

TABLE 1. Measured and predicted values for the eggs and eggshells of Christmas Shearwaters on Laysan Island. The mean measured values (± 1 SD) are shown; n = the numbers of observations. Predicted values are calculated following Rahn and Whitrow (1988).

	Measured ($\bar{x} \pm$ SD)	n	Predicted
Egg			
Volume (cm ³)	42.3 \pm 2.9	19	
Length (cm)	55.6 \pm 2.0	22	55.5
Breadth (cm)	38.3 \pm 1.3	22	39.9
Eggshell			
Mass (g)	2.9 \pm 0.2	8	3.0
Thickness (mm)	0.3 \pm 0.0	11	0.3
Pore density [pores (cm ²) ⁻¹]	59.8 \pm 4.7	6	

orders of seabirds in this regard (Whittow 1984, Ar and Rahn 1985).

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The Paint-billed Crake Breeding in Costa Rica

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ABSTRACT.—We report a recent observation from southern Costa Rica of the Paint-billed Crake (*Neocrex erythrops*), a little known species from eastern and northern South America. An adult and recently hatched chick were observed at close range in wet

grassy second-growth. This observation constitutes the first record of the young of this species and represents the only breeding record for Central America. *Received 12 Nov. 1998, accepted 12 Feb. 1999.*

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On 5 June 1998, at 16:30 an adult Paint-billed Crake (*Neocrex erythrops*) was observed, accompanied by a chick, near the

town of Golfito on the Pacific coast of Costa Rica, close to the Panama border (8° 37' N, 83° 11' W). Observations were made by both authors and K. Cohoon, while walking slowly beside the Golfito airstrip amidst grassy second growth interspersed with a row of large *Ficus* trees. Behind this vegetation was a slow moving stream with thickets of tall grass along its banks. We saw the birds from approximately 15 m and watched them for 25 seconds using binoculars. The adult paused in the middle of the path, eventually returning to the wet grassy second growth from which it had walked. The bright yellow bill with a scarlet base, and black and white barred flanks were clearly visible, clearly distinguishing it from the congeneric Colombian Crake (*Neocrex colombianus*). The chick was covered uniformly in black natal down and the tarsi were dark grey or horn. Further soft-part colors were not noted because it quickly ran away from the adult, across the path into thick undergrowth beside the airstrip. Despite subsequent visits to this locality for several weeks, we made no further observations of this species.

Neocrex erythrops is a little known species that ranges widely in eastern and central South America; *N. e. olivascens* is known east of the Andes from Colombia and Venezuela south to Paraguay and Argentina, and *N. e. erythrops* from west of the Andes in coastal Peru and the Galapagos Islands (Ripley 1977). There have been reports of vagrants within South America (Osborne and Beissinger 1979), from suburban areas and up to 3375 m elevation (Remsen and Traylor 1983), and some recent reports (Tostain et al 1992, Haverschmidt and Mees 1994) suggest that the species may be resident in Surinam and French Guyana. As with many other species of rail, the chicks of this species are undescribed (Ripley 1977, del Hoyo et al 1996). The uniform black down and dark tarsi are similar to the young of other neotropical rails in the genera *Laterallus* and *Porzana*.

The status of this species in Central America is unclear. There is only one definite record from Costa Rica, from the Sarapiquí lowlands in the northeast by Stiles and Rosselli on 22 August 1987 (Stiles and Skutch 1989). There is an additional record of either this species or

the similar *N. colombianus* from southern Costa Rica, near Hitoy Cerere in March 1985 (Pratt et al., reported in Stiles and Skutch 1989). Two specimens collected in the coastal lowlands of Bocas del Toro, Panama on 10 November 1981, were later identified by Ripley as the wide-ranging *N. erythrops olivascens*; several individuals were seen at Tocumen Marsh in eastern Panama by Behrstock (1983). All of these records are from the Caribbean lowlands, thus the record reported herein constitutes the first for the Pacific slope of Central America.

There are two records from North America: from east central Texas on 17 February 1972 (Arnold 1978), and Virginia on 15 December 1978 (Blem 1980). Both these records were probably wandering individuals, a pattern seen in many other species of rail (Remsen and Parker 1990). In contrast to these winter records, the two records from Costa Rica are from August and March. Based on the June 15 record we report, and the clear evidence of breeding, we suggest that *N. erythrops* has a breeding population in southern Costa Rica.

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Additional Records of Fall and Winter Nesting by Killdeer in Southern United States

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ABSTRACT.—We report on successful nesting attempts in fall by Killdeer (*Charadrius vociferus*) in southern Mississippi in November, 1987 and in central Arkansas in October, 1998, and a winter nesting attempt in South Carolina in December, 1998. The first nest was found 1 year before previously reported fall nestings in the Southeast and 1 month earlier in the season. The second is the most northern and western fall nesting site in the South, and the third is the latest reported nesting attempt in the southern United States. Taken together with 3 other reported successful fall nests in Mississippi and South Carolina, Killdeer would appear to be the only fall breeding shorebird in North America and, based on those 6 widely-scattered observations over the last 11 years, should now be considered a rare fall and winter breeder across the southern United States. Received 24 Nov. 1998, accepted 31 March 1999.

Although an anomalous report of breeding in November exists from Michigan in 1982 (Tessen 1983), Jackson and coworkers (1995) were the first to document fall and winter breeding by Killdeer (*Charadrius vociferus*)

in the southeastern United States, reporting 1 set of chicks and adults on 16 November and another set on 11 December 1988 in Okibbeha Co., Mississippi. Subsequently, Post (1996) reported 3 downy young, apparently 1–2 days old, taken to a veterinarian in Berkeley Co., South Carolina on 13 November 1995. Here we report on two more successful fall nesting attempts by Killdeer in the south: one from Mississippi that is earlier than observations by Jackson and coworkers (1995), and one from central Arkansas, the most northern and western fall nesting site yet reported in the South. We also document a mid-December winter nesting attempt in South Carolina, which is the latest nesting activity yet reported.

On 7 November 1987, W.M.D. found and photographed a pair of adults with one chick, which appeared to be several days old, at the wastewater treatment plant lagoon in Waveland, Hancock Co., coastal Mississippi. The race-track shaped lagoon was surrounded by a 4.5–9.2 m raised strip of excavated soil, which varied from well-grassed to almost bare areas, one of which was evidently chosen for nesting by the Killdeer.

On 5 October 1998, T.E.K. and his wife discovered a nest with four eggs located in a stone area on the barrier of the parking lot at the Veterans Administration Hospital in Little Rock, Pulaski Co., Arkansas. During daily observations, two birds were usually present and the female was observed incubating during the day. They found two chicks on 26 October and a third on 28 October. The nest was aban-

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