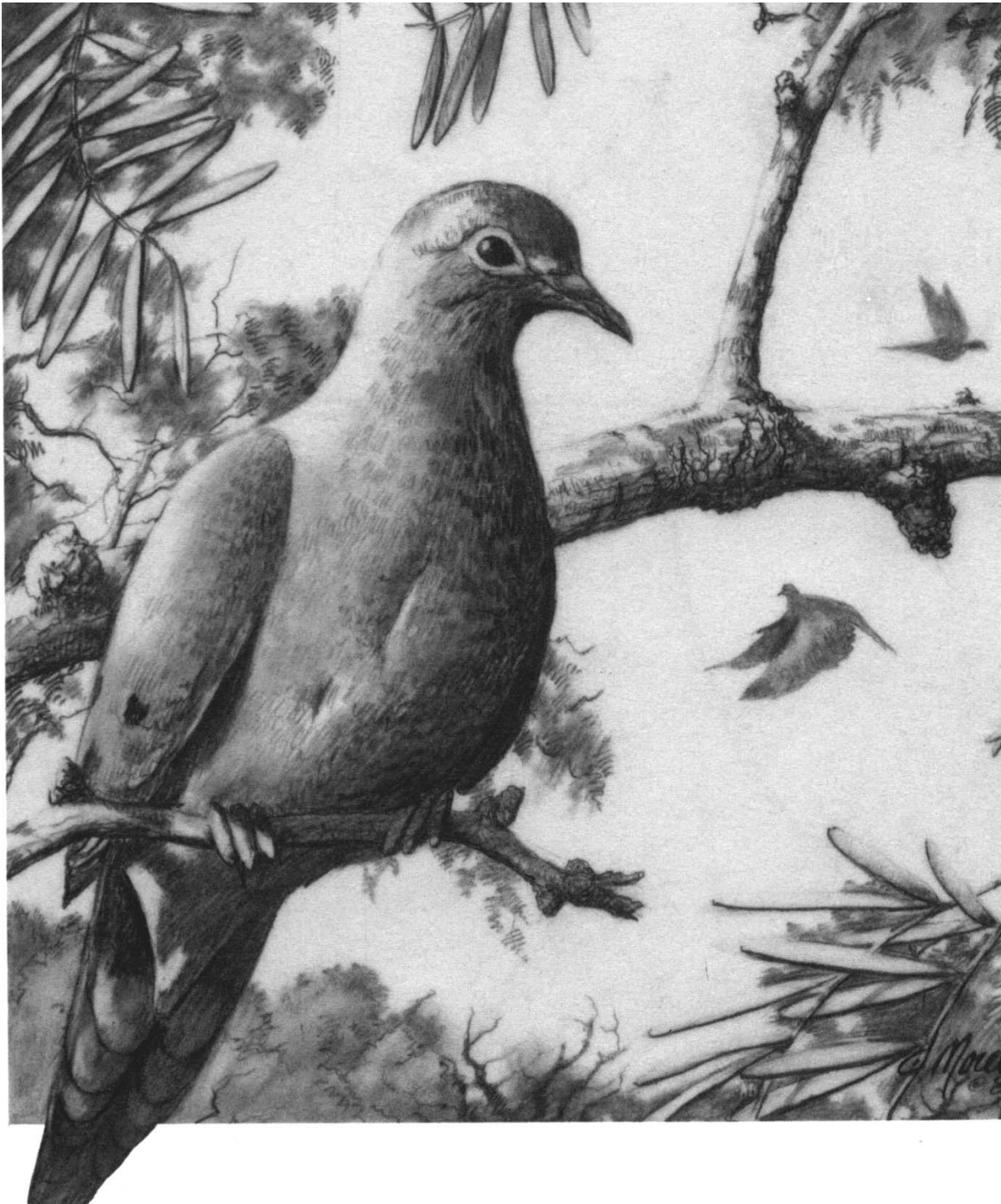


MOURNING DOVES IN TEXAS

Life History, Habitat Needs, and Management Suggestions

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Foreword

Mourning doves have been closely associated with people in Texas for centuries. Fragile bones found in cave-like rock shelters in the vicinity of Lake Amistad in Val Verde County indicate stone-age man used mourning doves for food nearly 9000 years ago. Prairie fires set by ancient hunters, as well as lightning-caused fires, indirectly benefited mourning doves by creating bare ground for feeding sites and stimulating the growth of sunflower, ragweed, croton and other seed-producing plants. When European settlers introduced livestock and grain farming to North America, made clearings in the eastern forests, and planted trees on the prairies, they inadvertently created near ideal habitat diversity for this edge-dwelling species. Even today the shade trees, waste grain, weed seeds, bare ground, and water found around modern farms, ranches, and cities continue to attract mourning doves for man's year-round enjoyment (Fig. 1).



Fig. 1. Habitat diversity created by human activities is often beneficial to mourning doves.

Although many human activities are beneficial to mourning doves, some are not. Major land-use changes, brush clearing, clean farming, fall plowing, larger fields, crop monocultures, environmental pollutants, and crowded feeding sites can have long-term, adverse effects on mourning dove populations. Consequently, the purpose of this brochure is to acquaint land-

owners, sportsmen, bird enthusiasts, and the general public with mourning doves and their habitat needs. Wildlife biologists with the Texas Parks and Wildlife Department are available in each region of the state to assist landowners in preparing management plans for individual tracts of land which could result in increased mourning dove usage.

Background

The mourning dove is one of seven species of doves and pigeons native to Texas. While other species like the white-winged dove, white-tipped dove, Inca dove, ground dove, red-billed pigeon and band-tailed pigeon have rather restricted ranges in Texas, the mourning dove occurs throughout the state and is in fact the most numerous and widely-distributed game bird in North America with a continental population estimated at 500 million. This adaptable, migratory species nests throughout the contiguous 48 states, southern Canada, and northern Mexico and winters in the southern United States, Mexico, and Central America (Fig. 2).

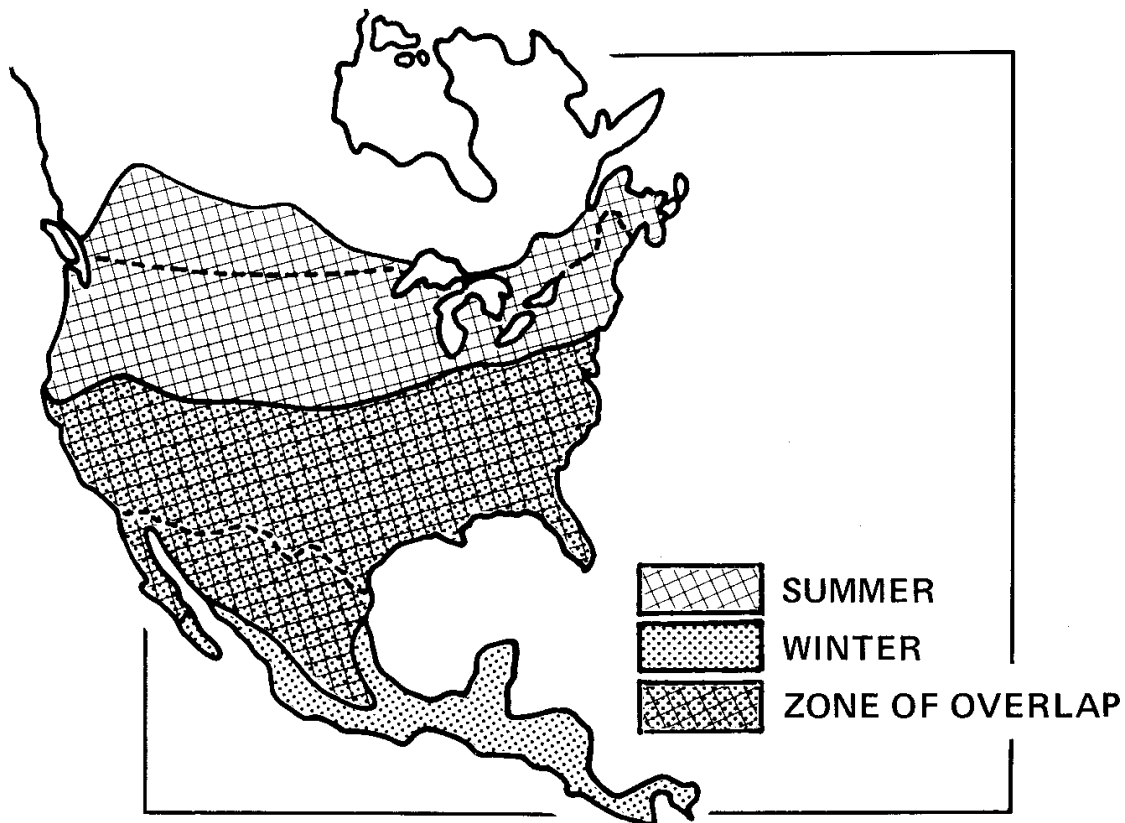


Fig. 2. The mourning dove is the most widely distributed gamebird in North America.



The fall mourning dove population in Texas has been estimated at 50 million birds, roughly 10 percent of the total continental population. Banding studies indicate about 60 percent of the doves that are harvested in Texas each fall were hatched in Texas; the remaining 40 percent are northern birds that migrate into or through the state as shortening day length and changing weather patterns signal the coming of autumn.

Texas is the number one dove hunting state in the nation; each year more than 400,000 Texas hunters of all ages bag 5 to 7 million mourning doves (Fig. 3). Although most hunters prefer 20 or 12 gauge shotguns with light shot for taking these fast and erratic flyers, longbows and arrows and falconry are also permitted for taking doves. The majority of the dove hunting activity in Texas occurs within the first two to three weeks of the dove season. Texas dove hunters average four days of dove hunting per season with an average seasonal bag of 15-20 mourning doves. Nationwide, approximately eight shots are expended for each mourning dove bagged.

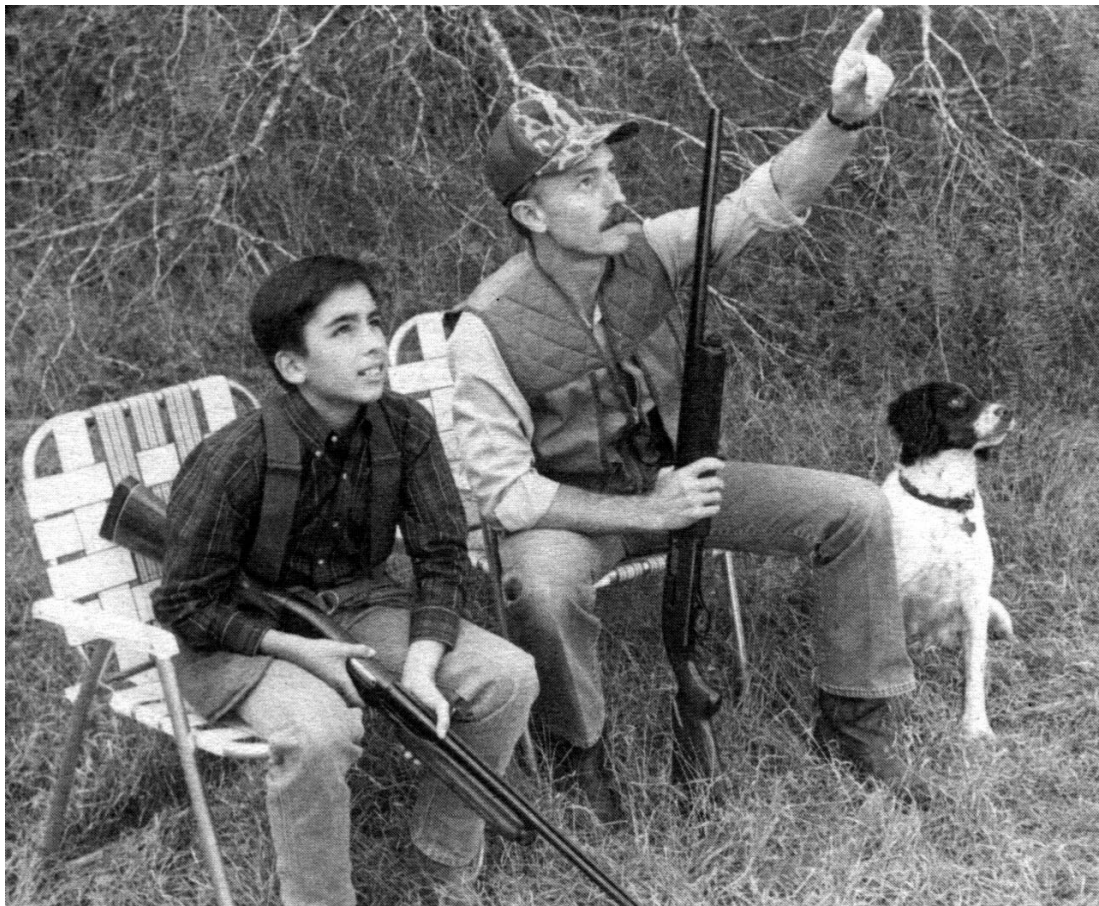


Fig. 3. Dove hunting is a sport everyone can enjoy.

Life History

Each spring, male mourning doves establish territories in suitable habitat and announce their presence to competing males and prospective mates by cooing their mournful four-note call from exposed perches such as utility lines or dead tree limbs. Male doves use exaggerated, stiff-winged, flapping-gliding flight to further advertise their territories when moving from one cooing perch to another.

Once a female is attracted to the territory, both birds assist in building the nest, incubating the eggs, and caring for the young. The nest is a rather flimsy structure composed of twigs and grass that is often so thin that the eggs can be seen through the bottom of the nest. The clutch usually consists of two eggs laid one day apart (Fig. 4). Incubation lasts about 14 days. The male dove usually takes nest duties from mid-morning until early evening each day while the female takes the night shift. Since incubation starts immediately after the first egg is laid, the first egg usually develops and hatches about one day before the second. Consequently, one of the nestlings is often noticeably larger than the other. Both parents feed their young a secretion from their crops known as "pigeon milk." This sub-



Fig. 4. Mourning doves usually lay two eggs per clutch



stance is very similar in chemical composition to milk produced by female mammals. After about seven days, the pigeon milk is gradually replaced by a diet of regurgitated seed. Young doves grow very rapidly (Fig. 5) and leave the nest 10 to 14 days after hatching but continue to be fed by the male in the vicinity of the nest for several more days. The female often begins reneating immediately after the young leave the nest. Adult females may nest successfully as often as four or five times in a single season in warm southern climates but average only two or three broods per season in northern states.



Fig. 5. Young doves grow rapidly and leave the nest 10-14 days after hatching.

Less than 50 percent of all nesting attempts are successful. High winds, rain, and hail destroy many mourning dove nests. Snakes, mammals, and avian predators prey on mourning dove eggs, nestlings, and adults. Accidents, environmental pollutants, parasites, diseases, and hunting also take a toll on mourning doves.

Disease

Although most mourning dove deaths in the wild go unnoticed by humans, a relatively-common and highly-contagious disease known as trichomoniasis causes several very-noticeable mourning dove dieoffs in Texas each year. Trichomoniasis is caused by a single-celled flagellate protozoan that infects the mouth, throat and crop of mourning doves. The disease causes a cheesy mass to form in the throat that physically blocks the passage of food or air and causes starvation or suffocation. Although unable to swallow, infected birds continue to pick up food items and then spit out the saliva-covered food. Thus at a crowded site like a backyard bird feeder, game feeder, or farm feedlot, the disease is rapidly transmitted from dove to dove. Domestic pigeons (and raptors that prey on doves and pigeons) can also contract the disease, but most other bird species and man are not affected. Fowl pox, a viral disease which causes dark, wart-like growths on the skin, bill, and feet of doves and other birds, can also cause dove mortality.

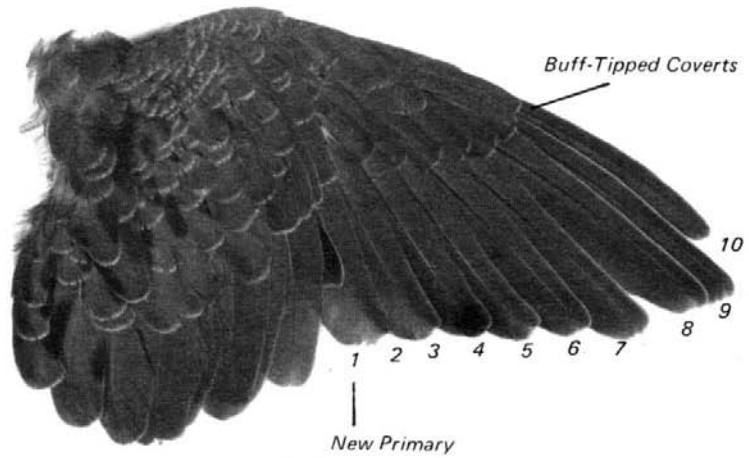
Age Determination

Mourning dove populations have a very high mortality rate. Although banding records indicate a few individuals have lived as long as 10 years in the wild, only 40 percent of all the mourning doves hatched in a given year survive until the next breeding season.

Most dove hunters recognize very small doves as this year's hatch, but many sportsmen mistake full-sized juvenile birds for adults. With a little practice anyone can identify juvenile doves by their buff-tipped body and wing covert feathers (Fig. 6). The buff-tipped juvenile feathers are gradually replaced by unmarked adult plumage (Fig. 7), but an adult-sized bird that hatched in May can still be identified as a juvenile in September by a single buff-tipped primary covert feather remaining on the wing (Fig. 8). The approximate age of juvenile doves can be determined by checking their primary wing feather molt and comparing this with the molt of known-aged doves (Table I). In South Texas where the problem of late nesting and young birds in the bag would be most acute, the dove season opening date has traditionally been delayed to minimize this problem.

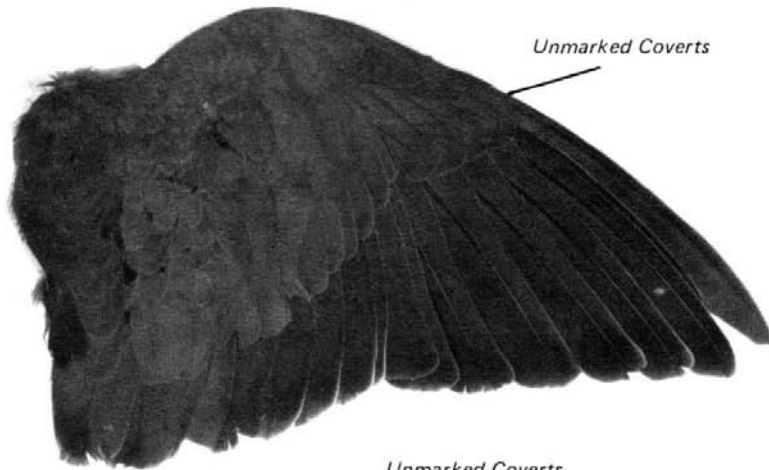
JUVENILE

Fig 6. Juvenile doves can be identified by their buff-tipped covert feathers. This bird is approximately 32 days old (note molt and replacement of primary number 1).



ADULT

Fig. 7. Adult doves have solid, unmarked covert feathers.



OLDER JUVENILE

Fig. 8. An adult-size juvenile dove can still be identified as this year's hatch by a single buff-tipped covert feather. This bird is approximately 133 days old.

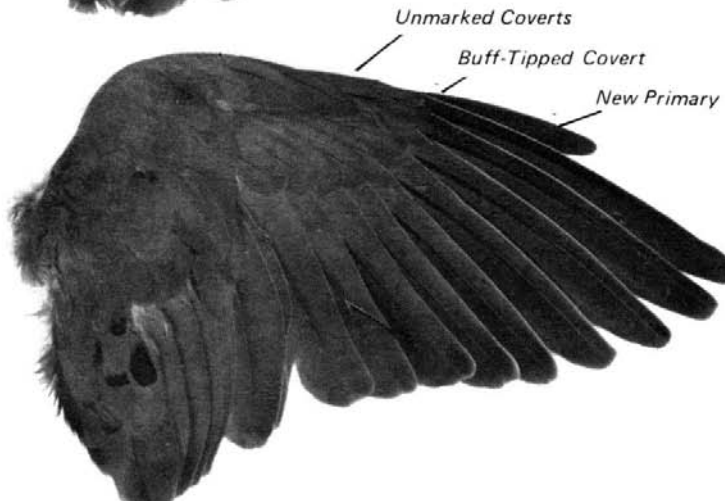


Table 1. To determine approximate age of juvenile doves, check primary flight feathers for a missing or regrowing feathers and compare with molt of these known-aged birds. The inner most of the 10 primaries is always molted first and is designated as primary number one.

Primary	Approximate Age of Bird in Days
1	32
2	38
3	45
4	54
5	63
6	72
7	85
8	102
9	127
10	133

Migration

Banding studies confirm that most mourning doves are migratory. Dove migration is usually north and south with relatively little east-west movement. Large numbers of doves that nest in the Central United States and Canada winter in Texas. Other northern birds merely pass through Texas en route to wintering grounds in Mexico and Central America. Doves that nest in Texas may either winter in Texas or migrate further south. Surprisingly, doves that nest in Texas are less likely to winter in Mexico and Central American than doves that nest further north, and South Texas nesters show even less tendency to migrate than North Texas doves.

Banding records also indicate juvenile mourning doves usually migrate earlier than adults, and adult females migrate earlier than adult males. Some non-resident doves began to enter Texas before September 1, but the bulk of the migrants arrive later in September. The peak band recovery period in Mexico is mid-October.

International, National, and Statewide Management Considerations

The 1916 Migratory Bird Treaty between the United States and Great Britain (representing Canada) and the accompanying 1918 Migratory Bird Treaty Act gives the U.S. Fish and Wildlife Service overall responsibility for managing migratory birds (including mourning doves) within the United States. The Treaty also specifies that no state within the United States may have a hunting season on migratory birds that begins before September 1.

The discovery of three essentially distinct dove populations in the United States led to the establishment of the Western, Central, and Eastern Mourning Dove Management Units (Fig. 9). Texas is in the Central Management Unit. These management units are used by state and federal wildlife biologists in formulating and administering dove hunting regulations in much the same way the Waterfowl Flyway System is used for duck and goose management.

Nationwide trends in mourning dove breeding populations are determined each year from the number of male doves heard

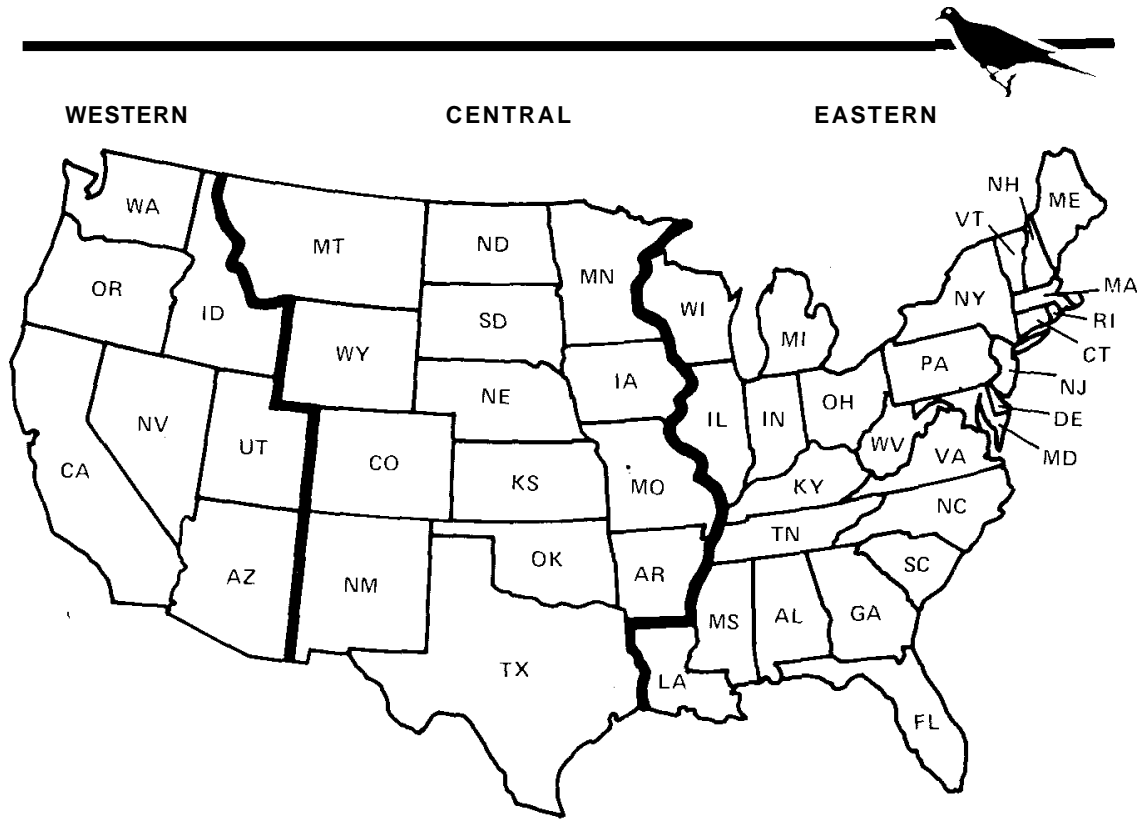


Fig. 9. State and federal biologists use three management units for formulating dove-hunting regulations.

cooing during early mornings in late May on over 1000 randomly-selected survey routes; 133 of these routes are located in Texas. Each route is located on a lightly-traveled secondary road and has 20 listening stations spaced at one-mile intervals. At each stop, a trained observer gets out of the vehicle and records the number of doves heard calling during a three-minute interval. The number of doves observed along the 20-mile route is also recorded (Fig. 10). Although the number of doves heard on a single route can be highly variable from year to year due to local changes in food availability or other conditions, annual changes in the combined total number of calls heard on all routes within a relatively-large area such as an ecological region, a state, or a management unit accurately reflect dove population trends for that area.

During recent years, the annual call-count survey has shown that mourning doves are most numerous during the breeding season in the Rolling Plains, Cross Timbers, Post Oak Savannah, and South Texas Plains Ecological Regions (Fig. 11).

Fall roadside surveys conducted periodically in Texas indicate mourning doves can be found throughout the state in late August with perhaps the greatest numbers occurring in a broad band

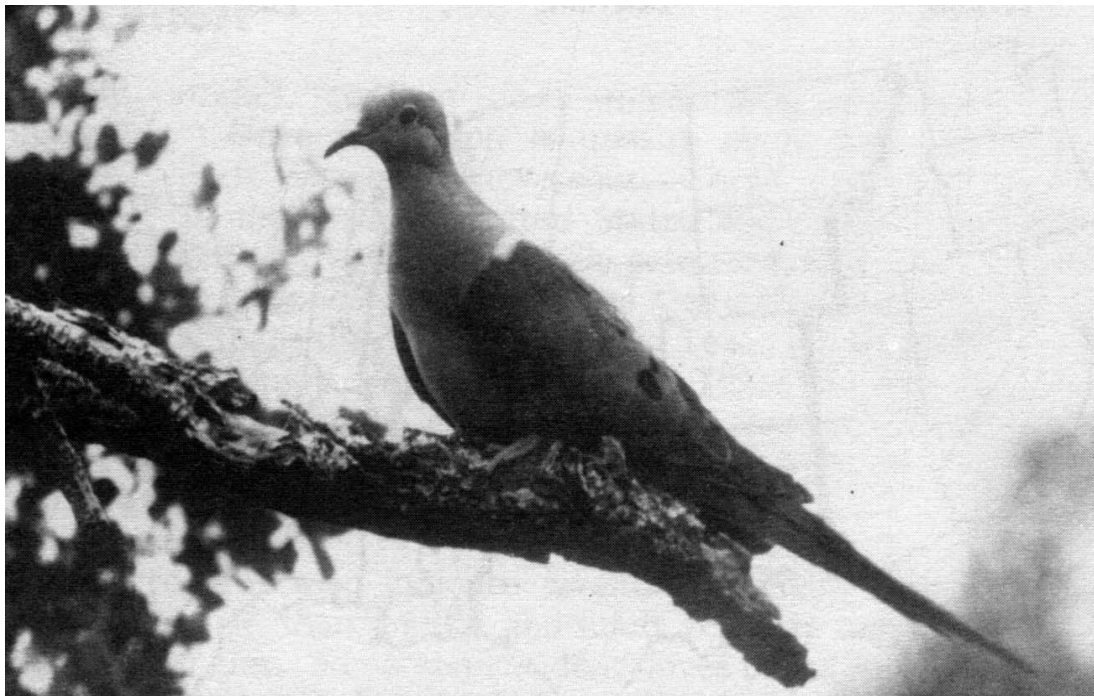


Fig. 10. Annual fluctuations in dove populations are determined by the number of doves heard and seen during late May on standardized 20-mile survey routes.

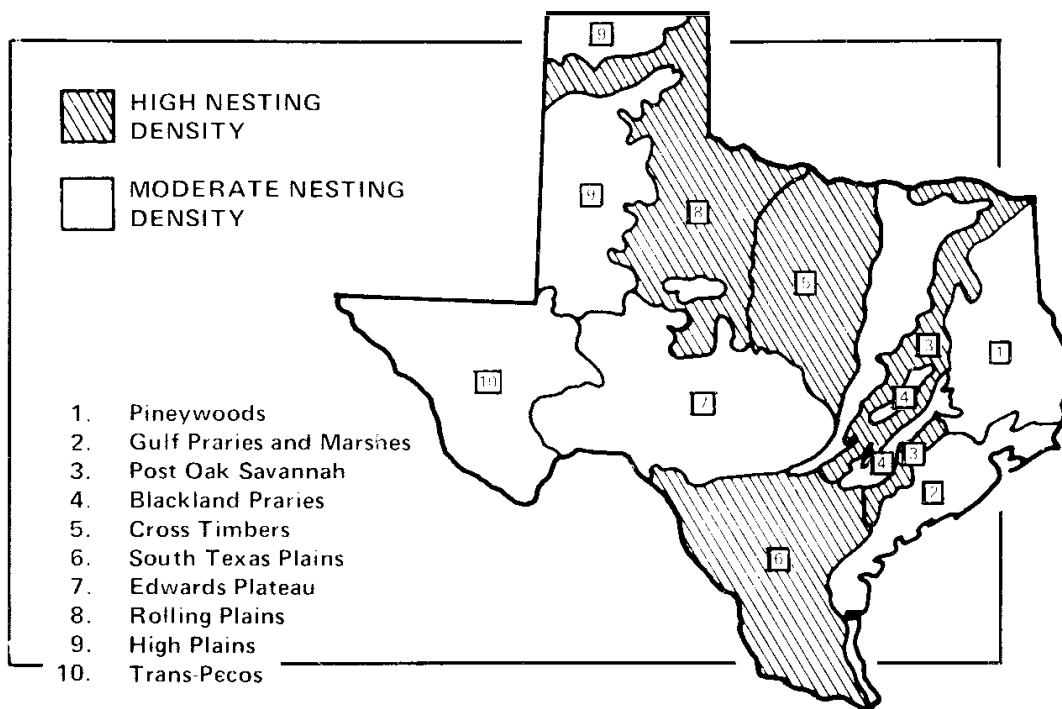


Fig 11. In recent years, mourning dove breeding populations have been highest in Texas in the Rolling Plains. Cross Timbers, Post Oak Savannah, and South Texas Plains Ecological Regions



extending from Wichita Falls to Laredo. However, by mid-October most mourning doves have left the northern part of the State and concentrated in Central and South Texas where substantial numbers spend the winter months.

Information from the annual dove surveys is reviewed on the state, management unit, and national levels, and frameworks for dove hunting regulations are ultimately developed by the U. S. Fish and Wildlife Service after careful consideration of all available information. These frameworks provide hunting opportunities consistent with dove migration and availability and may include hunting zones designed to protect late-nesting doves. State wildlife agencies such as the Texas Parks and Wildlife Department then establish hunting regulations within the federal frameworks that best suit state needs.

From all available evidence, biologists have concluded that legal sport hunting replaces approximately one-fourth of the natural mortality that occurs each year but does not add additional mortality to the mourning dove population. In addition, nationwide surveys have shown there is no significant difference in mourning dove breeding densities in hunted and nonhunted states.

Local Management Considerations

As with all wildlife species, food, water, and cover are essential for mourning dove survival. Although many small game species such as bobwhite quail and cottontail rabbits spend their entire lives within a mile or so of their birthplace, mourning doves are strong, swift flyers capable of crossing the Continent during migration and traveling many miles to obtain their daily needs. Even during the nesting season when they are most sedentary, mourning doves often travel five miles for food and water. Consequently, all of the habitat requirements for mourning doves do not necessarily have to appear on the same farm or ranch, but mourning doves will be more numerous on land where all habitat needs are supplied.

On the local level, sportsmen and landowners should consider habitat improvement, disease control, and even reduction of hunting intensity when trying to attract and maintain large numbers of doves.

Food

Mourning doves are almost exclusively seed-eaters. Their diet includes both native and introduced seeds. Native plant seed particularly important to doves in Texas include sunflower, croton (also known as doveweed, goatweed, or teaweed), ragweed and pigweed (Fig. 12). Partridge pea, bundleflower, spurge, panic grass, paspalum, pricklypoppy, and bristlegrass are also important in some areas. Introduced plant seed important to mourning doves include grain sorghum, forage sorghum, corn, wheat, rice, peanuts, domestic sunflower, and Johnsongrass.



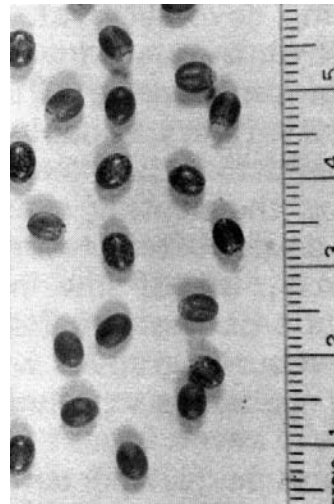
Sunflower



Sunflower seed

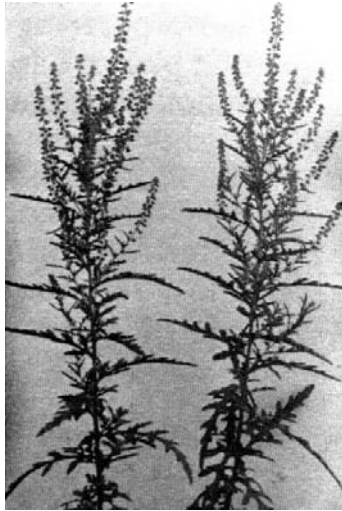


Croton

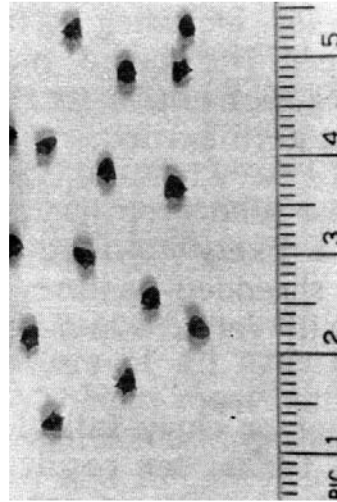


Croton seed

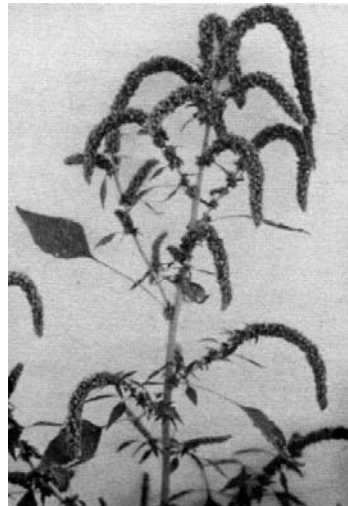
Fig. 72. Sunflower, croton, ragweed, and pigweed are important dove food plants.



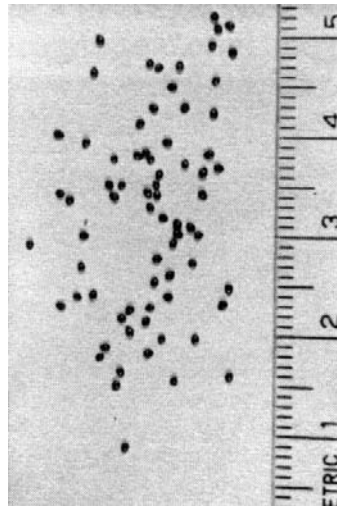
Ragweed



Ragweed Seed



Pigweed



Pigweed Seed

Waste grain and weed seeds produced as byproducts of farming and ranching are generally the least expensive and most widely-distributed dove food available in Texas (Fig. 13). However, almost any kind of soil disturbance such as disking, plowing, heavy grazing, or burning can be intentionally used to stimulate the growth of annual seed-producing forbs or "weeds" which in turn provide dove food. To be effective, soil disturbance should be completed in late winter before spring plant growth gets underway. Late-spring or summer soil disturbance may produce weed growth but can result in a very late seed crop or none at all. Soil disturbance is generally the least expensive method of actively providing dove food, but seed of desirable plants can also be purchased and planted. Seed are commercially available for most of the introduced species listed above and a few of the

native species including native sunflower, partridge pea, and bundleflower. The seed of most dove food plants can be planted in the spring, but native sunflower seed should be planted in the fall for best germination.

Once a new seed crop has been produced, mourning doves are much more likely to feed in a harvested grainfield, grazed, burned or shredded pasture, open feed lot, or mowed roadside than in tall, rank, standing vegetation which could conceal predators.

Late-summer or early-fall plowing, a common farming practice throughout Texas, can result in a 95 percent reduction in available dove food. Doves generally respond to this reduction in food by moving elsewhere. Delaying fall plowing until mid-October would greatly improve dove food availability in Texas grainfields.

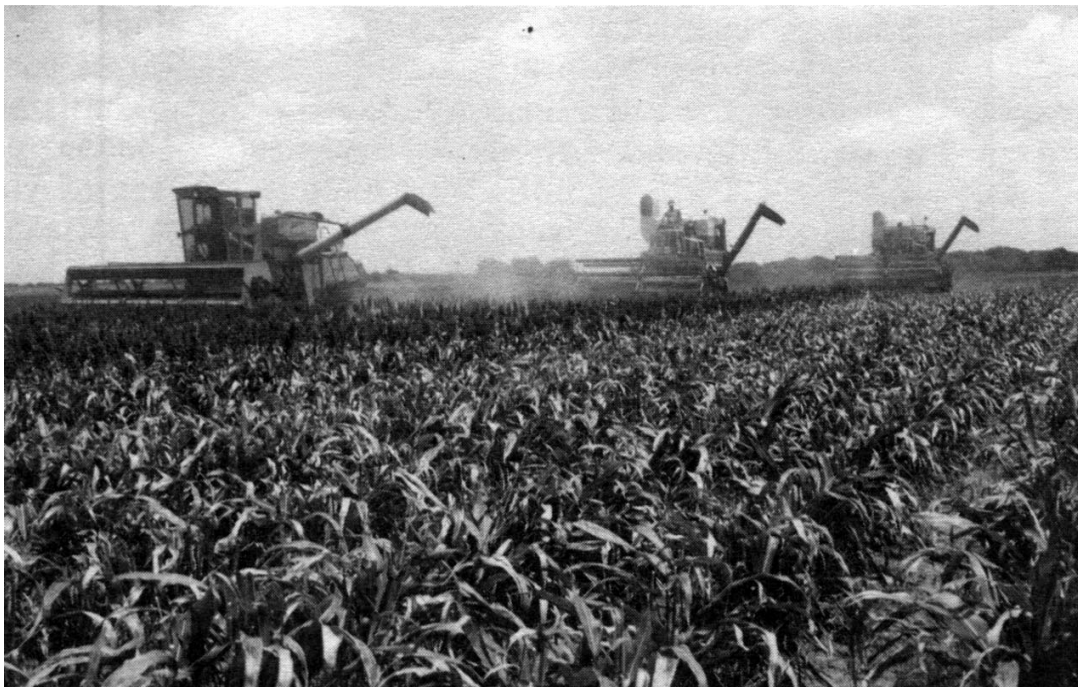


Fig. 13. Waste grain and weed seeds produced as by-products of farming and ranching are important dove foods (U.S. Soil Conservation Service Photograph).

Water

Mourning doves generally water twice a day, once in mid-morning and once in late evening. As with feeding areas, mourning doves prefer their watering sites open and free of tall, concealing vegetation (Fig. 14). Mourning doves are often seen



watering at stock ponds, windmills, feed lots, flooded pastures, bare stream bottoms, boat ramps, or even rain water puddles on paved roads. An ideal watering site designed specifically for mourning doves should include a bare landing area at least 30 to 50 feet wide at the water's edge. A gravel, caliche, or concrete pad or grazed area at the water's edge should satisfy this need. More elaborate watering systems could include shallow concrete dishes with gently-sloping sides. Since evaporation would be a problem, shallow dishes would need a constant water source and possibly a float shutoff system. It may even be necessary to provide some kind of shade over small water sources to reduce evaporation during the hot summer months. Trees, fences, or utility lines which provide perching sites near the water will be heavily used by mourning doves.



Fig. 14. Doves prefer watering sites free of ground-level vegetation.

Nesting Cover

In Texas, mourning doves nest in many types of habitat including residential shade trees, woody fencerows, old cemeteries, shelterbelts, brushy rangeland, and desert shrub. Ground nests are fairly common in rangelands, small grains, and grain stubble.

Mourning doves nest most frequently in scattered trees or in trees located along the edge of a field or forested area. They

generally avoid nesting in dense, forested areas or treeless prairies. Trees with a trunk diameter greater than eight inches and a crown height of 10 to 30 feet seem to be generally preferred. Mourning dove nests are usually located 5 to 15 feet above ground level. Recent studies indicate mesquite, hackberry, huisache, live oak, post oak, and juniper (cedar) trees are widely used by mourning doves nesting in Texas.

Trees planted for timber production, windbreaks, orchards, shade, or wildlife cover may be used by nesting mourning doves in as little as three to five years, but nesting densities are generally greater in more mature trees.

Disease Control

As discussed earlier, trichomoniasis and fowl pox are fairly important diseases of mourning doves in Texas. Evidence of these diseases is most frequently observed in the vicinity of some type of feeding or watering site where doves are abnormally concentrated. The only practical means of controlling these diseases in the wild is to remove the food source or water supply for three or four weeks, thereby dispersing the flock and reducing contact between diseased and healthy birds.

Doves infected with both trichomoniasis and fowl pox are occasionally bagged by sportsmen, but there is no danger of either disease being transmitted to humans.

Baiting

State and federal laws prohibit the hunting of mourning doves and other migratory species over areas that have been "baited" by scattering grain, salt, or other feed to attract the birds. An area is considered to remain baited for 10 days after all bait has been removed. However, mourning dove hunting is permitted on or over lands where grain or other feed has been scattered as a result of bona fide agricultural operations or as a result of manipulation of a crop or other feed on the land where it has been grown for wildlife management purposes. Manipulation for wildlife purposes cannot include the distributing or scattering of grain or other feed once it has been removed from or stored on the field where it was grown.



Hunting Intensity

As noted earlier, mourning doves are highly mobile and readily attracted to abundant food and water. However, heavy, continuous hunting can cause doves to leave desirable habitat. Even light hunting pressure can cause them to leave marginal habitat. Consequently, sportsmen and landowners may want to reduce hunting pressure on some of their land to extend the shooting season until local birds are supplemented by migrants. This reduction in hunting pressure could take the form of fewer hunters, fewer days, or shorter hours. If adequate land is available, perhaps one or two feeding fields could be left completely unhunted.

Urban Dove Management

Many Texans (including those who may not have the desire or opportunity to hunt doves) receive a tremendous amount of pleasure from mourning doves. This is especially true in urban areas that offer good nesting sites with ample food and water nearby. Older, established neighborhoods with adequately-spaced mature shade trees with broad, spreading branches provide especially good urban nesting habitat (Fig. 15). Trees with dense-growing, multi-limbed branches such as live oak are generally superior to more open-branched trees like willow.



Fig. 15. Older, established neighborhoods with big trees often provide good dove nesting habitat.

Food and water available at ground level will be more readily used by mourning doves than elevated feeders or bird baths. As with rural feeding and watering sites for mourning doves, it is important to locate urban feeding and watering sites away from tall vegetation or other visual obstructions which could conceal predators like house cats. Food and water placed near picture windows invite collisions by doves and other birds.

Homeowners should check their property periodically for any sick or dead birds that might indicate the presence of trichomoniasis or other diseases. It is also important to arrange for someone to provide feed and water for doves while you are on vacation since local breeding birds can become dependent on artificial food and water sources.

Summary

Mourning doves are an important economic, recreational, and esthetic resource which Texans share with people from other states and foreign countries. Mourning doves easily locate areas of superior habitat but quickly leave areas that no longer provide adequate food, water, cover, or security requirements. With proper management, the mourning dove's sleepy, mournful summer-time call and its whistling wings in autumn will always be an important part of rural and urban Texas.

For additional information on mourning dove management, contact your nearest Texas Parks and Wildlife Department office.



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