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The distribution of fish-eating, wading, and raptorial birds in the Gulf of Panama, October 1991

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Abstract

More than 15 500 fish-eating, wading, and raptorial birds were counted from an aircraft along the coast of the Gulf of Panama from Chitré to Garachine in October 1991. The Brown Pelican *Pelecanus occidentalis* (37.0% of all birds counted) and Olivaceous Cormorant *Phalacrocorax olivaceus* (24.7%) were the most frequently seen species. Over 92% of all birds encountered were fish-eating species, followed by wading birds (6.2%) and raptors (1.5%). A proposal to protect shorebird beaches between Panama City and Chiman as a "Ramsar" site will also protect almost 50% of the fish-eating, wading, and raptorial birds.

Introduction

The beaches and mudflats along the coast of the Gulf of Panama support over 300 000 shorebirds in October (unpubl. data). These beaches are also frequented by many plunge-diving, surface-feeding, and long-legged wading birds (Ridgely 1981), and the area contains a number of wetlands of international significance (Delgado 1986). However, there are no censuses of the numbers or distribution of these birds.

The purpose of this paper is to describe the distribution and numbers of fish-eating, wading, and raptorial birds along the coast of the Gulf of Panama in October 1991.

Study area and methods

We counted all fish-eating, wading, and raptorial birds seen in coastal habitats or perched in mangroves from a Cessna 172 flown at an altitude of about 40 m from Panama City eastwards to Garachine on 21 October 1991, and west of Panama City to the town of Chitré on 24 October 1991. The shoreline was divided into 16 sectors demarcated by prominent geographical and habitat features (Fig. 1). Three observers counted birds on both the outbound and inbound journeys. The maximum number seen by any observer in each sector was used as an estimate of the numbers present. Most birds were counted individually, although large flocks were estimated. All birds were identified to the lowest taxonomic group possible or into categories such as "large white herons."

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The Gulf of Panama contains extensive mudflats from Panama City east to the town of Chiman and a mixture of mangroves, rocky shores, and small mudflats to Garachine. Few people live east of Chiman. West of Panama City, the coastline to Punta Chamé is quite rocky, although mudflats occur along Bahia Vacamonte and in Bahia de Chamé. Long stretches of sandy beach run from Punta Chamé to Bahia de Parita, which contains extensive mudflats backed by mangroves and saltpans as far as the town of Chitré.

Results and discussion

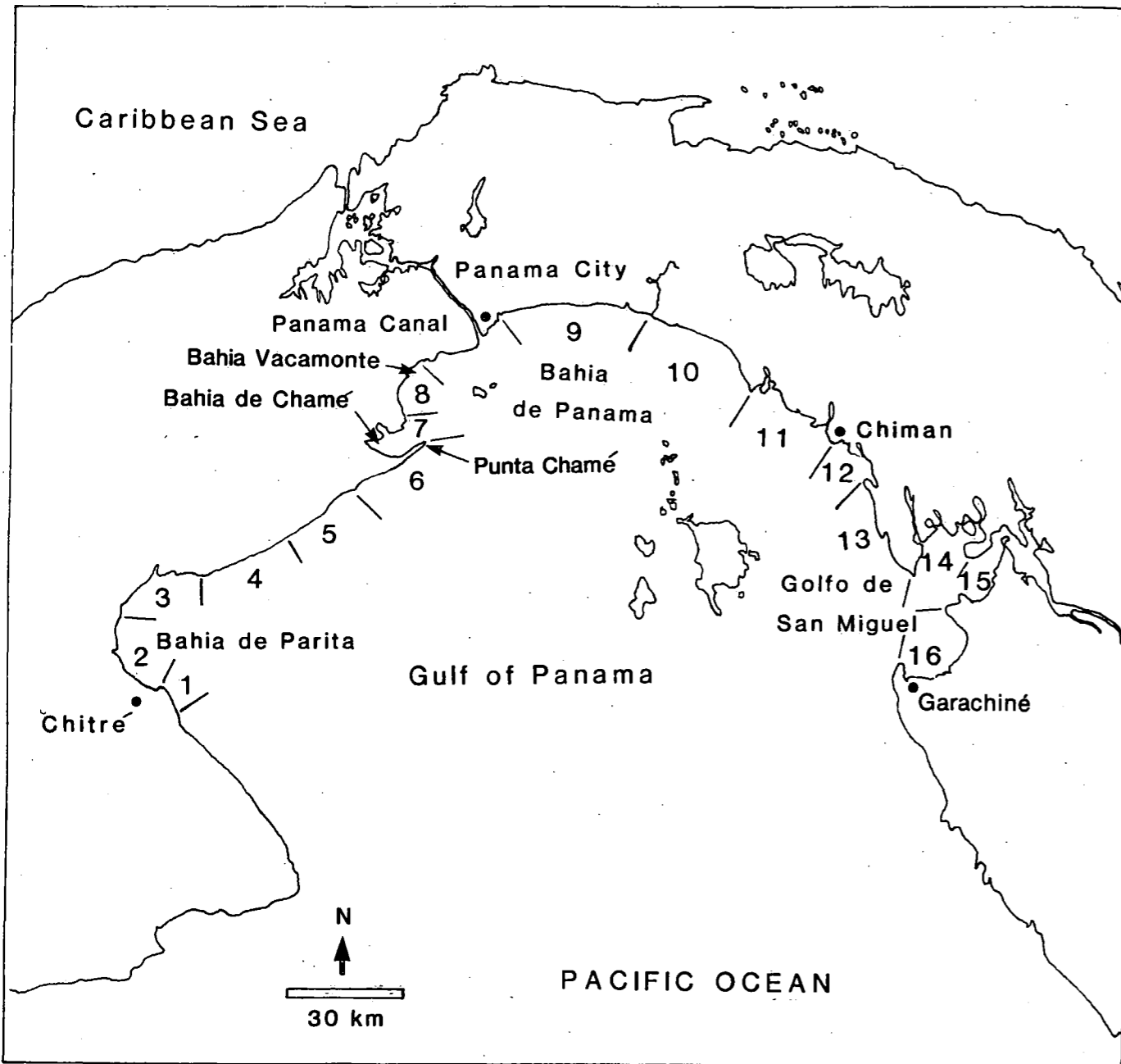
We recorded 15 533 birds, of which 972 (6.3%) were long-legged wading birds, 247 (1.6%) were raptors, 3385 (21.8%) were charadriiformes, 1346 (8.7%) were frigatebirds, and 9583 (61.7%) were peleciformes (Table 1). There was an average of 29.6 birds per kilometre of shoreline, with highest sector densities occurring east of Panama City in sectors 9 and 10 (55.4 and 89.0 birds/km, respectively), at Bahia de Parita (sector 3, 67.4 birds/km), and on adjacent coastline (sector 4, 65.5 birds/km; Table 1).

Egrets were the most frequently recorded (64.0%) long-legged wading bird. The most abundant coastal species in Panama are the Great Egret *Casmerodius albus* and Snowy Egret *Egretta thula*, according to Ridgely (1981). "Large white herons" in Table 1 were probably mostly Great Egrets. Little Blue Herons *Egretta caerulea* made up nearly 20% of all long-legged wading birds in our survey (Table 1), and most were seen in remote Golfo de San Miguel (sector 14, Fig. 1). "Large grey herons" included the White-necked Heron *Ardea cocoi*, most often seen to the east of Panama City, and the Great Blue Heron *A. herodias*, which is widespread (Ridgely 1981). We saw a flock of 37 Wood Storks *Mycteria americana* near Chitré. The majority of Roseate Spoonbills *Ajaia ajaja* were seen in Bahia de Parita north of Chitré, with smaller numbers near Panama City. Most long-legged wading birds were found in sectors with extensive low growths of mangrove near Chitré (sector 2) and in the eastern parts of the Gulf of Panama (sectors 10 and 14; Table 1).

The most numerous raptor (94.7% of all raptors seen) was the Black Vulture *Coragyps atratus* (Table 1), which was seen mostly along beaches in dry shrubby grasslands. Ospreys *Pandion haliaetus* were found along the entire census route. Four caracaras seen near the western end of the survey (Table 1) were most likely the Crested Caracara *Polyborus plancus*.

Gulls and terns were most frequently seen in the sectors east of Panama City and in Bahia de Parita (Table 1). We identified the Laughing Gull *Larus atricilla* and Royal Terns *Sterna maxima* during the surveys. Other species also likely to have been present include the Gull-billed Tern *S. nilotica*, Common Tern *S. hirundo*, and Sandwich Tern *S. sandvicensis*.

Figure 1
Location of survey sectors flown by aircraft in the Gulf of Panama



Thirty Black Skimmers *Rynchops niger* were seen near Garachiné in Darien Province. Ridgely (1981) considered this species to be a "rare and apparently irregular visitant to both coasts, always in small numbers."

Magnificent Frigatebirds *Fregata magnificens* were widespread (Table 1). They perched on mangroves and other shrubs and soared over beaches nearly everywhere we went.

Olivaceous Cormorants *Phalacrocorax olivaceus* and Brown Pelicans *Pelecanus occidentalis* were the two most abundant birds we saw (24.7% and 37.0% of all birds, respectively). Both species were widespread, with highest concentrations in Bahia de Parita and east of Panama City (Table 1).

Significance of Panama Bay for birds

The coastline between Panama City and Chiman (sectors 9-11) supported 46% of the birds surveyed in this paper as well as internationally significant concentrations of shorebirds (unpubl. data). These results indicate that this part of the coast should be considered for conservation protection. The area qualifies for "Ramsar" site designation and as a Western Hemisphere Shorebird Reserve (Myers et al. 1987). Bahia de Parita (sectors 2 and 3) also held many birds (this study and unpubl. data). Beaches near Chitré (sector 2) are protected as ecologically important sites by local bylaws.

Table 1
Number of long-legged wading birds, raptorial birds, and fish-eating birds counted from an aircraft in 16 sectors of beach on the Pacific coast of Panama, October 1991

	West of Panama City								East of Panama City								Total	%
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Long-legged wading birds																		
Small white egrets	0	135	22	17	4	26	48	70	11	115	0	1	NC ^a	117	53	3	622	4.0
Large grey herons	0	18	4	0	0	1	1	1	0	0	0	0	NC	4	0	0	29	0.2
Little Blue Heron	0	2	2	1	0	1	5	16	0	7	1	0	NC	143	12	2	193	1.2
Wood Stork	0	37	0	0	0	0	0	0	0	0	0	0	NC	0	0	0	37	0.2
Roseate Spoonbill	0	55	0	0	0	0	7	8	1	0	0	0	NC	0	0	0	71	0.5
Total	0	249	34	19	4	30	62	101	13	122	1	1	NC	265	65	5	972	
Raptorial birds																		
Black Vulture	0	23	0	80	8	0	58	52	4	9	0	0	NC	0	0	0	234	1.5
Osprey	0	1	1	0	0	0	3	0	1	0	0	0	NC	1	1	0	8	<0.1
Falco spp.	0	0	0	0	1	0	0	0	0	0	0	0	NC	0	0	0	1	<0.1
Caracara	0	0	3	1	0	0	0	0	0	0	0	0	NC	0	0	0	4	<0.1
Total	0	24	4	81	9	0	61	52	5	9	0	0	NC	1	1	0	247	
Fish-eating birds																		
Larid spp.	0	150	1	0	0	15	8	10	170	610	403	0	NC	0	0	30	1397	9.0
Tern spp.	0	404	222	0	0	1	1	0	351	504	100	0	NC	0	0	375	1958	12.6
Black Skimmer	0	0	0	0	0	0	0	0	0	0	0	0	NC	0	0	30	30	0.2
Frigatebird	0	79	20	961	15	27	22	92	2	20	58	0	NC	0	0	50	1346	8.7
Olivaceous Cormorant	0	30	165	24	5	0	5	151	1252	1676	75	0	NC	154	50	249	3836	24.7
Brown Pelican	0	270	1840	440	9	825	122	88	650	601	558	5	NC	10	142	187	5747	37.0
Total	0	933	2248	1425	29	868	158	341	2425	3411	1194	5	NC	164	192	921	14314	
Total %	0	7.8	14.7	9.8	0.3	5.8	1.8	3.2	15.7	22.8	7.7	<0.1	NC	2.8	1.7	6.0	100.0	
Length of survey sector (km)	9.4	29.6	33.9	24.5	23.9	22.7	32.9	18.6	44.1	39.8	45.5	21.6	NC	45.1	47.6	44.6	483.8	
Mean density (birds/km)	0	40.7	67.4	65.5	17.6	39.6	8.5	26.6	55.4	89.0	26.3	0.3	NC	9.0	5.9	22.3	32.1	

^aNC = no census made in this sector.

Acknowledgements

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