

Winter Raptor Use of the Platte and North Platte River Valleys in South Central Nebraska

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ABSTRACT — Winter distribution and abundance of raptors were monitored within the Platte and North Platte river valleys. Data were collected along 265 km of census routes along the Platte and North Platte rivers during the winters of 1978-1979 and 1979-1980. Observations recorded during the second winter involved less observation time and were at somewhat different periods. There were 1574 sightings of 15 species representing 3 raptor families. Number of raptors observed on 54 days from 15 November to 13 February 1978-1979 was 48.3 per 100 km. In 20 days of observation from 5 December to 6 March 1979-1980, 39.7 raptors were observed per 100 km. Small mammal indices were 21 and 12 captures per 1000 trap nights during November 1978 and 1979, respectively. Raptors were sighted most frequently in riverine habitat and least in pasture and tilled fields. American kestrels (*Falco sparverius*) (11.1 individuals/100 km), red-tailed hawks (*Buteo jamaicensis*) (9.9), and bald eagles (*Haliaeetus leucocephalus*) (9.6) were the most frequently sighted raptors. Northern harrier (*Circus cyaneus*), rough-legged hawk (*B. lagopus*), and prairie falcon (*F. mexicanus*) sightings were 3.4, 3.4, and 1.7, respectively. Nine species were seen at a frequency of less than 1.0 individuals/100 km. Improved foraging conditions throughout the region resulted in fewer raptors sighted in 1979-1980.

The importance of the Platte River Valley of Nebraska as a majoring staging area and breeding site for numerous species of migratory birds is well documented (Currier et al. 1985). Much less information is available on the distribution and abundance of wintering raptors. The Platte River Valley is currently undergoing major changes in land use, including habitat preservation efforts undertaken by the Platte River Whooping Crane Trust. More detailed information is needed to predict the effects of human activities that may alter upland and riparian habitat, and to develop guidelines for habitat management. This study was conducted to provide baseline data on the distribution, abundance, and habitat use of diurnal birds of prey during the winters of 1978-1979 and 1979-1980. A small mammal prey index was used to monitor prey abundance.

STUDY AREA

The study area extended upstream from the Chapman bridge on the Platte River to Kingsley Dam on the North Platte River, a distance of 325 km. Raptor survey routes sampled about 81% (265 km) of this distance and were restricted to within 3 km of the main channels (Fig. 1). The approximate area covered

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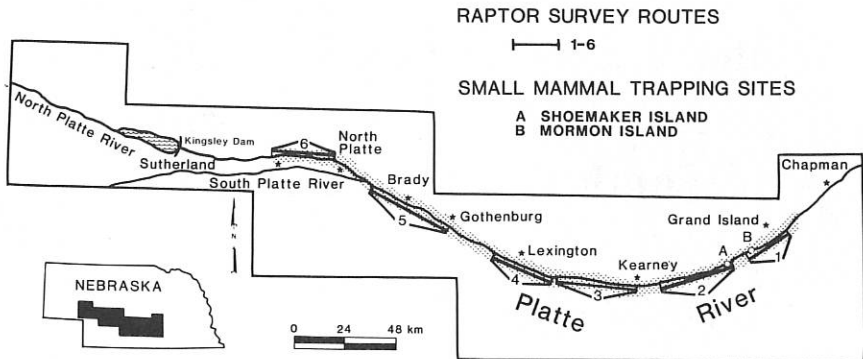


Figure 1. The Platte River Raptor study area (855 km²) showing survey routes and small mammal trapping sites.

by survey routes was 85,470 ha; 40% was tilled cropland, 26% was pasture, 10% was hay, 13% was shelterbelts/woodlots, and 5% was riverine which included open river channel, herbaceous riverine islands, and riparian woodlands. The remaining 7% of the area was roads, residential areas, and irrigation canals. Habitat types were digitized into a geographical information system database using 1982 aerial photographs (Platte River Whooping Crane Maintenance Trust, unpubl. data). In the counties encompassing the study area, corn composed 75% of the tilled crops, with wheat, sorghum, and other small grains forming the remaining 25% (U.S. Department of Agriculture 1978). Of agricultural lands, 83% was in tilled crops and the remaining 17% was hay. Cattle accounted for 71% (over 1 million head) of the livestock production in this area and hogs over 25%.

Most of the Platte Valley is underlain by alluvial deposits of sand, loam and gravel (Williams 1978). Dominant riparian woodland vegetation included eastern plains cottonwood (*Populus deltoides*), red cedar (*Juniperus virginiana*), rough-leaved dogwood (*Cornus drummondii*), Russian olive (*Elaeagnus angustifolia*), coyote willow (*Salix exigua*), and false indigo (*Amorpha fruticosa*). Smooth brome (*Bromus inermis*), bluegrass (*Poa pratensis*), and a variety of native grasses and forbs typical of mixed-grass prairie comprised the herbaceous cover (Currier 1982).

From east to west on the study area, the elevation increases from 540 to 952 m above mean sea level (from U.S. Geological Survey topographical maps), the river channel gradually narrows, and pasture area and small grain and cattle production increase. Mean annual precipitation decreases from about 58 cm at Grand Island to 46 cm at Ogallala (about 15 km south of Kingsley Dam) (U.S. Department of Commerce 1978).

Weather conditions differed markedly during the winters of 1979 and 1980 (U.S. Department of Commerce 1978-1980). The winter of 1979 was among the coldest on record, with average January temperatures 8.2° below normal and precipitation for November through March 130.8 mm above normal. In contrast, the winter of 1980 was relatively mild, with January temperatures averaging 0.4° below normal and precipitation for November through March 58.7 mm

above normal. Most of the precipitation in 1979 was in the form of snow, which blanketed the study area nearly continuously. Much of the 1980 precipitation came as rain, and this, with intermittent thawing periods, melted the limited snow cover.

METHODS

Roadside counts of raptors were made by two people from a vehicle along six survey routes established within areas adjacent to the river (Fig. 1 and Appendix A). Route length averaged 44.0 km, varied from 38 to 56 km, and totaled 265 km. Counts occurred between 0930 and 1430 hr, with the observers stopping at 1.6-km intervals to scan for raptors with binoculars. Only birds seen within a 1.6-km radius were recorded. Raptors sighted while driving were recorded as well. The number of raptors sighted per count was recorded for each route. There were 189.4 hr of observation for all counts combined. All bridges that traversed the Platte River along the survey routes were crossed to search for raptors, especially bald eagles (*Haliaeetus leucocephalus*). During the winter of 1978-1979 (hereinafter 1979), one count per route was conducted on 57 days at about 10-day intervals and varying from 6 to 15 days beginning 15 November 1978 and ending 13 February 1979 for a total nine counts per route. During the winter of 1979-1980 (hereinafter 1980), one count per route was run monthly beginning 5 December 1979 and ending 6 March 1980, for a total of four counts per route. Census dates are given in Appendix B. A total of 3447 km was driven, 2386 in 1979 and 1061 in 1980.

Raptor sightings were recorded by species, habitat type, date, and location. Location of each bird was plotted on a reduced 7½ minute U.S. Geological Survey map. Age, sex, and color phase were noted if discernable. The habitat type used was recorded at the time of initial observation. I assumed that raptor presence within a habitat reflected use of that habitat. A habitat preference index was developed for each species by dividing the percent occurrence of a species in a particular habitat by the percent availability of that habitat. This provided a simple technique to establish preference without undertaking a rigorous time-budget analysis and/or radio telemetry study for each species. Habitat types were: riparian woodland, which included river channel and herbaceous island; shelterbelt/woodlot; pasture; tilled field; mowed field; and other. Other included farmsteads, irrigation canals, and roadsides.

Rough-legged hawks (*Buteo lagopus*) were recorded by particular color phase. Color phases were as follows: (1) light phase: breast light or slightly mottled with no solid black band; (2) intermediate phase: solid black breast band prominent against a light background; (3) dark phase: breast and flanks completely dark, breast band barely visible or indistinguishable.

A small mammal population index was derived from kill-trapping on two sampling sites in November of each year. The results were expressed as mammals captured per 1000 trap nights. Habitats selected at each sampling site included native hay and mesic pasture. A xeric pasture was sampled additionally at one site. Sedges (*Carex* spp.) were predominant on the mesic areas, and downy brome (*Bromus tectorum*) on the xeric site. One grid of 75 traps each (three traps at each of 25 stations) was set for three nights in each habitat for a total

of 225 trap nights per habitat type. A grid was comprised of three parallel lines, set 20 m apart, having eight, eight and nine stations, respectively. A station was placed every 10 m along each line. The traps were baited with an oatmeal-peanut butter mixture and checked daily. Catches were removed and traps reset. A total of 1125 traps were run each year.

RESULTS

Raptor Distribution, Numbers, and Habitat Relationships

Twelve species of raptors representing three families were sighted during the raptor surveys. Three species, merlin (*Falco columbarius*), eastern screech-owl (*Otus asio*), and short-eared owl (*Asio flammeus*), were seen incidental to the survey route counts. Buteos were seen most frequently and comprised 22% of the sightings; Strigidae was the least encountered family (< 1% of the sightings during both years). The paucity of owl sightings was due to their nocturnal habits, which made sightings unlikely during diurnal surveys. A total of 1153 raptor sightings ($\bar{x} = 47.5$, SD 11.6 sightings/100 km) were made during the winter of 1979, and 421 sightings ($\bar{x} = 39.3$, SD 12.0 sightings/100 km) were made during the winter of 1980. These numbers include unidentified raptors.

Raptor sightings varied substantially among survey areas (Fig. 2A). For example, in 1979, sightings ranged from 65 (Route 4) to 32 (Route 1) raptors/100 km. The chronology of raptor sightings along these routes differed markedly (Fig. 2B). The peak found during Count 2 (27 November-1 December) probably resulted from a fall migratory movement. Thereafter, the cumulative totals gradually declined until Count 7, after which numbers leveled off for the duration of the study and presumably reflected a stable winter population. The peak in raptors observed during Count 3 in 1980 (Fig. 2B) was the result of an influx of bald eagles.

Generally, fewer raptors per 100 km were seen in 1980. The exceptions were bald eagles, which increased 51%, and rough-legged hawks, which increased 6%. There was an 18% decline in mean number of raptor sightings in 1980 with the largest decrease being among northern harriers (*Circus cyaneus*) (87%).

SPECIES ACCOUNTS

American kestrel (*Falco sparverius*). — This small falcon was the most abundant winter resident observed (Table 1). Their distribution was similar throughout the study area in both years (Fig. 3A), with Route 5 having the highest numbers. Kestrel sightings declined from fall to winter during 1979, but were relatively stable during 1980 (Fig. 3B). The male to female sex ratio was 1.2:1 in 1979 and 1.3:1 in 1980. They were sighted across a broad range of habitats during both years (Table 2).

Red-tailed hawk (*Buteo jamaicensis*). — This species was the second most common raptor (Table 1). Its distribution was fairly uniform throughout the study area and it was a common permanent resident (Fig. 4A). Of the 225 red-tailed hawk sightings where age was determined, 188 (84%) were adults and 37 (16%) were subadults. The overall adult:subadult ratio was 7.8:1; however,

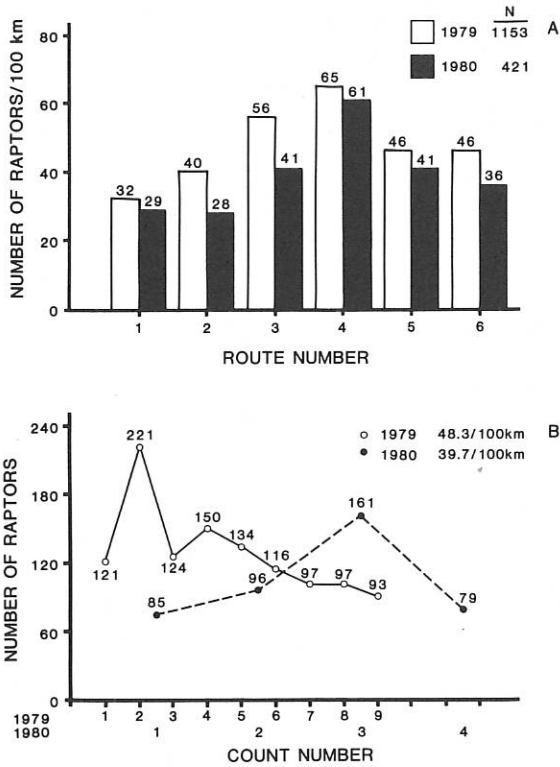


Figure 2. Distribution (A) and abundance (B) of raptors observed on survey routes during 1979 and 1980 (see Appendix B for census dates). These totals include unidentified raptors.

yearly differences were apparent. In 1979, the age ratio was 4.4:1 and in 1980 it was 11.8:1. Of 307 sightings, 299 (97%) were light phase and 8 (3%) were dark phase.

Red-tailed hawks were sighted most frequently in riparian woodlands and shelterbelts (Table 2). There was a 21% increase of sightings in mowed fields and pasture in 1980. Milder weather conditions in 1980 enabled exploitation of foods found in open areas that were inaccessible because of snow conditions the previous winter.

Bald eagle. — This species ranked third in relative abundance (Table 1) and had a clumped distribution (Fig. 5A). Riverine conditions influenced their distribution. Warm-water discharge from a steam generated powerplant 11 km southeast of Lexington maintained open water and provided foraging areas on the river on Route 4, accounting for their high use there.

The adult:subadult age ratio of 326 sightings was 2.1:1. Age ratios were 2.6:1 in 1979 and 1.6:1 in 1980. Sixty-nine percent of the bald eagles occurred in

Table 1. Raptor occurrence in the Platte and North Platte river valleys during the winters of 1979 and 1980.

Species	Individuals/100 km	
	1979	1980
American kestrel	11.4 (273) ¹	10.5 (111)
Red-tailed hawk	10.8 (258)	8.0 (85)
Bald eagle	8.3 (199)	12.5 (133)
Northern harrier	4.6 (111)	0.6 (6)
Rough-legged hawk	3.3 (77)	3.5 (37)
Prairie falcon	1.8 (44)	1.2 (13)
Ferruginous hawk	0.5 (13)	0.3 (3)
Sharp-shinned hawk	0.4 (9)	0.6 (6)
Golden eagle	0.3 (8)	0.1 (1)
Distance driven (km)	2386	1061

¹Total number of individuals sighted during counts.

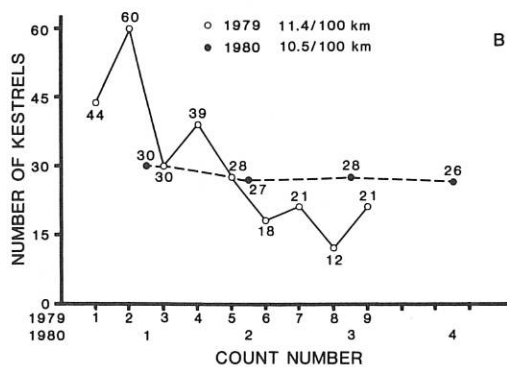
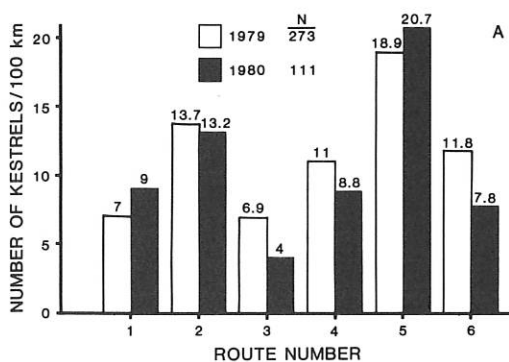


Figure 3. American kestrel distribution (A) and abundance (B) on survey routes during 1979 and 1980 (see Appendix B for census dates).

Table 2. Habitat use and preference by raptors during the winters of 1979 and 1980.

	Riverine (4.9%)*		Woodlot/ Shelterbelt (12.6%)		Pasture (25.9%)		Tilled (40.4%)		Mowed (9.6%)		Other (6.6%)	
	% Use	% Pref.	% Use	% Pref.	% Use	% Pref.	% Use	% Pref.	% Use	% Pref.	% Use	% Pref.
Bald eagle												
1979	67	13.6	11	0.9	2	0.1	10	0.2	< 1	<0.1	10	1.6
1980	71	14.5	2	0.2	2	0.1	12	0.3	4	0.4	8	1.2
N. harrier												
1979	15	3.1	3	0.2	14	0.5	27	0.7	14	1.4	26	4.1
1980	33	6.7	0	0	33	1.3	17	0.4	17	1.8	0	0
Red-tailed hawk												
1979	56	11.4	29	2.3	2	0.1	6	0.1	2	0.2	5	0.8
1980	55	11.2	11	0.9	9	0.3	6	0.1	16	1.7	2	0.3
Ferruginous hawk												
1979	18	3.4	36	2.8	0	0	9	0.2	27	2.8	9	1.4
1980	0	0	0	0	0	0	50	1.2	50	5.2	0	0
Rough-legged hawk												
1979	12	2.4	29	2.3	11	0.4	24	0.6	14	1.4	8	1.2
1980	20	4.1	14	1.1	28	1.1	6	0.1	28	2.9	3	0.5
American kestrel												
1979	13	2.6	20	1.6	9	0.3	24	0.6	14	1.4	18	2.8
1980	9	1.8	6	0.5	11	0.4	44	1.1	24	2.5	6	0.9
Prairie falcon												
1979	7	1.4	10	0.8	10	0.4	23	0.6	37	3.8	13	2.0
1980	15	3.1	8	0.6	15	0.6	38	0.9	15	1.6	8	1.2
All species												
1979	39	7.9	19	1.5	6	0.2	15	0.4	8	0.8	12	1.9
1980	45	9.2	6	0.5	9	0.3	19	0.5	15	1.6	6	0.9

*Habitat percentages based on September 1982 aerial photography (Platte River Whooping Crane Trust, unpubl. data).

riverine habitat, with a 4% variation in riverine use between years (Table 2). Increased occurrence in riparian woodlands in 1980 was believed to be due to milder weather conditions that resulted in an ice-free channel, thus allowing eagles access to fish, a principal prey. In 1979, because of severe cold and freezing of the river channels, bald eagles were forced to feed on nonpiscine prey (Lingle and Krapu 1986).

Northern harrier. — This species ranked fourth in abundance (Table 1). Route 3 had the greatest number (Fig. 6A). Harriers were apparently late fall migrants, as 51% of the sightings occurred by the first week of December (Fig. 6B). Thereafter, numbers dropped and the species was considered an uncommon and local winter resident. Immatures or adult females accounted for 73% (60) of

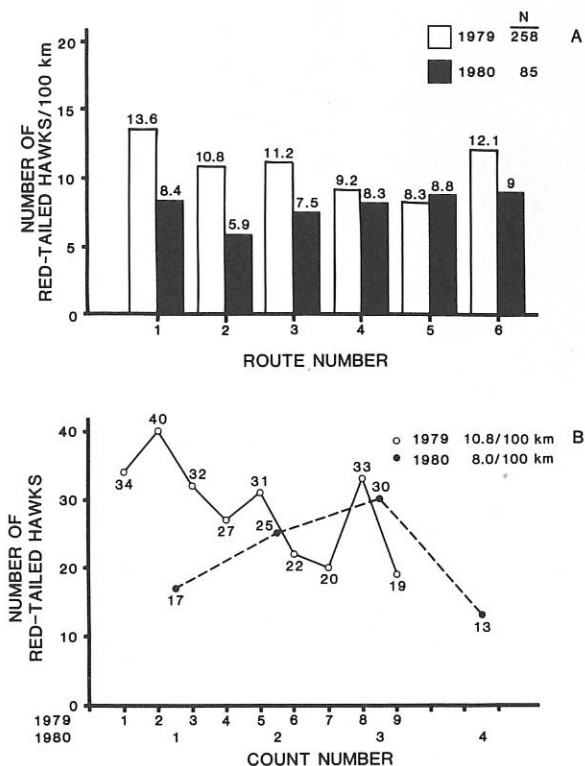


Figure 4. Red-tailed hawk distribution (A) and abundance (B) on survey routes during 1979 and 1980 (see Appendix B for census dates).

the sightings and adult males 27%. Harriers used a variety of habitats during both years (Table 2).

Rough-legged hawk. — This species ranked fifth in abundance (Table 1) and was most prevalent on Route 6 (Fig. 7A). Of sightings where color phase was determined, 7% (7) were light phase, 70% (76) were intermediate phase, and 23% (25) were dark phase. Rough-legged hawks were sighted more frequently in pastures than were other raptors (Table 2). Pasture and mowed field occurrence rose 31% in 1980, probably due to milder weather conditions.

Prairie falcon (*Falco mexicanus*). — This species was an uncommon but regular winter resident and ranked sixth in abundance (Table 1). Distribution varied among routes and between years (Fig. 8). Prairie falcons were sighted in open habitats 70% of the time (Table 2).

Other raptors. — Ferruginous hawks (*Buteo regalis*) occurred primarily in the western half of the study area and were uncommon and local in occurrence. Of 11 sightings, 10 (91%) were light phase and 1 (10%) was dark phase. They were most often seen in mowed fields and shelterbelts. Ferruginous hawks preyed

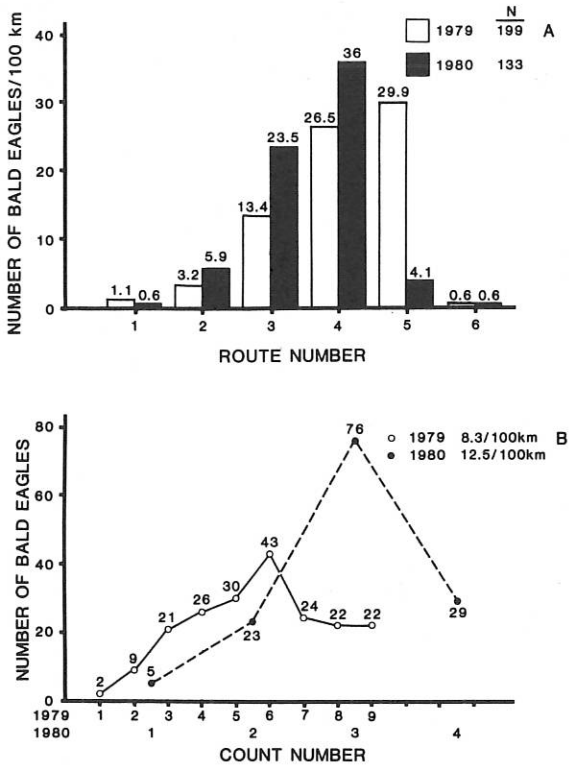


Figure 5. Bald eagle distribution (A) and abundance (B) on survey routes during 1979 and 1980 (see Appendix B for census dates).

on mallards (*Anas platyrhynchos*) during both winters and were kleptoparasitized commonly by bald eagles (Jorde and Lingle 1988).

The sharp-shinned hawk (*Accipiter striatus*) was the only accipiter observed in both years. This species was most often seen on Route 5. It was rarely seen, due in part to its habit of seeking concealment in wooded areas.

Golden eagles (*Aquila chrysaetos*) were sighted on nine occasions during the censuses (Table 1). Seven were subadults and two were adults. One adult was observed capturing a female mallard in flight. The bird stooped at a large flock of feeding mallards, which took flight with the eagle in pursuit. It grasped the mallard with its talons while rolling sideways in midair, dropped to the ground, then immediately began to feed on the struggling duck.

Great horned owls (*Bubo virginianus*) were observed twice on the survey routes. The species was considered a common resident but was rarely seen because of their crepuscular and nocturnal activity period.

No short-eared owls were observed on routes; however, nine were sighted incidentally. Of these, four were in pastures and two were in tilled fields. The Cooper's hawk (*Accipiter cooperii*) and northern goshawk (*A. gentilis*) were

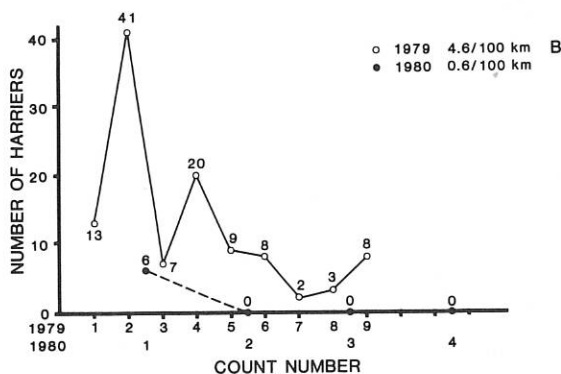
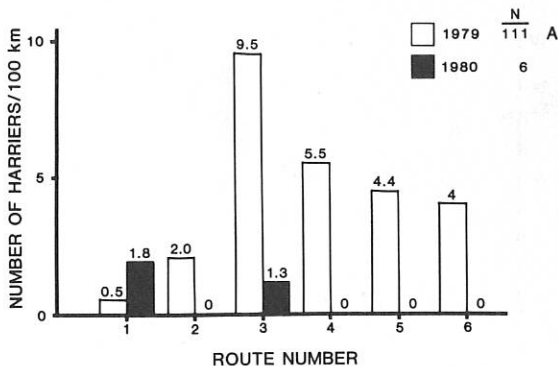


Figure 6. Northern harrier distribution (A) and abundance (B) on survey routes during 1979 and 1980 (see Appendix B for census dates).

observed only once each on the routes. A merlin and an eastern screech-owl were sighted as incidentals. Their habitat of remaining in wooded areas greatly reduced the chance of an encounter. Cooper's hawk, merlin, and eastern screech-owl were considered rare, although the eastern screech-owl was probably more common than this study reflected. Northern goshawk was also rare; however, this species is irruptive in Nebraska during some years.

Small Mammal Populations

The small mammal index declined from 21 mammals/1000 trap nights in November 1978 to 12 in November 1979 (Table 3). This index indicates intermediate small mammal abundance in 1978-1979 and low abundance in 1979-1980 according to the criteria in Hamerstrom et al. (1985). The greatest decline occurred in native hay at Shoemaker Island, 31 in 1978 to 0 in 1979 (Table 3). This index may not be representative of the entire study area, so caution must be used in interpreting these data.

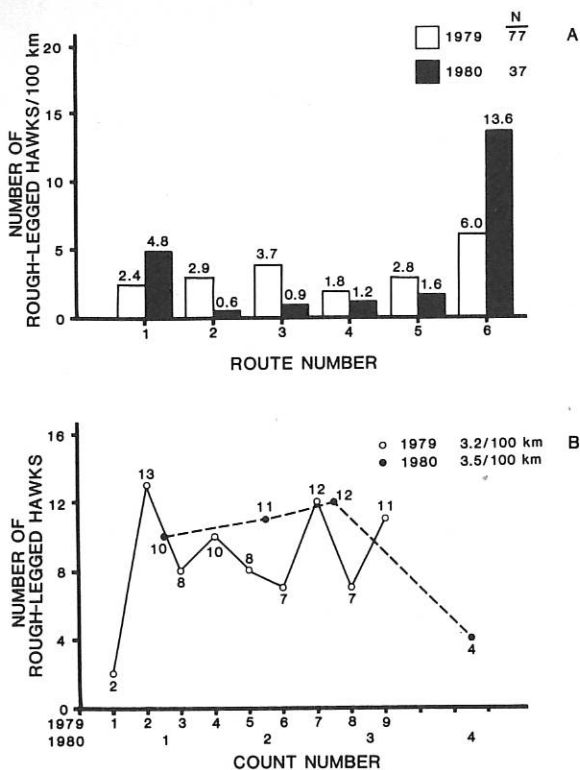


Figure 7. Rough-legged hawk distribution (A) and abundance (B) on survey routes during 1979 and 1980 (see Appendix B for census dates).

DISCUSSION

Winter raptor occurrence along the Platte and North Platte rivers was higher than surveys conducted in other parts of Nebraska and northeastern Colorado (Table 4). Although the effects of weather may have influenced annual occurrence among the various locations, a more plausible explanation for higher numbers in this study was the method in which the study area was surveyed. I concentrated search efforts along river bordered by riparian woodland for its entire length, whereas other studies covered areas with more open upland prairie. In general, fewer raptors would be expected to winter in open prairies at this latitude; however, golden eagles and rough-legged hawks had a higher occurrence in the short-grass prairie of northeastern Colorado (Table 4). Conversely, bald eagle and American kestrel occurrence was highest on the Platte River study area. Numbers of wintering red-tailed hawks in this study (9.9 birds/100 km) were similar to those found in eastern Kansas during 1953-1963, where they averaged 8 birds/100 km (Fitch and Bare 1978).

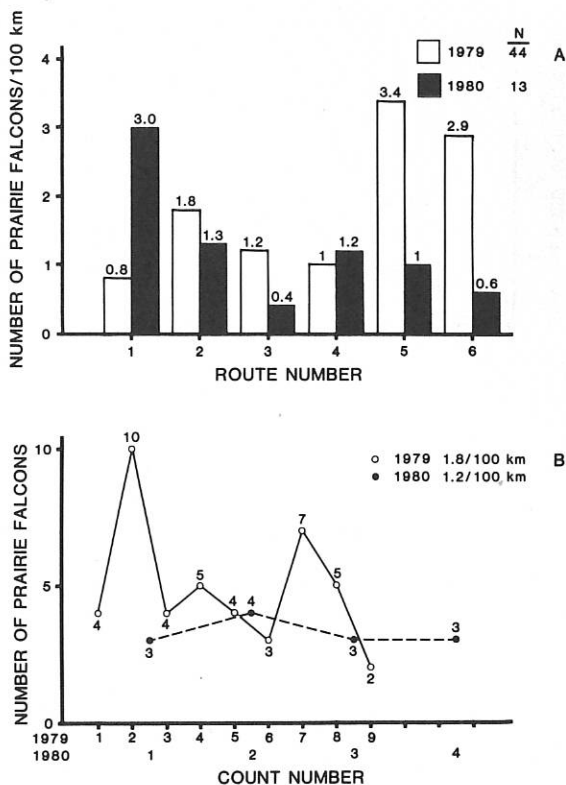


Figure 8. Prairie falcon distribution (A) and abundance (B) on survey routes during 1979 and 1980 (see Appendix B for census dates).

Rough-legged hawks and northern harriers were sighted most frequently in open pastures and fields. In the Nebraska panhandle, cropland was the preferred habitat for these species (Mathisen and Mathisen 1968) (Table 4). Schnell (1968) found no preference by rough-legged hawks for corn stubble and grassland in an Illinois study, although plowed fields were avoided. I found open pastures and fields were used more by rough-legged hawks and wooded areas were used more by red-tailed hawks (Table 2).

Small mammals are the principal food of several of the raptors wintering on the study area, including red-tailed hawks (Peterson 1979, Korschgen and Stuart 1972, Craighead and Craighead 1956); northern harriers (Randall 1940, Craighead and Craighead 1956, Hamerstrom 1979); American kestrels (Heintzelman 1964, Craighead and Craighead 1956); and wintering rough-legged hawks (Weller 1964, Craighead and Craighead 1956). Densities of several species of raptors during winter have been shown to vary with abundance of rodents. In New York, Bart (1977) reported wintering red-tailed hawk numbers ranging from 1.6 hawks/100 km in poor meadow vole (*Microtus pennsylvanicus*) habitat (based on 186 km) to 219 in good vole habitat (based on 4 km). In Wisconsin,

Table 3. Small mammal indices of habitats on two Platte River Valley sample areas.

Location	November 1978		November 1979	
	Trap Nights	Number Removed ¹	Trap Nights	Number Removed ¹
Mormon Island				
Native hay	225	9	225	22
Mesic pasture	225	9	225	4
Sub-total	450	9	450	13
Shoemaker Island				
Native hay	225	31	225	0
Mesic pasture	225	27	225	22
Xeric pasture	225	31	225	13
Sub-total	675	30	675	12
Total	1125	21	1125	12

¹Based on 1000 trap nights.

Hamerstrom et al. (1985) found a breeding northern harrier population closely mirrored the population cycle of meadow voles. Craighead and Craighead (1956) reported about 50 raptors/100 km (extrapolated from roadside count data) on a study area in southern Michigan during the 1946 winter, a "high vole density" year. During the subsequent low vole density years of 1947-1949, raptor numbers declined to 19, 12, and 19 raptors/100 km, respectively.

Changes in the habitat within the Platte River Basin have been quantified by Currier et al. (1985). Essentially the area has transformed from an open riverbed bordered by marsh and tall-grass prairie prior to European settlement to a floodplain forest bordered by intensively farmed croplands. Reduced flows in the Platte River due to water diversions for irrigation and hydropower have caused this change. The net result of habitat changes on the guild of raptors that winter here has generally been beneficial at least in terms of species composition and abundance. Although comparative data are few, some insight on this point may be gained by examining data collected by Craighead and Craighead (1956). Counts on 1 February 1947 tallied 5 hawks/100 km near Maxwell (14 km west of Brady) and 10 hawks/100 km near Kearney, NE. During the same season and areas in my study, 29 and 60 hawks/100 km (1979) and 54 and 74 (1980) were recorded, a six to elevenfold increase in occurrence. This increase in suitable raptor wintering habitat has come at the expense of detrimental effects on other migratory bird species dependent on the Platte River Basin (Currier et al. 1985).

Table 4. Raptor numbers (expressed as birds/100 km) from selected surveys as compared to this study.

Species	Northeastern Colorado Nov.-Feb. 1969 ^a	Nebraska Panhandle Nov.-Mar. 1957-59 ^b	Nebraska Nov.-Mar. 1972,1974 ^c	Present Study ^d
Bald eagle	0	0	0-1.5	9.6
Northern harrier	3.1	0.4-0.9	0.2-0.8	3.4
Sharp-shinned hawk	0	0	0	0.4
Cooper's hawk	0	0	0-<0.1	<0.1
Northern goshawk	0	0	0-<0.1	<0.1
Red-tailed hawk	0	0-<0.1	<0.1-2.0	9.9
Ferruginous hawk	1.7	0	0	0.5
Rough-legged hawk	4.5	1.2-2.0	0-0.7	3.4
Golden eagle	8.8	0.2-0.7	0-<0.1	0.2
American kestrel	0	<0.1-0.1	<0.1-0.1	11.1
Prairie falcon	0.7	0	0-<0.1	1.7
Great horned owl	No data	No data	0	<0.1
All species	20.2	2-4	1-4	45.6

^aRyder (1969).

^bMathisen and Mathisen (1968).

^cLock (pers. commun.).

^d1979 and 1980 data combined.

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APPENDIX A
RAPTOR SURVEY ROUTE LOCATIONS¹

- Route 1 — 1.6 km northwest of the U.S. 34 highway bridge westward to the Alda bridge (41.5 km).
 Route 2 — Wood River bridge westward to about 2.4 km west of the Gibbon bridge (38.0 km).
 Route 3 — Kearney bridge westward to the Overton bridge (56.4 km).
 Route 4 — 0.8 km west of the Overton bridge westward to the Darr bridge (42.3 km).
 Route 5 — Gothenburg bridge westward to the Maxwell bridge (48.4 km).
 Route 6 — 0.8 km west of Highway 83 westward to Sutherland bridge (along the north side of the North Platte River) (38.6 km).

¹Routes 1-5 were located on the south side of the Platte River, staying as close to the river channel as possible (Fig. 1).

APPENDIX B
INCLUSIVE COUNT DATES

<u>Count number</u>	<u>1978-79</u>	<u>1979-80</u>
1	15-22 November	5-12 December
2	27 November-1 December	3-7 January
3	7-13 December	4-6 February
4	18-21 December	3-6 March
5	28 December-4 January	
6	8-12 January	
7	18-26 January	
8	29 January-2 February	
9	8-13 February	