

RESOURCE UTILIZATION AND NESTING ECOLOGY OF THE WHITE-WINGED DOVE (*ZENAIIDA ASIATICA*) IN CENTRAL TRANS-PECOS, TEXAS²

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ABSTRACT

The White-winged Dove (*Zenaida asiatica*), a native of the Chihuahuan Desert Region, is a recent immigrant to the central Trans-Pecos of Texas. Because its range is documented as recently expanding northward into and beyond this area, data pertaining to its nesting ecology and habitat preferences are of considerable importance in assessing its reproductive biology and management. Fifty active or recent nests of White-winged Doves in and around Alpine, Texas, were located and studied. Tree species in which the nests were constructed were identified, as were tree height, and mean nest height; nest contents were also documented. Eighty percent of the nests were located in *Cupressus arizonica* Greene (Arizona Cypress) which appears to provide the most suitable nesting requirements for these economically important game birds.

Key words: White-winged Dove, nesting ecology, resource management, Arizona Cypress, habitat utilization

INTRODUCTION

The White-winged Dove, *Zenaida asiatica* L., is the only North American dove that is extensively marked with white on the upper wing surface (Johnsgard, 1975). It occurs throughout the southwestern United States into southern Texas, southward through Mexico and Central America, to Costa Rica and western Panama (Johnsgard, 1975). Populations of White-winged Doves of Trans-Pecos Texas, until recently, were confined to a narrow corridor paralleling the course of the Rio Grande River (Scudday et al., 1980). The presence of whitewings in this region in increasing numbers and population densities is believed, partially, to be the result of recent, massive influxes of several species of Salt Cedar (*Tamarix*) along the Rio Grande and its drainages (Powell, 1988; Scudday et al., 1980). At least six species of *Tamarix*, an old world genus, were introduced into Texas by early Anglo settlers (Cottam and Trefethen, 1968). Engel-Wilson and Ohmart (1978) and Gallucci (1978) observed a near exclusive nesting preference by these doves for species of *Tamarix*.

The nesting requirements of White-winged Doves have been of interest to wildlife and natural resource biologists for some 50 years. The first record of White-winged Doves within the city of Alpine was in 1966, with initial nesting confirmed in 1975 (Scudday et al., 1980). Since that time, the dove population in the Alpine area has grown significantly, due in part to the presence of suitable nesting sites, adequate water, and the availability of food. The primary nesting season of the White-winged Dove in the Alpine area begins in the late winter and continues into the summer. Two to several clutches are not unusual, and a successful brood has been recorded as late as September (Scudday, unpubl. data). Nests are usually located in large shrubs or trees and constructed almost entirely of twigs with no apparent design (Goodwin, 1983). The characteristic "bowl" shape associated with most bird nests is scarcely apparent, and eggs are sometime visible from below. White-winged Dove nests are distinguished from Mourning Dove (*Zenaida macroura* L.) nests in that the latter have a more circular appearance, a shallow "bowl", and a greater variety of

construction materials. Clutches generally consist of two buff, cream, or white eggs with incubation lasting approximately two weeks (Goodwin, 1983). After hatching, it takes approximately two additional weeks before the young are capable of flight.

The White-winged Dove is an economically valuable natural resource in that it generates revenue through the purchase of hunting licenses and stamps, and land leases for hunting rights. Throughout the United States, the highest population densities of the bird occur in association with towns and riparian or lake habitats (Brown, 1977). In addition to their native food sources, White-winged Doves consume agricultural grains in riparian areas, while desert-nesting birds primarily feed on fruits and seeds of native perennial plants (Haughey, 1986). Habitat destruction and hunting pressures in Arizona and the Lower Rio Grande Valley of Texas have caused significant declines in White-winged Dove population numbers (Gallucci, 1978). Suitable habitat for reproduction is now considered the major factor limiting the species distribution in the U.S. and resource management must include the acquisition of suitable habitat as well as resource inventory (Brown, 1977). The objectives of this study were to determine some of the habitat components affecting nesting and reproductive success of these birds in an effort to establish stable nesting populations of White-winged Doves in the central Trans-Pecos region.

METHODS

The study was conducted during the summer of 1987. Emphasis was placed on locating and identifying species of trees in which the doves nested. Hundreds of trees in and around Alpine were visually scanned from beneath. Trees with a potential nest were viewed with 8x40 binoculars to determine the presence or absence of a nest. Once a nest was located, the tree was climbed to ensure positive identification of the species of bird which constructed the nest. The nest was then assigned a number. The date the nest was sighted, the species of tree in which it was located, and the location of the tree were recorded. The exact height of the nest was determined using a 100 ft. tape measure. The location of the nest in the tree, its proximity to the trunk and distal branches, as well as the total height of the nesting-site tree (determined with a clinometer) were likewise recorded.

Nest contents were then examined. On four occasions, pairs of young birds approximately two-weeks-old or less were found occupying a nest. As part of a separate study, these young birds were carefully removed from the nest, banded with USFWS aluminum bands, and returned to the nest. After the nest contents were determined, a piece of orange flagging tape with the assigned nest number was tied to the branch as close as possible to the nest. Other miscellaneous information, such as nest condition and the presence of fledglings nearby, was also recorded.

RESULTS

Fifty White-winged Dove nests were located in 45 trees during the study. The nests examined were located in nine different species of trees (Table 1). *Cupressus arizonica*, an evergreen gymnosperm, was the tree choice for nesting whitewings. This species held 80% of the nests (40 total nests) in the Alpine area. One *Cupressus* contained three nests, while three others contained two nests each. Only one other species, *Cedrus deodora*, (also an evergreen gymnosperm) contained more than one nest, with two trees containing a single nest each. All other tree species contained just one nest each. Of the trees in which nests were located, 67% were gymnosperms while 33% were angiosperms. All of the gymnosperms are evergreen, while two of the three angiosperms species are deciduous with sympodial, widely spreading branching habits. These deciduous species are still

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nearly devoid of leaves when nest building by the birds begins in late winter.

Table 1. Tree species (n=45) with number and percentage of nests located in each.

Species	Number of Nests	Percentage of Total
<i>Cupressus arizonica</i>	40	80
<i>Cedrus deodora</i>	3	6
<i>Juniperus erythocarpa</i>	1	2
<i>Juniperus flaccida</i>	1	2
<i>Pinus cembroides</i>	1	2
<i>Ligustrum japonicum</i>	1	2
<i>Morus rubra</i>	1	2
<i>Thuja orientalis</i>	1	2
<i>Ulmus chinensis</i>	1	2

Mean tree height of the trees containing nests was 45.9 feet. The mean nest height was 21.7 feet. The mean nest height for all nests in this study, expressed as a percent of tree height, was 47.2%, indicating that the nests were predominantly located at or near the mid-point of the tree. Examination of the nests showed 40% (20) to be empty. Of the remaining 60% (30), either close examination was not possible or one or more of the following were found: feces, down feathers, adult White-winged Doves, fledglings, hatchlings, dead hatchlings, an egg, or egg fragments.

DISCUSSION

Eighty percent (80%) of the White-winged Dove nests located in the immediate vicinity of Alpine were found in *Cupressus arizonica*. This figure indicates that of the available nesting habitats (i.e., tree resources) in this area, that *Cupressus* appears to best provide the requisite nesting requirements of this bird species. These trees are relatively abundant in the area and have a monopodial growth habit containing horizontal, forking branches. This species is evergreen, provides year-round cover, and possesses protective, water-shedding properties. In light of Haughey's (1986) findings concerning the diet of desert White-winged Dove populations, it appears that these doves could also derive a portion of their diet from eating the abundant seeds produced by this species. The occurrence of nests approximately 50% of the way up the trees, on average, may be due to the relative stability of these mid-point areas during times of high wind in the late spring when eggs or young are most often found in the nests. These areas also contain the greatest cover to conceal the nests from predators and provide shade for the fledglings during the hottest times of the year. These areas of the trees may also contain branches that are most desirable in size for nest building and perching, while still being high enough to afford protection from climbing predators (i.e., domestic cats).

The results of this study differ from earlier studies along the Rio Grande by Engel-Wilson and Ohmart (1978) and Scudday et al. (1980), where nests occurred almost exclusively in *Tamarix* sp. There is a virtual absence of *Tamarix* sp. in the immediate vicinity of Alpine. *Tamarix*, a weedy, exotic species in the region, grows

primarily along the water courses of the Rio Grande and Pecos River drainage systems, and near surface tanks. *Cupressus arizonica*, a native species, occurs as isolated stands in the Chisos Mountains of Big Bend National Park disjunct from the main distribution center in Arizona and northwestern Mexico (Powell, 1988). Because *Cupressus* is easily propagated from seed and widely cultivated in the region, we suggest its use as an important tool for recruiting, establishing, and managing stable nesting populations in the central Trans-Pecos area. The widespread planting of this species in suitable habitats in the region should provide a way of increasing this valuable game bird and economic resource throughout West Texas. The use of *Cupressus* in this way is paramount to using one kind of renewable natural resource to increase the population base of another renewable resource.

CONCLUSION

As demonstrated, *Cupressus arizonica* can provide important cover, nesting habitat, and possibly forage for White-winged Doves, and the presence of these trees should increase the successful reproduction of the birds, resulting in greater population densities of this game species in the Trans-Pecos region.

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