

NIGHTHAWKS

In The City

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Although few native birds thrive in man-altered environments, others have spread into previously unoccupied regions and some species concentrate in prairie towns and cities. Such artificial habitats seasonally harbor better than 10 regularly breeding species, including the Common Nighthawk. It doesn't necessarily follow, however, that larger broods are raised in cities than in natural areas.

With the Nighthawk, the time for incubating and fledging is about 43 days compared to an average of 25 days for the small passerines (perching birds) commonly nesting in cities and towns.^{1 4 5 6 7 8 9 12} . Partly offsetting this seeming disadvantage is the young Nighthawk's greater flight power when it leaves the nest site. Excepting swallows and martins, young passerines we have seen departing the nest lack the ability to maintain level flight, let alone gain altitude. The Nighthawk can gain altitude on its first sortie, an obvious advantage as many nest sites adjoin busy streets.⁴ However, as the site is usually a roof, some preliminary flying may be done along it prior to the initial sortie.

Most urban-dwelling native birds nest in bushes and trees rather than in or on man-made structures. The Nighthawk is an exception. Most of its nests, if one can call them that, are on flat roofs — perhaps the safest place in town for protection from earth-bound predators, and maybe also safest from aerial predators, which are uncommon over the city during the breeding season. Another interesting characteristic is the location of the nest site. Of the native birds breeding in Saskatoon only the Nighthawk concentrates in the downtown district, rather than in residential areas. Of the more than 300 birds indigenous to Saskatchewan, the Common Nighthawk is the sole species attracted to the city core — which doesn't infer much for downtown as habitat: suitable for just three animals, Nighthawk, rat and man (and people are questioning the last).

The key to the location of the nest is the flat gravelled roof, a characteristic of cities. It reproduces the primary features of the bird's natural nest site, a generally flattish, largely vegetation-free, open locale.¹⁰

Study Area

Our main objective in our little study in the summer of 1971 was to estimate the number of breeding pairs of Common Nighthawks and their distribution within the limits of the City of Saskatoon. The variety of areas offered some interesting comparisons of occupancy by Nighthawks:

SUTHERLAND, once an independent town, now incorporated, is still isolated from the rest of the city by university farm lands and a highway right of way. It retains the physical characteristics of a large prairie town.

FIELD A is essentially in its original state. The soil is gravelly with numerous stones and boulders on the surface and the vegetation consists of short, sparse cover with a few small scattered patches of stunted poplars and bushes. There are no buildings in this field which is in the northeast rim of the city. None of the other open fields within the city limits have these surface conditions, and cursory check indicated that only Field A had nighthawks on range.

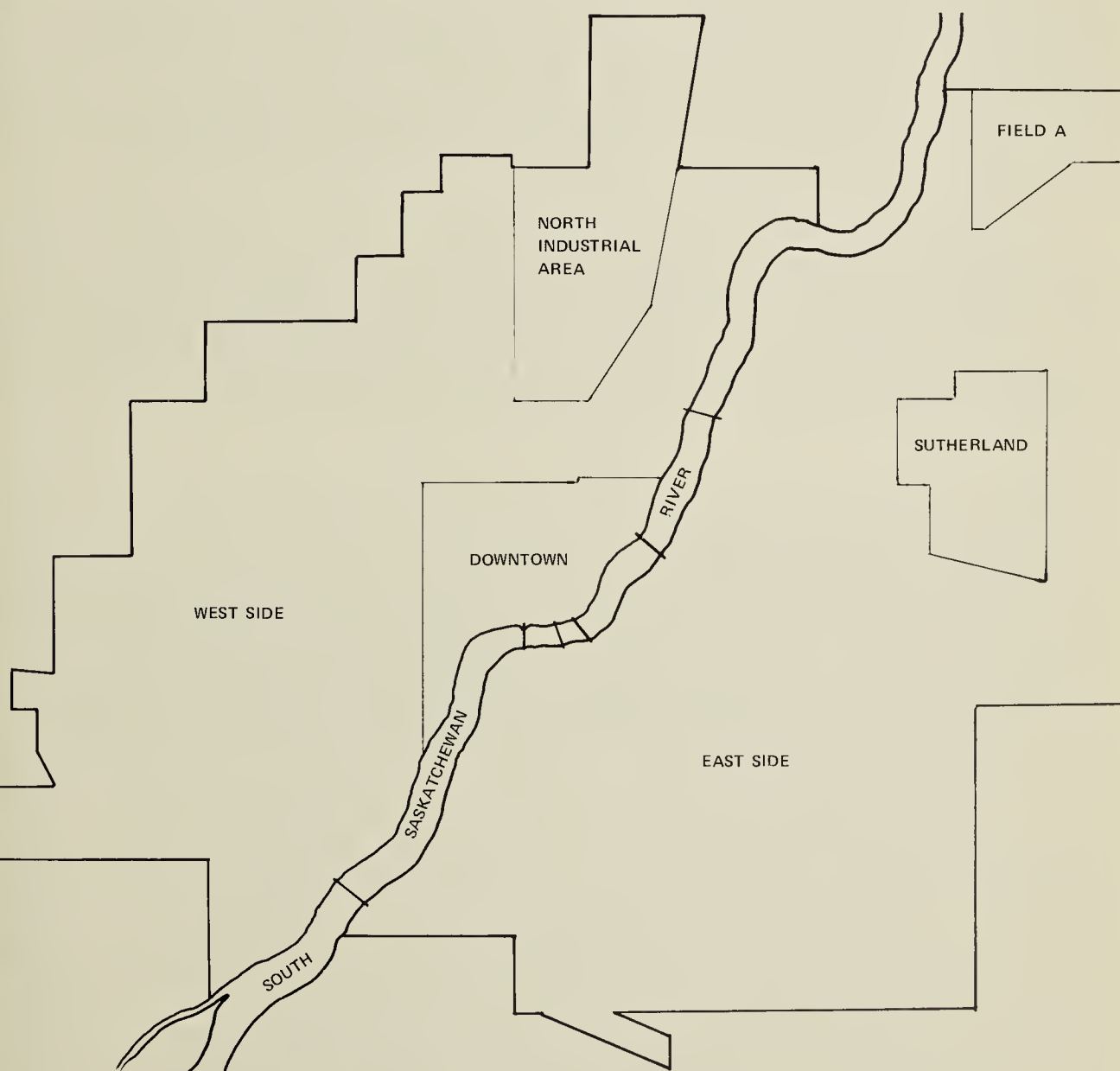
The **NORTH INDUSTRIAL AREA** has a number of buildings with flat roofs but most of the area is ground surface, much of which is devoid of vegetative cover. It has few trees.

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DOWNTOWN was that area containing Nighthawk home ranges adjoined on at least two sides by other ranges, that is, where the concentration of birds was the greatest. This was the district bounded by 19th Street, Spadina Crescent, Queen Street (28th Street) and Avenue J. It is flanked on the east and south by the South Saskatchewan River. The area is largely commercial, with some institutional, light industrial, warehouse and apartment buildings and, therefore, numerous flat roofs. There are some pockets of older housing and a few small open areas. Except for several blocks in the core and a recently redeveloped area, it is reasonably well wooded.

EAST SIDE is the City east of the South Saskatchewan River, excepting Sutherland and Field A.

WEST SIDE is the district west of the River, excepting the Downtown and North Industrial Areas. Here and there on their outskirts are large fields that, as noted previously, were devoid of Nighthawks. Except for these undeveloped parcels, they are similar to other prairie residential suburbs: mostly housing, including apartments, with some commercial and institutional sites. Typically, the majority of the apartment and commercial buildings have flat roofs.



Map of Saskatoon showing areas used in 1971 Nighthawk survey.

On the Sources of the Observations

Remarks about the occurrence of Nighthawks are largely based on observations my wife and I made mainly between June 19 and August 27, 1971. Other observations were kindly provided by Mrs. J. B. O'Neil, Miss L. P. Strom, J. Frank Roy, Stan J. Shadick, Jim D. Hogg, Wayne C. Harris and by J. Bernie Gollop who also gave us helpful suggestions. Some reference was made to the Saskatoon Natural History Society's bird survey of 1966-70, especially reports by W. S. Richards.

Random sightings by ourselves and others in the course of ordinary travel around town yielded a general picture on the number and location of birds and, in a few instances, pointed to centres of activity and to range boundaries. In our case modest adjustments in routes and times considerably extended the coverage.

However, did a Nighthawk in one block one night and in the next another time mean one male or two? Were birds being missed in the random coverage? Answering these questions meant surveying the whole town, driving at slow to moderate speeds wherever possible on parallel routes two or three blocks apart. We listened for "peent" calls and stopped where necessary for good soundings. The city was covered twice — sounds like a tall order but it wasn't, three nights sufficing for each of the two big districts. A few doubtful places were visited three times. The survey essentially completed the picture on the birds' whereabouts and provided further delineation of home ranges.

Downtown was then checked by traverses one block apart driven at the highest practical speed (the DARL technique: "damn, another red light"). Though Nighthawks can be swift, the male aloft and "peenting" meanders and hesitates so much his actual course that speed is usually quite low. If the traverse was made with dispatch and attention paid to the direction from which sounds came, one could differentiate between birds. To offset the risk of missing a bird, traverses were repeated when traffic was light.

Plotting the results of the one random and two more or less systematic surveys on a map showed places where it was unclear whether one or two ranges existed. These were resolved by going to likely lines of demarcation between ranges and making direct observations. Ten minutes was usually enough if birds were active. As this technique was less successful among taller buildings in the core of the Downtown area, it was used there in only a few cases.

Results

There were about 48 Nighthawk home ranges within the City limits, distributed among the six districts as shown in Table 1.

Downtown had the greatest number and density of birds. On a good Nighthawk evening they could be heard every second or third block. Why this concentration where there is such a large amount of building, concrete and asphalt, and where vegetation is minimal? The initial guess, proximity to the river bank for food supply, did not fit the facts. Density was as great away from the river as near it. Size of home range precluded colonial nesting — the Common Nighthawk is known also to nest in both colonial and semi-colonial situations, but the nests then are yards, not blocks, apart.^{4 11} Territorial defense seemed to be absolute in the few instances of boundary challenge seen; Nighthawks were not observed to cross territorial boundaries. No corresponding concentration existed on the opposite side of the river. Furthermore, only twice was a bird seen or heard over the river during the height of the breeding season. The growing suspicion that the concentration downtown was mainly due to the number of flat roofs available for nest sites was confirmed when we read J. T. Armstrong's report of a similar study in Detroit.³ His conclusion: density of flat roofs is the primary factor in the selection of home ranges; large trees for day-roosting by males and vegetation for the production of flying insects for food are of secondary importance.

Tall buildings may not be preferred nest sites — at least four of the nest sites were not on the highest roofs in the ranges.

A nest was found on the ground on railway right-of-way within the city in 1964, and a home range existed there in 1971. Yet a short distance beyond this range in two directions were flat-roofed buildings in unoccupied areas.

Initially, a bird near our home was used as a signal for a Nighthawk night, and when he became active we juggled some surveying into our plans. Later we found he was an unreliable indicator for the Downtown area, as birds there could be quite active when more isolated males were not. A density or crowd excitation factor seemed to be at work. A similar circumstance was observed in Field A. Arriving there at early dusk once, we found all the birds down. We flushed one, which climbed aloft, giving its “peent” call; within moments all five males were up and “peenting”. This bird, incidentally, roosted in a slight declivity on top of a rock.

What makes a “good” Nighthawk night — meaning most of the birds call for a considerable period? We were as much in the dark on this at the season’s end as at the beginning. Although activity declined in the latter part of the breeding cycle, two of our best nights for observations were in early August. Another time, one bird was silent during a steady all-night drizzle, while a second bird was calling at 10:00, 11:00 and 11:30 p.m. Generally however, there was less activity during poor weather.

A male near our home followed one of three routines on going aloft: an initial “peenting” cruise over his range followed by only sporadic flights, or the initial cruise followed by an extended period of calling, or the initial cruise, varying in duration, and then cessation of display activity for the evening. The time of the initial cruise was random, coming anywhere between sunset and an hour and a half before. In addition to differences due to concentration (the crowd excitation factor previously mentioned) there seemed to be considerable individuality with respect to the amount of calling.

One home range, established on June 4, was finally deserted 72 days later on August 16. For 10 weeks the male Nighthawk was attached to this site. Of 15 ranges, two appeared to have been prematurely abandoned — display ceased in one by July 12, in the second by July 20. For the remaining 13, the first release was on August 16, the last on August 25. These dates may have been later than usual, as spells of cool, showery weather between late June and mid-July could have affected development of young.

Migratory or pre-migratory movements appeared to commence while ranges were still being held. Five Nighthawks were observed in southerly flight on July 23, in the city but not within a home range. As more than two eggs per nest are rarely reported for the Common Nighthawk, this group likely consisted of members of more than one family or of non-breeders.⁴ On August 14 four birds silently drifted southeastward, coursing low through two adjoining ranges. The home males were aloft yet neither challenged the group or otherwise appeared to react in any way. This was exceptional because, if his mate or young were on the wing or if a neighboring

Table 1. Nighthawk Home Ranges by District in Saskatoon, 1971.

| | <i>Sutherland</i> | <i>Field A</i> | <i>North Industrial Area</i> | <i>Downtown</i> | <i>East Side</i> | <i>West Side</i> |
|--------------------------------|-------------------|----------------|------------------------------|-----------------|------------------|------------------|
| Number of Home Ranges | 1 | 5 | 5 | 16± | 11 | 10+ |
| Total Area of District (acres) | 900 | 390 | 1,300 | 740 | 9,820 | 7,310 |
| Developed area | | | | | 7,510 | 6,120 |

Nighthawk transgressed into his range, we have come to expect some reaction from the male.

Birds were occasionally heard calling aloft at dawn, in mid-morning, mid-afternoon and early evening. Most calling, however, was done from about half an hour before sunset to an hour after.

We concluded that the "peenting" flight, usually about 50 to 125 feet above the ground, was mainly display and territorial activity and only incidentally for feeding.² Rarely would a male leave the normal pattern and tower much higher into the sky, still giving the "peent" call, the highest observed being about 800 feet above the ground. Or, again as an exception, though much more frequently, he would swoop down, still calling, then swing back up to his position. Sometimes the female was aloft with the male, though usually only for a short span.

We could walk into Field A and have all the males within hearing and sight at one time (for as long as we chose to put up with the mosquitoes). Hence, the determination of numbers was more accurate than elsewhere. Field A appeared to approximate natural habitat for Nighthawk in this region. In any event, being essentially in its original state, it served as a comparison with the artificial habitats.

The Nighthawk density Downtown was greater than in Field A, one male per 40 acres as against one per 83 acres. The average home range size Downtown was less than that in Field A, 26 acres compared to 70 acres. (Not all of Field A was covered by home ranges and not all of the territories were completely within Field A. Roughly, for Downtown, the Nighthawks average range was four blocks in size – however, ranges were anything but uniformly shaped and usually did not line up with streets. Because tracking a range boundary is inexact, even under the ideal observation conditions in Field A, these sizes are approximations.

On the East and West Sides, home ranges were mainly along principal arteries and at primary intersections where flat roofs were concentrated; much of the area in these suburbs was unoccupied. No birds were detected in several places where there seemed to be a sufficiency of flat roofs. Most of these apparently suitable but unoccupied sites were in the newer subdivisions. Further, on the East Side, at least two home ranges of previous years were not occupied in 1971. The number on the West Side is thought to be low, as we later concluded that two of the surveys were not made on good Nighthawk evenings, and fewer opportunities arose for making random observations there.

Our data showed that where a range abuts two or more other ranges, minimum size was 10.2 acres, average was 25.7 and largest 56.3. Generally the largest were those with fewest neighbors and the smallest were ones completely surrounded. The final estimate of the number of ranges downtown was made by comparing Arm

Table 2.—Home range size on the East Side of Saskatoon, 1971

| <i>Range Location</i> | <i>Approximate Size of Range (Acres)</i> | <i>Number of Adjoining Ranges</i> | <i>Remarks</i> |
|-------------------------|--|-----------------------------------|--|
| University Campus | 74 | 0 | Isolated, no neighbors |
| Main St. & Copland Ave. | 51 | 1 | Bounded by 2 ranges for first half of the season, 1 for the last half. |
| Ewart Ave. & 8th St. | 39 | 2 | Bounded by 2 ranges on 2 "sides", open on the other 2 sides. |
| Five Corners | 41 | 3 | Bounded by 3 ranges on half the periphery, open on the remainder |

Armstrong's results for Detroit to our data. Armstrong's study area was a 90-block district of 870 acres, slightly larger than our downtown area, but with similar building heights. Four Saskatoon ranges on the East Side were fully traced and compared for general compatibility with his results; and we already had a rough picture, together with some fixes. The result was an increase from 15 to 16 in our estimate of the number of ranges in downtown Saskatoon.

The four fully traced home ranges, two of which had a common boundary half a block from our house, were the most extensively observed of all. Though areas were still approximate, they showed the tendency toward smaller size as the number of neighbors increased.

The key decision in our survey was that the "peent" is given only by the male Nighthawk. In the early days one observer wrote that both sexes gave this call; since then a number of people have disagreed.¹¹ Knowing this, and conscious of the difficulty of distinguishing between the sexes at dusk, we paid special attention when two birds were aloft together. If both "peented", did they display in any way other than the challenge-defense activity of two males at their mutual boundary? If only one called, was there activity other than what one expects of a territorial pair? Two birds in an isolated, relatively open range were watched for half an hour one evening when both were active but roving separately and at different altitudes most of the time — only one seemed to call.

In retrospect, the surveys should have started ten days earlier to allow for poor weather, unproductive evenings and other plans. Once numbers and distribution downtown were tentatively known, a triangulation check should have been made from three or four selected rooftops.

Some Incidental Observations

The first known abandonment of a range occurred on or before July 12. Later we noticed that two adjoining males extended their ranges into part of this vacated area. After August 18 the situation became more confusing in several places, possibly due to changes from breeding to pre-migratory behaviour. Consequently, observations toward the end of the season, though valid for other factors, were not used for determining range size.

Armstrong noted that where a range abutted unoccupied territory, the bird still only took up a certain amount of space, although it would make occasional forays into the vacant area, a circumstance also observed in Saskatoon.¹¹

The male also flew patterns only 10 to 20 feet up and sometimes even lower. While this close to the ground the bird rarely called and was not seen making short glides or alternating side-slips or rapid flutters, all manoeuvres observed when it was higher. Though flying swiftly in an erratic manner when low, it appeared to be simply coursing. Females behaved the same way. They dropped directly from the roof site, literally slipping over the edge of the roof and flying a long circular path over part of the range one or more times, then swinging back onto the roof. Because of the different behaviour of the male at low level, and because the female appeared to spend most of her time there when on the wing, we took these flights to be feeding forays.

The daytime torpor of the Common Nighthawk, its floppy flight, its non-streamlined facial structure and its soft feathers are not such as to remind one of a highly developed flyer. Yet seeing the bird coursing among obstacles quickly dispels any doubt. Once, in an industrial property at twilight, my wife and I watched a bird hunt at speed 3 to 10 feet above the ground amid a litter of poles, wires, piles, sheds and junk. Flight control was superb.

To those wishing to track nighthawks in an urban area, we offer some suggestions. Prepare in advance the answer you will give the policeman who stops and asks what you are doing — saying you are looking for Nighthawks is, we found, somehow

inadequate. If you park beside a house while listening for birds, you may notice the corner of the curtain being eased back, especially after dark. At such times, you should appear busy. Should you desire to get up onto the roof of a building to look for a nest site, don't bother the janitor — you have to go to the top.

¹ALLEN, A. A. 1939. *The Golden Plover and other birds*. Comstock, Ithaca, N.Y. 324 p.

²ARMSTRONG, E. A. 1965. *Bird display and behavior*. Dover. 431 p.

³ARMSTRONG, J. T. 1965. *Breeding home range in the Nighthawk and other birds; its evolutionary and ecological significance*. *Ecology* 46: 619-629.

⁴BENT, A. C. 1940. *Life histories of North American Cuckoos, Goatsuckers, Hummingbirds and their allies*. U.S. Natl. Mus. Bull. 176.

⁵BENT, A. C. Various volumes.

⁶BOWLES, J. H. 1921. *Nesting habits of the Nighthawk at Tacoma, Washington*. *Auk* 38: 203-217.

⁷DEXTER, R. W. 1952. *Banding and nesting studies of the Eastern Nighthawk*. *Bird Banding* 23: 109-114.

⁸DEXTER, R. W. 1956. *Further banding and nesting studies of the Eastern Nighthawk*. *Bird Banding* 27: 9-16.

⁹DEXTER, R. W. 1961. *Further studies on nesting of the Common Nighthawk*. *Bird Banding* 32: 79-85.

¹⁰GODFREY, W. E. 1966. *The birds of Canada*. Natl. Mus. Canada. Bull. 203. 428 p.

¹¹SUTHERLAND, C. A. 1963. *Notes on the behaviour of the Common Nighthawk in Florida*. *Living Bird* 2: 31-39.

¹²SUTTON, G. M., and H. H. SPENCER. *Observations at a Nighthawk's nest*. *Bird Banding* 20: 141-149.



Common Nighthawk

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