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Distribution and status of Brown Pelicans in Venezuela in 1983.—The breeding distribution of the Brown Pelican (*Pelecanus occidentalis*) in the eastern portions of its range extends from North Carolina through the Gulf of Mexico and Caribbean to eastern Venezuela (Palmer 1962). Few data exist on locations and sizes of nesting colonies in the Caribbean region, especially in South America (van Halewyn and Norton 1984). Here we present such data for Venezuela.

One of us (HMG) surveyed the 2900-km coastline of Venezuela from Punta Castillete (11°51'N, 71°19'W) to Punta Playa (8°33'N, 60°00'W) and island regions (except Los Monjes, La Orchila, and Aves) from a fixed-wing aircraft (Cessna 170) flying at 100-300 m, and at speeds of 120-160 km/h, in January-February 1983. The flight path paralleled the coastline at approximately 0.1 km offshore and required 44 h. All sightings of birds and nesting colonies were recorded, and the total number of nests in each colony was estimated from near-vertical color photographs taken with a 35-mm camera and 50-mm lens. Numbers of isolated pelicans, whether flying or resting, were counted directly or from photographs.

Pelicans breed in Venezuela between November and June (Guzman, unpubl. data), a chronology similar to breeding pelicans in Florida (Schreiber 1980a). January-February is the peak of nesting, and our surveys thus show the distribution of present colonies. The total

TABLE 1
BREEDING LOCATIONS OF BROWN PELICANS IN VENEZUELA, JANUARY–FEBRUARY 1983

State	Map location	Specific locality	Habitat	Number of nests counted	Number of birds counted resting/flying by state
Zulia	1	Lagunetas	Mangrove	24	0/81
Falcon	2	Maraguey	Mangrove	307	1387/138
Miranda	3	Carenero	Mangrove	412	0/349
Miranda	4	Buche	Mangrove	87	—
Miranda	5	Tacarigua	Mangrove	235	—
Anzoategui	6	I. Chimanas	Thorn woodland	35	0/328
N. Esparta	7	Las Maritas	Mangrove	291	347/743
D. Amacuro	8	C. Macareo	Mangrove	69	220/0
Los Roques	9	I. Larga	Mangrove	135	0/37
Los Roques	10	I. Canquises	Mangrove	207	—
Los Roques	11	I. Seleskey	Mangrove	43	—
Sucre	1	Chiguana	Mangrove	67	1133/261
Sucre	2	Chacopata	Mangrove	429	—
Sucre	3	La Esmeralda	Humid forest	113	—
Sucre	4	El Diablo	Humid forest	37	—
Sucre	5	Pto. Santo	Humid forest	133	—
Sucre	6	Morro Santo	Humid forest	16	—
Sucre	7	Mala Pascua	Humid forest	167	—
Sucre	8	Las Galdonas	Humid forest	21	—
Sucre	9	Tres Puntas	Humid forest	39	—
Sucre	10	Pica Pica	Humid forest	55	—
Sucre	11	Mejillones	Humid forest	71	—
Sucre	12	Uquire	Humid forest	97	—
Sucre	13	Irapa	Mangrove	210	—
Sucre	14	C. Guariquen	Mangrove	69	—
Dto. Federal	—	—	—	—	0/59
Monagas	—	—	—	—	1425/35
Aragua	—	—	—	—	0/27
La Tortuga	—	—	—	—	0/30
Blanquilla	—	—	—	—	0/25
Testigos	—	—	—	—	0/17
Las Aves	—	—	—	—	9/23

number of nests counted, however, should be considered only as an estimate of the breeding population, as considerable asynchrony in nesting exists (Guzman, unpubl. data; Schreiber 1979).

Distribution and habitat. — Birds nested on the tops of trees, both on islands and the shores of the continent. Nests were sighted in mangroves (*Avicennia germinans* and *Rhizophora mangle*; 2585 nests, 77%), in tropical thorn woodlands (*Plumeria* sp., *Bursera* sp., and *Caparis* sp.; 35 nests, 1%), and in humid forests along the abrupt eastern coast of the country (749 nests, 22%). Twenty-one of 25 colonies were on the continent (along 2519 km of shoreline); 4 were on islands (467 km of shoreline) (Table 1) (Fig. 1). More than half of the

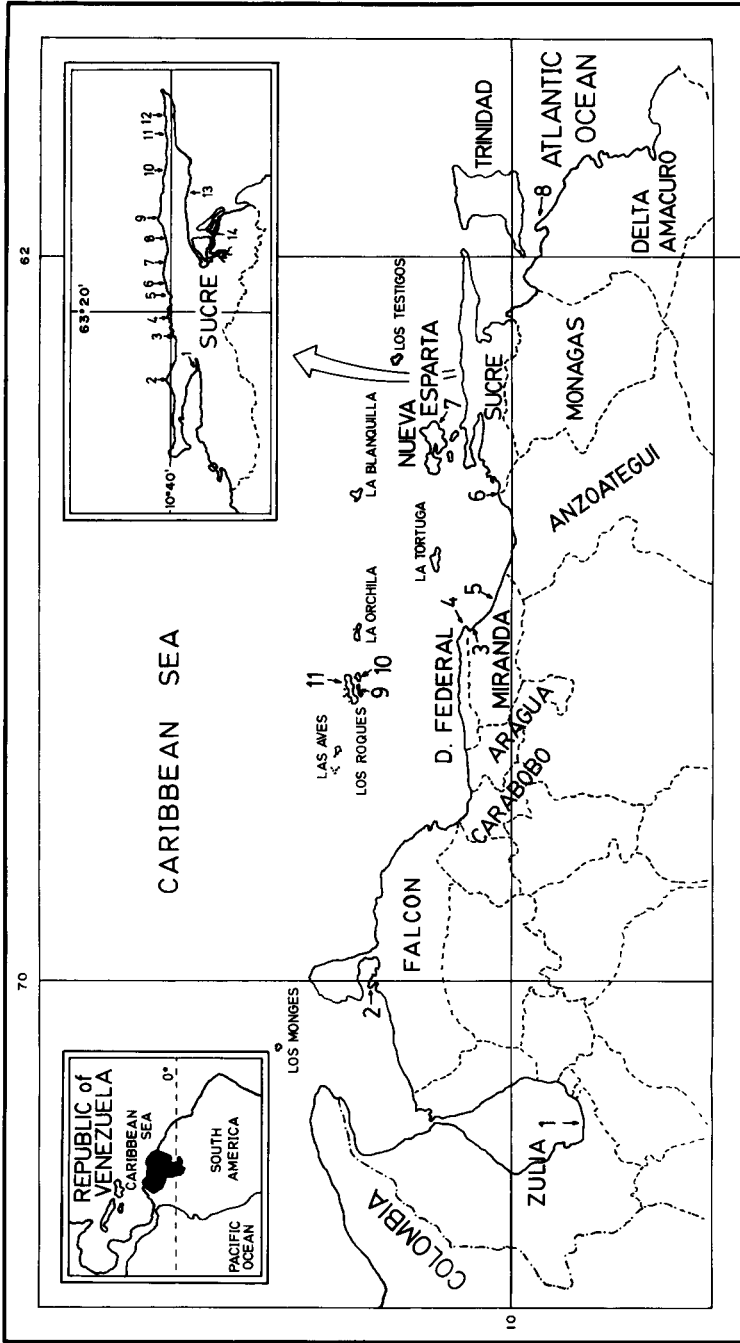


Fig. 1. Locations of Brown Pelican colonies in Venezuela, 1983. Each arrow represents one colony.

colonies were in the state of Sucre, which has the longest coast (705 km), of which almost 70% is escarpment. Most pelican colonies were higher than 40 m above sea level, or in isolated mangrove areas. In western Venezuela, the state of Zulia (225 km shoreline) appears to have considerable habitat for nesting (extensive mangroves bordering Lake Maracaibo); however, only one small colony was found in the area. Although local fishermen said that breeding colonies thrive in the mangroves of Tucacas (state of Falcon), we found none during this survey. Other important colonies exist in the mangroves of Carenero and Tacarigua in the state of Miranda. Although Cory (1909) and Van Der Werf et al. (1958) found breeding colonies in La Tortuga and Las Aves respectively, we sighted none there or on other islands, except for three colonies on Los Roques and one on Margarita (state of Nueva Esparta).

Population size.—A total of 3369 nests were counted (Table 1), along with 6674 individual birds away from colonies. Most birds not associated with nesting colonies were found in large groups on sand spits, primarily in Falcon and Sucre, and in the Delta Amacuro at low tide. In other states, most birds were resting on rocks, in marinas, or in mangroves. We estimated the total population during this study at 17,500 pelicans: 14,000 adults and 3500 juveniles.

Current status.—We have no direct evidence of disturbance to any breeding colony. The possibility, however, exists of indirect effects from habitat changes caused by human recreational activities and urban development, especially in Miranda. The Zulia region has experienced oil spills and industrial and domestic pollution for years, and the area has been overfished (Cadima et al. 1972, Montesinos 1974). Heavy mercury contamination has been reported in fishes in the Tucacas region (Urich 1981). Pelicans will suffer from oil pollution, not only as individual birds become oiled, but because oil and other pollutants cause decreases in marine productivity, and thus in the food supply of the birds (Schreiber 1980b). Continued overharvesting of fishes, pollution of the marine waters, and destruction of mangroves also may affect the pelican population along the coast of Venezuela.

Summary.—An aerial survey of the coast of Venezuela and its offshore islands (2900 km) conducted during the breeding season of 1983 revealed an estimated population of 17,500 birds in 25 colonies.

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First Bald Eagle nesting record from Sonora, Mexico.—Bald Eagles (*Haliaeetus leucocephalus*) in Mexico are known to breed only on the coast of Baja California (Henny et al., *Auk* 95:424, 1978; AOU 1983, Check-list of North American Birds, 6th ed., American Ornithologists' Union, Washington, D.C.). In Sonora, Bald Eagles occur regularly in winter in coastal areas and along the Rio Yaqui (Brown and Warren, *Wilson Bull.* 97:224–226, 1985). Here, we provide the first Bald Eagle nesting record from Sonora and the mainland of Mexico.

On 27 March 1986 we discovered an adult Bald Eagle sitting in a large nest along the Rio Yaqui below the El Novillo dam and reservoir (near 28°45'N, 109°38'W; elevation ca 200 m). The nest was in a 12-m dead mesquite (*Prosopis glandulosa*) 40 m from the river in a riparian woodland that was dominated by mesquite and Goodding willow (*Salix gooddingii*). An adult bird sat in the nest in an incubating posture almost continuously from 11:35 to 18:55 h. To avoid disturbing the adults, we did not check the nest for contents. Two adults were present at the nest the following morning. One adult was on the nest at the start of our observations at 05:58, and, except for leaving for 9 min when the other adult came in to perch beside the nest, it remained there until 10:45 when we left the area. No prey deliveries were observed. The pair also was observed at the nest when it was checked again on 3–4 April. One adult was apparently incubating, and the other adult spent several hours perched on nearby cliffs or trees. Again, no prey deliveries were noted.

No eagles were present at the nest site on 7 May, and the nest was presumed to have failed. One adult eagle was seen 12 km upstream of the nest site on 8 May. There was no evidence (i.e., fecal material on and around the nest) that nestlings had been present. Human activity associated with fence construction along the riverbank within 100 m of the nest may have contributed to abandonment. R. Mesta climbed up into the nest and took minimum and maximum measurements on it (height, 0.6 m; outside diameter, 0.9 to 1.1 m; inside diameter, 0.3 to 0.35 m; inside depth from rim, 10 to 17 cm).

Several large (ca 2 × 5 cm) eggshell fragments were collected from beneath the nest and sent to the Western Foundation of Vertebrate Zoology for identification, storage, and determination of shell thickness; the latter to determine if thinning from DDE or DDT contamination had occurred. The fragments were identified as Bald Eagle eggshells, ranging in thickness (exclusive of associated eggshell membranes) from 0.481 to 0.522 mm (\bar{x} = 0.502 ± 0.012 mm [SD]; N = 15) (L. F. Kiff, pers. comm.). Membrane thickness was estimated at