

PREDATION AT BANK SWALLOW COLONIES NEAR KATEPWA LAKE

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During 1980 and 1981, we studied Bank Swallow colonies along the Qu'Appelle Valley in the area of Katepwa Lake for the senior author's M. Sc. research.⁴ Several cases of predation observed at these Bank Swallow colonies are reported here.

We made repeat observations at 498 nests and recorded 183 known nest failures during 1980 and 1981. Only 9 of these failures were directly attributable to predation. Additional cases of predation were recorded in 1982 in the same area.

The most exciting predator-prey interaction observed was on 13 July 1980, at approximately 6:30 p.m. While driving

through Lebreton Dale glanced at a Bank Swallow colony at the edge of town. He saw a Bank Swallow fluttering in front of its hole, his impression was that it was struggling as though caught with a snake around its foot. Thinking the bird might have become entangled in an unusually long piece of nesting material, we turned the car around at the next intersection and drove back to the colony. At first we saw nothing and almost concluded the bird was gone when we noticed a garter snake holding a struggling Bank Swallow at the bank base.

The snake was in and around some Russian Thistle on the talus slope between the nest holes. It held the swallow



Dale Hjertaas inspecting Bank Swallow burrow



Western Plains Garter Snake with Bank Swallow

and the wing and appeared to be trying to slowly shift its grip until it could swallow the bird from the front or back. The process was hampered by the swallow's struggles and by the wings. The Bank Swallow, which appeared to be an adult, rested quietly some of the time, but would struggle, flapping its wings and lifting the snake's head several inches above the ground.

When we returned between 8:00 and 8:30 p.m. they were at the same place.

The snake had shifted its grip and was trying to swallow the bird tail first, having engulfed it up to the wings.

This case of predation did not cause a nest failure as young were already flying from all nests at the colony, although a few Bank Swallows were still returning to nest tunnels.

The ten nest holes at this colony were from 1.3 to 1.75 m above the talus slope and between 0.75 and 1.5 m from the

bank top. We did not attempt to estimate the length of the Western Plains Garter Snake, but believe it was able to reach nest holes from the bank top. We do not know whether it trapped a swallow which was already inside the tunnel, or waited in ambush for a returning swallow. When we drove by, the snake must have just caught the swallow and was struggling with it in the tunnel entrance. Freer observed a Black Snake enter a burrow from the top of the bank and visit three tunnels before taking a young swallow.² Black Rat Snakes have also been noted as predators at Bank Swallow colonies.^{1 6} Mobbing by the Bank Swallows was an ineffectual defence against these snakes.^{1 2} Steepness of the bank and an overhang at the bank top may prevent snakes from reaching the burrows.^{1 2}

In 1981 a Deer Mouse nested in an old swallow tunnel in a gravel stock pile south of Lebret. Small ledges on the gravel face allowed the mouse to travel back and forth along the bank face and reach other swallow holes. The mouse appeared to eat the swallows' eggs as we observed bits of broken egg shells in failed swallow nests. Nine of the 16 nests at this colony failed due to the mouse eating eggs. Four other nests failed for reasons which remain unknown because we could not see into the nest chamber. The Deer Mouse may have been involved in these nest failures as well. The only nest of 16 which fledged young at this colony was the farthest nest from the hole occupied by the deer mouse.

Stoner reported a Deer Mouse in a Bank Swallow colony but could see no evidence of the mouse having damaged eggs or young.⁷ These mice have been reported as a major predator of Spotted Sandpiper eggs.⁵

Bank Swallows have been reported to mob mammalian predators such as chipmunks which sometimes prey on nestlings or eggs.^{2 3} We never observed the

Bank Swallows along the Qu'Appelle Valley use such mobbing tactics. On June 1980 we watched both a Least Chipmunk and a Thirteen-lined Ground Squirrel at a colony. Both moved on the talus slope and on ledges on the actual bank without any interference by swallows. The chipmunk actually looked into some of the burrows. Although Bank Swallows took no action, a House Wren which was nesting in an unoccupied Bank Swallow tunnel attacked and chased the chipmunk from the bank face.

During 1980 and 1981 we observed evidence of predation by large mammals which we had thought would be a major factor influencing where Bank Swallows nested. However in 1982, 28 of 30 nests at one gravel pit complex and 1 of 8 second pit, approximately 2 km away were dug out by a mammal which had cavated down to the nest chamber from above. Perhaps it could hear or smell nestlings or adults as holes were cavated directly to the chamber and contents scooped out through a surface opening. Bits of egg shell at some nests suggested they were still at egg stage while others clearly contained young when preyed upon between 11 and 15 July.



Holes dug by mammalian predators

The species of predator could not be identified with certainty as recent rains had eliminated tracks before each of our visits. However, size of the holes (they were 15 to 18 cm wide at the top, and funnel shaped with only a small opening to the nest chamber), and some scats suggested a larger mammal such as a skunk, fox or badger was the predator. Stoner reported a Striped Skunk digging down to as many as five nests over a night period.⁷ Nests lower than 60 cm are usually safe from this skunk. Freer observed a colony of 30 nests entirely destroyed by a mammal digging down from above.²

Interestingly, at the colony where only one nest was excavated, it was the one closest to the surface. Tunnel entrances of nests preyed on by this mammal ranged from 11 to 42 cm below the bank top. The distance from the ground surface to the nest chamber was not recorded.

Predation at Bank Swallow colonies in the Qu'Appelle Valley was a minor force of nest failure in 1980 and 1981. However, as shown by the almost total failure of one colony in 1982, predation can have a significant impact in some years and is undoubtedly a strong selec-

tive force in determining the types of banks selected by Bank Swallows.

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- 3 GINEVAN, M.E. 1971. Chipmunk predation on Bank Swallows. *Wilson Bull.* 83:102.
- 4 HJERTAAS, D.G. 1984. Colony site selection in Bank Swallows. M. Sc. Thesis, Univ. of Sask., Saskatoon, Sask.
- 5 ORING, L.W., D.B. LANK and S.J. MAXSON. 1983. Population studies of the polyandrous Spotted Sandpiper. *Auk* 100:272-285.
- 6 PLUMMER, M.V. 1977. Predation by Black Rat Snakes in Bank Swallow colonies. *Southwest Naturalist* 22:147-148.
- 7 STONER, D. 1936. Studies on the Bank Swallow *Riparia riparia* (Linnaeus) in the Oneida Lake Region. *Roosevelt Wildl. Annals* 4:127-233.



Bank Swallow feeding young at burrow entrance