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## Seasonal Variation in Gull Populations along Trinidad's West Coast, Trinidad and Tobago

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### ABSTRACT

Seven species of gulls were recorded during a six-year study (1997-2003) of gull populations along the west coast of Trinidad. An estimated 4000-5000 Laughing Gulls (*Larus atricilla*) wintered annually in western Trinidad, with the population peaking in February and less than 10% remaining during the northern summer. Up to 13 Lesser Black-backed Gulls (*L. fuscus graellsii*) wintered in Trinidad, with a few lingering during summer. Very small numbers of the remaining species were recorded: Black-headed Gull (*L. ridibundus*), Franklinis Gull (*L. pipixcan*), Kelp Gull (*L. dominicanus*), Ring-billed Gull (*L. delawarensis*) and Sabine's Gull (*Xema sabini*). Trinidad's west coast provides crucial habitat for many waterbirds and is perhaps the most important locality in northern South America for wintering gulls, which are attracted by the fishing industry.

### INTRODUCTION

The coasts of northern South America and offshore islands provide a plethora of critical sites hosting large concentrations of coastal waterbirds. Although many of these sites have been identified during aerial surveys documenting shorebird populations (Morrison and Ross 1989), little is known about the populations of other coastal waterbird taxa, such as gulls of the family Laridae.

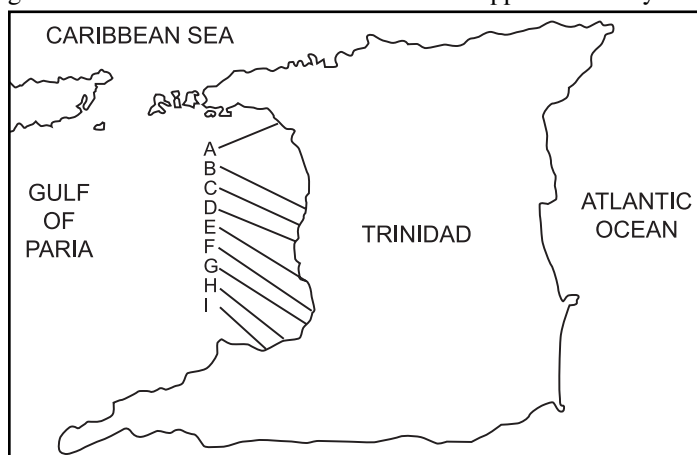
The Gulf of Paria is a highly productive estuary (e.g., Kenny and Bacon 1981) that borders the west coast of Trinidad. Large concentrations of gulls, including several rare species (Hayes *et al.* 2002a, b, McNair *et al.* 2002), roost along Trinidad's west coast and forage offshore among large fleets of fishing vessels. In this paper we report survey data gathered from several sites during a six-year period to assess seasonal and long-term trends in the abundance of gulls.

### STUDY AREA AND METHODS

Trinidad is a large island located on the continental shelf of South America just north of the Orinoco River Delta. The relatively shallow Gulf of Paria separates Trinidad from the continental mainland and borders Trinidad's west coast, where several major ports, along with several extensive tidal mudflats, are located. Along the Chaguaramas Peninsula to the north, the coast is characterized by rocky shores, sandy beaches, several marinas, small patches of mangroves and minor mudflats at the mouths of streams. A large commercial port at Port of Spain is bordered to the south by extensive mangroves of Caroni Swamp. From the southern edge of Caroni Swamp, the coast is characterized by extensive tidal mudflats and patches of mangroves from Waterloo to Pointe-a-Pierre. Small fishing ports occur at Waterloo, Orange Valley, Carli Bay and Claxton Bay. Large shipping docks occur at Point Lisas and Pointe-a-Pierre. Further south, small fishing ports are located at San Fernando and Horqueta, and less extensive mudflats occur from La Romaine to Horqueta. To the west and south of Horqueta, the coast is characterized by scattered mangroves, rocky coasts and a few sandy beaches, with a major commercial port at Point Fortin and a minor

fishing port at Cedros.

From December 1997 to September 2003, we periodically censused gull populations at selected sites along the west coast of Trinidad (Fig. 1). Census data were obtained primarily from readily accessible sites where large concentrations of larids could be observed, especially at Waterloo, Orange Valley and San Fernando. Fewer counts were conducted at Carli Bay, La Romaine, Mosquito Creek and Horqueta. Birds were counted individually when possible, but when large flocks were present we estimated the number of birds based on clusters of 10, 25 or 50 individuals. Due to frequent turnover of arriving and departing birds at a given locality, precise counts were difficult to obtain. Counts at coastal mudflat sites (Waterloo, Orange Valley and La Romaine) were generally conducted when mudflats were exposed at low or intermediate tides. Counts at San Fernando were usually conducted at high tide, when concentrations of gulls roosting on the water, boats and piers were greatest. Elsewhere counts were conducted opportunistically.



**Fig. 1.** Sites in western Trinidad where gull populations concentrate. A = Port of Spain; B = Waterloo; C = Orange Valley; D = Carli Bay; E = Pointe-a-Pierre; F = San Fernando; G = La Romaine; H = Mosquito Creek; I = Otaheite.

**Table 1.** Monthly variation in Laughing Gull populations along the west coast of Trinidad.

Locality	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Waterloo												
$\bar{x}$	1269	1949	1901	934	122	94	59	217	298	302	465	792
SD	541	1203	562	749	101	60	35	124	194	218	352	541
Min	310	325	1372	15	11	35	1	10	120	140	150	150
Max	2000	4000	2675	2300	250	170	85	420	600	550	950	1800
<i>n</i>	12	12	12	7	5	6	5	8	8	3	4	12
Orange Valley												
$\bar{x}$	420	774	695	81	15	46	11	130	101	288	147	351
SD	281	712	794	83	17	53	6	140	80	271	21	180
Min	58	50	22	5	1	0	7	2	3	107	130	77
Max	780	1635	2000	210	40	120	17	420	200	600	175	660
<i>n</i>	6	5	6	5	4	4	3	7	5	3	4	13
San Fernando												
$\bar{x}$	441	1056	369	426	294	104	113	25	100	475	680	573
SD	333	713	125	554	148	90	18	$\bar{n}$	$\bar{n}$	35	387	191
Min	0	300	250	7	150	30	100	25	100	450	220	400
Max	1000	2000	500	1200	500	225	125	25	100	500	1000	1000
<i>n</i>	7	9	4	4	4	4	2	1	1	2	4	12

**RESULTS AND DISCUSSION**

Laughing Gull (*Larus atricilla*) was by far the most abundant species. Populations fluctuated wildly at the three major sites, but were highest during winter, peaking in February (Table 1). Populations declined precipitously during May and June, when breeding occurs in Tobago and elsewhere in the Caribbean and eastern USA (Burger 1996, Chardine *et al.* 2000) and were lowest during July, when mean counts were only a small fraction of those in February (3.0% at Waterloo, 1.4% at Orange Valley, 10.7% at San Fernando; Table 1). Juveniles first arrived in August, when populations began to increase. Laughing Gulls were most common at Waterloo, with a maximum count of 4000. Elsewhere, up to 2000 were recorded at Orange Valley and San Fernando (Table 1), up to 1000 at Carli Bay (*n* = 11), 600 at Otaheite (*n* = 3), 300 at La Romaine (*n* = 3) and 300 at Mosquito Creek (*n* = 2). From San Fernando we could see large numbers congregating on the mudflats of Pointe-a-Pierre during low tide, but were unable to access the site. Scattered smaller flocks were occasionally encountered in the northern Gulf of Paria between Port of Spain and the Bocas Islands, but were not counted.

ffrench (1973, 1991) reported that Laughing Gull was most common along the west coast from March to November, when up

to 1000 (ffrench 1973) or 2000 (ffrench 1991) were recorded at Pointe-a-Pierre. ffrench (1973, 1991) reported high counts of only 500 at Pointe-a-Pierre during December and February, and 200 at Port of Spain in January. Our data suggest that numbers have increased in recent decades, especially during the northern winter. Because large flocks of Laughing Gull routinely follow fishing ships at sea and not all can be viewed within a single day from a few vantage points along the coast, obtaining an accurate estimate of Laughing Gull numbers along the entire coast was not possible. Nevertheless, we believe that our estimate of 4000-5000 wintering along the west coast of Trinidad is fairly accurate. Trinidad's west coast may be its most important winter habitat in South America. Lesser Black-backed Gull (*L. fuscus graellsii*) is an Old World species whose numbers have increased dramatically in the New World, where breeding remains undocumented (Post and Lewis 1995). It was the second most common species, occurring in small numbers that peaked in February-March, with a few recorded during summer (Table 2). Hayes *et al.* (2002b) reported 31 records of an estimated 45 individuals (mostly immatures) in western Trinidad from August 1978 through June 2002. In contrast with Laughing Gull, Lesser Black-backed Gull numbers were highest at San Fernando, with a maximum count of six birds; up to five were recorded at Waterloo

**Table 2.** Monthly variation in Lesser Black-backed Gull populations along the west coast of Trinidad. Sample sizes (*n*) are as in Table 1.

Locality	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Waterloo												
$\bar{x}$	1.2	0.9	0.5	0.3	0	0.5	0.6	0.4	1.3	1.0	0.5	0.8
SD	1.3	1.1	0.8	0.5	0	0.8	1.3	0.7	1.0	1.0	1.0	1.5
Min	0	0	0	0	$\bar{n}$	0	0	0	0	0	0	0
Max	4	3	2	1	$\bar{n}$	2	3	2	3	2	2	5
Orange Valley												
$\bar{x}$	0.3	0.8	0.2	0	0	0	0	0.6	0	0.3	0	0.1
SD	0.5	1.3	0.4	0	0	0	0	1.0	0	0.6	0	0.3
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	1	3	1	0	0	0	0	2	0	1	0	1
San Fernando												
$\bar{x}$	2.4	3.2	3.8	0.8	1.5	0	0	0	0	0	1.8	1.2
SD	1.8	2.3	2.5	1.5	1.0	0	0	0	0	0	0.8	1.5
Min	0	0	0	0	0	0	0	0	0	0	1	0
Max	5	6	5	3	2	0	0	$\bar{n}$	$\bar{n}$	0	3	3

and three at Orange Valley (Table 2). The ratio of Lesser Black-backed Gulls to Laughing Gulls ranged from one to 310 at San Fernando, 1280 at Waterloo and 1436 at Orange Valley. Up to 13 different individuals were recorded along the west coast during the winter of 2000-2001, with a maximum daily count of eight on 10 February 2001 (Hayes *et al.* 2002b).

Five other species of gulls were recorded during these surveys, but numbers were too small for statistical analyses. Of these, Black-headed Gull (*L. ridibundus*) is a Eurasian vagrant with several previous records from Trinidad (ffrench 1991). Two immatures and an adult were at Waterloo and Orange Valley from 11 February to 18 May 2000 (M. Kenefick *et al.*); an adult at Waterloo from 3-17 February 2001 (N. Lallsingh *et al.*); and an adult at Waterloo from 17 January to 1 March 2002 (N. Lallsingh *et al.*).

Franklin's Gull (*L. pipixcan*) is a North American migrant that was previously unrecorded from Trinidad (ffrench 1991). Up to two immatures and one adult were seen at Port of Spain and Waterloo during 5 January to 20 March 1999; up to two immatures were seen (one photographed) at Waterloo and San Fernando from 3 December 2000 to 22 April 2001; and an adult was photographed at San Fernando from 10-17 November 2001 (McNair *et al.* 2002).

Kelp Gull (*L. dominicanus*) is a recent colonist from the southern hemisphere to the Gulf of Mexico that was previously unrecorded from Trinidad (ffrench 1991). Two adults were photographed at Waterloo and San Fernando from 8 July 2000 to 10 February 2001, providing the first record for the Caribbean (Hayes *et al.* 2002a).

Ring-billed Gull (*L. delawarensis*) is a North American migrant with several previous records from Trinidad (ffrench 1991). An immature was photographed at Carli Bay on 14 December 1997 and possibly the same individual was seen at Waterloo on 1 March 1998 (White and Hayes 2002); an immature was photographed at San Fernando and also seen at Waterloo from 21 January to 22 April 2001 (F. E. Hayes *et al.*); an immature was photographed at San Fernando and also seen in the Columbus Channel (south coast) from 17 November 2001 to 24 March 2002 (F. E. Hayes *et al.*).

Sabine's Gull (*Xema sabini*) is a North American migrant with a highly pelagic winter distribution that had been recorded only once previously along the Atlantic Coast of South America off eastern Trinidad (ffrench 1991). An immature was photographed at Waterloo from 27 January to 1 February 2002 (Nigel Hacking *et al.*), and was probably seen at San Fernando on 9 February 2002 (H. Kilpatrick).

In conclusion, the west coast of Trinidad may be the most important wintering site for gulls in northern South America, with

an estimated 4000-5000 Laughing Gulls and up to 13 Lesser Black-backed Gulls. Small numbers of Franklin's Gull and Ring-billed Gull winter sporadically. Kelp Gull and Sabine's Gull are probably accidental visitors. The robust fishing industry is probably the major attraction to gulls, facilitated by the presence of tidal mudflats and sheltered bays for roosting.

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