placed on a separate 7-inch square of plexiglass. Eight of these units then were stacked in a Harco hydraulic press and subjected to 14,000 pounds per square inch for 60 seconds. Two irregularly concentric stained areas were



- D. Grasp dove body and break breast away from body.
E. With shears or knife, cut through adhering bones at shoulder.

formed on the filter paper. The total stained area represented expressible water present in the meat sample; the inner stained area represented meat residues. Each of the two stained areas was measured with a compensating polar planimeter. Expressible moisture was then computed using the following equation (10).

$$\frac{\text{total area (sq. in.)} - \text{meat film area (sq. in.)}}{\text{wt. of sample}} \times 100 = \text{Percent Expressible Moisture/gram}$$

Statistical Design

A randomized complete block design was used in this study. Variations in panelists' overall acceptability scores and expressible moisture values were analyzed using the analysis of variance techniques outlined by Snedecor (9). Means for all data were tested for differences using Duncan's New Multiple Range Test (6).

RESULTS AND DISCUSSION

The panelists determined that method of packaging and sex of the bird were the most important factors affecting overall acceptability of the meat (Table 1). The panelists showed no preference for juvenile or adult birds, nor did they find any difference in flavor after 0, 3, or 5 months of frozen storage.

Mean taste panel scores indicate that dove breasts frozen in vacuumized polyethylene bags possessed superior flavor to those frozen in water or wrapped in aluminum foil. With other types of meat such as beef and pork cuts, polyethylene films have shown advantages (8). Polyethylene is very pliable and conforms closely

Table 1. Analysis of variance table and means¹ of taste panel scores for cooked dove meat

<u>Source</u>	<u>Degrees of freedom</u>	<u>F value</u>
Age	1	<1
Sex	1	8.53*
Packaging	2	5.85*
Replication	1	<1
Storage	2	<1
Age * Sex	1	2.63
Error	135	

<u>Packaging material</u>	<u>Mean overall acceptability scores²</u>
Vacuum plastic wrap	2.02 ^a
Frozen in water	2.58 ^b
Aluminum foil wrap	2.68 ^b

<u>Sex</u>	<u>Mean overall acceptability scores³</u>
Male	2.18 ^a
Female	2.68 ^b

*Significant at .05 probability level.

¹Means followed by the same letter are not significantly different at .05 probability level.

²Values listed are averages of 48 scores. 1=excellent, 6=very poor. Means followed by the same superscript are not different.

³Values listed are averages of 72 scores.

to the shape of the product and has very low moisture-vapor transmission when sealed tightly. Also, the product is more visible. The greatest disadvantage of aluminum foil is its lack of strength. Heavy duty aluminum foil is available and is recommended but often leads to incomplete contact with the sample and may result in localized dehydration (freezer burn).

Freezing in water requires more storage space and a longer defrosting time. In this study, the ice surrounding the frozen-in-water meat was discolored indicating leaching of blood and other components. Leaching could result in decreased flavor and overall acceptance. An informal survey indicated that the two methods of packaging found to be of lower acceptance in this study are most commonly used by dove hunters in Tennessee.

The panelists also preferred the flavor of male birds. This finding was interesting since this trend is less obvious in meat from domestic animals. Also this preference was not of practical importance since the hunter cannot select for male birds during hunting.

The expressible moisture values (Table 2) for the thawed, uncooked dove meat decreased from the initial value (68.52%) to the 5-month value (61.22%). This points out that dessication occurred during frozen storage or that significant amounts of water were lost as the meat thawed. Probably thaw drip explains this decrease since expressible moisture did not differ between methods of packaging (aluminum foil, 65.18%; polyethylene, 64.06%; water, 65.38%).

Also quite interesting is the fact that female birds contained more expressible moisture (67.68%) than males (62.06%). Since this particular test for moisture is an objective test analogous to juiciness, it would seem that the meat from male birds being less moist would be scored lower in flavor. This, however, was not the case with the dove meat studied. Likewise, panelists did not score samples lower in flavor after 5 months storage although the expressible moisture values were lower after 5 months. Other published studies do not report a similar relationship (1, 5, 7). Apparently, differences in expressible moisture of these magnitudes are not related to overall acceptance of dove meat.

Table 2. Analysis of variance table and means¹ of expressible moisture values for dove meat.

<u>Source</u>	<u>Degrees of freedom</u>	<u>F value</u>
Age	1	3.28
Sex	1	4.91*
Packaging	2	<1
Replication	1	<1
Storage	1	8.29**
Age * Sex	1	<1
Error	88	

<u>Sex</u>	<u>Mean expressible moisture²</u>
Female	67.68% ^a
Male	62.06% ^b

<u>Storage</u>	<u>Mean expressible moisture²</u>
0 Months	68.52% ^a
5 Months	61.22% ^b

*Significant at .05 probability level.

**Significant at .01 probability level.

¹Means followed by the same letter are not significantly different at .05 probability level.

²Values listed are averages of 48 values. 1=excellent, 6=very poor. Means followed by the same superscript are not different.

CONCLUSIONS

The results of this study indicate that dove breasts packaged in vacuumized polyethylene bags and frozen for 5 months were superior to those wrapped in aluminum foil or those frozen in water and that soaking meat before freezing did not improve it. The sensory panel used in this study found the male dove to possess superior eating qualities. Lower expressible moisture values were observed for male birds. Dove breasts frozen at 0°F for 5 months contained less expressible moisture than initially, regardless of packaging method.

Guidelines for Freezing Dove Meat

1. Cool dove carcasses in portable ice chest in the field rather than a game bag or vest if possible, especially on hot days.
2. Clean the dove carcasses or breasts immediately after the hunt with large amounts of cold water. Cleanliness of the meat preparation area, utensils, and water supply are important in eliminating bacteria which are known to cause meat spoilage (8).
3. Package carcasses or dove breasts in meal-size lots in polyethylene freezer bags. A) Express as much air from the bag by hand as possible, or B) place the filled bag in container of cool water. Keep the top of bag above water. The pressure of the water forces much of the air out. Or C) if a great number of dove are being processed at one time, a vacuum cleaner may be used. Be sure to clean the terminal metal piece thoroughly.
4. Do not season before freezing as rancid flavors develop slower in unseasoned products.
5. Label the bags with name of product and date of kill.
6. Place the meat in a single layer in the coldest part of freezer. The lower the temperature, the longer the period of successful storage (8). Store the meat at a uniform temperature near 0°F.
7. Use the doves before next hunting season.

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HOW TO COOK DOVE

After properly freezing dove meat, it can be removed from the freezer and prepared in a variety of ways. These recipes were tested at the conclusion of the study by a select group of panelists.

Dove with Brown Gravy

Many southerners enjoy this common recipe for preparing game meats of many species. Dove prepared in this fashion is especially good for breakfast with hot biscuits for the gravy.

6 doves or breasts	1/2 t. pepper
1 cup flour	1 cup milk
1 t. salt	

Lightly salt and pepper dove breast or whole bird. Dredge with flour. Brown the meat about 5-7 minutes on each side in about 1 inch of oil preheated to 350°F. The skillet should be covered while the meat is browning. When nicely browned remove the meat to absorbent toweling to drain. Pour off all but about 1/4 cup hot fat. Stir in 2 tablespoons flour, season lightly and mix well, allow to brown slightly. Stir in 1 cup milk and 1/2 cup water. Reduce heat to 250°F. Place drained meat in gravy mixture to simmer 10-15 minutes more. Serve hot.

Dove Bean Casserole

The dish needs to be started early in the day and cooked slowly for a flavorful main dish from the field.

12 doves	1/2 t. mustard
1 to 1 1/2 c. dried beans (pinto or navy)	4 T. catsup
1/3 c. flour	salt, pepper, paprika
4 T fat	hot water
1 med. onion, chopped	
1 clove garlic, crushed	
dash of cloves	

Soak beans overnight, drain. Cook in salted water about 2 1/2 hours, drain and place in casserole or bean pot. Split whole doves or use breast. Season, dredge with flour and brown. Remove pieces to casserole or bean pot. Cook onions and garlic in drippings about 10 minutes. Add 1 1/2 t. salt, 1/4 t. pepper, remaining seasonings and 1 1/2 cups water; bring to boil and pour over beans and meat, adding hot water as needed to cover well. Bake covered, in moderate oven (325-350°F) for 1 1/2 to 2 hours or until meat is tender and beans cooked. Serve from casserole with cole slaw, corn muffins, and butter.

Barbecued Dove

A new dish for the summer cookout:

6 doves	1 t. tomato catsup
4 t. lemon juice	1 t. salt
1 t. Worcestershire Sauce	1/2 t. paprika
1 T. butter	

Split doves or use breasts. Broil under flame or over hot coals. Baste frequently with barbecue sauce made from last 6 ingredients. Continue to broil for 20 minutes or until done.

Creamed Dove

This recipe was especially well received by the panel:

6 doves	1/2 lb. butter
salt and pepper	2 c. sweet cream
1 c. toasted breadcrumbs or crushed crackers	

Salt and pepper cleaned, dressed dove, simmer slowly in butter in covered saucepan until tender. Add cream and continue simmering until done. Remove dove to hot platter. Sift toasted breadcrumbs over doves. Pour cream gravy from pan over doves. Serves 3-6.

Dove Royale

A true gourmet dish:

6 doves	2 T. minced celery leaves
1/2 c. butter	1/2 t. salt and pepper
1 c. dry white wine	Tarragon (optional)
1/4 c. minced onion	

Split doves. Sauté in butter until lightly browned, or about 5 minutes. Add wine, onion, celery leaves, salt, and pepper. Cover and simmer over low heat for 20 minutes. Add tarragon and simmer uncovered for 15 min. Serve over rice or egg noodles. Serves 3-6.

Dove and Rice Pilaf

This dish is both attractive and delicious:

12 dove breasts	2 T. margarine
1 c. oil	1/4 c. chopped onion
flour	1 beef bouillon cube
salt, pepper	2 c. water
1 c. long-grained rice	

Preheat oil in heavy skillet with tight-fitting cover. Dredge dove breasts in seasoned flour. Brown on both sides and drain. Pour off oil but retaining browned flour particles. Add margarine, onion, and rice. Stir until rice is evenly and lightly browned. Add water to rice-onion mixture and dissolve bouillon cube. Reduce heat to simmer. Arrange dove breasts in rice-water mixture. Cover tightly and stir occasionally until rice is tender, about 20 minutes. Serve dove on bed of rice. Serves 6.

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