Reproductive Potential of Mourning Doves in Residential Sacramento, California

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The Mourning Dove (*Zenaida macroura*) breeds abundantly in California and much of North America (Otis et al. (2008). Dove populations in California declined during the 1990s, but have recently stabilized (Sauer et al. 2008). The species is well-adapted to human land uses and activity, including residential areas (Leopold and Dedon 1983).

Breeding adaptations of the Mourning Dove include early-season nesting, multiple breeding attempts in a year, and repeated use of the same nesting sites (Otis et al. 2008). The species has been studied intensively primarily because of its importance as a game species (Baskett et al. 1993, Miller et al. 2001). The breeding potential and annual productivity of individual pairs, however, is not well known (Otis et al. 2008). Extensive research has measured nesting productivity in rural habitats of the Central Valley (Miller et al. 2001), but studies in urban areas of California have focused on survival and distribution (Channing 1979, Leopold and Dedon 1983). Doves regularly nest in urban/residential areas (e.g., Sayre and Silvy 1993), and as urbanization continues in the Central Valley (Bunn et al. 2007), this habitat may become more important to the species.

The presence of a breeding pair nesting in my yard in urban Sacramento over several years afforded the opportunity to record details of their nesting biology. These anecdotal observations provide some initial information on reproductive potential in urban habitats in California's Central Valley.

METHODS

I monitored a single pair of doves that nested in my yard in an older residential area in Sacramento during full nesting seasons in 2007 and 2008. The birds were unmarked, but based on the repeated use of a nest in rapid succession (see below), I conclude that they were the same individuals within each year. I recorded dates of nest initiation, egg laying, and fledging; timing of nest attendance; and limited information on post-fledging survival of young. From this information, I calculated individual and average time from egg laying to fledging and from fledging to subsequent nest initiation. I also calculated average annual nesting success and productivity. I examined how weather may have affected nesting both years using temperature and precipitation data taken at the Sacramento Executive Airport (http://www.weather.gov/climate) 4 km (2.5 mi) away.

RESULTS

Nesting occurred both years primarily at the same site, in a structure I created by stapling wire hardware cloth between two parallel 5x20 cm (2x8-inch) beams beneath an outside porch roof. In 2007, one nest was attempted, but failed, in a peach (*Prunus persica*) tree 4 m from the porch nest site after the previous nesting attempt on the porch failed. In 2007, nesting activity was first observed on 6 March, 2 days after I improved the nest support, so early activity may have been influenced by this action. In 2008, a dove was seen sitting on the nest site as early as 16 January, when the previous night's temperature dropped below freezing. The doves performed nest building and courtship at and around the nest site though early March.

The female laid her first egg on 11 March in 2007 and on 2 March in 2008. Nesting continued repeatedly at the site in both years, with 5 nesting attempts in 2007 and 7 attempts in 2008. The duration of successful nesting attempts, for 7 of the attempts during the 2 years where both the laying of the first egg and fledging of young were recorded, averaged 28 days (range = 27-30 days). I did not separately determine the duration of incubation or time from hatching to fledging. The interval between fledging of young and laying of the next egg for the subsequent clutch averaged 4.4 days (N = 5 intervals with precise data). The last brood of the season was fledged during Aug 6-12 in 2007 and on September 8 in 2008.

In total, 9 (75%) of 12 nesting attempts over both years successfully fledged at least 1 young. Nesting success was similar in both years (80% in 2007 and 72% in 2008). Productivity also was similar in both years, averaging 1.6 fledglings/nesting attempt and 8 total fledglings/pair in 2007 and 1.3/nesting attempt and 9 total fledglings/pair in 2008.

I could not determine causes of nest failure with certainty. A Western Scrub-Jay (*Aphelocoma californica*) likely preyed on unattended eggs in one nest during cool weather in early 2008. I observed several other conflicts with scrub-jays near the nest, but they generally ignored the nest in warmer conditions when adults were nearly continuously in attendance.

After fledging, the young remained close to the nest site, often roosting near or under cover on the ground or in elevated areas (i.e., trees, fences, roofs). Adults fed regurgitated food to fledged young (Lewis 1993) for up to 10 days after fledging. Re-nesting regularly began while fledged young were still being fed. I could not precisely determine survival rates of fledglings, but the only fledgling mortality I observed resulted from predation by domestic cats, which I inferred to have occurred twice based on observations of cats stalking doves and on prey remains.

DISCUSSION

The small number of pairs I observed precludes strong conclusions about nesting behavior and productivity of Mourning Doves, even in the

local area. Nonetheless, these observations provide some indication of reproductive potential that may be attained by doves in residential areas, which has not been well documented. Reproductive parameters in my yard exceeded the averages reported for various rural Northern California sites (Miller et al. 2001), including nesting attempts per season (3.7-5.0), nesting success per attempt (22-45%), number of fledglings per nesting attempt (0.7-1.2), and total annual number of fledglings per pair (2.9-5.0).

The 7 nesting attempts by the pair in 2008 exceed the highest previously reported for Mourning Doves (Swank 1955), although this aspect of the species' breeding biology remains little-studied (Otis et al. 2008). The number of nesting attempts and the reproductive success of this pair (or pairs) suggest a substantial potential for this species to reproduce in an urban residential setting.

Several factors may have influenced the number and success of nesting attempts at this site. Previous studies that have shown that warm dry spring conditions are favorable for dove reproduction (Miller et al. 2001). In 2007, the average monthly temperature was 2.9°C (1.6°F) warmer than average during February through May, but rainfall was 88% of normal. In 2008, temperature was only 0.9°C (0.5°F) above average for March-May (February data unavailable), and almost no rain fell during February-May (0.25 cm [0.1 inch], less then 1% of normal). Therefore, the relatively high reproductive success may have resulted from these warm or dry spring conditions in each year.

Other factors may have influenced nesting success. My yard is 0.5 km (0.3 mi) from the large Curtis Park Railyard, a weedy area where doves regularly fed. The porch nesting site appeared to be relatively protected from predators, with overhead cover and grapevines obstructing access, even though I found raccoon (*Procyon lotor*) paw prints on a post and railing within 2 m of the nest. The doves regularly used a bird feeder in my yard that I kept filled through May of each year, which is typical of urban doves (Leopold and Dedon 1983). Human disturbance did not appear to be a factor; the doves became quite tame at the nest despite regular and close human activity. If nesting close to human activity had any effect, it may have discouraged potential predators. Last, I occasionally sprayed water on the nearby patio and vegetation during hot afternoons when an adult dove on the nest was panting; however, whether this was beneficial is unknown.

Notwithstanding the limited extent of these observations, they have value in documenting a higher than previously described reproductive potential for Mourning Doves in residential districts of large cities. Considering the importance of reproductive potential in managing the species (Miller et al. 2001), additional effort may be warranted to more fully document this potential in towns and cities of the Central Valley.

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LITERATURE CITED

T.S. Baskett, M. W. Sayre, R. E. Tomlinson, and R. E. Mirarchi (editors). 1993. Ecology and management of the Mourning Dove. Stackpole Books, Harrisburg, PA.

Bunn, D., A. Mummert, M. Hoshovsky, K. Gilardi, and S. Shanks. 2007. California Wildlife: Conservation Challenges – California's Wildlife Action Plan. California Department of Fish and Game, Sacramemento, CA.

Channing, E. 1979. Movements of banded Mourning Doves near Turlock, California. California Fish and Game 65:23-35.

Leopold, A. S. and M. F. Dedon. 1983. Resident Mourning Doves in Berkeley, California. Journal of Wildlife Management 47:780-789.

Lewis, J. C. 1993. Foods and feeding ecology. Pp. 181-204, in: Ecology and management of the Mourning Dove (T.S. Baskett, M. W. Sayre, R. E. Tomlinson, and R. E. Mirarchi, editors). Stackpole Books, Harrisburg, PA.

Miller, M. R., C. L. Stemler, and D. S. Blankenship. 2001. Mourning Dove productivity in California during 1992-1995: was it sufficient to balance mortality? Journal of Wildlife Management 65:300-311.

Otis, D. L., J. H. Schulz, D. Miller, R. E. Mirarchi and T. S. Baskett. 2008. Mourning Dove (*Zenaida macroura*), No. 117 in: The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology.

Sauer, J. R., J. E. Hines, and J. Fallon. 2008. The North American Breeding Bird Survey, Results and Analysis 1966 - 2007. Version 5.15.2008. USGS Patuxent Wildlife Research Center, Laurel, Md.

Sayre, M. W., and N. J. Silvy. 1993. Nesting and production. Pp 81-104, in: Ecology and management of the Mourning Dove (T.S. Baskett, M. W. Sayre, R. E. Tomlinson, and R. E. Mirarchi, editors). Stackpole Books, Harrisburg, PA.

Swank, W. G. 1955. Nesting and production of the Mourning Dove in Texas. Ecology 36:495-505.