

Physical Characteristics of a Whooping Crane Roost Site on the Platte River, Hall County, Nebraska

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The whooping crane (*Grus americana*) is one of the most celebrated of the federally endangered species. Its status in Nebraska is one of a migrant, occurring between 10 March to 15 May and 22 September to 14 November (Krapu 1981). Peak migration occurs during 1-20 April and 10 October to 1 November. Over 90% of the sightings in Nebraska have occurred within 48 km of the Platte River and about 80% have occurred in the Big Bend reach, a 130-km stretch between Lexington and Grand Island (Johnsgard 1980) (Fig. 1). Most of this river section has been designated as critical habitat for the whooping crane under Section 7 of the Endangered Species Act of 1973 (Federal Register 43(94): 20938-20942). Habitat degradation resulting from water diversions upstream has drastically reduced use of the river by whooping cranes (Krapu 1981) and has increased concerns that cranes will lose this major stopover area. These concerns have prompted efforts to gather information on the habitat needs of the cranes during their stay by the Platte River Whooping Crane Critical Habitat Maintenance Trust (hereinafter Platte River Trust). In December 1978, the Platte River Trust was formed, in part, to "foster the continued existence of that amount of habitat required to meet the need of whooping cranes stopping in the Big Bend of the Platte River on their spring and fall migrations" (see VanDerwalker 1981). A detailed description of the most recent known site used by whooping cranes on the Platte River is presented in this report.

METHODS

Personnel from the Platte River Trust and the U.S. Fish and Wildlife Service arranged for an aerial and ground reconnaissance of the whooping cranes' roost site and movements. A Cessna 182 was chartered for the aerial reconnaissance and three vehicles were used by the ground crew. Observations of the birds were taken using binoculars and a 25X Bushnell spotting scope. A minute by minute account of the cranes' behavior and activities was recorded by both crews in addition to a photographic record of the birds and their habitat use. A bank to bank cross-section of the river was measured at 1-m intervals. Width of sandbars and open water areas, depth of water, height of the sandbars above the water surface, and distance from the roost site to woody vegetation were

measured. The cross-section bisected the roost site and measurements were taken within 2.5 hours after the cranes departed. Flow data was obtained from the U.S. Geological Survey in Lincoln, Nebraska.

RESULTS

Chronology of the whooping crane sighting. — On 27 October 1983, five adult whooping cranes were reported feeding in an idle cornfield (Sec 26 T9N R12W, Hall County) by local residents. At 1830 CDT, these five individuals were observed flying to the Platte River to roost (Sec 27 T9N R12W), again by a local resident (Fig. 1). At 0720 on 28 October 1983, the air crew located the five whooping cranes on the Platte River and 25 minutes later the ground crew observed them. None of the birds were banded. They were roosting on a shallow, submerged sandbar about a neck's length apart. At 0754 the group departed south and landed in a pasture with about 100 sandhill cranes (*Grus canadensis*) about 1.9 km southeast of the roost. The air crew maintained visual contact with the birds. The whooping cranes were observed probing in the pasture. At 0804 they flew about 0.4 km south and landed in a grazed corn stubble field (Sec 35 T9N R12W). They were observed probing, preening, and walking in the field. Based on their flexed necks and forceful head movements, they apparently were probing beneath the soil surface. At 0903 they were joined by a family group of three whooping cranes. These eight birds were within 2.4 km of the main

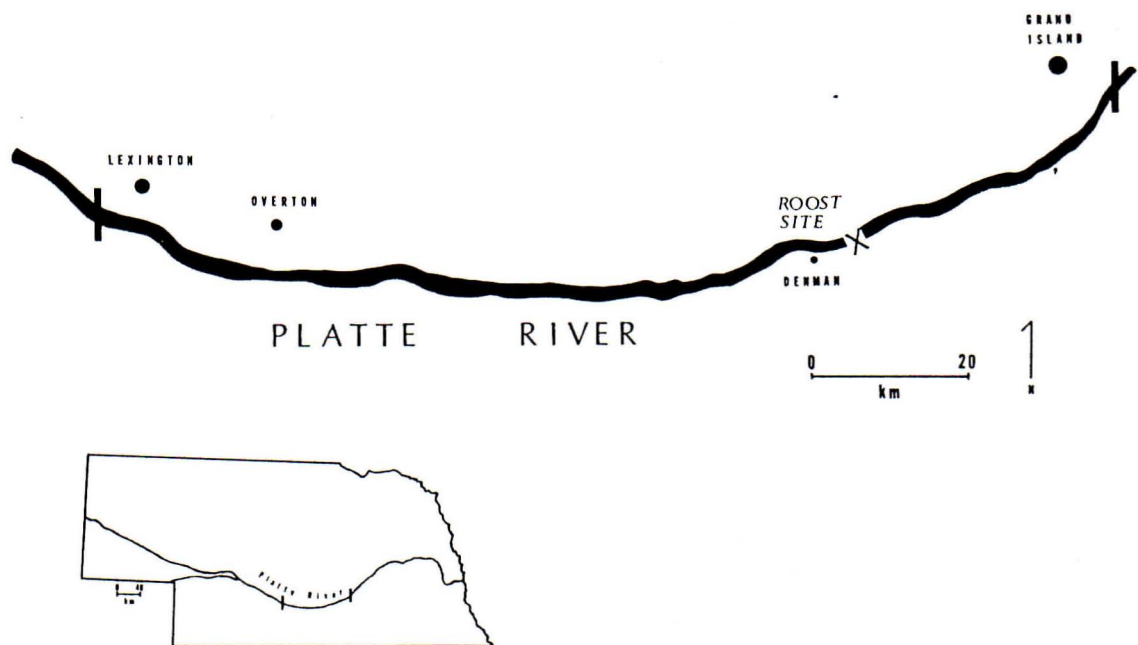


Fig. 1. The Big Bend reach of the Platte River, Nebraska.

channel of the Platte River. They remained in this field until 0959, then departed southeast. The ground crew followed them 18 km south and 5 km east of the cornfield before losing sight of the cranes at 1010, about 1.8 hours after they were first sighted. They most likely continued their southward migration. Large flocks of sandhill cranes and geese were migrating that day. Northerly winds were gusting in excess of 48 km/h by 1023 and the temperature was 16°C. The whooping crane flight speed was estimated at 90 km/h with the strong tailwind. Another adult whooping crane was observed by the air crew at 1109 about 35 km south of where the eight cranes were last observed feeding. It was migrating with a group of 150 sandhill cranes at an altitude of about 360 m and a speed of 90 km/h.

Riverine roost site characteristics. — A cross-section of the river channel was constructed by plotting a transect line through the roost site and perpendicular to the north and south shoreline (Figs. 2 and 3). The total open channel width

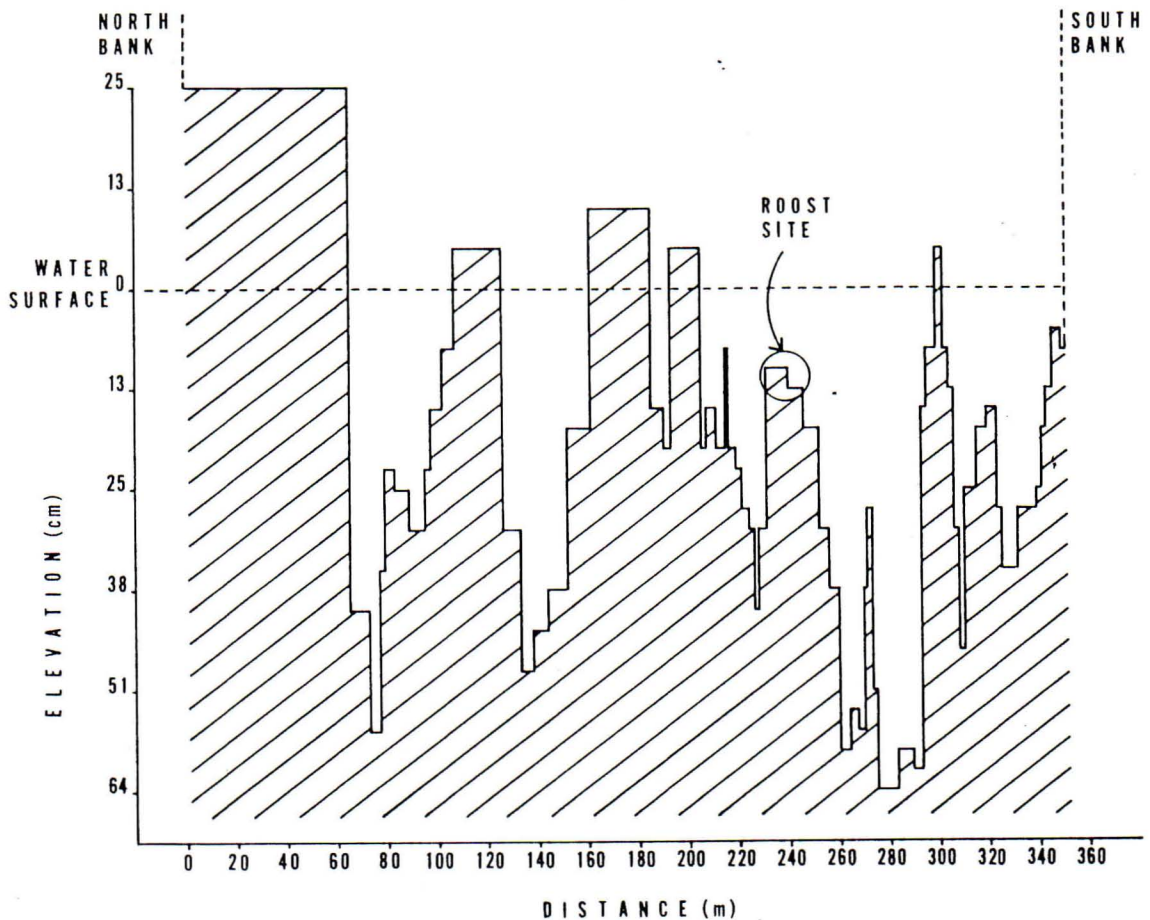


Fig. 2. Cross-section of the Platte River at the whooping crane roost site (see Fig. 3 for transect line location).

(barren sandbar and water) was 350 m. Of this distance, 230 m consisted of water-filled channels and exposed sandbars less than 5 cm above the water surface. The roost was 70 m from the nearest wooded island or bank. This section of the river had been mechanically cleared of woody vegetation over the past 20 years. Willows (*Salix* sp.) and cottonwoods (*Populus deltoides*) occurred along the north and south shoreline and ranged from 3-12 m in height. Interstate 80 parallels the river about 0.8 km north of the roost and an occupied cabin is present 0.2 km south of the roost. The woody vegetation along the river bank provided a visual barrier between the roost site and both of these disturbances.

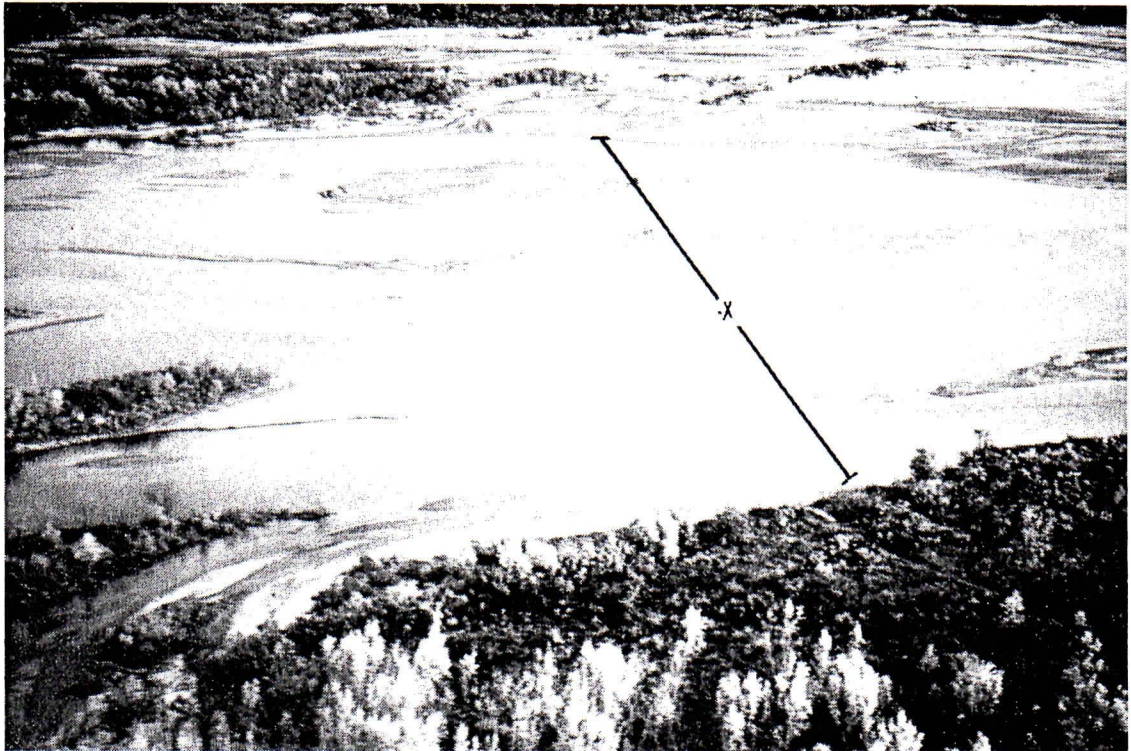


Fig. 3. Aerial view of the whooping crane roost looking NNW with the transect line and roost site (X) identified.

The roost was located on a shallowly submerged sandbar 15 m wide with a depth of 10-13 cm. This flooded sandbar was within a 94 m wide channel and the closest sandbar was 26 m north (Fig. 2). Loose sand and fine gravel comprised the substrate. River flows ranged from 1220 to 1260 cfs and 1180 to 1280 cfs on 27 and 28 October respectively (U.S. Geological Survey unpubl. data). These measurements were taken at the Grand Island gauging station about 36 km downstream from the roost. This roost was about 6.4 km east of the area designated as whooping crane critical habitat.

DISCUSSION

The roost site characteristics fit well within the parameters outlined by Johnson and Temple (1980) (Table 1). Low flying aircraft, noise from Interstate 80 traffic, and gunshots in the area did not seem to have an adverse effect on the whooping cranes. The ground crew parked within 0.8 km of the feeding cranes but

Table 1. Comparison of riverine whooping crane roost characteristics between this sighting and ten previously documented sightings (Johnson and Temple 1980).

<u>Characteristic</u>	<u>Johnson and Temple (1980)</u>	<u>This site</u>
1. Channel width	155 to 365 + m	350 m
2. Flow	Slow, 1-4 mph	Not measured, relatively slow
3. Water depth	5 - 30 cm	10 - 13 cm
4. Vegetation	Unvegetated	Unvegetated
5. Substrate	Fine, usually sand	Fine sand
6. Horizontal visibility	Unobstructed view from bank to bank and at least 200 m upstream and downstream (a small portion of viewing area may be obstructed).	Unobstructed view from bank to bank (350 m), upstream and downstream view generally 300-350 m.
7. Overhead visibility	Open	Open
8. Proximity to feeding site	4.8 km for Platte River Valley sites	1 - 2.8 km
9. Isolation	Usually 0.4 km from human developments	0.2 - 0.8 km with wooded visual barrier
10. Sandbar characteristics	Sandbars near roost with 1-2° slope, less than 30 cm topographic relief, and no banks over a few cm.	Closest sandbar was 26 m with 1-2° slope, less than 5 cm topographic relief, and no high banks.

the vehicles' outline was broken by adjacent trees. The birds did not appear to be alarmed.

Between Overton and Grand Island, the Nebraska Game and Parks Commission (1983) has recommended a flow of 1700 cfs in the Platte River during the migration period to maintain whooping crane roosting habitat. Although the observed flows at the time of this sighting were below 1700 cfs, higher flows are necessary to provide for adequate whooping crane roosting habitat along much of the river channel in the Overton to Grand Island reach. The roost site described herein was located in a stretch of the river where all of the water flows essentially in a single channel. For this reason, adequate habitat was provided there at the 1260 cfs flow while in many other stretches of the river, where there are several major channels, the 1260 cfs flow is not adequate to provide whooping crane roosting habitat (see Currier and Eisel in prep).

These observations represent the ninth confirmed sighting in the Platte River

Valley and the largest group of whooping cranes confirmed there at least since 1942 (The Whooping Crane Recovery Team 1983). Their use of a site which had been mechanically cleared of woody vegetation reinforces the Platte River Trust's contention that roost sites can be restored for whooping cranes. We feel we can effectively manage and maintain habitat for this species; however, we have no assurance that adequate water will be left flowing in the Platte River if proposed water diversion projects are constructed.

ACKNOWLEDGMENTS

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