

SOME HABITS OF TWO BURROWING SPIDERS  
IN MANITOBA.

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Among the various natural objects met with in the vicinity of the writer's home in Manitoba, none have induced more enquiries as to their origin than the numerous open holes made by the large burrowing spider *Lycosa missouriensis* Banks. These holes are, in fact, met with wherever the soil is sandy and towards winter become very conspicuous on account of the ring of sand thrown around them by the digging spiders. The writer has long since been interested in these creatures and, more than twenty years ago, commenced some observations relating to their winter habits. Owing to the difficulty of securing their names at that time, however, the notes were laid on one side. During the summer of 1917 the old interest was revived through a visit to Treesbank, of Mr. J. H. Emerton, of Boston, Mass., the following notes being a result.

Two species of burrowing spiders are involved in these studies both sand-loving but partial, nevertheless, to certain local conditions of soil. *Lycosa missouriensis* is always found close to vegetation and prefers a situation where dead herbage of some sort is available for the construction of a turret around the entrance to its hole. *Lycosa wrightii* Em., on the other hand, inhabits the bare sand dunes only and constructs no turret. Hence, while these two species may be met with in close proximity they seldom, if ever, invade the other's territory for burrowing purposes. In life *L. wrightii* is at once told from *L. missouriensis* by its black venter.

The life-habits of these two species have already been described by Mr. Emerton\* and need not, therefore, be repeated here. This paper, consequently, will be confined to a description of the burrowing habits and such other features as have not previously been touched upon.

In summer time, the excavations of both of these spiders are comparatively shallow, those of *L. missouriensis* being about 9 inches in depth, while those of *L. wrightii* are slightly deeper. It is not unusual to find females, when the young are upon their backs, with holes only three or four inches deep. As autumn approaches both these spiders commence to either deepen their burrows or prepare new ones. There is much variation in the dates when individuals begin to do so. In 1917, some were at work on August 2, while others did not commence to dig for more than a month later. There is good reason to

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\*Phyche, Vol. XIX, No. 2, 1912.



suspect that this variation has to do with the pairing of the sexes and that females do not commence to burrow until after they have become fertilized. The mature males, of course, die before winter sets in.

On September 16, 36 adult burrows of *L. missouriensis* were measured and were found to have attained an average depth of 3 feet 1 inch, the deepest being 5 feet 3 inches and the shallowest 1 foot 4 inches. The deeper burrows had not been further extended for some days, while the spiders were busily at work with the shallower ones. By October 1, many holes had been closed and a measurement of 9 of these indicated an average depth of 3 feet 9 inches. 17 holes still open, but showing no recent signs of digging, averaged 4 feet 1 inch in depth. 15 holes in which the spiders were still digging showed an average depth of 3 feet 7 inches. The deepest closed hole was 4 feet 5 inches, the deepest open one 4 feet 10 inches. Closed holes are thoroughly covered in with grass, leaves and sand fastened together with web in such a way as to make them practically water tight. It was observed that the earliest closed burrows were always in shady situations which would indicate that the shadow had induced an earlier closing than in the case of those exposed to the sun. Burrows in low, wet, lands are shallower than those on the higher lands. 33% of the spiders were still digging on the above mentioned date.

On October 5, about 22% of the adults had closed their holes though all the young were still digging.

On October 8, cold weather seemed to have induced a closing of nearly all burrows, only a few of the smaller ones remaining open. 20 adult holes on high land had an average depth of 5 feet 1 inch, the deepest being 5 feet 8 inches and the shallowest 4 feet 4 inches. Measurement of young spider burrows indicated an approximate depth similar to those of adults.

On November 5, a mature individual was dug out at 4 feet 7 inches. This burrow though perpendicular in direction, had numerous small curves, due to the spider having encountered obstacles in digging. For the first 3 feet this hole was rather densely lined with web but became less so towards the bottom. It had also been stopped with sand at several places, the sand being held in place by web. This spider was found, at the bottom of her burrow slightly sluggish but with sufficient energy to defend herself. A young example provided a similar burrow but slightly deeper. It was stopped at two places. The ground at this time had been frozen to a depth of four inches for some days but at the time of observation was thawed out. These two individuals were placed in the warm sun and became quite active; they refused, however, to dig a new burrow and had moved but little by the next day.

As *L. wrightii* was not found in such close vicinity it did not receive the careful attention given to *L. missouriensis*. Judging from



hasty visits to its home, however, it does not appear to differ very markedly in habits from the latter. A full day spent in the Spruce Woods Reserve on October 13, where the species is numerous, discovered most of the burrows closed but here and there spiders would be found busily at work. The holes were always in pure sand, though occasionally they might be located in places where the grass was sparse or even near ground cedar, *Juniperus horizontalis*. It often happens, with this species, that the coverings of the holes are broken away by the drifting sand, thus giving them the appearance of having never been closed. In several instances of this sort the spiders had abandoned their burrows, while on other occasions a stoppage of the hole lower down had protected them from the falling sand. Abandoned holes of both this spider and of *L. missouriensis* are quite frequently met with, doubtless due to the death of their owners. There is reason to suspect that very late burrowing individuals are those which have been obliged to abandon a previously prepared home. The fact that *L. wrightii* does not construct a turret around its hole is doubtless due to the fact that a turret would catch the wind in such an exposed situation and so be blown away. The holes, unlike those of *L. missouriensis*, are closed entirely with a mixture of sand and web, no vegetation being used in the process. 22 adult burrows were measured, the average depth of which was 4 feet 7 inches, the deepest being 5 feet 7 inches, and the shallowest 4 feet 1 inch. These holes were all closed and had been so for some time.

The burrows of *L. wrightii* being in pure sand are more thoroughly lined with web than are those of *L. missouriensis*. This, of course, serves a double purpose, namely, to enable the spiders to climb up readily and to prevent the loose sand from dislodging. During the summer, holes have to be continually cleaned out owing to the drifting condition of the sand and in late autumn a majority of the closed holes are very soon hidden through the same agency. The opening of burrows in spring time is largely governed by meteorological conditions, and is doubtless induced by a thawing out of the ground around the hibernating spiders. Thus, during an early spring, the holes are opened by the end of April, while in other years they have remained closed until the middle of May.

Both these large spiders are much attacked by parasitic and predacious wasps which they greatly fear. The males are particularly subjected to these attacks while wandering in search of females during September, and fall ready victims to the determined onslaught of their dreaded foes. It is true that the spider will fight in desperation when overtaken but the result is, apparently, always the same. Some species of *Pompilus* boldly enter the spider's burrows and attack the occupants. On July 7, 1916, the writer observed an example of *Pompilus scelestus* Cr. enter a burrow of *L. wrightii* and shortly afterwards



emerge again. An examination revealed the spider in a torpid condition with a large cylindrical shaped white egg attached to the under side of its abdomen. This spider was placed in a glass vial and on the 8th had fully recovered its activities. It ate flies readily thereafter and was kept alive until July 15, when being unable to longer resist the sapping of its vitality by the large larva, which the *Pompilus* egg had produced, it died. This *Pompilus* larva had in seven days attained a truly remarkable size and was almost 20 mm. long at the time of the spider's death. It only survived its host, however, for a short time, so that the further stages of its life could not be ascertained. This is but a single example of the many tragedies that occur in, or around, the spiders' homes. Wasps of many kinds roam these sand dunes in large numbers and there is no doubt that spiders form quite a large percentage of their prey. That the spiders in their turn, have found it a profitable hunting ground is equally demonstrated by the large number present in the neighbourhood.

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#### A NOTE ON THE MIGRATION OF THE BARREN GROUND CARIBOU.

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BY E. M. KINDLE.

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There is perhaps no more curious and interesting phenomenon connected with the wild life of Northwestern Canada than the semi-annual migration of the Caribou, *Rangifer arcticus*. The vast herds of these deer, which summer in the barren lands far to the east of the Mackenzie river, move southward in the late autumn from the treeless barrens of the Arctic slope and seek the shelter of the forested region east of the Slave and Athabasca rivers. The writer traversed both of these rivers and a part of the Mackenzie river during the past summer but neither saw nor heard of any caribou having been observed during the summer. With the coming of winter, however, they appeared east of the Slave river in vast numbers, as the following letter from Inspector K. F. Anderson of the R. N. W. Mounted Police clearly indicates.

R. N. W. M. Police,  
Fort Fitzgerald,  
December 15, 1917.

E. M. Kindle, Esq.,  
Ottawa.

My dear Mr. Kindle:

There is nothing new here except the Caribou. They are within forty-five miles of this place in tens of thousands and the natives are getting numbers of the animals and will therefore have plenty to eat this winter. The Deer (Caribou) are passing



Criddle, Norman. 1917. "Some Habits of Two Burrowing Spiders in Manitoba." *The Ottawa naturalist* 31(9), 104–107.

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