

TRANSACTIONS  
OF THE  
Nova Scotian Institute of Natural Science.

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ART. I. ON THE MAMMALIA OF NOVA SCOTIA. BY J. BERNARD  
GILPIN, A. B., M. D., M. R. C. S.

No. V.

(Read November, 1867.)

IN the last paper I had the honor of reading to you, you will recollect that I enumerated and classed all the mammalia of the Province, and also described the somewhat aberrant group of the otter, the skunk, and the raccoon. This evening I shall devote to the American bear, our largest carnivora, and our last, according to the classification adopted by the author of North American mammals—and then I shall take up the rodents.

THE AMERICAN BEAR.

*Ursus Americanus*, (Pallas.)

*Ursus Americanus*, (Richardson.)

*Ursus Americanus*, (Baird.)

This well known animal which, unlike very few, is honored by no synonymes, no one seeming to deprive the learned Russian of his original specific, is too familiar to naturalists to warrant a minute description. The few facts I may have obtained personally, through our Indians and hunters, of his habits in our Province, will best fill the paper. From the European bear (*U. Arctos*) he specifically differs, in his less size, his tawny muzzle, and tendency to tawny spots and stripes down his breast, in his arched profile, and pointed nose, in his darker colour, and his having according to LeCôte, one more molar tooth than the latter. His hair when in good condition, is lustrous black, with a sub-layer of soft wool. I have had mittens knit out of yarn spun from it.

A lady well known some half century gone in the Province, when a girl assisted by her companion killed a large bear, which came down on the solitary farm house in which they were alone. In his attack on the hogpen he got himself caught in the rails of a fence. Whilst one girl sat upon the rail, the other despatched him with a rusty carving knife. The knife was dull, the hand unsteady, the operation prolonged, and the bear's struggles and cries appalling. In after life this girl become a matron, kept a shirt wove of the wool from her mangled victim, and clad her first-born, and each succeeding new-born son in this hair shirt, to give him courage and strength. They all grew up men of undaunted spirit; but the first-born in after years became a Royal favourite, and left his life's blood on one of the Canadian battle grounds, in the war of 1812 with America.

In Nova Scotia the bear regularly hybernates, going into winter quarters late in November, or early in December. He seeks, the Indians say, usually during a snow storm, the upturned root of a fallen tree for a shelter; sometimes a projecting rock, or, beneath a heavy log, serves him. Here he becomes fast snowed up, leaving a small hole, around which hangs often a vapour, said to be his breath, but more probably caused by the heat of his body. The female seeks an earlier and more intricate seclusion, and it is during this period that gestation must take place. This demand for a second life is made upon her, taking no food herself, and seemingly ill prepared for its duties. The Indians and hunters say that there has been no instance of a she-bear being taken with young,—that if disturbed, she always aborts, and that the young are born no larger than kittens. We can only receive these stories, which, however, are universal from here to the Polar Ocean, and which her hybernated state during the time certainly accords with. March or early April sees them out again, and not so much out of condition as one would suppose. In captivity he rarely hybernates. Capt. Moody, (Secretary to his Honor Sir Hastings Doyle,) informed me he knew one which regularly hybernated at Mirimachi, a chain disappearing down a deep burrow beneath a stable being the outward sign of his retreat.

When seen in the open he is usually shuffling off a brisk retreat, going high behind with a rolling gait, his head and tawny muzzle

ever and again turned over his shoulders. On the blueberry barrens, when the low thick mist disappears before the red September sun, the Moose hunter returning from his night's bivouac sometimes surprises him, sitting upon his haunches gathering in with his hairy paws the berries he loves, and muttering a low whimpering growl, and turning his head and pointed nose in ceaseless circles. It is astonishing with what celerity he retreats. No chance to cover him with the ready gun, the dew dried upon the grass and bushes where he sat, whilst the crystal drops are steeping elsewhere, the broad barren is his only sign. The male bear has the habit of rising upon his hind legs and sticking his claws into the bark of trees, like a cat against a table leg, at the same time snarling, growling and foaming at the mouth. I have often seen trees thus torn, and old rotten logs torn into pieces in his search for maggots. When it happens in a line of country, that a long narrow ravine, water course, or gorge, descends from the forest into the open, making as it were with its steep and wooded sides a covered way, this country becomes famous for a bear country. The farms all about suffer in their young cattle and sheep. Here it is that the deadfall and steel trap are set, when the alarm of a bear being seen, is given. Sawmill Creek, about four miles from Annapolis Royal, has had this bad reputation for ages. It is often asserted that we have two species in this Province, a brown and a black variety. This is not true. I have seen brown bears, from their old sun-tanned coats falling off, become black; I have also seen brown and black cubs, seemingly of the same litter.

Of his food, most probably before the Province was settled, it was nearly vegetable. The varying hares seem almost the only indigenous mammals within his reach; a few fish, frogs and fresh water clams may have been added to his diet in early spring; but the innumerable quantity of berries, beech nuts and acorns, give him that savoury fat that fits him for his wintry sleep. Now his diet is not only varied by the wild apples so often found in old clearings in the deep forest, and which he and the porcupine greedily seek, but the young cattle and sheep of the settler afford him many a meal. He never attacks old cattle, but creeps upon and surprises yearlings, springing upon their withers. I have

frequently seen working cattle, which still bore the scar of deep flesh wounds, made when yearlings, and which have escaped from his clutches. From all these sources he keeps himself in good case, especially as during the winter he need not provide, an advantage which one easily understands who has seen the gaunt spectre of a hungry lynx or wild cat, made reckless by famine, leaving the wintry forest and prowling by day in our back yards and town gardens. I have seen him far off by day, and crossed his path at night in riding in the forest; though turning upon the dogs his instinct was to retreat.

Except when her cubs have been taken, the she-bear undauntedly charges the spoiler, I never knew but one instance of a bear pursuing a man. This man riding in the forest was pursued for two miles. He gave little heed to it at first, but the beast was so dogged, that he put spurs to his horse to rid himself of a pursuit that only stayed when he reached the open. Of the danger of approaching a wounded bear, even when seemingly dying, an unhappy occurrence at Annapolis Royal was a warning for many a year. Towards night, a bear that had been hunted the livelong day, desperately wounded, sought a deep ravine to await his fate and fast approaching foes. The foremost man, armed only with an axe, fired by the thoughts of killing the animal, which lay before him with head to ground, and bleeding from mouth and nose, closed with him. Instantaneously he was seized in a grasp which was only relaxed as both fell dead together; a rude barrow of branches served to carry both from the steep ravine. An eye witness, who helped carry the double burden, told me this. On the other hand, the very frequent stories of children seeing him on their way to the lonely school, attest his comparative harmlessness. His flesh is not unsavoury when cooked as cutlets, tasting both of pork and veal; the hams when smoked are dry and tasteless, and very inferior to pork. He is by no means diminishing in our Province, and we may speculate that perhaps our earliest carnivora, which may have put in his first appearance as a vegetable eater, until taught by the lynx and wolf the taste of blood, may be our last. His shiftiness, now a berry finder, now a grub hunter, anon going to the lakes for food; his hybernation, and frequently when enforced, his ability for so large an animal for keeping close cover,

and the increasing food of sheep and young cattle that our advancing settlers unwittingly spread for him, all attest that for ages to come Nova Scotia will not be without its bear.

## RODENTIA.

### THE RED SQUIRREL.

*Sciurus Hudsonius*, (Pallas.)

*Sciurus Hudsonius*, (Richardson.)

*Sciurus Hudsonius*, (Audubon, Bachman.)

*Hudson's Bay Squirrel*, (Pennant.)

Description of a fine specimen of this beautiful little animal, taken 14th Novr., 1862, near Halifax:—

The head arched, nose rather blunt, ear rounded, hairs on the inside, both anterior and posterior edges turned inward, a few long hairs approximating to a pencil on the tip; teeth reddish brown. On the fore extremity four toes, with a rudimentary thumb, third the longest. Palm naked with five tubercles; on the hind foot there are five toes, four tubercles at the base of the toes; the sole is well furred up to the tubercles. Colour—margin around the eyes, sides of upper jaw and chin, white; breast, belly and inside of legs whitish, with slate grey mixed through them, each hair in many instances annulated grey and white; above, on head, back and sides and outside of the legs, there is the same slate grey at the base, but the tips of the hairs are washed by a most beautiful chestnut red, which commencing on the forehead becomes very intense at the back, spreads down the back and sides and outside of the legs, and ends in the tail. The tail is flat, well spread with a margin of blackish hair all around it. The hairs at the end being very long and partially forked; the fur is thick and full, that on the back lustrous. The whiskers are black; in some instances a black line along the side divides the chestnut from the grey of the belly.

Extreme length to end of hairs on tail  $12\frac{3}{4}$  inches.

Extreme length of tail to end of hairs,  $5\frac{3}{4}$  inches.

This charming little animal is an inhabitant of the spruce fir wood throughout the year. In summer he is seen in the clearings, and as often running along the topmost rail of the rude fences.— In winter he seeks the dense forest. According to Richardson, he makes a burrow in the fur countries, and stores away pine cones for winter use. With us he sometimes makes a nest in the branches of a spruce fir tree. I believe farther south he habitually does, making no burrow, as he lays up no winter stock. He does not hibernate, but during very bad weather he lies by for days. He is seen during the coldest winter days running from tree to tree, or

skerring over the snow-clad rocks, and usually alone. Now he pauses, now flings his head and tail up with perpetual jerk, then scuds off into a hole. Returning he indulges in a scolding match of short shrill barks, stamping his feet and evincing every mark of passionate anger. If you approach him he makes off, straddling his hind legs, and flattening his back to a level of the old log on which he makes his running. The winter camps of the loggers become infested with them. The men have scarce left their camps for their work, than the silent rude structure is attacked by an army of invaders; every hole, every crack and orifice is pryed into, an entrance is made, and perhaps, a half barrel of hard bread has been removed by these red pilferers before the men return for the night. Hard biscuit, perhaps from its resemblance to nuts, and beech mast, is a very favourite food. During autumn they approach the villages and gardens in numbers. I have counted seven in sight, and again they appear to migrate, as for several years they are scarcely seen in that section of the country. This truly boreal member of our fauna is so conspicuous an ornament of our dark pine woods, that we may hope his lustrous red will for ages contrast with the dark sombre of our forest, his short startling bark awake its solitudes, and his brisk jerking scud over fallen tree and snow-clad rock enliven our austere landscape.

#### SEVERN RIVER FLYING SQUIRREL.

*Sciurus Hudsonius*, (Gmelin.)

*Pteromys Hudsonius*, (Baird.)

*Pteromys Sabrinus*, (Richardson.)

*Pteromys Sabrinus*, (Audubon, Bachman.)

*Severn River Flying Squirrel*, (Pennant.)

*Asapan*, of early American voyages.

Description of a fine male given me by Mr. J. R. Willis, Halifax, N. S. :—

Head short, and nose round, eyes very prominent, ears moderately large and sub-pointed, whiskers black. On the fore foot are four toes, and a large ball almost a rudimentary thumb, the palm naked, with four tubercles; on the hind foot five toes with four tubercles, sole naked. A membrane covered by hair of the same quality as the body extends from the wrist of the fore foot to the heel of the hind. A bone three-fourths of an inch long is articulated on the wrist, which seems to keep the

membrane expanded when in use, but when not in action lies folded parallel with the fore arm. It is peculiar that this bone is not as in the case of the bat, a prolonged toe or digit, and as also is the case in the swimming paw of the seals, and the feet of ducks, but a bone "*sui generis*," though most probably its type would be found in the carpal bones of all mammals. With the exception of the bat this is the only instance of both extremities being used in forming the wing, considering the great Indian flying fox to belong to this genus. The flying lemur, (*galiopithicus*) of DeBlainville, seems to have some analogous structure. The fur of this little animal is very soft, silky, and long. The ears appear to the casual observer naked, but are covered both inside and out by very fine fur. The colour on the forehead, back, and upper side of flying membrane, is light reddish brown, but this colour extends only to the ends of the hair, which beneath is lead colour. This lead colour shows itself in streaks in many parts of the body, and in rather broad patches on shoulders and thighs, the head is rather lighter than the back, and the upper surface of tail fades into a fawn with a few dusky hairs, forming a mesial line and tip; chin and lower part yellowish white, with a buff wash that becomes more intense on the lower side of tail. With the exception of chin and a narrow breast line where the hair is white at the root, the white surface has lead coloured roots. I am the more particular in this, because one of the specific differences between this species and *P. Volucella*, a smaller species in the New England States, is, the latter has no lead coloured base to its fur.

Extreme length to end of tail .....	11 inches.
Length of tail.....	5 inches.
"    of wrist bone.....	$\frac{3}{4}$ inch.

It is singular that Richardson makes no mention of the wrist bone, but rather makes a new species founded upon the projection of the flying membrane, though this rounded projection is only caused by the bone being extended during flight.

This singular animal to which the peculiar name *Asapan* has been given by the old voyagers, is not rare with us; but having its abode in the most secluded forest, and being nocturnal in its habits, is seldom seen. It makes warm nests for itself in hollow trees, where it produces four or six at a litter, and where it also hoards its stores of cones and beech nuts. When disturbed from its abode during the day it ascends the highest trees, and jumping from the topmost branches either sails before the wind and catches the tops of other trees one hundred yards or so distant, or comes fluttering to the ground at double that distance. I have often mistaken them for dead leaves falling to the ground. They have usually three or four holes to their nests; by blocking up all but two, spreading a stocking over the one, and smoking a cigar in the other, you will

soon be rewarded. In their precipitous escape from the smoke they rush headlong, two or three at once, into the stocking. Thus taken they are easily tamed, become fond of sleeping all day in your pocket, but are abroad all night, and carry off and secrete in bureaus and table drawers all nuts in their reach. In flying they appear to have but little power of direction, and none of ascension.

As I have before mentioned a smaller species replace ours to the south. I must confess that I have drawn my observation of the habits of this species from some of the captives of the stocking and cigar, in the New England woods, though there can be no doubt of their entire similarity of habits. Dead specimens, stuffed ones from my friends' collections, or living ones kept in cages, of our species, are the only ones I have had access to. A larger and finer animal with a somewhat more sombre colour, he yet must content himself with a less variety, and a scant and meagre fare of pine cones and beech nuts, and long winter naps, to eke out his frugal larder, instead of the profusion of chestnuts, walnuts, and shellbarks spread before his more southern representative.

#### AMERICAN GROUND SQUIRREL.

*Sciurus striatus*, (Linn.)

*Sciurus (Tamias), Lysteri*, (Richardson.)

*Tamias Lysteri*, (Audubon, Bachman.)

*Tamias striatus*, (Baird.)

*Ground Squirrel, Striped Dormouse*, (Pennant.)

The great Swede was the first to describe this little animal, which he included in the genus *Sciurus*, taking the description from an American specimen. The genus *Sciurus* being justly divided into "Tamias," Richardson supposing that the specific "Striatus" referred to the European species, and knowing that they were distinct, adopted the specific "Lysteri," for the American, but Baird justly restores it, since although Linnæus supposed them identical, yet it was the American species which he described, and therefore the name, if it belonged to either, did to it.

From a skin before me, from the collection of J. M. Jones, Esq., I find the measurements to be—

Total Length.....11 inches.

Length of Tail.....4 inches.

In colour the head is brownish, with white stripes through the eye,

the back of a delicate French gray, the sides yellowish brown, lighter than the head, and the rump a fine chestnut red; the tail of reddish brown with the tip and a margin each side black; the under parts are light. On the back there are five black stripes, extending the middle or dorsal one from back of head, the central ones from top of shoulder down to the chestnut red of rump. The dorsal stripe has a reddish border on each side; the four other stripes are margined outside with red, but between each pair there is a white stripe which takes the place of the reddish border.

This complicated colorization is easily seen but difficult to describe. The ears are small and covered inside and out by fine hair. Four toes with a rudimentary thumb, are on the fore foot, and five upon the hind. This genus "Tamias," separated from the tree squirrels by their burrowing habits, their different dentition, their cheek pouches, pointed nose and thin tails, are the connecting link of the true squirrels and the gophers or pouched rats, and are connected on the other hand with the Spermophiles. This genus is both restricted and well marked, restricted to six or seven individuals, all of which are well marked by stripes.

They are tolerably numerous in our Province, where their quick angry bark enlivens the solitude of the steep woody dell in whose sides they burrow, and where their quaintly painted forms give a touch of colour to grey rock or old rotten log, as with laden cheek pouches, mindful of pinching winter, they scud on their daily avocation. Towards the last of October they retreat to their burrows, returning again of a warm April day. They probably sleep much of their time, but do not hybernate so profoundly as the bear or jumping mouse, which as they require none, lay up no winter store.

Unlike our red squirrel, which seeks your society, and is saucy, inquisitive, and prying, these burrowing squirrels are solitary, avoiding notice, and unsocial. In confinement they sulk, resist kindness, and bite, and never use the turning wheel.

#### THE WOOD CHUCK.

*Mus. monax*, (Linnæus.)

*Arctomus monax*, (Gmelin.)

*Arctomus monax*, (Richardson.)

*Arctomus monax*, (Baird.)

*Arctomus empetra*, (Numerous systematic authors.)

*Quebec Marmot*, *Maryland Marmot*, (Pennant.)

*Ground Hog*.

Of fourteen systematic and trivial names by which this solitary little earth burrower has been honored, I have selected such as will

bring him down from his first illustrious describer, to the most modern English and American writers. I may add that about thirty naturalists since 1751, now one hundred and ten years gone, and the date of Linnæus, first description, have written upon him.

The description of several skins before me collected at Halifax, N. S., would read:—

General appearance above hoary brown. There are two kinds of hair, a short woolly fur interspersed with long shining hairs. These long hairs are coloured at base bluish black, then brown, then black, then white, and finally tipped with black. They prevail all over the body but are very much longer and more numerous on the shoulders, giving a ruffed look to that part. The tail is also covered with long stiff hair, but these are of a uniform yellowish brown, with an obscure dark bordering. The head and forehead are dark brown, a grizzly ring around the nose, the tip of nose black and the cheek and throat greyish. Beneath there is a fine chestnut red, the hair is coarse and thin; the mesian line very much pronounced; the feet are black, the leg partaking of this chestnut hue, which is much more intense on breast and side of belly than mesian line. I have been the more minute in these colours, as they differ from the more southern species, which according to Baird and Audubon, and Godman, have no long hair over the shoulders, and from Baird are nearly black above, and black and grizzle, mixed with the chestnut red of the belly. In these differences they approach "pruinus" of Pennant; indeed with the exception of the dark line running vertically downwards from behind the ear, almost identical. In some of our skins there are dark penciling of the long hairs which might almost be taken for the lines. I cannot but suppose that Pennant's first description of "pruinus" was taken from a northern specimen. A more minute study and comparison of many specimens must be made before "caligata," "okanagan" and "flaviventa" can be separated from "pruinus," which I think hereafter will become a northern specimen of *Monax*.

A female specimen taken from an Indian's dog, Kentville, N. S., 20th May, 1861, measured—

Total length..... $22\frac{5}{10}$  inches.  
Length of tail.....  $6\frac{6}{10}$  "

Another female sent me by Sgt. Kavanagh, Margaret's Bay, 24th May, 1861—

Total length..... $19\frac{5}{10}$  inches.  
Length of tail.....  $5\frac{4}{10}$  "

The general appearance of both the specimens, was, on the upper parts, hoary brown with black, feet black, under parts chestnut red. On looking down upon them, the nose was light hoary, forehead brown, cheek and band extending over the shoulders, light yellowish hoary, with long shining hair, the back

and tail brown again, with shorter fur, tail flattened inclined to a double point. There were eight mammæ, two in the axilla, two inside of fore leg, and four inguinal. The very great development, especially in the large specimen, of the masseter muscle, gave them an appearance of cheek pouches. As all our specimens agree in the white ring around the nose, the black feet, and chestnut red belly, with the more southern specimen, we must suppose they owe this longer and more hoary fur upon back to their northern origin. *Of their habits in the forest I have studied but little.* They generally affect a barren stony side hill for their burrow, not in the deep forest but on the outskirts of settlements, and as I never have heard of their ravages in the clover fields, I fancy they are not very numerous in our province. A young one that I saw in confinement was very graceful in its attitude, sitting upon its haunches with its tail brought forward like a squirrel and using its fore paws. As they advance in life in confinement, they become loaded with fat, and clumsy in their movements; they have the habit of flattening themselves to the ground. When going on all fours, they have the high back and steep cut off rump of the guinea-pig. The nose is somewhat pointed though the head is blunt or rounded. Another favourite attitude is to sit upon their haunches with the head thrown upwards and to one side, the fore paws hanging down flattened to the body. They hibernate regularly in confinement, on the approach of cold weather, but may easily be roused from insensibility, by being placed before a warm fire.

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ART. II. ON A PECULIARITY IN THE BLOCK-HOUSE SEAM,  
COW BAY, CAPE BRETON. BY JOHN RUTHERFORD,  
M. E., *Inspector of Mines.*

(Read January 18, 1869.)

THE carboniferous formation which borders the eastern shore of Cape Breton, does not in its general features differ much from other coal-producing localities. The position of the coal measures has been ascertained over a distance of about fifty miles, extending from Miré Bay on the south, to the syenitic range which forms the promontory of Cape Dauphin on the north, against the southern