



## SHOREBIRD USE OF THE LOWER LOS ANGELES RIVER CHANNEL: A NOVEL WETLAND HABITAT

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**ABSTRACT:** The concrete-lined channel of the lower Los Angeles River in Long Beach supports one of the largest concentrations of shorebirds in southern California during fall migration. Each fall, the Black-necked Stilt (*Himantopus mexicanus*), Western Sandpiper (*Calidris mauri*), and Least Sandpiper (*Calidris minutilla*) occur in the thousands of individuals per day, and the American Avocet (*Recurvirostra americana*) and Long-billed Dowitcher (*Limnodromus scolopaceus*) occur in the hundreds. Numbers peak from mid-August through late September, and eight systematic surveys between 9 August and 27 September 2000 yielded in excess of 14,000 birds on four of these counts. Despite the channel's proximity to the coast, the species composition resembles that at other inland sites in the Southwest more closely than natural coastal wetlands in the region. Because of the channel's constricted concrete borders, even slight rainfall can raise the water level in the channel, reducing the suitability of the habitat for shorebirds. This effect likely accounts for the area's relatively light use by shorebirds outside the late summer and fall dry season.

As landscapes across the West become more urbanized, information on wildlife use of novel habitats will be at a premium. Shorebirds are receiving increased conservation attention, and strategies to incorporate their needs into wetlands management are being developed (Brown et al. 2001). The greater Los Angeles area was once a haven for waterbirds (Chambers 1936, Fuller 1955), but now only a handful of its much-reduced wetlands, split largely between the Oxnard Plain of coastal Ventura County (including Mugu Lagoon) to the north and the coastal marshes of Orange County to the south (Cooper 2004), are appropriate for shorebirds. Starting in the early 1900s, but greatly accelerating following catastrophic flooding in 1938, a large system of wetlands along the Los Angeles River (roughly traced by the path of Interstate freeway 405) in southern Los Angeles County was drained, and the water was diverted into cement-lined flood-control channels to allow for urban development (Gumprecht 1999:17–20, 224–228). Though small sections of the floor of the 85 km-long Los Angeles River were never lined and now support a mix of native and ruderal riparian vegetation (Wallace

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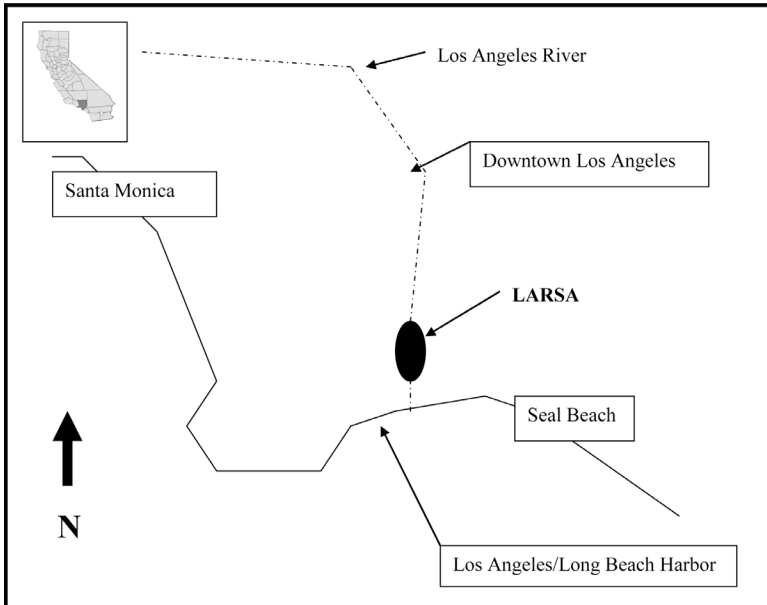


Figure 1. The Los Angeles River shorebird area (LARSA) in Los Angeles County.

1993), the 35-km stretch from downtown Los Angeles south to Willow Street in Long Beach is entirely lined with cement. Here, the channel floor is 100 m wide, and water flows year round, with 85% of the flow consisting of treated effluent from two wastewater-treatment plants upstream, 10% of urban runoff, and the remaining 5% of natural groundwater (Mullin 2000; V. Bapna, Los Angeles Dept. of Public Works, pers. comm.).

Though obviously different from the natural wetlands they replaced, portions of these cement channels have proven attractive to shorebirds, particularly a 13-km-long section of the Los Angeles River channel from Willow Street in north Long Beach upstream to Interstate freeway 105 in the city of Paramount (Figure 1; Garrett 1993, Cooper 2004:148). This "Los Angeles River Shorebird Area" (hereafter LARSA) is located just east of what were once two large historical wetlands, "Nigger Slough" in present-day Carson and Watson Lakes/Slough in northern Long Beach (Hise and Deverell 2000:254, Gumprecht 1999), both popular collecting locales for early Los Angeles ornithologists (Grinnell 1898, Willett 1912, 1933, Garrett 1993). LARSA represents 150 ha of contiguous linear habitat formed by a thin sheet of water (<10 cm deep) flowing across the floor of the trapezoidal channel, interrupted by exposed cement and clumps of herbaceous vegetation on silt bars. This sheet supports a mat of algae (*Cladophora* spp., *Scenedesmus acuminatus*, *Pediastrum* spp., *Euglena* spp.) that develops through the summer (Anderson 1993). This algal mat supports flies, whose eggs and larvae offer abundant concentrated food for shorebirds. By October,

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rains—even showers elsewhere in the Los Angeles Basin—raise the water level in the channel and wash out the algal growth, which can then re-form during intervals between winter storms (Garrett 1993:5; pers. obs.).

### METHODS

To document the timing and magnitude of fall shorebird migration on the lower Los Angeles River, I organized a group of volunteers for eight single-day surveys of LARSA during August and September 2000. Teams of one or two experienced observers walked four consecutive sections within LARSA simultaneously between 0630 and 0900 hr to avoid duplicate counting, estimating total numbers of shorebirds seen within the channel and identifying birds to species where possible. In addition to these systematic surveys in 2000, I surveyed the southernmost 2.5 km of LARSA (between Interstate 405 and Willow St.) weekly in October and early November 2000 and 2001; I also made several incidental surveys on this southernmost stretch of LARSA in June/July 2001 to clarify usage during the early (mid-summer) period of shorebird migration, which was not covered by the comprehensive surveys in 2000. For one problematic group, the dowitchers, individuals were typically recorded as simply “dowitcher spp.,” even though most dowitchers on the river after August are assumed to be Long-billed (*vide* K.L. Garrett), and small numbers of the Short-billed were recorded (by voice) on the eight fall surveys in 2000 (Table 1).

### RESULTS AND DISCUSSION

Twenty-two species of shorebirds were detected on the eight surveys of LARSA in 2000 (Table 1); at least 11 additional species are known from the site (Garrett 1993; K. L. Garrett pers. comm.). The total number of shorebirds approached or exceeded 15,000 on four of the eight surveys and exceeded 15 species on all six surveys between 16 August and 20 September. (Table 1). A dip in the numbers of birds on the 30 August count coincided with a rise in water levels in the channel following a tropical storm on 29 August (pers. obs.). These storm waters may have cleared out some of the algal growth, temporarily reducing habitat for shorebirds and reflected in their reduced abundance on 9 September. Additional surveys in late fall and winter (Table 2) not only clarified which species were transients as opposed to wintering residents at the site (e.g., Black-bellied Plover), they also revealed a dramatic reduction in the numbers of the Killdeer, American Avocet, and dowitchers, presumably as migrants of these species moved on to wintering locales. Supplemental surveys in summer 2001 (Table 3) revealed high usage by certain species earlier than the August start date of the 2000 surveys, suggesting that future shorebird surveys at LARSA be initiated in mid-July.

The numbers of shorebirds using LARSA are comparable to those at other sites important to shorebirds in southwestern California (see Hickey et al. 2003), at least during fall migration. Eleven species of shorebirds were recorded on all eight counts in fall 2000, with the three most abundant species, the Black-necked Stilt, Western Sandpiper, and Least Sandpiper,

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**Table 1** Counts of Shorebirds along the Los Angeles River between Interstate 105 and Willow Street, Fall 2000

Species	9 Aug	16 Aug	23 Aug	30 Aug	6 Sep	13 Sep	20 Sep	27 Sep
Black-bellied Plover								
<i>Pluvialis squatarola</i>	29	19	5	4	15	18	15	1
Semipalmated Plover								
<i>Charadrius semipalmatus</i>	36	41	37	4	15	23	15	4
Killdeer								
<i>Charadrius vociferus</i>	45	45	34	4	41	61	45	32
Black-necked Stilt								
<i>Himantopus mexicanus</i>	3501	3840	4215	2449	2488	3836	3968	3353
American Avocet								
<i>Recurvirostra americana</i>	65	23	125	81	90	110	174	79
Greater Yellowlegs								
<i>Tringa melanoleuca</i>	17	17	23	13	8	15	14	16
Lesser Yellowlegs								
<i>Tringa flavipes</i>	7	13	15	11	12	10	12	2
Solitary Sandpiper								
<i>Tringa solitaria</i>	0	0	0	0	0	0	0	1
Willet <i>Catoptrophorus</i>								
<i>semipalmatus</i>	0	0	1	0	0	0	1	0
Spotted Sandpiper								
<i>Actitis macularius</i>	2	5	5	6	11	6	8	6
Semipalmated Sandpiper								
<i>Calidris pusilla</i>	0	5	0	0	0	0	0	0
Western Sandpiper								
<i>Calidris mauri</i>	4189	6826	7253	4115	4773	9091	8664	4308
Least Sandpiper								
<i>Calidris minutilla</i>	1880	3807	2759	1477	1370	2658	1838	1356
Baird's Sandpiper								
<i>Calidris bairdii</i>	0	1	3	2	1	1	1	0
Pectoral Sandpiper								
<i>Calidris melanotos</i>	0	0	1	0	2	10	6	0
Dunlin <i>Calidris alpina</i>	0	0	0	0	0	0	1	0
Short-billed Dowitcher								
<i>Limnodromus griseus</i>	5	2	0	13	9	3	0	1
Total dowitchers								
<i>Limnodromus</i> spp.	278	374	581	373	404	553	626	623
Wilson's Phalarope								
<i>Phalaropus tricolor</i>	23	44	39	26	3	1	0	0
Red-necked Phalarope								
<i>Phalaropus lobatus</i>	0	4	14	12	1	2	0	0
Red Phalarope								
<i>Phalaropus fulicarius</i>	0	0	0	1	0	0	0	0
Total individuals	10,077	15,062	15,110	8591	9243	16,398	15,388	9782
Total species	13	16	16	16	16	16	15	13

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**Table 2** Counts of Shorebirds along the Los Angeles River between Interstate 405 and Willow Street, late Fall/Winter 2000 and 2001

Species	2000					2001					
	7 Oct	14 Oct	28 Oct	4 Nov	25 Nov	6 Jan	6 Oct	13 Oct	28 Oct	1 Nov	13 Nov
Black-bellied Plover <i>Pluvialis squatarola</i>	0	3	1	0	0	0	5	3	0	0	0
Semipalmated Plover <i>Charadrius semipalmatus</i>	3	1	0	0	0	0	0	4	0	0	0
Killdeer <i>Charadrius vociferus</i>	18	21	54	1	0	2	24	22	10	3	5
Black-necked Stilt <i>Himantopus mexicanus</i>	963	799	535	654	746	567	718	516	663	554	225
American Avocet <i>Recurvirostra americana</i>	107	199	2	4	9	57	139	100	108	27	0
Greater Yellowlegs <i>Tringa melanoleuca</i>	5	6	0	0	0	0	10	9	8	7	2
Lesser Yellowlegs <i>Tringa flavipes</i>	0	1	0	0	0	0	1	0	0	0	0
Willet <i>Catoptrophorus semipalmatus</i>	0	1	1	0	0	0	1	1	1	0	2
Spotted Sandpiper <i>Actitis macularius</i>	2	3	2	2	2	1	7	4	6	1	3
Sanderling <i>Calidris alba</i>	0	0	0	0	0	4	0	0	0	0	0
Western Sandpiper <i>Calidris mauri</i>	515	330	0	126	1063	1860	40	570	25	0	40
Least Sandpiper <i>Calidris minutilla</i>	209	820	105	493	244	1160	180	510	202	0	180
Pectoral Sandpiper <i>Calidris melanotos</i>	0	0	0	0	0	0	1	1	0	0	0
Dunlin <i>Calidris alpina</i>	8	5	0	9	9	2	0	8	6	0	0
Ruff <i>Philomachus pugnax</i>	1	0	0	0	0	0	0	0	0	1	0
Dowitchers <i>Limnodromus</i> spp.	566	469	54	3	41	29	856	895	846	526	185
Wilson's Snipe <i>Gallinago delicata</i>	0	0	0	0	0	0	0	0	1	0	0
Red-necked Phalarope <i>Phalaropus lobatus</i>	0	0	0	0	0	0	1	0	0	0	0
Total individuals	2397	2658	754	1292	2114	3682	1983	2643	1876	1119	642
Total species	11	13	8	8	7	8	13	13	11	7	8

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**Table 3** Counts of Shorebirds along the Los Angeles River between Interstate 405 and Willow Street, Summer 2001

Species	26 Jun	12 Jul	25 Jul	12 Aug
Black-bellied Plover <i>Pluvialis squatarola</i>	0	0	4	0
Semipalmated Plover <i>Charadrius semipalmatus</i>	0	0	3	6
Killdeer <i>Charadrius vociferus</i>	0	2	7	14
Black-necked Stilt <i>Himantopus mexicanus</i>	521	549	808	980
American Avocet <i>Recurvirostra americana</i>	24	0 <sup>a</sup>	38	112
Greater Yellowlegs <i>Tringa melanoleuca</i>	0	5	2	2
Lesser Yellowlegs <i>Tringa flavipes</i>	0	1	0	0
Semipalmated Sandpiper <i>Calidris pusilla</i>	0	0	0	1
Western Sandpiper <i>Calidris mauri</i>	0	250	932	1845
Least Sandpiper <i>Calidris minutilla</i>	0	110	401	438
Dowitchers <i>Limnodromus</i> spp.	0	0	109	475
Wilson's Phalarope <i>Phalaropus tricolor</i>	0	0	6	3
Total individuals	545	917	2310	3876
Total species	2	6	10	10

<sup>a</sup>Probably overlooked on this date and in error.

exceeding 1000 birds on all eight surveys (Table 1). Despite approaching the coast as close as 6 km, LARSA supports a bird community resembling that of other inland-basin flood-control channels more closely than that of coastal wetlands. For example, along the San Gabriel River near Whittier Narrows, 50 km from the coast, some species abundant in southern California coastal wetlands such as the Willet and Marbled Godwit (*Limosa fedoa*) are rare, and in fall the most common shorebirds are the Killdeer, Black-necked Stilt, Greater Yellowlegs, Western Sandpiper, Least Sandpiper, and Long-billed Dowitcher (Long 1993). With its large numbers of the Black-necked Stilt and small *Calidris* sandpipers, the shorebird avifauna of LARSA also appears similar to that at wastewater-treatment ponds and shallow reservoirs elsewhere in California (W. D. Shuford in litt.). More information on the ecology of migrant and wintering shorebirds at LARSA would be desirable, including seasonal changes in foods, possible effects of pollution (from urban runoff), the relationship between the water level in the channel and the distribution and abundance of shorebirds here and elsewhere along the channel, and the actual status of the two dowitcher species. Future reduction of summer and fall water levels in the river (through water conservation) could lead to major changes in the use of this site by shorebirds.

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