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Wildlife Habitat Management Institute

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Mourning Dove (Zenaida macroura)

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General information

The mourning dove (*Zenaida macroura*) is one of the most widely distributed and abundant birds in North America. Fall populations of this game bird in the United States are estimated to be slightly more than 400 million birds. In recent years, the annual harvest by hunting in the United States has been estimated at 18 to 25 million birds, similar to the harvest of all other migratory game birds combined. Mourning doves are highly adaptable, occurring in most ecological types except marshes and heavily forested areas.

The mourning dove is a medium-sized member of the Columbidae family. While this family consists of approximately 300 species of doves and pigeons, only 8 species, including the mourning dove, are native to the United States. The mourning dove is approximately 11 to 13 inches in length, with a 17– to 19–inch wingspan, weighing on average 4.4 ounces. Mourning doves have delicate bills and long, pointed tails. They are grayish-brown and buff in color, with black spots on wing coverts and near ears. The tail and wing feathers are gray, except for black-bordered white tips on the tail. Their eyes are brown and bordered by light blue bare skin, while legs and feet are a dull red. Males are slightly larger than females, and slightly more brightly colored. Males have more of a pinkish wash on the breast and a brighter blue-gray coloration on top of the head. Juveniles have light buff tips to their feathers, giving a scaly appearance.

Mourning doves are monogamous and form strong pair bonds that persist during at least one nesting season. The breeding season is among the longest of all North American birds, with peak nesting activity occurring in late spring/early summer and a decline beginning in July. At the beginning of the breeding season, unpaired males devote considerable time to perch cooing and performing displays such as flapping/gliding flight to attract females. When performing the flapping/gliding flights, a male leaves his cooing perch with a vigorous and noisy flapping of his wings, rising up to 100 feet in the air. He then extends his wings and begins a long spiraling glide back down. The perch coo is one of the few vocalizations



U. S. Fish and Wildlife Service

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that mourning doves make. It consists of one note followed by a higher one, then three to five notes held at great length, and it is used by males to court females. A female will respond to the perch coo in one of three ways: she will fly away, initiating a pursuit chase; she will ignore the male and continue preening or feeding; or she will permit copulation and formation of the pair bond.

Once the pair bond is made, the male takes the initiative in nest-site selection. He selects small twigs and delivers them to the female, who arranges them in a nesting platform. Clutch size is small, usually two eggs per nest. Sometimes three or four eggs are found in a nest, due to “dump nesting” where a female lays her eggs in another’s nest. Eggs are white and nests are usually open, making them easy targets for predators, including blue jays, grackles, crows, housecats, red squirrels, and rat snakes. Both parents incubate the eggs; eggs hatch in 14 to 15 days. Repeated nesting in a season is necessary to maintain population levels, as average mortality rates can be as high as 58 percent per year for adults and 69 percent per year for juveniles. Generally, mourning doves can successfully raise two to three clutches per season in northern areas and five to six clutches per season in warmer areas.

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This leaflet provides an introduction to the habitat requirements of the mourning dove and is intended to assist landowners and managers develop mourning dove management plans. The success of any species-specific management plan depends on targeting the needs of the desired species and analyzing existing habitat conditions to ensure that all required habitat elements are present. This leaflet provides a number of practical habitat management practices that can be used to improve and manage mourning dove habitat. Landowners and managers are encouraged to enlist the expertise of wildlife and natural resource professionals to help identify additional habitat management needs and actions.

Distribution

The mourning dove is indigenous to North America and is widespread throughout the continent. Its breeding distribution includes southern Canada, all of the continental United States, northern Mexico, and the Caribbean Islands. The winter distribution extends from northern California across the central United States to Iowa, southern Michigan, southern Ontario, New York, and New England, extending south through the breeding distribution over most of Mexico and Central America.

Mourning doves are migratory in the northern part of their distribution. Those that breed farther north winter farther south. Each migratory location receives doves from divergent breeding locations. For the most part, birds living in New England and the mid-Atlantic over winter in the Carolinas; birds living in eastern and mid-central United States over winter in southeastern United States (including LA, MS, AL, GA, FL); and birds living in central United States over winter in Mexico and Central America. Texas, California, and Arizona serve as resting points for more southern migrants. Spring migration begins in March, progresses slowly through April, and ends in mid to late May. Autumn migration begins at the end of August and ends in November. Most migration routes are overland.

As a result of environmental factors, mourning doves exhibit geographical morphological variations. For example, plumage varies from darker in the east to paler in the west; wings vary from shorter in southern areas to longer in northern areas; and toe length decreases from east to west. These geographical variations have led to the classification of mourning dove subspecies (table 1).

Habitat requirements

General

Mourning doves are adapted to a wide variety of habitat conditions, but depend particularly on edge cover and mixed successional stages throughout their range. They primarily inhabit woodland/grassland edges. They prefer open or semi-open lands and are primarily farm game birds that thrive where grain crops are grown. Mourning doves generally do not feed in areas containing heavy, densely-matted vegetation; bare ground on which seeds are available and visible is preferred.



Breeding and wintering distribution of the mourning dove (adapted from Mirarchi and Baskett 1994).

There has been a dramatic increase in the number of mourning doves inhabiting the Canadian prairies over the past several decades, due to an increase in their preferred habitat. This is attributed to the establishment of trees in windbreaks and shelterbelts, the advent of agriculture with plentiful grain seeds as a stable food supply, the creation of small water supplies for livestock, and the erection of telephone lines and power lines used for perching. Likewise, in the Great Plains, the conversion of large tracts of treeless prairie to domestic grains and farmsteads has created an excellent combination of food and nesting cover for mourning doves.

Food

Seeds obtained from native or cultivated plants make up more than 99 percent of a mourning dove's diet. Many of the most favored foods are seeds produced

on herbaceous plants found in early successional habitats. Mourning doves are selective foragers and their feeding habits depend on what seeds are available in a given region. Choice foods are those that are readily eaten when encountered, whereas fair foods are eaten only rarely when choice foods are present. Table 2 offers guidelines for mourning dove choice and fair foods.

Mourning doves eat what is visible and readily accessible in light ground cover. They do not scratch or use their bill to dig for food. Rather, food is eaten directly off the ground. They locate food by sight or by observing other birds feeding. Mourning doves will often return repeatedly to the same feeding site until the food source is exhausted. Most agricultural seeds consumed are from spillage after harvest, from livestock feeding, or located around storage buildings.

Grit (sand and gravel) is ingested and retained in the mourning dove's gizzard to help grind and pulverize hard foods. Grit is available along gravel or mud flats, road edges, or in sandy soil.

Nesting cover

Mourning doves are best adapted to and most closely associated with agricultural habitats, but will nest in many different habitat types. They typically nest along the edges of fields, pastures, or clearings; nests are seldom found in densely wooded areas. Nests are built in both coniferous and deciduous trees, shrubs, and vines. Tree nesting is most common, but they will nest on building ledges, chimneys, and the ground in the absence of trees or shrubs. Nesting habitat is not usually a limiting factor for mourning doves. However, it is important to have an interspersion of vegetation types for nest site selection.

Mourning doves are notoriously poor nest constructers. Nests are often no more than a platform of small twigs, grasses, pine needles, or similar materials found around nest sites. They will frequently use previously constructed nests (of mourning doves, other birds, or squirrels).

Table 1 Mourning dove subspecies

Common name (Scientific name)	Characteristics	Range
Eastern mourning dove (Z. m. carolinensis)	longer wings, longer toes, shorter bill, darker in color	Eastern U.S., Bermuda, Bahamas
Western mourning dove (Z. m. marginella)	longer wings, longer bill, shorter toes, paler in color	Western U.S. including prairie grasslands, southern Canada, Mexico
Panama mourning dove (Z. m. turturilla)	shorter wings, shorter legs, longer bill, pale grayish in color	Western Panama
West Indian mourning dove (Z. m. macroura)	shorter wings, dark-to-medium toned, deep buff-colored belly	Western West Indies, Florida keys
Clarion Island mourning dove (Z. m. clarionensis)	larger feet, larger bill, very dark brownish	Clarion Island (off the west coast of Mexico)

Table 2 Mourning dove food [1]

	Choice foods	Fair foods
Agriculturally Produced	Bread wheat, corn, grain sorghum, millets, oats (pieces), peanuts (hulled), sesame, sudangrass, sunflower (oil varieties)	Barley, buckwheat, cowpea, rice, rye, soybean
Trees	Pines, sweetgum	
Grasses	Bristlegrasses, broadleaf signalgrass, canary grasses, panicums, paspalums, switchgrasses	Goosegrass, Johnsongrass
Forbs	Amaranths, crotons, various euphorbs, hemp, pokeberry, sunflower (common)	Smartweed

[1]Some of these plants are considered to be invasive species in some areas. While their seeds may benefit mourning doves, these plants should be avoided in favor of native species. Landowners should consult with local NRCS offcials to find out which preferred mourning dove foods are native in their area.

Did you know?

Both parents nourish young mourning doves with crop milk, a milk-like substance consisting of cells sloughed from the parent's crop wall. The crop gland is located at the base of the neck in front of the breastbone and it functions as part of the digestive system as a food storage organ. After a few days, crop milk is gradually supplemented by seeds, and at fledging (11-15 days), young mourning doves' diets are the same as their parents'.

Roosting cover

Like nesting cover, roosting cover is provided by various habitat types. These include coniferous and deciduous trees, brushy thickets, dead snags, and power-line right-of-ways. Hedgerows and shelterbelts also provide excellent roosting sites for mourning doves. Mourning doves will often sit in roosting sites before flying down into a field to feed.

Water

Mourning doves require fresh surface water for drinking on a regular basis. Puddles, ponds, and stream edges are suitable water sources. Doves will alight on unvegetated or lightly vegetated spots where visibility is good and where predators cannot easily hide, and where they can walk easily to the water's edge. Sandbars, gravel bars, and mud flats provide such drinking sites.

Limiting factors

Table 3 provides a summary of mourning dove habitat requirements. For planning purposes, use table 4 to subjectively rate the availability and quantity of mourning dove habitat within a planning area, based on habitat requirement descriptions listed in table 3. Habitat communities and components that are absent or given a low rating are likely limiting mourning dove habitat quality. Management actions should be taken to address these limiting factors. Land uses on adjacent properties may need to be considered to accurately rate the quality of a habitat management area for mourning doves.



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Both parents care for the young by nourishing them with crop milk.

Habitat management recommendations

Maintenance of mourning doves in a healthy, productive state is a primary management goal. To this end, management of mourning doves includes assessment of population status, regulation of harvest, and habitat management. In general, the primary management tool is through hunting regulations, including season length, bag limits, and shooting hours. The regulations generally remain the same year-to-year, but have been changed in response to population trends in an attempt to alter the number of doves harvested in a given year. While these regulations are in place at the federal and state levels, there are concrete actions that landowners can take to increase the numbers of mourning doves on their properties. Ultimately, a landowner's goal should be to provide a continuous supply of diverse and highly preferred foods throughout the year, not just during hunting season.

Feeding fields are created to attract mourning doves, primarily for hunting purposes. Fields that are most used by mourning doves are characterized by an abundance of small seeds scattered on the surface of relatively bare ground with little horizontal cover. Seeds that will attract mourning doves include wheat, millet, sunflowers, corn or grain sorghum, peanuts, buckwheat, barley, and annual rye. Fields may be varied in shape, but should be at least 2 acres in size. For hunting, larger fields of 20 to 60 acres are recommended for safety and to allow hunters to spot the doves to prepare the shot. A general rule of thumb is to provide at least 1 acre for each gun on the field. By regulating hunter pressure, landowners can extend quality dove hunting on a feeding field well into the season. To keep doves coming into a field, it is important to limit hunting to two to three times per week. If the property is large enough, the fields that are hunted can be rotated, which will allow more frequent hunting. For maximum effectiveness, a given field should be hunted only a half-day per week and hunters should stay on the outside of the field.

Feeding fields can be agricultural fields managed in such a way as to provide habitat for mourning doves, or they can be fields maintained specifically for mourning dove habitat. Table 5 outlines the vari-

ous management practices that can be used for either kind of feeding field. Fields with natural vegetation (those not used for agricultural purposes) can be managed for improved mourning dove habitat. Soil disturbance, such as light discing, mowing, or burning, prior to or early in the growing season will stimulate seed-producing annuals and attract mourning doves. In areas of extensive crop and grasslands, coniferous trees can be planted for nesting and roosting sites.

Table 3 Summary of mourning dove habitat requirements

Habitat component	Habitat requirements
Food	Seeds from native or cultivated plants; seed must be visible and readily accessible on the ground; sand or gravel must be available
Nesting cover	Trees or shrubs on the edges of fields, pastures, or clearings
Roosting cover	Trees, shrubs, or power lines on the edges of fields, pastures, or clearing.
Water	Fresh surface water in puddles, ponds, or streams; must have unvegetated area around water source on which to alight

Table 4 Factors that can limit habitat quality/quantity

Habitat component	Availability/quality High	Medium	Low	Absent
Food				
Nesting cover				
Roosting cover				
Water				

Table 5 Mourning dove field management options[1]

Seed crop	Special dove planting	Agricultural crop residue
Corn	Mow, burn, disc	Combine, cut silage, “hog”, mow, disc, or burn stalks
Peanuts		Mechanical harvest, “hog”
Wheat	Fresh seed and mow, burn or disc when mature	Combine, burn residue, hay, lightly disc
Browntop, proso, and other millet	Clean cultivate in rows, mow or lightly disc if broadcast	Hay, combine
Milo, higera, sorghum	Clean cultivate, mow, disc	Combine, hay, cut silage, shred or burn stalks
Sunflowers	Clean cultivate, mow, lightly disc	Combine
Watermelon		Leave broken melons, mow, disc
Soybeans	Clean cultivate, mow, lightly disc	Combine, hay
Hemp		Bale for rope
Sesame	Clean cultivate, mow	Harvest
Barley	Mow, lightly disc	Harvest, hay
Annual rye	Mow, lightly disc	Harvest, hay

[1]Baskett, R. K. 1993. Table 59: Mourning dove shooting field management options with special plantings or manipulation or agricultural crop residues. Page 498 in T. S. Baskett, M. W. Sayre, R. Tomlinson, and R. E. Mirarchi, editors. Ecology and management of the mourning dove. Stackpole Books, Harrisburg, PA, USA.

When planting seed crops for mourning dove habitat, it is important to pay attention to planting dates and seed maturation dates to ensure the grain crop will be available during the dove-hunting season. Crop harvesting should be done a week or two prior to the opening of dove season to allow time for doves to find and begin using the field. Most harvesting methods, including silage chopping, conventional combining, picking, hogging, and haying, all involve provisions for open or bare ground with scattered seeds on the surface. Light discing, hogging, or shredding stalks and remaining ears of corn, bean pods, peanut hulls, or milled heads improves the field's potential for attracting doves. For seeds to be visible to mourning doves, landowners should avoid fall plowing of agricultural fields following harvest, leave some areas of small grains unharvested, and leave waste grain on the field.

In brush or timbered areas, it is necessary to control understory vegetation so that mourning doves may move freely on the ground and easily locate seeds. Livestock grazing can be beneficial to doves by opening understory and encouraging weed seed production. However, landowners must be cautious as overgrazing may cause long-term soil deterioration and a loss of grass and forb seeds. Seed tree, shelterwood, and clearcuts are all appropriate timber harvest methods for dove management. Frequent thinning of pine stands stimulates the production of herbaceous plants valuable as dove foods. Prescribed burning in park-like stands is an inexpensive and effective technique for managing dove habitat, especially when used in association with openings, cultivated grain fields, and water sources. Burning of crop residues provides the bare ground necessary to attract doves to feeding fields. Doves readily feed in burned areas where desirable seeds are abundant and exposed.

Diseases and parasites

A number of known diseases and parasites affect mourning doves. Parasites include intestinal parasites (nematodes, flukes, tapeworms), ectoparasites (mites, lice), and blood parasites, none of which are linked to mortality. *Haemoproteus columbae* is an example of a common blood parasite; it lives within red blood cells and is transmitted by hippoboscid flies, biting midges, louse flies, or nest mites. Trichomonas gallinae, caused by a single-celled flagellate that resides in the mouth, esophagus, and crop, is one of the most dangerous pathogens in mourning doves. It can exist peacefully in the host but can also cause cheesy, yellowish growths in the mouth and esophagus, making it difficult for the mourning dove to eat and eventually leading to death by starvation. Avian pox is a virus that causes lesions on the skin and/or mucous membranes of the mouth and upper respiratory tract. These lesions can also make it difficult for the mourning dove to see and eat and lead to death by starvation. Avian pox is highly contagious and transmitted by mosquitoes, hippoboscid flies, biting midges, or by direct or indirect contact with an infected bird.

Baiting laws

When preparing a feeding field, landowners should be aware of the laws protecting mourning doves under the Migratory Bird Treaty Act. Federal regulations concerning the baiting of migratory birds prohibit the shooting of doves over areas where grains, salt, or other foods are placed (carried to an area, not grown) for the purpose of attracting birds. Doves may be hunted over a standing crop or any field where grain or feed has been distributed or scattered as a result of normal agricultural operations. Standing crops may be manipulated by any methods to attract doves, such as mowing, discing, or burning, so long as the grain is not harvested and then redistributed to the field. It is recommended that state and/or federal wildlife officers be consulted concerning plans for dove feeding fields and hunting. For more information on the laws surrounding mourning dove baiting, visit *http://www.le.fws.gov/dove-baiting.htm*

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