

FEATURE ARTICLES

DEMOGRAPHY OF ZENAIDA DOVES ON CAYO DEL AGUA, CULEBRA, PUERTO RICO

FRANK F. RIVERA-MILÁN^{1,3} AND FRED C. SCHAFFNER^{2,4}

¹*Department of Natural and Environmental Resources, Stop 3, Puerta de Tierra, San Juan, PR 00906*

²*U.S. Fish and Wildlife Service, Caribbean Islands National Refuge, P.O. Box 510, Boquerón, PR 00622*

Manuscript received 16 February 2001; accepted 8 March 2002.

³Present address: U.S. Fish and Wildlife Service, Division of International Conservation, 4401 North Fairfax Drive, Suite 730-ARLSQ, Arlington, VA 22203. E-mail: frank.rivera@fws.gov

⁴Present address: Vicepresidencia de Asuntos Académicos e Investigación, Universidad de Puerto Rico, P.O. Box 364984, San Juan, PR 00936.

Abstract. The demography of Zenaida Doves (*Zenaida aurita*) was studied on Cayo del Agua, Culebra, Puerto Rico. We collected capture-recapture and reproductive success data and monitored annual changes in the density of ground nests in 1987–1993 and 2000. Models with time-specific apparent survival and constant capture rates ($\hat{\phi}_t, \hat{p}_c$) and constant apparent survival and time-specific capture rates ($\hat{\phi}_c, \hat{p}_t$) were equally parsimonious, with the former having 1.5 times more support from the data. Rainfall of the first six months of the year was positively related to nest density, and crab density was negatively related to nesting success and the number of doves fledged per nest. Crabs are the main predators of dove nests on Cayo del Agua. Models, parameterized with field data, were used to simulate full and reduced stochastic variation in environmental and demographic conditions, and predict annual changes in population size. High recruitment (births or births + immigrants) offset high losses (deaths + emigrants) in all instances. Our field data suggest that Zenaida Doves suffered an ecological crunch between 1989 and 1990, when weather (a hurricane followed by a drought), food availability, and nest predation interacted, lowering the number of locally fledged doves that survived the hatching year (1989–1990) and reproductive success (1990). Under severe conditions, population size and recovery mainly depended on immigration. Apparent survival returned to pre-hurricane levels between 1990 and 1991, and reproductive success was about average in 1991.

Key words: Cayo del Agua, capture-recapture, Culebra, demography, ground nests, predators, reproduction, Puerto Rico, *Zenaida aurita*, *Zenaida Dove*.