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White-winged Dove Population Status, 2010

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U.S. Fish & Wildlife Service

White-winged Dove

Population Status, 2010

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U.S. Fish and Wildlife Service
Division of Migratory Bird Management
Population and Habitat Assessment Branch
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Preface:
The U.S. Fish and Wildlife Service has annually requested information from Arizona and Texas state representatives about the status of white-winged doves in their respective state since those states conduct their own surveys with no federal involvement. In past years, we have taken those reports and summarized them orally for discussions pertaining to the regulations-setting process. In order to provide more comprehensive and available information, we are now publishing this information as an annual status report. We currently have adequate information from the state of Arizona to produce an annual report. In the future, we expect to include a report from Texas and possibly other states. Texas is transitioning to a new survey method that includes urban areas statewide and data have not yet been analyzed fully.

Cover photograph: White-winged dove by George Andrejko ©

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WHITE-WINGED DOVE POPULATION STATUS, 2010

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Abstract: This report summarizes information on the abundance and harvest of white-winged doves (*Zenaida asiatica*) in Arizona. Since 1962, the Arizona Game and Fish Department (AGFD) has conducted a call-count survey to monitor relative abundance of white-winged dove populations. Based on this survey, the annual count of doves heard per route peaked at 52.3 birds in 1968 and then declined until about 2000, after which, the mean annual count has remained stable at 24.7 doves per route (2001–2010). In 2010, the mean annual count of doves heard per route was 23.6. Also, the AGFD monitored white-winged dove harvest during 1962–2008. Harvest peaked at about 740,000 birds in 1968, decreased to a mean annual harvest of about 391,000 during the 1970s, and decreased again to about 131,000 birds annually during 1980–2008. The state-based harvest survey was discontinued after the 2008 season with establishment of the federal Migratory Bird Harvest Information Program (HIP). Based on HIP, the current (2009) estimates of white-winged dove total harvest, active hunters, and hunter days afield in Arizona were 124,500 ± 12,069 (estimate ± SE) birds, 20,400 ± 1,561 hunters, and 68,200 ± 6,611 days afield. Hatching year birds comprised a mean of 63% of the total white-winged dove harvest during 1968–2009 based on hunter bag checks at two AGFD operated stations, and 54% of total harvest in 2009.

White-winged doves are managed cooperatively by State wildlife agencies and the U.S. Fish and Wildlife Service. Their management is detailed in a plan developed by the Pacific Flyway Council (Pacific Flyway Council 2003).

Maintenance of white-winged dove populations in a healthy, productive state is a primary management goal. Management activities include population and harvest assessment, harvest regulation, and habitat management. Each year, counts of white-winged doves heard are conducted by biologists and others in the state of Arizona to monitor population status. The resulting information is used by wildlife administrators to set annual hunting regulations.

DISTRIBUTION

The white-winged dove is one of 14 species of Columbidae occurring in North America north of Mexico (Aldrich 1993). Twelve subspecies of white-

The primary purpose of this report is to facilitate the prompt distribution of timely information. Results are preliminary and may change with the inclusion of additional data.

Figure. 1. The principal breeding, wintering, and resident area of migratory white-winged dove populations in North America, from George et al. (1994). Since George et al. (1994), white-winged doves have expanded their range into north-central New Mexico and southern Colorado. These new range expansions most likely are Mexican highland birds. The Eastern Population has expanded northward throughout most of the central United States.

winged doves have been described for North, Central and South America, and the West Indies (Saunders 1968). Of these, four are known to reside and breed in the United States (Western, *Z. a. mearnsi*; Eastern, *Z. a. asiatica*; Big Bend, *Z. a. grandis*; and Mexican Highland, *Z. a. monticola*). Only the Western and Eastern races represent populations of significant size in the U.S.

In Arizona, only the Western subspecies is known to occur (Fig. 1). Distribution of the white-winged dove in Arizona is mostly restricted to lower desert areas although there are infrequent reports of birds summering as far north as Flagstaff, (2,100 m elevation). The highest populations occur in the lowland Sonoran desert areas. Large numbers of birds can be found in the urban complexes of Phoenix and Tucson. There are small populations in Casa Grande and Tucson that apparently do not migrate.

ECOLOGY

White-winged doves nest at relatively low densities throughout the Sonoran, Mohave, and Chihuahua deserts of southern and western Arizona, southern California, and southern New Mexico. However, in riparian woodlands near agricultural areas, populations have historically been present in high densities. Butler (1977) found that birds that nested in high densities in mesquite (*Prosopis* sp) or salt cedar (*Tamarix ramosissima*) had the greatest nesting success. Brown (1977) referred to these nesting concentrations as colonial populations, as opposed to the non-colonial populations in upland desert regions.

Cottam and Trefethen (1968) speculated that white-winged doves may have been relatively uncommon in Arizona prior to the advent of agriculture because of the near absence of white-winged dove remains at prehistoric ruins in Arizona and because early European explorers failed to mention the species in their journals. Although many of the early explorations in Arizona were conducted during cool winter months after white-winged doves had presumably migrated south, some expeditions occurred during the nesting season; surely the dove's presence would have been documented had the populations along the Gila River approached even current densities. Cottam and Trefethen (1968) present arguments that the Imperial Valley population represents a relatively recent range expansion, probably since 1901, as the result of flooding of the Salton Sink and subsequent development of agriculture. In contrast, Brown (1989:239) maintains that white-winged doves were common in Arizona from the beginning of settlement.

Haughey (1986) studied desert-nesting white-winged doves and their relationships to saguaro cactus (*Carnegiea gigantea*) in the Saguaro National Monument in southern Arizona, where they are dependent on native food sources. Saguaros were used extensively for both nectar and fruit in Arizona. The similarity in the nesting range of white-winged doves and that of the saguaro has been cited by several authors as noted by Haughey (1986). Those areas where white-wings occur and saguaro do not, i.e., southeastern California, southwestern New Mexico, southeastern Arizona and southern Nevada, may represent recent range extensions in response to agriculture.

In recent times, white-winged dove densities have been greatest near agricultural areas, presumably because of increased food availability. Response of white-winged doves to agricultural activities are well documented and are likely partially responsible for recent large changes in abundance in the southwestern U.S. Rapid declines in white-winged dove populations following either loss of food crops or nesting habitat have been noted in Arizona (Cunningham et al. 1977, Rea 1983) and Mexico (Tomlinson 1993).

White-winged doves typically migrate into Arizona beginning in March. Breeding usually occurs in two peaks, during May-June and July-August, although the timing varies among years (Cunningham et al. 1977). By early September, most adult birds have begun southward migration. The young leave the state soon after. In most years much of the harvest consists of juvenile birds.

IMPORTANCE

White-winged doves are important pollinators of saguaro cactus in Arizona. Haughey (1986) noted that white-winged doves visited saguaro blooms more often than any other bird species. For desert-dwelling doves, 60% or more of the diet is saguaro (Haughey 1986, Wolf and Martinez del Rio 2000). Haughey

(1986) suggested that the breeding cycle of these birds is timed to coincide with the saguaro bloom. Fleming et al. (1996) identified white-winged doves as the major vertebrate pollinator of saguaro.

White-winged doves are popular game birds within their range in the southern U.S. They are also popular for non-hunting recreation. People in many areas provide feeding stations and water in backyards to attract them for observation. Bird watchers and photographers also avidly pursue white-winged doves for observation and the satisfaction of adding them to their life-lists.

HARVEST REGULATIONS

Hunting season dates and bag limits for white-winged doves in Arizona have varied during the past 60 years (see Cottam and Trefethen 1968:320 for Arizona regulations prior to 1956), but have become increasingly restrictive beginning in 1970 and again in 1988 (Table 1).

White-winged dove populations in high-density nesting areas have been subjected to high hunting pressure, particularly during the 1960s when the bag limit in Arizona was 25 birds per day. White-winged doves appear more vulnerable to over harvest than mourning doves (George 1993). A combination of high dove harvest in Arizona during the 1960s (Fig. 2), destruction of river-bottom nesting habitat, and a shift in agricultural crops (substantial shifts from cereal grains to cotton and other non-food crops) (Cunningham et al. 1977) was associated with declining harvests. In response, bag limits were reduced from 25 per day to 10 per day in 1970. Continued harvest declines prompted an additional reduction in bag limits (6 per day) in 1980 where they remain today. In 1988, the season length was reduced from 3 weeks to 2 weeks and half day shooting was implemented in 1989 (Table 1).

POPULATION MONITORING

Call-count Survey

The AGFD has conducted the White-winged Dove Call-Count survey, similar to the federally-coordinated Mourning Dove Call-count Survey, since 1962 (Table 2). The survey generally consists of 25–30 routes (the number varies with logistic circumstances that may prevent completion of some routes in some years). Typical distribution of routes is 19–24 in Sonoran-Mohave desert habitat, 3 in chaparral habitat, and 4–5 in Chihuahua desert habitat. The survey provides an annual index to relative abundance and is calculated as a simple mean of the counts during a year. In 2010, 24 routes were surveyed: 17 in Sonoran-Mojave desert, 3 in chaparral, and 4 in Chihuahua desert habitats. The numbers of routes in each habitat are generally representative of the total area of white-winged dove habitat in the state. There is no attempt to monitor the population status of urban doves.

Harvest Surveys

The AGFD has conducted a mail survey of general license holders to obtain harvest statistics specific to white-winged doves. Harvest report cards are sent to a random sample of the general license holders at the end of the season. From 1982 to 2001, the mean number of white-winged hunters per year sampled from this survey was 430. Results of the surveys are then multiplied by the estimated proportion of license holders that hunted doves each year.

In 2007, the sampling frame for the white-winged dove harvest survey was changed from general license holders to those hunters that had obtained a migratory bird stamp and registered with the federal Migratory Bird Harvest Information Program (HIP). The AGFD harvest survey and HIP used the same sampling frame for 2007 and 2008, although the two programs made no effort to survey the same hunters. The AGFD sampled 8,000 white-winged dove hunters in 2007 and 8,200 hunters in 2008. This dove harvest summary was discontinued after the 2008 season.

The U.S. Fish and Wildlife Service and state wildlife agencies initiated HIP in 1992. This program was designed to enable the U.S. Fish and Wildlife Service to conduct nationwide surveys that provide reliable annual estimates of the harvest of migratory game birds including white-winged doves. Under HIP, states provide the U.S. Fish and Wildlife Service with the names and addresses of all licensed migratory bird hunters each year, and then surveys are conducted to estimate harvest and hunter participation (total harvest, number of active hunters, days hunted, and seasonal harvest per hunter) in each state. All states except

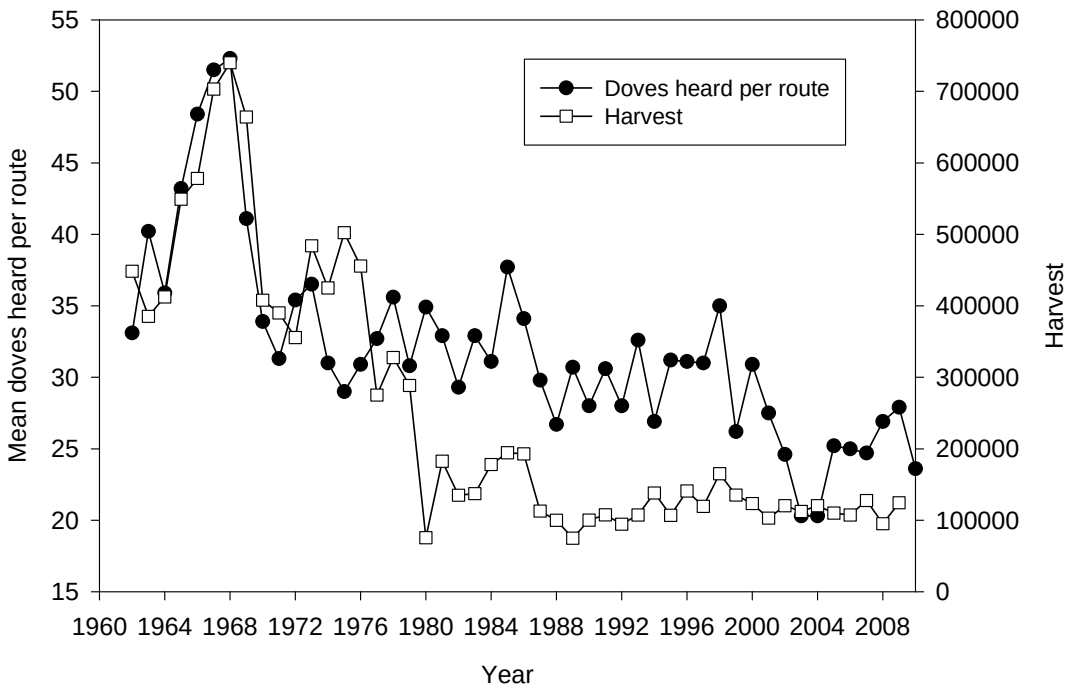

Figure 2. Mean white-winged doves heard per route in Arizona, 1962–2010, and estimated harvest, 1962–2009. Harvest estimates from 2002–2009 are Harvest Information Program estimates; prior to 2002, estimates are from Arizona Game and Fish Department's small game questionnaire.

Hawaii have participated in HIP since 1998. Useable estimates of white-winged dove harvest and hunter participation became available in 1999.

Two AGFD check stations are operated on the opening day (September 1) of the dove season in Arizona: one at Milligan Road, near Picacho, and one at Robbin's Butte Wildlife Area west of Buckeye. Check station locations were selected based on their proximity to popular dove hunting areas. Check stations have been in operation since 1968. The number of white-winged doves examined at the two check stations varies from year to year, but numbered in the thousands in the late 1960s and early 1970s. The annual number of doves examined has since declined due to declining hunter participation and restrictions in the daily bag limit (unpublished data, AGFD). In a typical year, 250–500 doves are sampled to estimate the percent of young in the harvest.

RESULTS

Based on the AGFD Call-count Survey, the mean annual count of white-winged doves heard per route peaked at 52.3 birds in 1968 and then decreased during the next three years to 31.3 birds (Table 2). White-winged dove abundance remained stable during 1985–2000 at an annual mean of 30.8 doves heard per route, but then dropped to 24.8 doves per route since then (Table 2, Fig. 2). Most of the recent white-winged dove decline in Arizona is likely due to the loss of large nesting colonies in the 1960s and 1970s from habitat destruction, shifts in agricultural trends, and possible over harvest. Clearing of the large mesquite forests in river bottoms for flood control and fuel wood removed the most productive nesting areas. In the past, large breeding colonies were attracted to, and maintained by, grain fields that now grow vegetables and cotton. The more dispersed, solitary nesting white-winged dove populations have been less affected by these changes and have remained relatively stable in Arizona.

According to the AGFD harvest survey, the annual white-winged dove harvest in Arizona peaked in 1968 (about 740,000 doves), decreased to a mean of about 391,000 birds during the 1970s, and decreased again to about 131,000 doves annually during 1980–2008 (Table 2, Fig. 2). The apparent decline in harvest can be partially attributed to restrictions in hunting regulations, but there are also fewer white-winged doves in Arizona now than there were in the 1950s and 1960s. Arizona white-winged dove harvest appears to have stabilized since 1/2 day shooting hours were implemented in 1989 (Tables 1 and 2, Fig. 2). Recent discrepancies between the call-counts and harvest trends appears to be a function of the disproportionate weight given by the call-count survey to desert nesting populations that have not experienced the extent of habitat loss, changes in food availability, and high hunting pressure that colonial nesting doves have.

HIP estimates during 2009 of total harvest, active hunters, and hunter days afield for white-winged doves in Arizona were 124,500 ± 12,069 (estimate ± SE) birds, 20,400 ± 1,561 hunters, and 68,200 ± 6,611 days afield., respectively (Table 3). Estimates of white-winged dove harvest and hunter participation in Arizona are generally similar between the AGFD and HIP harvest surveys considering the precision of the estimates (Table 3).

From the AGFD bag-check stations, hatching year birds comprised a mean of 62.6% (SE = 1.83, n = 42) of the total white-winged dove harvest during 1968–2009, and 54% of total harvest in 2009 (Table 2).

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Table 1. White-winged dove season dates, days, and daily bag and possession limits in Arizona, 1956–2009.

Year	Dates[a]	Days	Bag/possession[b]
1956	Sep 1–Oct 4 and Dec 8–23	34 and 16	12/15
1957	Sep 1–29 and Dec 7–27	29 and 21	25/25
1958	Sep 1–28 and Dec 13–Jan 3	27 and 23	25/25
1960	Sep 1–25 and Dec 10–Jan 3	25 and25	25/25
1961	Sep 1–24 and Dec 9–Jan 3	24 and 26	25/25
1962	Sep 1–24 and Dec 8–Jan 2	24 and 26	25/25
1963	Sep 1–25 and Dec 7–31	25 and 25	25/25
1964	Sep 1–27 and Dec 12–Jan 3	27 and 23	25/25
1965	Sep 1–26	26	25/25
1966	Sep 1–26	25	25/25
1967	Sep 1–24	24	25/25
1968	Sep 1–24 and Dec 11–Jan 5	24 and 26	25/25
1969	Sep 1–28 and Dec 21–Jan 11	28 and 22	25/25
1970	Sep 1–20 and Dec 12–Jan 10	20 and 30	10/10
1971	Sep 1–12	12	10/10
1972	Sep 1–12	12	10/10
1973	Sep 1–23	23	10/10
1974	Sep 1–22	22	10/10
1975	Sep 1–21	21	10/10
1976	Sep 1–20	20	10/10
1977	Sep 1–25	25	10/10
1978	Sep 1–24	24	10/10
1979	Sep 1–23	23	10/10
1980[c]	Sep 1–28	28	5/10 North and 6/12 South
1981	Sep 1–27	27	6/12
1982	Sep 1–26	26	6/12
1983	Sep 1–26	25	6/12
1984	Sep 1–23	23	6/12
1985	Sep 1–22	23	6/12
1986	Sep 1–21	22	6/12
1987	Sep 1–13	21	6/12
1988	Sep 1–11	13	6/12
1989	Sep 1–10	10	6/12
1990	Sep 1–10	10	6/12
1991	Sep 1–10	10	6/12
1992	Sep 1–10	10	6/12
1993	Sep 1–12	12	6/12
1994	Sep 1–11	11	6/12
1995	Sep 1–10	10	6/12
1996	Sep 1–10	10	6/12
1997	Sep 1–14	14	6/12
1998–2009	Sep 1–15	15	6/12

[a] Federal white-winged dove frameworks have been set to coincide with those of mourning doves. The frameworks have allowed a white-winged dove season only during the first segment of a split mourning dove season from 1971 to present. From 1983–1986, all WMU states were permitted a mourning dove framework option (including white-wings in CA, AZ, and NV) of 60 days (45 in 1982) and 15/30 aggregate bag/possession.

[b] Between 1957 and 1979, mourning and white-winged doves had separate limits; since 1980, aggregate bag limits permitting either 10 or 12 doves, no more than 5 or 6 could be white-wings, have been in effect.

[c] Arizona was divided into a special white-winged dove zone and the remainder of the state in 1979. Hunting was permitted from noon to sunset during the first 3 days of the season in the special zone. In 1980, the state was divided into North and South zones, that latter having shooting hours of sunrise to noon. Since then season and bag limits have applied statewide.

Table 2. Mean number of white-winged doves heard per route and harvest from AGFD surveys, and percent young estimated in hunter bags from two check stations in Arizona, 1962–2010.

Year	Heard	Harvest	Percent young
1962	33.1	448,398	†[a]
1963	40.2	385,249	†
1964	35.9	412,542	†
1965	43.2	549,045	†
1966	48.4	578,166	†
1967	51.5	703,157	†
1968	52.3	740,079	57
1969	41.1	664,053	69
1970	33.9	407,921	58
1971	31.3	390,016	54
1972	35.4	355,633	79
1973	36.5	484,095	67
1974	31.0	425,127	75
1975	29.0	502,225	58
1976	30.9	455,692	66
1977	32.7	274,998	74
1978	35.6	327,555	65
1979	30.8	288,516	43
1980	34.9	75,611	51
1981	32.9	182,535	65
1982	29.3	134,981	61
1983	32.9	137,284	83
1984	31.1	177,957	82
1985	37.7	194,508	41
1986	34.1	192,734	69
1987	29.9	112,838	78
1988	26.7	99,955	78
1989	30.7	74,944	73
1990	28.0	100,163	71
1991	30.6	107,455	46
1992	30.8	94,551	63
1993	32.6	107,393	51
1994	26.9	138,080	44
1995	31.2	106,925	51
1996	31.1	140,974	63
1997	31.0	119,446	56
1998	35.0	165,190	41
1999	26.2	135,226	68
2000	30.9	123,259	70
2001	28.5	102,941	45
2002	24.6	186,532	61
2003	20.3	147,711	55
2004	20.3	86,355	69
2005	25.2	139,984	82
2006	25.0	236,126	60
2007	24.7	84,142	61
2008	26.9	79,488	74
2009	27.9	†	54
2010	23.6	†	†

[a] No estimate available.

Table 3. Harvest and hunter participation estimates with 95% confidence intervals (CI, expressed as the interval half width in percent) for white-winged doves in Arizona from the Arizona Game and Fish Department (AGFD) harvest survey during 1999–2008 and the Migratory Bird Harvest Information Program (HIP) during 1999–2009. The AGFD harvest survey sampling frame changed in 2006 from general license holders to those that obtained a small game permit and registered with HIP; the survey was discontinued after the 2008 season.

Survey	Total harvest		Active hunters		Hunter days afield		Harvest per hunter[a]	
Year	Estimate	CI	Estimate	CI	Estimate	CI	Estimate	CI
AGFD								
1999	143,129	†[b]	26,689	†	89,709	†	†	†
2000	128,695	†	28,652	†	87,868	†	†	†
2001	102,941	†	21,180	†	77,462	†	†	†
2002	185,654	†	35,747	†	107,525	†	†	†
2003	147,711	†	26,598	†	86,120	†	†	†
2004	86,355	†	20,962	†	69,104	†	†	†
2005	139,984	†	29,057	†	98,477	†	†	†
2006[c]	236,126	†	30,017	†	86,255	†	†	†
2007	84,142	†	13,852	†	46,203	†	†	†
2008	91,004	†	14,067	†	47,263	†	†	†
HIP								
1999	122,100	20	24,900	13	71,200	16	4.9	24
2000	84,500	20	19,600	15	56,400	16	4.3	25
2001	86,500	16	12,100	10	62,500	13	4.1	19
2002	120,400	15	22,700	10	72,700	12	5.3	18
2003	112,300	25	23,000	15	75,500	20	4.9	29
2004	120,300	19	24,200	12	81,200	19	5.0	23
2005	110,100	20	21,600	15	65,700	16	5.1	25
2006	107,400	23	18,300	15	56,500	16	5.9	27
2007	127,600	25	23,200	14	68,700	14	5.5	28
2008	95,300	25	19,800	16	82,400	59	4.8	30
2009	124,500	19	20,400	15	68,200	19	6.1	24

[a] Seasonal harvest per hunter.
[b] No estimate available.
[c] Note the seemingly biased AGFD harvest survey results for 2006 compared to other years; the 2006 questionnaire had a 17% return rate and results may be unreliable.

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