Site fidelity and movements of least terns and piping plovers along the Platte River, Nebraska

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Previous studies have examined site fidelity in piping plovers (Wilcox 1959) and least terns (Burger 1984). This paper discusses site fidelity and local movements of a population of least terns and piping plovers in the central Platte River Valley, NE, during 1984-1991.

The study area was an 80-mile reach of the Platte River from Lexington to Grand Island (Fig 1). Adult birds were captured on nests using drop traps. Chicks were banded as nestlings or fledglings. I began banding terns in 1984 and plovers in 1985, terminating banding of plovers in 1989 due to leg injuries resulting from the bands. Terns were banded through 1990.

Color banding with plastic leg bands began in 1986. Observations of color marked birds enabled me to ascertain local movements and dispersal patterns as well as site fidelity in subsequent years. Color-band loss did occur, which reduced my confidence in correctly identifying individuals in the field.

Banding

A total of 704 least terns (150 adults, 554 chicks) and 329 piping plovers (83 adults, 246 chicks) was banded. Of these, 339 terns (117 adults, 222 chicks) and 273 plovers (67 adults, 206 chicks) were color banded. That was 48% of the banded terns and 81% of the banded plovers.

Site fidelity

Distances of nesting birds from their banding origin extended from 0 to 170 miles for least terns (based on 163 sightings of 109 individuals) and from 0 to 125 miles for piping plovers (based on 71 sightings of 57 individuals). Five percent of the least terns and 14% of the piping plovers resighted were banded as chicks.

The same nest bowl was used by a pair of plovers at a site near Lexington in 1986 and 1987. It was not determined if it was the same pair. Twenty-eight percent of the terns returned to the colony where they were banded compared to 32% of the plovers. Forty-three percent of the adult plovers returned to the site where they were banded, whereas only 29% of the adult terns returned to their banding origin. However, tern chicks showed a stronger tendency towards natal site fidelity than plover chicks, 26% vs. 18% respectively.

Mate fidelity

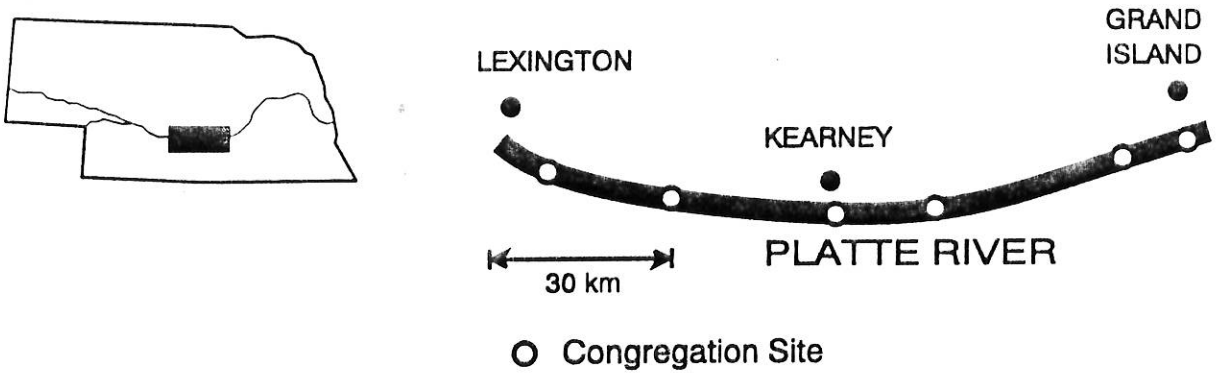
Least tern and piping plover pairs remained faithful within a season, but were generally unfaithful from year to year. I made 14 observations of five individual terns, all males, where both birds comprising a pair were identified. Only once did a pair remain faithful between years. That pair nested in 1985 and was located again in 1988 10.5 miles from their previous nest site.

Eleven observations of four individual piping plovers yielded similar results. In no case was a pair intact in subsequent years. Incest was not documented in either species.

Immigration, emigration

Eleven sightings of 10 banded terns have confirmed mixing of tern populations between Kansas and Nebraska and within the Platte River valley itself. An adult tern banded on a nest at Quivara National Wildlife Refuge, KS, in 1984 was captured by me on a nest near Kearney in 1987, 170 miles north of where it was banded. A tern chick that I banded at this same site in 1987 was recovered at a nest at Quivara in 1990.

Fig 1. Study area.



Three chicks banded on the lower Platte were later recaptured on nests in the central Platte, up to 125 miles from their natal colony. Conversely, one adult banded near Kearney in 1988 was found nesting on the lower Platte near Fremont in May 1989, 150 miles downstream from where it was banded. After successfully hatching its eggs, it was observed near Grand Island in July 1989.

Nine sightings of seven banded piping plovers confirmed mixing within the Platte River valley. Two plover chicks banded on the lower Platte were found nesting near Grand Island in 1990, 120 miles upstream of their natal colony. An adult banded near Keaney in 1986 nested there again in 1988. In 1989, this male nested 155 miles downstream and was found nesting near Grand Island in 1990. A chick banded southwest of Grand Island in 1986 was observed nesting 125 miles downstream near Ashland in 1989. Greg Wingfield (pers comm) captured a banded plover at McConaughy Reservoir in 1991 which was banded in the lower Platte River some 300 miles downstream.

Local movements, post-nesting dispersal

Sightings of color-banded least terns (n =54) and piping plovers (n=19) revealed their movement and dispersal patterns. In about 80% of the observations, birds moved from sand pit to riverine sites. Terns and plovers generally foraged within 1 mile of their nest site. Birds, especially terns, relied heavily on the river for foraging and loafing. Foraging movements from nests at sand pits to the river were readily observed at several sites and ranged from 0.25 to 1.5 miles.

Post-fledging chick movements were generally to the river from sand pits. The exception was when high flows forced the birds off the river to sand pits, as documented on two occasions.

Once the chicks attained flight, they would accompany their parents to the river. In 1990, one plover and one tern brood moved to the river from an adjacent sand pit prior to fledging. The plover chicks were less than 5 days of age and the tern chicks were about 7 days of age.

The Platte River not only provided vital nesting, loafing, and foraging habitat for terns and plovers but, perhaps more importantly, served as a post-nesting congregation or staging area.

Six congregation areas were noted; one of which was not a nesting site (Fig 1). These sites were used up to 30 days. The U.S. Highway 34 bridge southeast of Grand Island served as a congregation site from July 12 to August 4, 1989, hosting a maximum of 10 juveniles and eight adult terns on July 18. A maximum of 25 terns (12 juveniles, 13 adults) was observed on July 21, 1989, on Shoemaker Island. This site hosted terns from July 11 to August 10, 1989.

Terns traveled between 4 and 57 miles from where they nested to reach a congregation site. Con-

gregation areas for plovers were not observed.

Renesting

I documented 17 cases of renesting in least terns. In all cases the second nest contained two eggs. Renesting was stimulated by the loss of the original nest or brood shortly after hatching. The time between the loss of the first nest and the completion of the second clutch was between 5 and 33 days, although 78% occurred between 5 and 15 days.

Terns always moved to a new location to nest after losing their first nest. Distances to new nest sites ranged from 0.5 to 55 miles. In three cases when multiple nests were lost, pairs remained intact and renested at separate sites. In one case, at least four pairs renested together within 0.5 miles from where they lost their nests to predators.

I documented one instance of renesting in piping plovers. This female hatched a nest between June 12 and 20, 1985, and was found incubating a second clutch on June 28. This nest was within 200 yards of the first nest.

Longevity

The oldest least tern was banded as an adult in 1984 and was resighted again in 1991, making it 9 years of age at a minimum. Three plovers were at least 5 years of age. These figures were not maximum ages since field work was terminated at a time when banded birds still survived.

Management implications

Perhaps the most significant finding of this study was the importance of riverine habitat for nesting, foraging, post-fledging dispersal areas, and post-nesting congregation sites including birds nesting on sand pits. The need to maintain and restore suitable riverine habitat in close proximity (within 1.5 miles) to non-riverine nesting areas, coupled with adequate instream flows, cannot be overemphasized. An unobstructed channel at least 600 feet wide and 1 mile long would provide such habitat (Lingle 1988).

Mixing of populations for terns (Boyd and Thompson 1985, Smith and Renken 1990) and plovers (Wilcox 1959, Haig 1987) has been reported and has been further verified by this study for both species.

This points out the need to use census data cautiously, especially if statements regarding population trends include only a portion of their range. The mobility of both species within and between nesting seasons makes long-term population inferences even at a statewide level spurious at best.

A cooperative census effort throughout the entire range, similar to the 1991 international piping plover census, made on a periodic basis (3-5 years), is required to assess population trends with any degree of confidence.

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