Key to the land mammals of northeastern
The original of this book is in the Cornell University Library.

There are no known copyright restrictions in the United States on the use of the text.
KEY TO THE LAND MAMMALS
OF
Northeastern North America

BY

GERRIT S. MILLER JR

ALBANY
UNIVERSITY OF THE STATE OF NEW YORK
1900
Price 15 cents.
University of the State of New York

REGENTS

With years of election

1874 Anson Judd Upson L.H.D. D.D. LL.D. Chancellor, Glens Falls
1892 William Croswell Doane D.D. LL.D. Vice-Chancellor, Albany
1873 Martin I. Townsend M.A. LL.D. — — Troy
1877 Chauncey M. DePew LL.D. — — — New York
1877 Charles E. Fitch LL.B. M.A. L.H.D. — Rochester
1877 Orris H. Warren D.D. — — — — Syracuse
1878 Whitelaw Reid LL.D. — — — New York
1881 William H. Watson M.A. M.D. — — — Utica
1881 Henry E. Turner — — — — Lowville
1883 St. Clair McKelway L.H.D. LL.D. D.C.L. — Brooklyn
1885 Hamilton Harris Ph.D. LL.D. — — — Albany
1885 Daniel Beach Ph.D. LL.D. — — — Watkins
1888 Carroll E. Smith LL.D. — — — Syracuse
1890 Pliny T. Sexton LL.D. — — — — Palmyra
1890 T. Guilford Smith M.A. LL.D. C.E. — — Buffalo
1893 Lewis A. Stimson B.A. M.D. — — — New York
1895 Albert Vander Veer Ph.D. M.D. — — — Albany
1895 Charles R. Skinner M.A. LL.D. Superintendent of Public Instruction, ex officio
1897 Chester S. Lord M.A. LL.D. — — — Brooklyn
1897 Timothy L. Woodruff M.A. Lieutenant-Governor, ex officio
1899 Theodore Roosevelt B.A. LL.D. Governor, ex officio
1899 John T. McDonough LL.B. LL.D. Secretary of State, ex officio
1900 Thómas A. Hendrick M.A. LL.D. — — — Rochester

SECRETARY

Elected by regents

1900 James Russell Parsons Jr. M.A.

DIRECTORS OF DEPARTMENTS

1888 Melvil Dewey M.A State library and Home education
1890 James Russell Parsons Jr. M.A. Administrative, College and High school dep'ts
1890 Frederick J. H. Merrill Ph.D. State museum
KEY TO THE LAND MAMMALS
OF
Northeastern North America

BY
GERRIT S. MILLER JR

ALBANY
UNIVERSITY OF THE STATE OF NEW YORK
1900
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>61</td>
</tr>
<tr>
<td>Life zones</td>
<td>61</td>
</tr>
<tr>
<td>Arctic zones</td>
<td>62</td>
</tr>
<tr>
<td>Hudsonian zone</td>
<td>62</td>
</tr>
<tr>
<td>Canadian zone</td>
<td>62</td>
</tr>
<tr>
<td>Transition zone</td>
<td>62</td>
</tr>
<tr>
<td>Upper austral zone</td>
<td>62</td>
</tr>
<tr>
<td>Species and subspecies</td>
<td>63</td>
</tr>
<tr>
<td>General plan of key</td>
<td>63</td>
</tr>
<tr>
<td>Synopsis</td>
<td>65</td>
</tr>
<tr>
<td>Key</td>
<td>76</td>
</tr>
<tr>
<td>Index</td>
<td>153</td>
</tr>
</tbody>
</table>
KEY TO THE LAND MAMMALS OF NORTH-EASTERN NORTH AMERICA

INTRODUCTION

Originally outlined as part of my recently published Preliminary list of the mammals of New York, this "key" soon grew to the proportions of an independent paper. As first planned it was intended to furnish a ready means for finding—with the minimum of technical requirements—the name of any wild mammal taken in New York. When the "key" was separated from the "list" its scope was extended to include the entire mammalian fauna of the Atlantic slope of North America north of the southern boundary of the upper austral zone. At the same time the whales and porpoises were omitted. It is thus practically a key to the land mammals of the Atlantic division of the life zones represented in New York state, since the upper austral zone is the southernmost of these, and the arctic zone, florally at least, may almost be said to touch the higher Adirondack peaks. Throughout I have endeavored to write as non-technically as the subject will permit, that is to use no unexplained terms not to be found in a pocket dictionary.

Life zones

While the subject of life zones has been dealt with at considerable length in the paper just referred to, a few words of definition are necessary here. A life zone is simply an extended area over which the fauna and flora are relatively homogeneous. As such areas are limited chiefly by temperature, and their boundaries consequently determined by isothermal lines, they normally assume the form of belts stretching from east to west, or, to speak more exactly, arranged concentrically around the poles. Therefore in passing from pole to equator a certain number of these belts must be crossed. The forms of the life zones are distorted by irregularities in the surface of the earth with their accompanying variations in temperature. In the northern hemisphere mountain chains

carry the northern zones southward, and hot, dry plains bend the southern zones toward the north. Finally a zone may become locally broken into islands, as when a cool mountain chain is interrupted by warm valleys and plains, or cold swamps are scattered in hot lowlands. In North America there are seven of these life areas, each characterized by the predominance of a particular assemblage of animals and plants. Beginning at the north they are the arctic zone, Hudsonian zone, Canadian zone, transition zone, upper austral zone, lower austral zone and tropical zone. The last two lie south of the region included within the scope of this paper. The areas covered by the Atlantic divisions of the five others are as follows:

**Arctic zone.** Treeless northeastern coasts of Labrador and Newfoundland; above timber line on the highest mountain peaks of New England, and perhaps of the Adirondacks also.

**Hudsonian zone.** Wooded portions of Labrador, Newfoundland, northern Ontario, northern and eastern Quebec and northern New Brunswick; region immediately below timber line on the mountains of New England and New York and possibly in the highest southern Alleghanies.

**Canadian zone.** Eastern Nova Scotia; the greater part of New Brunswick; southern Quebec; eastern central Ontario; northern and western Maine; the higher parts of New Hampshire, Vermont and western Massachusetts; the Adirondacks, Catskills and higher parts of the Alleghanies.

**Transition zone.** Western Nova Scotia; eastern and southern Maine; southern Ontario (except north shore of Lake Erie); the greater part of the lowlands of New York, Vermont, New Hampshire, Massachusetts, Connecticut and Pennsylvania; the lower slopes of the Alleghanies to their extreme southern limit.

**Upper austral zone.** North shore of Lake Erie in southern Ontario; south shore of Lake Ontario, "lake region", lower Hudson valley and western end of Long Island in New York; southern Connecticut; lowlands of New Jersey, Delaware, eastern Pennsylvania, eastern Maryland and northeastern Virginia; belt (extending northeast and southwest) in Virginia, North Carolina, South Carolina and Georgia, covering the higher land east of the mountains.
Species and subspecies

In this paper subspecies are treated as the component parts of species, not, as is now too often the custom, as independent forms intergrading with species. The relationship of species and subspecies is thus maintained exactly parallel with that between genus and subgenus or family and subfamily. 1 The separate keys to the subspecies under each species will help to emphasize this conception. I have attempted to apply a system of English names that will coincide with this treatment of species and subspecies, but in certain cases perfect adherence to this principle has not been possible.

General plan of the key

Beginning with the definition of the class Mammalia, this paper consists of a series of keys and definitions, interspersed with brief statements of range, habitat and extent of groups. Keys are given under each order to its families, under each family to its genera, under each genus to its species and under each species to its subspecies. Suborders, subfamilies and subgenera are not included in this scheme, but their characters are referred to in the sections of the keys or elsewhere, and their names are inserted in the synopsis placed before the "key" proper (p. 65–76). Under each species and subspecies will be found references to, 1) the first publication of the specific or subspecific name, 2) first use of the binomial or trinomial combination, and 3) a recent monographic paper in which the form is described in detail. Absence of the second reference shows that the binomial or trinomial was used by the original describer of the form, or that it is now for the first time published. Absence of the third reference, in cases where the second and third are

1 An example may make the matter more clear. Squirrels of the genus Sciurus occur throughout the greater part of the wooded portion of the northern hemisphere. The species vary much in form, and the variations tend to group themselves in such a way that the different groups are recognizable as subgenera, all, however, falling within the definition of the genus Sciurus. To the one of these groups of species containing the type species of the genus the name Sciurus in a subgeneric sense is restricted. It happens that this subgenus Sciurus is confined to the old world, and that within our limits the genus is represented by the three subgenera Tamiasciurus, Neosciurus and Parasciurus. No one would on this account deny that the genus Sciurus occurs in eastern North America. A species of this genus, Sciurus ludo-vici-anus, is widely distributed in the southern United States. Individuals of this species vary considerably in size and color, and the variations so group themselves that several subspecies are recognizable, each restricted to a particular part of the range of the species, and all included within the definition of the species. The one of these which was first named (that of the Mississippi valley) and which consequently gives its name to the species as a whole, is not found east of the Alleghanies, whereas is replaced by S. ludo-vici-anus vici-anus. The species Sciurus ludo-vici-anus is nevertheless as truly a member of the fauna of the eastern United States as is the genus Sciurus.
not identical, shows that nothing of importance has been published on
the animal during the present phase of the study of North American
mammals, a period dating from 1889. The type locality of each form
is given in parenthesis after the first reference. The accented syllable of
all technical names is marked with an acute accent; and the derivation
of each name is placed in parenthesis at the end of the diagnosis
(Lat. Latin, N. Lat.=New Latin, Gk. Greek). All measurements are in
millimeters followed (in parenthesis) by an approximate equivalent in
inches and sixteenths.

As in the List of the mammals of New York, my aim is to present the
subject as it stands today rather than to attempt to reach final conclu-
sions. Numerous forms are therefore admitted the status of which is still
in question. Though this course has its disadvantages, it seems the one
least open to objection at the present time, when any revisionary work
would necessarily be imperfect.

The use of keys in botany and zoology is now too well understood to
require any special explanation. It must be remarked, however, that no
t keys can be made by which single specimens of closely related sub-
species can be invariably named. Certain species even differ from each
other by characters that can not be set down in a single line of print. I
have endeavored to base keys and diagnoses on the most tangible
characters available; but where the way is hard for the specialist it
can not be made easy for the beginner.

Individuals affected with albinism, melanism and other abnormalities
frequently occur in all species. Compared with the place they hold in
popular estimation their interest is slight. They should be carefully
 guarded against as extremely liable to cause difficulty in identification.
Such individuals seem possessed of a peculiar faculty for bringing them-
selves to notice.
SYNOPSIS

Class **Mammalia**: mammals, p. 76
Subclass **Metatheria**: marsupials, p. 76
Order **Marsupialia**: marsupials, p. 77–78
Suborder **Polyprotodontia**: polyprotodont marsupials
Family **Didelphidae**: opossums, p. 77–78
Genus **Didelphis** Linnaeus: p. 78

1 Didelphis virginiana Kerr: opossum, p. 78
   Represented by:
   Didelphis virginiana virginiana Kerr: northeastern opossum, p. 78
Subclass **Eutheria**: placental mammals, p. 76
Order **Ungulata**: hoofed mammals, p. 78
Suborder **Artiodactyla**: even-toed hoofed mammals, p. 78
Family **Bovidae**: cattle, p. 79
Genus **Bison** Hamilton Smith: p. 79
2 Bison bison (Linnaeus): American bison, p. 79
   Represented by:
   Bison bison bison (Linnaeus): American plains bison, p. 79
   Family **Cervidae**: deer, p. 79
   Genus **Rangifer** Hamilton Smith: p. 80
   3 Rangifer caribou (Gmelin): woodland caribou, p. 80
   4 Rangifer terraenovae Bangs: Newfoundland caribou, p. 81
   5 Rangifer arcticus (Richardson): barren ground caribou, p. 81
      Genus **Alces** Jardine: p. 81
   6 Alces americanus Jardine: eastern moose, p. 81
      Genus **Cervus** Linnaeus: p. 82
   7 Cervus canadensis (Erxleben): eastern American wapiti, p. 82
      Genus **Odocoileus** Rafinesque: p. 82
   8 Odocoileus americanus (Erxleben): Virginia deer, p. 82
      Represented by:
      Odocoileus americanus americanus (Erxleben): southern Virginia deer, p. 83
      Odocoileus americanus borealis Miller: northern Virginia deer, p. 83

1 The arrangement of the higher groups is that adopted by Flower and Lydekker.
Order **GLIRES**: rodents, p. 83
Suborder **SIMPLICIDENTATA**: true rodents, p. 84
Family **SCIURIDAE**: squirrels, p. 84
Genus **Sciurus** Linnaeus: p. 85
Subgenus **Tamiasciurus** Trouessart: p. 85

9 **Sciurus hudsonicus** Erxleben: red squirrel, p. 85
   Represented by:
   Sciurus hudsonicus hudsonicus Erxleben: Hudsonian red squirrel, p. 86
   Sciurus hudsonicus gymnicus Bangs: Canadian red squirrel, p. 85
   Sciurus hudsonicus loquax Bangs: southeastern red squirrel, p. 86
Subgenus **Neosciurus** Trouessart: p. 85

10 **Sciurus carolinensis** Gmelin: gray squirrel, p. 86
    Represented by:
    Sciurus carolinensis carolinensis Gmelin: southeastern gray squirrel, p. 86
    Sciurus carolinensis leucotis Gapper: northeastern gray squirrel, p. 87
Subgenus **Parasciurus** Trouessart: p. 85

11 **Sciurus ludovicianus** Custis: fox squirrel, p. 87
    Represented by:
    Sciurus ludovicianus vicinus Bangs: northern fox squirrel, p. 87
Genus **Tamias** Illiger: p. 88

12 **Tamias striatus** (Linnaeus): eastern chipmunk, p. 88
    Represented by:
    Tamias striatus striatus (Linnaeus): southeastern chipmunk, p. 88
    Tamias striatus lysteri (Richardson): northeastern chipmunk, p. 88
Genus **Arctomys**: Schreber: p. 89

13 **Arctomys monax** (Linnaeus): woodchuck, p. 89
    Represented by:
    Arctomys monax monax (Linnaeus): southeastern woodchuck, p. 89
    Arctomys monax canadensis (Kuhl): northeastern woodchuck, p. 89
14 **Arctomys ignavus** Bangs: Labrador woodchuck, p. 89
   Genus **Sciuropterus** F. Cuvier: p. 90
15 **Sciuropterus volans** (Linnaeus): southern flying squirrel, p. 90
   Represented by:
   **Sciuropterus volans volans** (Linnaeus): southern flying squirrel, p. 90
16 **Sciuropterus sabrinus** (Shaw): northern flying squirrel, p. 90
   Represented by:
   **Sciuropterus sabrinus sabrinus** (Shaw): Hudsonian flying squirrel, p. 91
   **Sciuropterus sabrinus macrotis** Mearns: Canadian flying squirrel, p. 91
Family **CASTORIDAE**: beavers, p. 91
   Genus **Castor** Linnaeus: p. 35
17 **Castor canadensis** Kuhl: American beaver, p. 92
   Represented by:
   **Castor canadensis canadensis** Kuhl: northeastern beaver, p. 92
   **Castor canadensis carolinensis** Rhoads: southeastern beaver, p. 92
Family **MURIDAE**: mice, p. 92
   Subfamily **MURINAE**: old world mice, p. 93
   Genus **Mus** Linnaeus: p. 94
18 **Mus musculus** Linnaeus: house mouse, p. 94
19 **Mus rattus** Linnaeus: black rat, p. 95
20 **Mus decumanus** Pallas: house rat, p. 95
   Subfamily **CRICETINAE**: new world mice, p. 93
   Genus **Reithrodontomys** Giglioli: p. 95
21 **Reithrodontomys lecontii** (Audubon & Bachman): harvest mouse
   p. 95
   Represented by:
   **Reithrodontomys lecontii impiger** Bangs: Virginia harvest mouse, p. 96
   Genus **Oryzomys** Baird: p. 96
22 **Oryzomys palustris** (Harlan): ricefield mouse, p. 96
   Represented by:
   **Oryzomys palustris palustris** (Harlan): northern ricefield mouse, p. 96
   Genus **Peromyscus** Gloger: p. 96
   Subgenus **Peromyscus** Gloger: p. 96
23 **Peromyscus canadensis** (Miller): Canadian white-footed mouse, p. 97
   Represented by:
   **Peromyscus canadensis abietorum** Bangs: Hudsonian white-footed mouse, p. 97
   **Peromyscus canadensis canadensis** (Miller): Canadian white-footed mouse, p. 97
   **Peromyscus canadensis nubiterrae** (Rhoads): Cloudland white-footed mouse, p. 98

24 **Peromyscus leucopus** (Rafinesque): deer mouse, p. 98

25 **Peromyscus maniculatus** (Wagner): Labrador white-footed mouse, p. 98
   Subfamily **NEOTOMINAE**: wood rats, p. 93
   Genus **Neotoma** Say & Ord: p. 98
   Subgenus **Neotoma** Say & Ord: p. 98

26 **Neotoma pennsylvanica** Stone: Allegheny cave rat, p. 99
   Subfamily **MICROTINAE**: voles and lemmings, p. 93
   Genus **Synaptomys** Baird: p. 99
   Subgenus **Synaptomys** Baird: p. 99

27 **Synaptomys cooperi** Baird: Cooper’s lemming, p. 100

28 **Synaptomys fatuus** Bangs: Bangs’s lemming, p. 100
   Subgenus **Mictomys** True: p. 99

29 **Synaptomys innitus** (True): True’s lemming, p. 100

30 **Synaptomys sphagnicola** Preble: Preble’s lemming, p. 100
   Genus **Dicrostonyx** Gloger: p. 101

31 **Dicrostonyx hudsonius** (Pallas): Labrador lemming, p. 101
   Genus **Fiber** Cuvier: p. 101

32 **Fiber zibethicus** (Linnaeus): muskrat, p. 101
   Represented by:
   **Fiber zibethicus zibethicus** (Linnaeus): northeastern muskrat, p. 101
   **Fiber zibethicus aquilonius** Bangs: Labrador muskrat, p. 102

33 **Fiber obscurus** Bangs: Newfoundland muskrat, p. 101
   Genus **Microtus** Schrank: p. 101
   Subgenus **Pitymys** McMurtrie: p. 102
34 Microtus pinetorum (Le Conte): pine mouse, p. 103
   Represented by:
   Microtus pinetorum scalopsoides (Audubon and Bachman): northern pine mouse, p. 103
   Subgenus Microtus Schrank: p. 103
35 Microtus terraenovae Bangs: Newfoundland vole, p. 104
36 Microtus chrotorrhinus (Miller): rock vole, p. 104
   Represented by:
   Microtus chrotorrhinus chrotorrhinus (Miller): southern rock vole, p. 104
   Microtus chrotorrhinus ravus Bangs: Labrador rock vole, p. 105
37 Microtus breweri (Baird): Muskeget island vole, p. 105
38 Microtus enixus Bangs: Hamilton inlet vole, p. 105
39 Microtus pennsylvanicus (Ord): field mouse, p. 105
   Represented by:
   Microtus pennsylvanicus pennsylvanicus (Ord): common eastern field mouse, p. 106
   Microtus pennsylvanicus labratorius Bailey: Labrador field mouse, p. 106
   Microtus pennsylvanicus fontigenus (Bangs): northern field mouse, p. 107
   Microtus pennsylvanicus acadicus Bangs: Acadian field mouse, p. 107
40 Microtus nesophilus Bailey: Gull island mouse, p. 107
   Genus Phenacomys Merriam: p. 108
41 Phenacomys celatus Merriam: large yellow-faced phenacomys, p. 108
42 Phenacomys latimanus Merriam: small yellow-faced phenacomys, p. 108
   Genus Evotomys Coues: p. 109
43 Evotomys ungava Bailey: ungava redbacked mouse, p. 109
44 Evotomys carolinensis Merriam: Carolina redbacked mouse, p. 109
45 Evotomys proteus Bangs: variable redbacked mouse, p. 110
Evotomys gapperi (Vigors): common redbacked mouse, p. 110
Represented by:
Evotomys gapperi gapperi (Vigors): eastern redbacked mouse, p. 110
Evotomys gapperi ochraceus Miller: Mount Washington redbacked mouse, p. 111

Evotomys rhoadsi (Stone): New Jersey redbacked mouse, p. 111
Family DIPODIDIAE: jerboas, jumping mice etc. p. 111
Subfamily ZAPODINAE: jumping mice, p. 111
Genus Zapus Coues: p. 112

Zapus hudsonius (Zimmermann): meadow jumping mouse, p. 112
Represented by:
Zapus hudsonius hudsonius (Zimmermann): northern meadow jumping mouse, p. 113
Zapus hudsonius americanus (Barton): southern meadow jumping mouse, p. 112
Zapus hudsonius ladasi Bangs: Labrador meadow jumping mouse, p. 113
Genus Napaeozapus Preble: p. 113

Napaeozapus insignis Miller: woodland jumping mouse, p. 113
Represented by:
Napaeozapus insignis abietorum Preble: northern woodland jumping mouse, p. 114
Napaeozapus insignis insignis Miller: southern woodland jumping mouse, p. 114
Napaeozapus insignis roanensis Preble: mountain woodland jumping mouse, p. 114
Family ERETHIZONTIDAE: American porcupines, p. 115.
Genus Erethizon F. Cuvier: p. 115

Erethizon dorsatus (Linnaeus): Canadian porcupine, p. 115
Suborder DUPLICIDENTATA: hares and pikas, p. 84
Family LEPORIDAE: hares, p. 115
Genus Lepus Linnaeus: p. 115
Subgenus Lepus Linnaeus: p. 116

Lepus labradorius Miller: Labrador arctic hare, p. 116

Lepus bangsi (Rhoads): Newfoundland arctic hare, p. 116
53 **Lepus americanus** Erxleben: American varying hare, p. 116
   Represented by:
   *Lepus americanus struthopus* Bangs: Nova Scotia varying hare, p. 117
   *Lepus americanus americanus* Erxleben: northern varying hare, p. 117
   *Lepus americanus virginianus* (Harlan): southern varying hare, p. 117
   Subgenus **Sylvilagus** Gray: p. 116

54 **Lepus floridanus** Allen: cottontail, p. 118
   Represented by:
   *Lepus floridanus transitionalis* Bangs: northeastern cottontail, p. 118
   *Lepus floridanus mearnsi* (Allen): eastern prairie cottontail, p. 118
   *Lepus floridanus mallurus* (Thomas): southeastern cottontail, p. 119
   Order **FERAE**: flesh-eaters, p. 119
   Suborder **PINNIPEDIA**: seals and their allies, p. 120
   Family **ROSMARIDAE**: walruses, p. 120
   Genus **Rosmarus** Scopoli: p. 120

55 **Rosmarus rosmarus** (Linnaeus): Atlantic walrus, p. 120
   Family **PHOCIDAE**: earless seals, p. 121
   Genus **Cystophora** Nilsson: p. 121

56 **Cystophora cristata** (Erxleben): hooded seal, p. 121
   Genus **Halichoerus** Nilsson: p. 121

57 **Halichoerus grypus** (Fabricius): gray seal, p. 122
   Genus **Phoca** Linnaeus: p. 122
   Subgenus **Pagophilus** Gray: p. 122

58 **Phoca groenlandica** Fabricius: harp seal, p. 122
   Subgenus **Pusa** Scopoli: p. 122

59 **Phoca hispida** Schreber: ringed seal, p. 123
   Subgenus **Phoca** Linnaeus, p. 122

60 **Phoca vitulina** Linnaeus: harbor seal, p. 123
   Suborder **FISSIPEDIA**: true carnivores, p. 120
   Family **FELIDAE**: cats, p. 123
   Genus **Felis** Linnaeus: p. 123
61 **Felis oregonensis** Rafinesque: puma, p. 123
   Represented by:
   **Felis oregonensis hippolestes** Merriam: northern puma, p. 124
   Genus **Lynx** Kerr: p. 124
   Subgenus **Lynx** Kerr: p. 125

62 **Lynx canadensis** Kerr: Canada lynx, p. 126

63 **Lynx subsolanus** Bangs: Newfoundland lynx, p. 125
   Subgenus **Cervaria** Gray: p. 125

64 **Lynx ruffus** (Gueldenstaedt): bay lynx, p. 125
   Represented by:
   **Lynx ruffus ruffus** (Gueldenstaedt): northeastern bay lynx, p. 125

65 **Lynx gigas** Bangs: Nova Scotia lynx, p. 126
   Family **Canidae**: dogs, p. 126
   Genus **Canis** Linnaeus: p. 126

66 **Canis albus** (J. Sabine): arctic wolf, p. 127

67 **Canis occidentalis** (Richardson): American wolf, p. 127
   Genus **Vulpes** Richardson: p. 127

68 **Vulpes lagopus** (Linnaeus): arctic fox, p. 128

69 **Vulpes fulvus** (Desmarest): red fox, p. 128
   Represented by:
   **Vulpes fulvus fulvus** (Desmarest): southeastern red fox, p. 128
   **Vulpes fulvus rubricatus** Bangs: Nova Scotia red fox, p. 128

70 **Vulpes deletrix** Bangs: Newfoundland red fox, p. 129
   Genus **Urocyon** Baird: p. 129

71 **Urocyon cinereoargenteus** (Müller): gray fox, p. 129
   Represented by:
   **Urocyon cinereoargenteus cinereoargenteus** (Müller): eastern gray fox, p. 129
   Family **Mustelidae**: weasels, p. 129
   Genus **Lutra** Brisson: p. 130

72 **Lutra hudsonica** (Desmarest): North American otter, p. 130
   Represented by:
   **Lutra hudsonica hudsonica** (Desmarest): northeastern otter, p. 130
   **Lutra hudsonica lataxina** (F. Cuvier): southeastern otter, p. 131
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

73 **Lutra degener** Bangs: Newfoundland otter, p. 131
   Genus **Gulo** Storr: p. 131

74 **Gulo luscus** (Linnaeus): wolverine, p. 131
   Genus **Mustela** Linnaeus: p. 132

75 **Mustela pennanti** Erxleben: fisher, p. 132
   Represented by:
   Mustela pennanti pennanti Erxleben: eastern fisher, p. 132

76 **Mustela brumalis** Bangs: north Labrador marten, p. 132

77 **Mustela americana** Turton: eastern marten, p. 132

78 **Mustela atrata** Bangs: Newfoundland marten, p. 133
   Genus **Putorius** Cuvier: p. 133
   Subgenus **Lutreola** Wagner: p. 133

79 **Putorius vison** (Schreber): mink, p. 133
   Represented by:
   Putorius vison vison (Schreber): northeastern mink, p. 134
   Putorius vison lutreoccephalus (Harlan): southeastern mink, p. 134
   Subgenus **Arctogale** Kaup: p. 133

80 **Putorius cicognanii** (Bonaparte): brown weasel, p. 134
   Represented by:
   Putorius cicognanii cicognanii (Bonaparte): eastern brown weasel, p. 135

81 **Putorius occisor** Bangs: slender-tailed weasel, p. 135

82 **Putorius noveboracensis** Emmons: New York weasel, p. 135
   Represented by:
   Putorius noveboracensis noveboracensis Emmons: white-bellied New York weasel, p. 136
   Putorius noveboracensis notius Bangs: yellow-bellied New York weasel, p. 136
   Genus **Mephitis** Cuvier: p. 136

83 **Mephitis mephitica** (Shaw): skunk, p. 136
   Represented by:
   Mephitis mephitica mephitica (Shaw): northeastern skunk, p. 137
   Mephitis mephitica scrutator Bangs: southeastern skunk, p. 137
   Family **PROCYONIDAE**: raccoons, p. 137
   Genus **Procyon** Storr: p. 137
84 Procyon lotor (Linnaeus): racoon, p. 137
Represented by:
Procyon lotor lotor (Linnaeus): northeastern racoon, p. 138
Family Ursidae: bears, p. 138
Genus Thalarctos Gray: p. 138

85 Thalarctos maritimus (Phipps): polar bear, p. 139
Genus Ursus Linnaeus: p. 139
Subgenus Euarctos Gray: p. 139

86 Ursus americanus Pallas: black bear, p. 139
Represented by:
Ursus americanus americanus Pallas: eastern black bear, p. 139
Ursus americanus sornborgeri Bangs: Labrador black bear, p. 139
Order Insectivora: insect-eaters, p. 140
Family Talpidae: moles, p. 140
Subfamily Talpinae: true moles, p. 140
Genus Scalops Cuvier: p. 141

87 Scalops aquaticus (Linnaeus): naked-tailed mole, p. 141
Represented by:
Scalops aquaticus aquaticus (Linnaeus): northern naked-tailed mole, p. 141
Genus Parascalops True: p. 141

88 Parascalops breweri (Bachman): eastern hairy-tailed mole, p. 142
Genus Condylura Illiger: p. 140

89 Condylura cristata (Linnaeus): star-nosed mole, p. 141
Family Soricidae: shrews, p. 142
Genus Blarina Gray: p. 142
Subgenus Blarina Gray: p. 142

90 Blarina brevicauda (Gray): large blarina, p. 142
Represented by:
Blarina brevicauda brevicauda (Gray): northern large blarina, p. 143
Subgenus Cryptotis Pomel: p. 142

91 Blarina parva (Say): small blarina, p. 143
Represented by:
Blarina parva parva (Say): northern small blarina, p. 143
Genus Sorex Linnaeus: p. 143
Subgenus Neosorex Baird: p. 143
Sorex albibarbis (Cope): eastern marsh shrew, p. 144
Subgenus Microsorex Baird: p. 143
Sorex hoyi Baird: Hoy’s shrew, p. 144
Subgenus Sorex Linnaeus: p. 143
Sorex macrurus Batchelder: big-tailed shrew, p. 144
Sorex richardsoni Bachman: Richardson’s shrew, p. 144
Sorex fumeus Miller: smoky shrew, p. 145
Sorex personatus I. Geoffroy: masked shrew: p. 145
Represented by:
Sorex personatus lesueuri (Duvernoy): southern masked shrew, p. 146
Sorex personatus personatus I. Geoffroy: northern masked shrew, p. 145
Sorex personatus miscix Bangs: Labrador masked shrew p. 146
Order CHIROPTERA: bats, p. 146
Suborder MICROCHIROPTERA true bats, p. 146
Family VESPERTILIONIDAE: typical bats, p. 146
Subfamily VESPERTILIONINAE: simple-nosed typical bats, p. 146
Genus Lasiurus Gray: p. 147
Lasiurus cinereus (Beauvois): hoary bat, p. 147
Lasiurus borealis (Müller): red bat, p. 147
Represented by:
Lasiurus borealis borealis (Müller): northern red bat, p. 148
Genus Nycticeius Rafinesque: p. 148
Nycticeius humeralis Rafinesque: Rafinesque’s bat, p. 148
Genus Myotis Kaup: p. 148
Myotis subulatus (Say): Say’s bat, p. 149
Represented by:
Myotis subulatus subulatus (Say): eastern Say’s bat, p. 149
Myotis lucifugus (Le Conte): little brown bat, p. 149
Represented by:
Myotis lucifugus lucifugus (Le Conte): eastern little brown bat, p. 149
Genus Lasionycteris Peters: p. 149
Lasionycteris noctivagans (Le Conte): silvery bat, p. 149
Genus Pipistrellus Kaup: p. 150
104 Pipistrellus subflavus (F. Cuvier): American pipistrelle, p. 150
Represented by:
  Pipistrellus subflavus subflavus (F. Cuvier): southeastern pipistrelle, p. 150
  Pipistrellus subflavus obscurus Miller: northeastern pipistrelle, p. 150
Genus Vespertilio Linnaeus: p. 151

105 Vespertilio fuscus Beauvois: big brown bat, p. 151
Represented by:
  Vespertilio fuscus fuscus Beauvois: eastern big brown bat, p. 151

KEY
Class Mammalia Mammals

Vertebrate (backboned) animals with four chambered heart, complete double circulation, body partly or wholly covered with hair (rarely almost naked); young nourished for a period after birth by milk; breathing accomplished by means of lungs (Mammalia; Lat., a nipple).

The Mammalia are distributed over practically the whole surface of the earth and throughout the oceans. They are absent however from the most extreme arctic and antarctic regions. The class is divided into three subclasses: 1) the Prototheria, in which the young are hatched from eggs as in birds, confined to New Guinea, Australia, and Tasmania; 2) the Metatheria, in which the young are born in a very rudimentary condition and after birth carried for some time attached to the nipples of the parent (usually in a special pouch of skin); and 3) the Eutheria, in which the young are born perfectly formed. While the Metatheria comprise the one order Marsupialia, a single representative of which occurs within our limits, the Eutheria are divided by Flower and Lydekker into 9 orders. Of these 7 are terrestrial, and members of each are found in North America. Six come within the scope of the present paper.

ORDERS
Female generally (always in North American species) provided with an external pouch in which the young are carried for sometime after birth, Metatheria (in species found within our limits, tail prehensile, teeth 50, hind foot with 5 toes, the innermost of which is thumb-like and clawless) (opossums) . . . . Marsupialia, p. 77

1 An Introduction to the study of mammals living and extinct. 1891.
Female without external pouch for carrying the young,

**Eutheria** (in species found within our limits, tail never prehensile, teeth less than 50, innermost toe of hind foot never thumb-like)

Fore limbs modified to serve as wings (bats)........... *Chiroptera*, p. 146

Fore limbs not modified to serve as wings

Toes armed with hoofs (bison, deer etc.)............. *Ungulata*, p. 78

Toes armed with claws

Front teeth chisel-shaped and separated from grinding teeth by a wide space (gnawing animals).................................. *Glires*, p. 83

Front teeth not chisel-shaped, tooth row essentially continuous

Brain large, well developed; in species found within our limits, size large, length 300 (12) to 2400 (96), eyes well developed, muzzle not greatly elongated (flesh-eaters)

Brain small, not highly developed; in species found within our limits, size small, length under 250 (10), eyes small or rudimentary, muzzle greatly elongated (moles, shrews, etc.)................................. *Insectivora*, p. 140

Order **Marsupialia** Marsupials

Two small separate bones projecting from front of pelvis; female reproductive organs double through greater part of their length; young not attached to parent before birth by a complicated special organ (placenta) but born in a very undeveloped condition and carried for some time in an external pouch of skin in which are situated the nipples; brain very small and simple; in North American species tail prehensile, teeth 50, hind foot with five toes, the innermost of which is clawless and thumb-like. (*M*arsup*ia*; Lat., a pouch)

The order **Marsupialia** reaches its greatest development in Australia and the neighboring islands. Elsewhere it is confined to South America and the warmer parts of North America. Eight families are recognized, six of which are peculiar to the Australian region. The other two are confined to America. One of them reaches our limits.

Family **Didelphididae** Opossums

Teeth 50; toes five, distinct, each provided with a well developed claw except the first on hind foot, which is thumb-like and clawless. Tail long, prehensile, mostly naked and scaly. (*Didelphididae*; genus *Didelphis*)
The family Didelphidae is peculiar to the warmer parts of America. It contains about 10 genera, all strictly tropical with the exception of the following:

Genus Didelphis Linnaeus

1758 Didelphis Linnaeus, Systema naturae. ed. 10. 1: 21. Type Didelphis marsupialis Linnaeus.

Size of a house cat; fur a mixture of short, fine, soft hairs and long coarse bristles; pouch always well developed; fifth toe on hind foot markedly shorter than second, third and fourth, which are subequal. (Didelphis; Gk., two womb)

The genus Didelphis is peculiar to the warmer parts of America, it contains three or four species, one of which reaches our limits.

Didelphis virginiana Kerr  Common opossum

1792 Didelphis virginiana Kerr, Animal kingdom. 1: 193 (Virginia).

Blackish varied with grayish white; ears naked, leathery; tail dark at base, light at tip; total length 700 (27½), tail vertebrae 28 (11), hind foot 57 (2½). (virginiana; N. Lat. Virginian)

The common opossum is abundant in woods and old fields throughout the austral zones of the eastern United States. At the northern limit of its range it is irregular in distribution. Notwithstanding the popular misconceptions on the subject the process of reproduction in the opossum is, with the exception of the one peculiarity common to the members of the subclass Metatheria, precisely as in our other mammals.

Order Ungulata  Hoofed animals

Terrestrial, herbivorous or omnivorous animals with hoofed toes; front teeth variable in form (sometimes wanting in upper jaw) but never long and with chisel-like edges; cheek teeth with broad flat crowns for grinding vegetable matter. (Ungulata; Lat., a hoof)

The order Ungulata contains about a dozen families distributed practically throughout the world outside of Australia and the neighboring islands. Four of these occur in America north of Panama, and two have been found within our limits during historic times. The domestic horse, cow, sheep, and pig are well known representatives of the order. The North American members of the group belong to the suborder Artiodactyla, in which an even number of toes (usually two) are well developed in each foot.
FAMILIES OF UNGULATA

Horns simple, hollow, permanent............................... Bovidae
Horns branched, solid, periodically shed..................... Cervidae

Family Bovidae  
Cattle, bison, sheep, etc.

Horns permanent, consisting of a hollow sheath and solid bony core, canine teeth never present. (Bovidae; Genus Bos)

The family Bovidae, containing the cattle, bison, sheep, true antelopes, and their allies, is represented by about 30 genera, chiefly African and Asiatic. Only one of the three genera occurring in America is confined to the western hemisphere. A single genus has inhabited northeastern North America within historic times.

Genus Bison Hamilton Smith

1827 Bison Hamilton Smith, Griffith's Cuvier, Animal kingdom. 5:373. Type Bos bison Linnaeus.

Forehead convex, much broader than long; horns placed in front of highest part of skull; head heavily clothed with long bushy hair. (Bison; Lat., a bison)

Two living members of this genus are known, one peculiar to eastern Europe, the other to North America. The remains of several extinct species have been found in various parts of North America.

Bison bison (Linnaeus)  American bison

1758 [Bos] bison Linnaeus, Systema naturae. ed. 10. 1:72 (Texas).

Horn core short (under 10 in. or 250 mm) very strongly curved, circumference at base much greater than length along upper curvature. (bison; Lat. a bison)

The American bison, which formerly ranged throughout central North America, east to Pennsylvania and central New York, is now practically extinct, but the skulls and horn cores may be occasionally found in salt licks and other places once frequented by the animals. Our animal was the plains bison, B. bison bison, smaller and shorter horned than the woodland bison, B. bison athabascae Rhoads.

Family Cervidae  Deer and their allies

Horns solid, shed and renewed each year, usually much branched, though occasionally (always in young) simple; canine teeth usually present in upper jaw. (Cervidae; genus Cervus)

The family Cervidae contains 10 or more genera mostly of very wide distribution or peculiar to the old world. At least three are con-
fined to America. Four of the five that occur in America north of Panama have been found within our limits during historic times, and three of these are still represented.

**GENERAE OF CERVIDAE**

Horns present in both sexes; nose entirely hairy (caribou)  
*Rangifer*, p. 80

Horns normally present in males only; nose partly or entirely naked  
R. caribou

Horns broadly flattened; a small naked space between nostrils (moose)  
*Alces*, p. 81

Horns not conspicuously flattened; muzzle entirely naked  
*Cervus*, p. 82

Horns about 1530 (60) in length, their circumference at base about 200 (8) (wapiti)  

Horns about 610 (24) in length, their circumference at base about 115 (4½) (deer)  
*Odocoileus*, p. 83

Genus *Rangifer* Hamilton Smith

1827 *Rangifer* Hamilton Smith, Griffith's Cuvier, Animal kingdom. 5:304.

Type *Cervus tarandus* Linnaeus.

Horns long, much branched, usually flattened at tip; muzzle entirely hairy.  
(Rangifer; Old French, branch-bearer)

This genus, which includes the reindeer of the old world and the caribou of America, is represented within our limits by three species.

**SPECIES OF RANGIFER**

Muzzle and region about eye dark  
*R. caribou*

Muzzle and region about eye conspicuously whitish

Size very large; antlers relatively short and heavy,  
*R. terraenovae*

Size small; antlers relatively long and light  
*R. arcticus*

*Rangifer caribou* (Gmelin)  
*Woodland caribou*

1788 [*Cervus tarandus*]  

1853 *Rangifer caribou* Audubon and Bachman, Quadr. N. Am. 3: 111.

1898 *Rangifer tarandus caribou* Lydekker, The deer of all lands, p. 42.

General color tawny brown; head and neck paler; front half of lower surface of body dark; no white eye ring; a narrow white ring on leg above hoof; horns large and heavy, *the prongs mostly pointing upward*. (caribou; Indian name)

The woodland caribou is abundant in the forested region of the Hudsonian zone and uppermost part of the Canadian zone in eastern Canada. It reaches the eastern United States in northern Maine only.
Rangifer terraenovae Bangs _Newfoundland caribou_

1896 _Rangifer terraenovae_ Bangs, Preliminary description of the Newfoundland caribou, Nov. 11, 1896. p. 2. (Codroy Newfoundland)

1898 _Rangifer tarandus terraenovae_ Lydekker, The deer of all lands, p. 45.

General color drab; head and neck paler, _the muzzle and a large patch including eye conspicuously whitish_; legs whitish for some distance above hoofs; horns large and heavy, the prongs mostly pointing forward and inward. (terraenovae; N. Lat., of Newfoundland)

The Newfoundland caribou is confined to the island of Newfoundland, from which it never crosses to the mainland. It is the largest species of caribou of eastern North America.

**Rangifer arcticus** (Richardson) _Barren ground caribou_

1829 _Cervus tarandus var. arcticus_ Richardson, Fauna Boreali-Americana. 1: 241. (Barren grounds of arctic America)


1898 _Rangifer tarandus arcticus_ Lydekker, The deer of all lands, p. 47.

General color light brown; head and neck paler, the muzzle and a large patch about eye conspicuously whitish; legs whitish for some distance above hoofs, _horns very long and slender_; the prongs mostly pointing inward; _size small, the female scarcely larger than a sheep._ (arcticus; Lat., arctic)

The barren ground caribou occurs in the treeless arctic regions of extreme northern America. Within our limits it is confined to the barrens of Labrador.

**Genus Alces** Jardine

1835 _Alces_ Jardine, The naturalists library, 21 (mammalia; deer, antelope, camels, etc.): 125. _Type Cervus alces Linnaeus._

_Horns very greatly flattened and expanded; muzzle broad and elongated; a small naked spot between nostrils._ (Alces; Lat., an elk)

The genus _Alces_, which contains the old world elk and the American moose, the largest living members of the deer family, is represented by one species within our limits.

**Alces americanus** Jardine _Eastern moose_

1835 _Alces americanus_ Jardine, The naturalists library, 21 (mammalia; deer, antelope, camels, etc.): 125. (Eastern Canada)

1898 _Alces machlis_ Lydekker, The deer of all lands, p. 52. (part)

Dark brown, blackening on belly and paler on legs, shoulders and muzzle; hight at shoulders about 2000 (6 ft); spread of antlers, 1700 (5 ft), circumference of antler above bur, 215 (8½). (americanus; N. Lat., American)

The moose is an inhabitant of forests in the Canadian zone and lowermost edge of the Hudsonian zone. It is now exterminated in the east-
ern United States except in northern Maine, but is still found in the adjoining British provinces.

Genus *Cervus* Linnaeus

1758 *Cervus* Linnaeus, Systema naturae. 1, ed. 10. 1:66. Type *Cervus elaphus* Linnaeus.

Horns large, curved mostly backward, the tines all directed forward; first tine immediately above base; hoofs broad, tail short. (*Cervus*; Lat., a deer)

The genus *Cervus* is confined to the temperate parts of the northern hemisphere. About half a dozen species are known, mostly peculiar to the old world. Two are now recognized as occurring in America; one of these has only recently been exterminated within our limits.

*Cervus canadensis* (Erxleben) *East American wapiti*

1777 [*Cervus elaphus*] *canadensis* Erxleben, Syst. regn. anim. 1:305. (Eastern Canada)

1822 *Cervus canadensis* Desmarest, Mammalgie. 2:433.

1898 *Cervus canadensis* Lydekker, The deer of all lands, p. 94.

Reddish brown, paler in winter; height at shoulder, 1530 (5 ft); horns 1530 (5 ft) in length, 200 (8) in circumference above basal tine. (*canadensis*; N. Lat., Canadian)

The east American wapiti is now extinct in the eastern United States and eastern Canada, where, however, its antlers are often found in bogs and stream beds.

Genus *Odocoileus* Rafinesque

1832 *Odocoileus* Rafinesque, Atlantic journal. 1:109. Type *Odocoileus* *speleus* Rafinesque.

Horns small, curved forward, the tines all directed upward; first tine some distance above base; hoofs narrow; tail rather long. (*Odocoileus*; Gk., tooth cave, Rafinesque's specimen having come from a cavern deposit)

The genus *Odocoileus* (often known as *Cariacus* or *Dorcelsaphus*) numerous members of which occur in the western United States as well as in Mexico and South America, is represented within our limits by one species only.

*Odocoileus americanus* (Erxleben) *Virginia deer*

General color in summer uniform reddish, in winter usually grayer and faintly speckled; belly, inner side of legs, and under side of tail white. (*americanus*; N. Lat., American)

The Virginia deer occurs in all sufficiently extensive tracts of forest throughout eastern North America from the south Atlantic states to the warmer parts of the Canadian zone. It is divisible into two well marked subspecies.

---

1 It is possible that the animal still occurs in Quebec.
**KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA** 83

**SUBSPECIES OF ODOCOILEUS AMERICANUS**

Size medium; teeth relatively small (lower row of cheek teeth 75 (3) in length);
gray winter coat not well developed. *O. americanus americanus*

Size large; teeth relatively large (lower row of cheek teeth 85 (3?) in length);
gray winter coat well developed. *O. americanus borealis*

**Odocoileus americanus americanus** (Erxleben) *Southern Virginia deer*

1777 [*Cervus damas*] americanus Erxleben, Syst. regn. anim. 1:312

(Virginia)

Size medium; teeth small, the row of lower cheek teeth 75 (3) in length;
winter pelage not conspicuously grayer or coarser than summer pelage; horns slender, 540 (21?) in length, 90 (3?) in circumference at base. (americanus; N. Lat., American)

The southern Virginia deer is an inhabitant of the austral zones. Its range is not at present understood in detail; and it may eventually be found that the animal does not enter our limits.

**Odocoileus americanus borealis**, subsp. nov. *Northern Virginia deer*

*Cariaeus virginianus Auct.* (not *Cervus virginianus* Boddaert, which is *O. americanus americanus*)


Size, large; teeth large, the row of lower cheek teeth 85 (33?) in length;
winter pelage coarse, usually much tinged with gray, very different from summer pelage; horns robust, 540 (21?) in length, 120 (4?) in circumference at base. (borealis; Lat., northern)

The northern Virginia deer is an inhabitant of the Canadian zone. It is abundant throughout northern New York, northern New England and southeastern Canada. The limits of its range are not known.

**Order Glires Rodents**

Front teeth long, chisel shaped; cheek teeth broad, short, flat-crowned; a wide toothless space between front teeth and cheek teeth. (*Gli-re-s; Lat., a dormouse*)

---


Some of the measurements of this specimen are as follows: total length, 1830 (6 ft); tail 289 (11 in.) (from fresh specimen by collector). Skull, greatest length 340 (13?), basal length, 310 (12?), zygomatic breadth, 130 (5); length of upper tooth row, 83 (34?); greatest width between outer sides of upper tooth row, 83 (34?), lower tooth row, 83 (34?).
The order *Glires* is essentially cosmopolitan. Its members may be recognized at a glance by their peculiar teeth. The group is usually divided into 21 families,¹ nine of which occur in North America. Six of these are found within our limits.

**FAMILIES OF GLIRES**

Upper front teeth four, the second pair minute and placed directly behind the first (hares, *Duplicidentata*) ...........................................  
*Leporidae*, p. 115

Upper front teeth two. (*Simplicidentata*) 
Tail very broad, flattened from above downward (beaver) ...........................................  
*Castoridae*, p. 91

Tail rounded or flattened from side to side 
Fur thickly sprinkled with stiff quills (porcupines) ...........................................  
*Erethizontidae*, p. 115

Fur without quills 
At least four well developed grinding teeth in each jaw; tail bushy (squirrels, etc.) ....  
*Sciuridae*, p. 84

Never more than three well developed grinding teeth in each jaw; tail closely haired 
Hind feet not greatly elongated (rats, mice etc.) ...........................................  
*Muridae*, p. 92

Hind feet greatly elongated (jumping mice)  
*Dipodidae*, p. 111

**Family Sciuridae** Squirrels

Upper front teeth two; upper cheek teeth four or five, lower cheek teeth four; a well developed bony projection on skull above and behind eye socket (postorbital process); tail round, covered with long hairs which are usually so arranged as to form a broad, flat brush. (*Sciuridae*; genus *Sciurus*)

The family *Sciuridae* is almost cosmopolitan in distribution. It is a large group, containing 15 or 20 genera. In North America it is represented by seven genera, four of which occur within our limits.

**GENERA OF SCIURIDAE**

Sides with a densely furred membrane joining front and hind legs (flying squirrels) ...............  
*Sciuropterus*, p. 90

Sides without membrane 
Form stout and clumsy; tail less than half as long as body; top of skull nearly flat (woodchucks)  
*Arctomys*, p. 89

Form slender and graceful; tail much more than half as long as body; top of skull distinctly rounded 
Cheek pouches present; back striped (chipmunks) ...........................................  
*Tamias*, p. 88

Cheek pouches absent; back (in our species) without stripes (squirrels) ...........................................  
*Sciurus*, p. 85

---

¹ Tulberg recognizes 27 families, but even this number is probably too small.
Genus *Sciurus* Linnaeus

1758 *Sciurus* Linnaeus, Systema naturae. ed. 10, 1: 63. Type *Sciurus vulgaris* Linnaeus.

Tail very long and bushy, the hairs longest on the sides; ears well developed, pointed, hairy; thumb with a rudimentary nail. (*Sciurus*; Gk. shade tail)

The genus *Sciurus*, which is found in nearly all parts of the world except Australia and the neighboring islands, is well represented in North America, about 80 forms occurring north of Panama. Three species are found within our limits.

**SPECIES OF SCIURUS**

Size small, hind foot less than 50 (2); back red (red squirrels, subgenus *Tamiasciurus*). .......... *S. hudsonicus*

Size medium or large, hind foot over 60 (2); back not red

Ears whitish (gray squirrels, subgenus *Neosciurus*). *S. carolinensis*

Ears rusty brown (fox squirrels, subgenus *Parasciurus*) *S. ludovicianus*

*Sciurus hudsonicus* (Erxleben) *Red squirrel*

Size small; back red, varying much in exact shade; belly white or gray, never tawny in forms found within our limits. (*hudsonicus*; N. Lat., Hudsonian)

The well known red squirrel occurs throughout the wooded parts of northern North America. In different regions it has developed numerous well marked local races, three of which occur in eastern North America.

**SUBSPECIES OF SCIURUS HUDSONICUS**

Hind foot about 44 (14); edge of tail reddish. *S. hudsonicus gymnicus*

Hind foot about 47 (15); edge of tail yellowish or grayish

Belly in winter pelage gray ................. *S. hudsonicus hudsonicus*

Belly always pure white. ................. *S. hudsonicus loquax*

*Sciurus hudsonicus gymnicus* Bangs *Canadian red squirrel*


*Colors dark and rich; outer fringe of tail distinctly red; belly white in summer, dark gray in winter.* Total length, 290 (114); tail vertebrae, 120 (44); hind foot, 44 (15). (*gymnicus*; Lat., gymnastic)

The Canadian red squirrel inhabits the Canadian forests of eastern North America, south to northern New York.
Sciurus hudsonicus hudsonicus (Erxleben) Hudsonian red squirrel

1777 [Sciurus vulgaris] hudsonicus Erxleben, Syst. regn. anim. 1:418. (Hudson bay)

1894 Sciurus hudsonicus Allen, Bull. Am. mus. nat. hist. 7 Nov. 1894. 6:325.


Colors pale, outer fringe of tail yellowish or grayish, belly white in summer, dark gray in winter. Total length, 310 (21½); tail vertebrae, 118 (4½); hind foot, 47 (1¾). (hudsonicus; N. Lat., Hudsonian)

The Hudsonian red squirrel is probably confined to the wooded portions of the Labrador peninsula.

Sciurus hudsonicus loquax Bangs Southeastern red squirrel


Colors pale; outer fringe of tail yellowish; belly pure white at all seasons. Total length, 315 (12½); tail vertebrae, 130 (5½); hind foot, 47 (1½). (loquax; Lat., talkative)

The southeastern red squirrel occurs in the deciduous forests of the transition and upper austral zones of the eastern United States.

Sciurus carolinensis Gmelin Gray squirrel

Size medium; back gray, more or less tinged with yellowish; belly white, occasionally blotched with rusty; ears whitish. (carolinensis; N. Lat., Carolinian)

The gray squirrel is a wide ranging species, divisible into numerous geographic races, two of which occur within our limits.

SUBSPECIES OF SCIURUS CAROLINENSIS

Hind foot about 60 (2½); back always strongly tinged with rusty yellowish.............. S. carolinensis carolinensis

Hind foot about 70 (2½); back in winter pelage clear gray.... S. carolinensis leucotis

Sciurus carolinensis carolinensis Gmelin Southeastern gray squirrel


KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA 87

Back dark yellowish rusty gray, never clear gray in any pelage. Total length, 455 (18); tail vertebrae, 205 (8); hind foot, 60 (2%). (carolinénusis; Lat., Carolinian)

The southeastern gray squirrel inhabits the austral zones of the eastern United States from New Jersey to northern Florida.

Sciurus carolinensis leucotis (Gapper) Northeastern gray squirrel
1830 Sciurus leucotis Gapper, Zoological Journal. 5: 206. (Region between York and Lake Simcoe, Ontario)
1877 Sciurus carolinénusis var. leucotis Allen, Monogr. N. Am. rodentia, p. 706.

Back clear silvery gray in winter pelage, often tinged with yellowish brown in summer, belly occasionally with rusty blotches. Total length, 500 (19½); tail vertebrae, 220 (8½); hind foot, 70 (2½). (leucotis; Gk., white ear)

The northeastern gray squirrel occurs in the deciduous forests of the transition zone and lowermost part of the Canadian zone in Pennsylvania, New York, New England and southeastern Canada. Wholly or partly black individuals are often met with.

Sciurus ludovicianus Custis Fox squirrel

Size medium; back always strongly tinged with rusty; belly never pure white (varying from bright rust color to rusty white; ears rusty). (ludovicianus; Lat., Louisianian)

The fox squirrel is confined to the forests of the austral zones and lower edge of the transition zone of eastern North America. Its western limit is not definitely known. Of the three or more races into which the species is divisible, only the following occurs within our limits. Partly or wholly black individuals are not uncommon.

Sciurus ludovicianus vicinus Bangs Northern fox squirrel

Back mixed black and rusty; belly varying from pale rust color to rusty white; ears rusty. Total length, 590 (23½); tail vertebrae, 270 (10½); hind foot, 73 (2½). (vicinus; Lat., neighboring)

The northern fox squirrel is an inhabitant of the forests of the transition zone and upper austral zone east of the Alleghenies. It formerly occurred with considerable regularity as far north as central New York and southern New England, but it is now fast approaching extinction, especially in the northern part of its range. The western fox squirrel, S. ludovicianus ludovicianus, occupies the same zones in the region immediately west of the Alleghenies.
Genus Tamias Illiger

1811 Tamias Illiger, Prodr. syst. mamm. et. avium, p. 83. Type Sciurus striatus Linnaeus.

Like Sciurus, but with less bushy tail, and with well developed cheek pouches in which large quantities of food can be carried. The only known species is conspicuously striped on the back, while none of our squirrels are so marked. Upper cheek teeth four on each side, all well developed. (Tamias; Gk., a steward)

The genus Tamias is represented by one species only, the well known chipmunk of the eastern United States and southern Canada.

Tamias striatus (Linnaeus) Eastern chipmunk

Reddish brown or yellowish brown; back with five black stripes and two whitish ones. (striatus; Lat., striped)

The eastern chipmunk occurs throughout eastern North America from the lower edge of the upper austral zone to the lower edge of the Hudsonian zone. It is divisible into four geographic races, two of which occur within our limits.

SUBSPECIES OF TAMIAS STRIATUS

Tamias striatus striatus (Linnaeus) Southeastern chipmunk

Rump rich rufous brown........................................ T. striatus striatus
Rump pale, dull, yellowish brown...................... T. striatus lysteri

1758 Sciurus striatus Linnaeus, Systema naturae, ed. 10. 1: 64. (Southeastern United States)

1857 Tamias striatus Baird, 11th Smithsonian report, p. 35.


Colors dark and rich; rump warm rufous brown, or chestnut. Total length, 250 (9½); tail vertebrae, 90 (3½); hind foot, 33 (1½). (striatus; Lat., striped)

The southeastern chipmunk inhabits the old fields and open woods of the upper austral zone. It is abundant from the lower Hudson valley south to North Carolina.

Tamias striatus lysteri (Richardson) Northeastern chipmunk

1829 Sciurus (Tamias) lysteri Richardson, Fauna Boreali-Americana. 1: 182. (Penetangushene, Ontario, Canada)


Color pale and dull, rump yellowish brown. Total length, 250 (9½); tail vertebrae, 95 (3½); hind foot 35 (1½).

The northeastern chipmunk inhabits clearings, old fields and open woods in the transition zone and lower part of the Canadian zone in the region east of Lake Huron and the upper Mississippi valley. It is abundant throughout the greater part of New York and New England.
Genus Arctomys Schreber

1780 Arctomys Schreber, Säugethiere. pl. 207.

Form stout and heavy; tail short, much less than half as long as body, densely covered with long, rather stiff hairs; upper cheek teeth five in each jaw, each, except first, with two transverse grooves on crown. (Arctomys; Gk., bear mouse)

The genus Arctomys occurs throughout the greater part of northern North America, Asia and alpine Europe. It is represented in North America by six or more species, two of which, the well known woodchuck or ground-hog, and a little known animal from Labrador, occur within our limits.

**SPECIES OF ARCTOMYS**

Fur much suffused with reddish and yellowish; skull long and narrow, smooth above. ........................................ A. monax

Fur slightly suffused with reddish and yellowish; skull short and broad, with a well developed median ridge over brain case .......................................................... A. ignavus

**Arctomys monax** (Linnaeus) Common woodchuck

1758 [Mus] monax Linnaeus, Systema naturae. ed. 10.1:60. (Maryland)
1780 Arctomys monax Schreber, Säugethiere. 4:737.

Grizzly gray, varied with chestnut, yellowish and blackish; under parts reddish; skull long and narrow, the top smooth. Total length, 460 (18); tail vertebrae, 115 (4½); hind foot, 75 (3). (Monax; Lat., a hermit)

The common woodchuck is an abundant animal throughout the Hudsonian, Canadian, transition and upper austral zones in eastern North America from Labrador and Hudson bay south at least to Virginia. Two races probably occur in this region, but their characters are not well understood. The southern form is A. monax monax, the northern A. monax canadensis (Erxleben) (See Allen, Bull. Am. mus. nat. hist. 10 Nov. 1898. 10:456.) Partly or wholly black individuals are often met with.

**Arctomys ignavus** Bangs Labrador woodchuck


Dark grizzly gray, little varied with yellowish and reddish; skull short and broad, the braincase developing a well marked median ridge in adult individuals. Total length, 500 (19½); tail vertebrae, 140 (5½); hind foot, 80(3½). (Ignavus; Lat., inactive)

The Labrador woodchuck is at present known from Black bay, Labrador only.
Genus Sciuropterus F. Cuvier

1855 Sciuropterus F. Cuvier, Dents des mammifères, p. 255. Type Sciurus volans Linnaeus.

Squirrels with a broad furry membrane connecting front and hind leg of each side, but none between hind legs. (Sciuropterus; Gk., squirrel wing)

The genus Sciuropterus is distributed throughout the greater part of northern Europe, northern Asia and northern North America. It contains a dozen or more species, several of which are American. Two occur within our limits.

SPECIES OF SCIUROPTERUS

Total length about 280 (11); fur of belly dark at base........... S. sabrinus
Total length about 230 (9); fur of belly white to base........... S. volans

Sciuropterus volans (Linnaeus) Southern flying squirrel

1758 [Mus] volans Linnaeus, Systema naturae. ed. 10. 1:63. (Virginia)

Back drab, somewhat shaded with russet, not distinctly different in winter and summer; belly pure white to extreme base of hairs. Total length 230 (9); tail vertebrae, 100 (4); hind foot, 30 (14). (volans; Lat., flying)

The southern flying squirrel occurs in woods, orchards, buildings, etc., in the transition zone and upper austral zone from New Hampshire and southern Ontario to Georgia. It is divisible into two races; of which the typical form alone, S. volans volans, occurs within our limits.

Sciuropterus sabrinus (Shaw) Northern flying squirrel

Back in winter glossy wood brown mixed with cinnamon, in summer sooty drab; belly dirty white, the hairs darker at base. (sabrinus; N. Lat., Severn)

The northern flying squirrel occurs throughout the wooded portions of eastern North America from the southern border of the Canadian zone northward. It is abundant in the evergreen forests of central and northern New York and New England, and in the Alleghanies. Two subspecies occur within our limits.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

**SUBSPECIES OF SCIUROPTERUS SABRINUS**

Size large, hind foot over 40 (1½); ear short and broad ........................................... S. sabrinus sabrinus

Size medium, hind foot under 40 (1½); ear long and narrow ........................................... S. sabrinus macrotis

Sciuropterus sabrinus sabrinus (Shaw) *Hudsonian flying squirrel*

1801 Sciurus sabrinus Shaw, Gen. zool. 1: 157. (Severn river, James bay)


Total length, 350 (13½); tail vertebrae, 140 (5½); hind foot, 42 (1½); ear from crown, 15 (½). (sabrinus; N. Lat., Severn)

The Hudsonian flying squirrel is confined to the Hudsonian forests of eastern and central Canada.

Sciuropterus sabrinus macrotis Mearns *Canadian flying squirrel*


1898 Sciuropterus sabrinus macrotis Mearns, Proo. U. S. nat. mus. 4 Nov. 1898. 21: 353. (Catskill mts, N. Y.)

Total length, 280 (11); tail vertebrae, 125 (5); hind foot, 38 (1½); ear from crown, 20 (½). (macrotis; Gk., long eared)

The Canadian flying squirrel is abundant in the Canadian forests of the northeastern United States and southeastern Canada.

**Family Castoridae Beavers**

Four broad, rootless cheek teeth in each jaw; angle of lower jaw rounded; tail very broad, flattened from above downward, scaly; size large. (Castoridae; genus Castor)

The family Castoridae is represented by a single living genus common to the northern parts of both old and new worlds.

**Genus Castor Linnaeus**

1758 Castor Linnaeus, Systema naturae. ed. 10. 1: 58. Type Castor fiber Linnaeus.

Feet four-toed; hind feet webbed; second toe of hind foot double-clawed. (Cástor; Lat., a beaver)

One species of beaver occurs in North America. It is closely related to that of the old world.
Castor canadensis Kuhl  American beaver

Flat space on top of skull between eye sockets distinctly longer than broad. (canadensis; N. Lat., Canadian)

The American beaver, which occurs throughout the wooded parts of North America, is divisible into four or more races, two of which are found within our limits.

SUBSPECIES OF CASTOR CANADENSIS

Scaly portion of tail more than twice as long as wide. C. canadensis canadensis

Scaly portion of tail less than twice as long as wide. C. canadensis carolinensis

Castor canadensis canadensis Kuhl  Northeastern beaver

1820 Castor canadensis Kuhl, Beiträge zur zool. u. vergl. anat. p. 64. (Eastern Canada)

Scaly portion of tail more than twice as long as wide; pelage long, full and soft. Total length, 1100 (35); tail vertebrae, 410 (164); hind foot, 175 (62). (canadensis; N. Lat., Canadian)

The northeastern beaver was formerly an inhabitant of the wooded banks of lakes and watercourses in the Hudsonian and Canadian zones of eastern Canada and the northeastern United States. It has been exterminated south of the Canadian border.

Castor canadensis carolinensis Rhoads  Southeastern beaver


Scaly portion of tail less than twice as long as wide; pelage relatively short and harsh. Total length, 1100 (35); hind foot, 180 (7). (carolinensis; N. Lat., Carolinian)

The southern beaver inhabits the austral zones of the eastern United States. Its range is now restricted to the wilder foothills of the southern Alleghanies.

Family Muridae  Rats, mice, etc.

Front teeth two; cheek teeth never more than three in each jaw. In the species that occur within our limits the fur is without spines or bristles, and the hind feet and legs are never greatly elongated for jumping. (Muridae; genus Mus)

The family Muridae, which includes more than one third of the existing rodents and a greater number of species than any other family of mammals, is cosmopolitan in distribution. It probably contains more than 100 genera, many of which are American, occurring within our limits.
Grinding teeth with tubercles arranged in three transverse rows very distinct in teeth of upper jaw (subfamily Murinae, old world rats and mice) ................................. Mus, p. 94

Grinding teeth with tubercles arranged in two rows, or without distinct tubercles of any kind

Crowns of grinding teeth with tubercles arranged in two rows (subfamily Cricetinae, American rats and mice)

Upper front teeth grooved (harvest mice) Reithrodontomys, p. 95

Upper front teeth not grooved

Skull with a distinct ridge over eye-socket; fur coarse; belly not pure white; total length over 230 (9) (rice field mice) ...................... Oryzomys, p. 96

Skull without ridge over eye-socket; fur fine; belly pure white; total length under 215 (8) (white-footed mice) .. Peromyscus, p. 96

Crowns of grinding teeth divided into loops, or triangles formed by plates of hard enamel inclosing a softer substance (dentine)

Upper front teeth narrow, compressed, the antero-posterior diameter of each much greater than the transverse diameter; body slender, tail always long; eyes and ears large; belly white (subfamily Neotominae, wood rats and cave rats). ...................... Neotoma, p. 98

Upper front teeth broad, the antero-posterior diameter of each less than transverse diameter; body clumsy; tail usually short; eyes and ears small; belly generally not white (subfamily Microtinae, voles, lemmings, minks rats etc.)

Lower front teeth short, the roots terminating on inner side of grinding teeth (lemmings)

Upper front teeth grooved; ears small but well formed; color not changing to white in winter; tail covered with short hairs .............................. Synaptomys, p. 99

Upper front teeth not grooved, ears rudimentary; color white in winter, tail with a brush of stiff hairs nearly as long as itself .............................. Dicrostonyx, p. 101
Lower front teeth long, their roots extending under posterior grinding tooth into outer side of jaw (voles) .........................
Tail flattened laterally (musk-rat) .........................
Tail round
Grinding teeth without roots (prongs) .......................
Grinding teeth with roots (prongs) in adults
Grinding teeth heavy, with sharp-pointed angles; color never red...
Grinding teeth light, with blunt angles; color usually red .....................

Fiber, p. 101
Microtus, p. 102
Phenacomys, p. 108
Evotomys, p. 109

Genus \textit{Mus} Linnaeus

1758 \textit{Mus} Linnaeus, \textit{Systema naturae.} ed. 10. 1: 59. Type \textit{Mus rattus} Linnaeus.

Front teeth without grooves; cheek teeth in upper jaw with \textit{tubercles of crown arranged in three} longitudinal rows; form slender; \textit{tail long, scaly, scant haired; fur coarse.} (Lat., a mouse)

The genus \textit{Mus} contains many old world species, but none native to America. Four have been naturalized in the United States. One of these, the roof rat, \textit{Mus alexandrinus} (like the black rat but brown with a yellowish white belly) is normally confined to the lower austral zone. Two of the three others are well known within our limits.

**SPECIES OF MUS**

Total length under 200 (8) (mice) ................. \textit{M. musculus}
Total length over 300 (12) (rats)
Color bluish black; tail more than half of total length \textit{M. rattus}
Color brownish; tail less than half of total length .... \textit{M. decumanus}

\textit{Mus musculus} Linnaeus \textit{House mouse}

1758 [\textit{Mus}] \textit{musculus} Linnaeus, \textit{Systema naturae.} ed. 10. 1: 62. (Sweden)

Brownish gray, slightly paler below. Total length, 170 (6\%); tail vertebrae, 85 (3\%); hind foot, 17 (1\%). (\textit{musculus}; Lat., a little mouse)

The house mouse is thoroughly established throughout the settled parts of America. It is abundant in buildings and cultivated fields within our limits, and is sometimes found in woods.
**Mus rattus** Linnaeus *Black rat*

1758 *Mus* r*attus* Linnaeus, Systema naturae. ed. 10. 1: 61. (Sweden)

Blue black, darker on the back, more slaty on the belly. Total length, 400 (15½); tail vertebrae, 215 (8½); hind foot, 37 (1½). (*rattus*; Lat., a rat)

The black rat was formerly widely spread in the eastern United States. It is now rapidly disappearing before the larger and stronger brown rat. This animal occurs still in central Massachusetts, but with this exception I know of no localities where it is now found abundantly in the northeastern United States.

**Mus decumanus** Pallas *House rat*

1778 *Mus decumanus* Pallas, Nov. ep. quadr. glir. ord. p. 91. (Russia)

Brownish above; grayish beneath; tail scaly, clothed with short stiff hairs, not distinctly bicolor. Total length, 400 (15½); tail vertebrae, 180 (7½); hind foot, 45 (11). (*decum anus*; Lat., a tithe gatherer)

The house rat is abundant and well known throughout North America.

Genus **Reithrodontomys** Giglioli

1873 *Reithrodontomys* Giglioli, Richer. intorn. alia distrib. geogr. gener. p. 60. Type *Mus lecontii* Aud. and Bach.

Like *Peromyscus* except that the face of each upper front tooth is marked by a conspicuous longitudinal groove. (*Reithrodontomys*; Gk., channel tooth mouse)

The genus *Reithrodontomys* is confined to North America. It reaches its greatest development in Mexico and the southwestern United States, where it is represented by 15 or more forms. Only one species occurs within our limits.

**Reithrodontomys lecontii** (Audobon and Bachman) *Harvest mouse*

1842 *Mus lecontii* Audobon and Bachman, Journ. Acad. nat. sci. Philadelphia. 8: 307. (Georgia)


Light brown above, varying much in exact shade; whitish beneath. (*lec ontii*; name from that of John LeConte)

The harvest mouse is common throughout the southeastern United States. Three races are now recognized: *R. lecontii d ickinsoni* Rhoads from Florida; *R. lecontii lecontii* from the lower austral zone, and the following:
Reithrodontomys lecontii impiger Bangs Virginia harvest mouse


Russet brown above, dull white beneath. Total length, 115 (4½); tail vertebrae, 51 (2); hind foot 9 (½). (impiger; Lat., quick)

The little known Virginia harvest mouse has been taken at White Sulphur Springs W. Va. only. It probably occurs throughout the southern part of the upper austral zone, east of the high Alleghenies.

Genus Oryzomys Baird


Front teeth without grooves; cheek teeth with tubercles arranged in two rows; skull distinctly ridged over eye sockets; form slender; total length more than 230 (9); tail long, scant haired; belly not white. (Oryzomys; Gk., rice mouse)

The genus Oryzomys is widely distributed in the warmer parts of America. Many species are known, only one of which reaches the upper austral zone of the eastern United States.

Oryzomys palustris (Harlan) Rice field mouse

1837 Mus palustris Harlan, American jour. sci. 31: 386. (Fast island, near Salem N. J.)


Dark brown above, paler below. Total length, 240 (9½); tail vertebrae, 115 (4½); hind foot, 30 (½). (palustris; Lat., pertaining to a marsh)

The ricefield mouse is locally common in marshes throughout the austral zones of the eastern United States, north to New Jersey. The form which occurs within our limits is the typical subspecies, O. palustris palustris. Two others are found in Florida and a fourth in Texas.

Genus Peromyscus Gloger


Front teeth without grooves, cheek teeth in upper jaw with tubercles arranged in two longitudinal rows; skull smoothly rounded between eye sockets; form slender. Total length, (in our species) under 220 (8¾); tail long, well furred, belly white. (Peromyscus; Gk., little pocket mouse)

The genus Peromyscus, which contains nearly 100 species, is confined to America. It reaches its greatest development in Mexico and the western United States. Three species occur within our limits, all members of the subgenus Peromyscus.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

SPECIES OF PEROMYSCUS

Tail about half of total length, ears large, colors
dull or light............................................... P. canadensis

Tail less than half of total length, ears moderate, colors
bright or dark
Tail slightly less than half of total length, color strongly
russet ......................................................... P. leucopus
Tail considerably less than half of total length, color
dull, not strongly russet.............................. P. maniculatus

Peromyscus canadensis (Miller) Canadian white-footed mouse

Tail 45% to 60% of total length, with a conspicuous tuft of hair at tip; ears and
eyes large. Adults never reddish brown above (young bluish gray); belly hairs
always snowy white at tips. (canadensis; N. Lat., Canadian)

This mouse is an inhabitant of the forests of the Canadian and Hud-
sonian zones of eastern America. It is divisible into four subspecies,
three of which occur within our limits.

SUBSPECIES OF PEROMYSCUS CANADENSIS

Adults very pale, grayish brown............. P. canadensis abietorum

Adults not pale, grayish brown
Adults yellowish brown....................... P. canadensis canadensis
Adults dull brownish......................... P. canadensis nubiterrae

Peromyscus canadensis abietorum Bangs Hudsonian white-
footed mouse

Washington. 9 Mar. 1896. 10:49. (Lake Edward, Quebec)

Adults pale grayish brown above, never fuscous or yellowish. Total length,
190 (74); tail vertebrae, 100 (4); hind foot, 21.5 (12). (abietorum; Lat., of
the firs)

The Hudsonian white-footed mouse inhabits the spruce forests of
Quebec, New Brunswick and Nova Scotia. It probably occurs in northern
Maine.

Peromyscus canadensis canadensis Miller Canadian white-footed
mouse

1893 Sitomys americanus canadensis Miller, Proc. biolog. soc.
Washington. 20 June 1893. 8:55. (Peterboro, Madison co. N. Y.)
Mar. 1896. 10:49.

Adults dull yellowish brown above. Total length, 190 (74); tail vertebrae,
100 (4); hind foot, 21.5 (12). (canadensis; N. Lat., Canadian)

The Canadian white-footed mouse inhabits the Canadian zone and
locally the cooler parts of the transition zone in the eastern United
States and Canada. It is a characteristic forest animal.
Peromyscus canadensis nubiterrae Rhoads Cloudland white-footed mouse


Adults dull brownish above. Total length, 170 (6½); tail vertebrae, 86 (3½); hind foot 21.5 (1½). (nubiterrae; N. Lat., of Cloudland)

This form of the Canadian white-footed mouse is confined to the spruce forests of the high southern Alleghanies.

Peromyscus leucopus (Rafinesque) Deer mouse

1818 Musculus leucopus Rafinesque, Am. monthly magazine. 3: 446. (Kentucky)


Tail 40% to 45% of total length, with an inconspicuous tuft of hair at tip; ears and eyes moderate; adults chestnut brown above (young bluish gray); belly hairs always showy white at tips. Total length, 170 (6½); tail vertebrae, 75 (3); hind foot, 20 (1½). (Leucopus; Gk., white foot)

The deer mouse is abundant throughout the upper austral and transition zones. The race occurring in the former is true leucopus, that of the transition zone has been separated as P. l. noveboracensis. (See Miller, Proc. Boston soc. nat. hist. 28: 22) The status of these forms is not well understood.

Peromyscus maniculatus (Wagner) Labrador deer mouse

1845 Hesperomyys maniculatus Wagner, Wiegmann's Archiv für naturgeschi. 11, 1: 148. (Moravian settlements of Labrador)

1898 Peromyscus maniculatus Bangs, American naturalist. July 1898. 32: 496.

Color about as in P. canadensis canadensis. Total length, 165 (6½); tail vertebrae, 74 (3); hind foot, 20 (1½). (maniculatus; Lat., gloved)

The Labrador white-footed mouse is probably confined to the wooded parts of the Hudsonian zone in Labrador. The species is very imperfectly known.

Genus Neotoma Say & Ord


Front teeth without grooves, narrow, compressed, much deeper than broad; grinding teeth rooted, the flat crown divided by enamel folds into loops and
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

triangles; form slender; tail long and hairy; eyes and ears large; fur soft. (Neotoma; Gk., new cutter)

The genus Neotoma is peculiar to America. It reaches its greatest development in Mexico and the southwestern United States, where 70 or more forms occur. One species only is found in the eastern United States north of the lower austral zone. This is a member of the restricted subgenus Neotoma, in which the tail is round.

**Neotoma pennsylvanica** Stone *Alleghany cave rat*


Grayish above, white beneath, tail furry, sharply bicolor. Total length, 410 (16i); tail vertebrae, 85 (7f); hind foot, 42 (11i). (pennsylvanica; N. Lat., Pennsylvanian)

The Alleghany cave rat is common in caves and rocky woods throughout the Alleghanies. Its northern range extends to the lower Hudson valley. This is the common rat in Mammoth cave. Aside from the character of its teeth, the cave rat differs from the house rat in its larger eyes and ears, long soft fur and more hairy tail, which is dark above and white below, the two colors sharply defined.

Genus *Synaptomys* Baird

1857 Synaptomys Baird, Mamm. N. Am. p. 558. Type Synaptomys cooperi Baird

*Face of each upper front tooth with a distinct longitudinal groove, gridding teeth without roots (prongs); skull small, not strongly angular; claws small, simple; tail moderate (about as long as hind foot) covered with short hairs; color always dark. (Synaptomys; Gk., connecting mouse)*

The genus Synaptomys, containing the smallest and least specialized of the lemmings, has not been detected in the old world. It is generally distributed throughout boreal North America. Eight species are now recognized, four of which occur within our limits.

**SPECIES OF SYNAPTOMYS**

Mammæae 6; crown of each lower cheek teeth with a small closed triangle of enamel on outer side (subgenus Synaptomys)

Upper front teeth relatively broad and heavy .......... S. cooperi
Upper front teeth relatively narrow and light .......... S. fatuus

Mammæae 8; crown of lower cheek teeth without closed triangles of enamel on outer side (subgenus Mictomys)

Total length, 115 (44) .......... S. innuitus
Total length, 132 (54) .......... S. sphagnicola
Synaptomys cooperi  
Baird  
Cooper's lemming  
1857 Synaptomys cooperi Baird, Mammm. N. Am. p. 558. (Probably northern New Jersey or southern New York)  
General appearance of a common meadow mouse, but tail very much shorter; color grizzled gray and yellowish brown thickly sprinkled with black; belly soiled whitish. Total length, 120 (4½); tail vertebrae, 18 (1½); hind foot, 18 (1½). (cooperi; name from that of William Cooper)  
Cooper's lemming is locally common in cool bogs and marshy places from Massachusetts to Virginia, west to Michigan and Indiana.

Synaptomys fatusus  
Bangs  
Bangs's lemming  
Like S. cooperi but with smaller front teeth and less heavily built anterior part of skull. Total length, 120 (4½); tail vertebrae, 21 (3); hind foot, 18 (1½). (fatusus; Lat., clumsy)  
Bangs's lemming is common in bogs and wet woods of the Hudsonian zone and upper part of the Canadian zone from New Brunswick to the north shore of Lake Superior, south to New Hampshire. A single specimen has been recorded from the Catskills.

Synaptomys innuitus  
True  
True's lemming  
Like S. cooperi but smaller. Total length 115 (4½); tail vertebrae, 17 (1½); hind foot, 17 (1½); greatest length of skull, 19 (½). (innuitus; N. Lat., Eskimo)  
True's lemming is at present known from northern Labrador only (Fort Chimo and Hamilton inlet)

Synaptomys sphagnicola  
Preble  
Preble's lemming  
Like S. cooperi but larger. Total length, 132 (5½); tail vertebrae, 24 (1½); hind foot, 20 (3); greatest length of skull, 27 (1½). (sphagnicola; N. Lat., an inhabitant of sphagnum)  
Preble's lemming is at present known from the type specimen only, taken in the Canadian forests near the foot of Mt Washington, New Hampshire.
Genus *Dicrostonyx* Gloger

1844 *Dicrostonyx* Gloger, Gemeinn. hand- u. hilfsbuch d. naturgesch. 1: xxxi, 97. Type *Mus hudsonius* Pallas.

Face of each upper front tooth smooth, grinding teeth without roots (prongs); skull large, heavily angular; ears reduced to mere naked rims; claws very large; in winter apparently double; tail very short with a long brush of stiff hairs; fur turning white in winter. (*Dicrostonyx*; Gk., fork claw)

The genus *Dicrostonyx*, containing the lemmings which turn white in winter, is circumpolar in distribution. One or more forms occur in northern Europe and Asia. The following species is found in Labrador.

*Dicrostonyx hudsonius* Pallas *Labrador lemming*


In summer about the color of a Maltese cat, slightly varied with rusty; a narrow black line down middle of back; in winter pure white. Total length, 150 (6); tail vertebrae, 21 (i2); hind foot, 21 (i2). (*hudsonius*; N. Lat., Hudsonian)

The range of the Labrador lemming is imperfectly known. The animal occurs on the barrens of northern Labrador, south at least to Hamilton inlet.

Genus *Fiber* Cuvier


Front teeth without grooves, broader than deep; grinding teeth with roots (prongs), body short and thick; tail long, flattened laterally. (*Fiber*; Lat., a beaver)

The genus *Fiber* containing the well known muskrat, is peculiar to America. Seven forms have been described, but their interrelationships are very imperfectly understood. Two species occur within our limits.

**Species of Fiber**

Upper lip yellowish brown, total length over 500 (19$\frac{1}{2}$)...... *F. zibethicus*
Upper lip white, total length under 500 (19$\frac{1}{2}$)................. *F. obscurus*

*Fiber zibethicus* Linnaeus *Muskrat*

Size usually large; hind foot generally about 80 (3$\frac{1}{2}$) color very variable; upper lip yellowish brown. (*zibethicus*; Lat., a civet, in allusion to the musky odor)

The muskrat occurs throughout North America south into the lower austral zone. It is divisible into four or five races, two of which occur within our limits.
SUBSPECIES OF FIBER ZIBETHICUS

Hind foot about 80 (3½); color brown much suffused with yellowish and reddish...... F. zibethicus zibethicus

Hind foot about 73 (2½); color blackish brown, little suffused with yellowish and reddish..... F. zibethicus aquilonius

Fiber zibethicus zibethicus (Linnaeus) Northern muskrat

1766 [Castor] zibethicus Linnaeus, Systema naturae, ed. 12. 1: 79. (Eastern Canada)

1817 Fiber zibethicus Cuvier, Règne animal, 1: 192.

Rich dark brown above; sides and belly strongly tinged with rusty. Total length, 600 (23½); tail vertebrae, 267 (10⅔); hind foot, 80 (3½). (zibethicus; Lat., a civet, in allusion to the musky odor)

The northern muskrat is abundant in marshes and on the borders of ponds and water courses throughout eastern North America, south at least into the upper austral zone. In Louisiana it is replaced by another race, F. z. rivalicium Bangs. In Labrador it gives way to the following form.

Fiber zibethicus aquilonius Bangs Labrador muskrat


Blackish brown above; sides and belly tinged with umber. Total length, 540 (2⅓); tail vertebrae, 240 (8⅔); hind foot, 73 (2½). (aquilonius; Lat., northern)

The Labrador muskrat is thus far known from Black bay, Labrador only. It probably ranges throughout the Hudsonian zone of Labrador.

Fiber obscurus Bangs Newfoundland muskrat


Blackish brown above; sides and belly light grayish brown tinged with fawn color; upper lip white. Total length, 180 (19); tail vertebrae, 210 (8⅔); hind foot, 70 (2½). (obscurus; Lat., dark)

The Newfoundland muskrat is confined to the island of Newfoundland.

Genus Microtus Schrank

1798 Microtus Schrank, Fauna boica. 1: 72. Type Mus arvalis Pallas.

Front teeth without grooves, not compressed, broader than deep: grinding teeth without roots, (prongs); bony palate not ending in a thin-edged shelf behind; body stout and thick; tail short; ears just appearing above fur (color seldom distinctly red). (Microtus; Gk., small ear)

The genus Microtus is distributed throughout the boreal and austral regions of the northern hemisphere. It probably contains one hundred or more species, seven of which occur within our limits.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

SPECIES OF MICROtUS

Fur dense and mole-like; claws on front feet longest (subgenus Pitymys) ........................................ M. pinetorum, p. 103
Fur not dense and mole-like; claws on hind feet longest (subgenus Microtus)

Face or muzzle distinctly yellowish

Total length about 180 (64); muzzle patches pale ................................................................. M. terraenovae, p. 104
Total length about 165 (64); muzzle patches dark ........................................................................ M. chrotorrhinus, p. 104

Face or muzzle not distinctly yellowish

Total length often over 200 (8); color very pale ........................................................................... M. breweri, p. 105
Total length seldom if ever reaching 200 (8); color dark

Teeth weak; front teeth protruding forward; the row of cheek teeth less than \( \frac{1}{2} \) basal length of skull...

Teeth strong; front teeth not protruding forward; the row of cheek teeth more than \( \frac{1}{2} \) basal length of skull

Skull not very broad (the common field mouse of the eastern United States) .................................. M. pennsylvanicus, p. 105
Skull very broad (confined to Great Gull island off the eastern end of Long Island, New York) ................................................................. M. nesophilus, p. 107

**Microtus pinetorum** (Le Conte) *Pine mouse*

*Fur dense velvety and mole-like, eyes and ears very small, claws on front feet longest; color of adults dull reddish brown; young slaty. (pinetorum; Lat., of the pines)*

The pine mouse inhabits dry sandy soil (usually in thickets and open woods) in the austral zones and lower part of the transition zone of the United States from the Atlantic coast west to Missouri and Indian territory. It is divisible into four or more subspecies, one of which occurs within our limits.

**Microtus pinetorum scalopsoides** (Audubon & Bachman)

*Northern pine mouse*


1900 *Microtus pinetorum scalopsoides* Bailey North American fauna. 6 June 1900. no. 17, p. 64.

Adults reddish brown, lighter than in the southeastern pine mouse (M. pinetorum pinetorum) of the lower austral zone. Total length, 125 (5); tail vertebrae, 22 (\( \frac{1}{2} \)); hind foot, 16 (\( \frac{1}{2} \)). (scalopsoides; Gk., mole-like)
The northern pine mouse inhabits the upper austral zone and lower part of the transition zone east of the Alleghanies. It generally occurs in colonies, which may be detected by the mole-like ridges thrown up by the animals.

**Microtus terraenovae** Bangs *Newfoundland vole*


1900 *Microtus terraenovae* Bailey, North American fauna. 6 June 1900. no. 17, p. 25.

Aboveumber brown, slightly sprinkled with blackish hairs; below light gray; tail well haired, blackish above, light gray below; a pale dull tawny patch on each side of muzzle at roots of whiskers. Total length, 180 (6f); tail vertebrae, 50 (2); hind foot, 24 (1). (terraenovae; N. Lat., of Newfoundland)

The Newfoundland vole is confined to the island of Newfoundland.

**Microtus chrotorrhinus** (Miller) *Rock vole*

Light brown above, thickly sprinkled with blackish hairs beneath; a conspicuous ochraceous patch on each side of muzzle; hind foot about 21 (i8). (chrotorrhinus; Gk., color nose)

The rock vole inhabits heavy spruce woods and rock cavities in the Hudsonian zone of eastern North America. Two well marked subspecies are known, both of which occur within our limits.

**Subspecies of Microtus Chrotorrhinus**

- Muzzle patch dark tawny ochraceous, confined to extremity of muzzle.
- Muzzle patch pale tawny ochraceous, suffusing whole face.

**Microtus chrotorrhinus chrotorrhinus** (Miller) *Southern rock vole*


1900 *Microtus chrotorrhinus* Bailey, North American fauna. 6 June 1900. no. 17, p. 58.

General color of upper partsumber brown; muzzle patches deep tawny ochraceous strictly confined to sides of muzzle. Total length, 165 (6f); tail vertebrae, 50 (2); hind foot, 20 (13). (chrotorrhinus; Gk., color nose)

The southern rock vole is locally distributed in the Hudsonian zone and in cold situations in the Canadian zone of Quebec, New Brunswick, the White mountains, Adirondacks and Catskills.
Microtus chrotorrhinus ravus Bangs Labrador rock vole


General color of upper parts light umber brown; muzzle patches pale tawny ochraceous spreading over whole face. Total length, 160 (6½); tail vertebrae, 45 (1½); hind foot, 22 (¾). (ravus; Lat., yellow gray)

The Labrador rock vole is thus far known from Black bay, Labrador only.

Microtus breweri (Baird) Muskeget island vole

1857 Arvicola breweri Baird, Mamm. N. Am. p. 525. (Muskeget island, Massachusetts)


Light gray, pure and whitish on belly, dull, tinged with wood brown and sprinkled with blackish hairs on back; fur harsh and coarse. Total length, 195 (7½); tail vertebrae, 48 (1½); hind foot, 24 (1½). (bréweri; name from that of Thomas Mayo Brewer)

The Muskeget island vole is peculiar to the island of Muskeget, off Nantucket, Massachusetts.

Microtus enixus Bangs Hamilton inlet vole

1896 Microtus enixus Bangs, American naturalist. Dec. 1896. 30: 1051. (Hamilton inlet Labrador)

Upper parts dark umber brown, much sprinkled with black hairs; under parts dark gray occasionally slightly washed with buffy; teeth very lightly built, the front teeth slender and strongly projecting, the row of cheek teeth averaging less than ½ basal length of skull. Total length, 190 (7½); tail vertebrae, 60 (2½); hind foot, 22 (¾). (enixus; Lat., zealous)

The Hamilton inlet vole is abundant throughout northern Labrador.

Microtus pennsylvanicus (Ord) Field mouse

Upper parts dark brown, much sprinkled with black; under parts gray, usually washed with buffy; teeth strong, the front teeth heavy, not directed noticeably forward, the row of cheek teeth averaging more than ½ basal length of skull; skull with long, narrow braincase. (pennsylvánicus; N. Lat., Pennsylvanian)

This is the common field mouse abundant and well known throughout eastern North America from Labrador to North Carolina, and ranging
far to the westward. It is often erroneously called "mole" or "meadow mole". In the extensive territory which it inhabits the animal is differentiated into several geographic races, four of which occur within our limits.

**SUBSPECIES OF MICROTUS PENNSYLVANICUS**

Size large, total length of adult males often over 185 (7½) ....... M. pennsylvanicus pennsylvanicus

Size medium or small, total length of adult males seldom if ever reaching 175 (6½)

Total length of adults mostly under 140 (5½) ......... M. pennsylvanicus labradorius

Total length of adults mostly over 140 (5½) ......... M. pennsylvanicus pontigenus

General color clear light brown ................. M. pennsylvanicus acadiensis

General color brown tinged with russet .............

Microtus pennsylvanicus pennsylvanicus (Ord) Common eastern field mouse

1815 Mus pennsylvanica Ord, Guthrie's geography, Am. ed. 2. 2: 292. (Near Philadelphia Pa.)


1900 Microtus pennsylvanicus Bailey, North American fauna. 6 June 1900. no. 17, p. 16.

General color above dark brown, usually tinged with tawny, under parts light gray often washed with buffy; skull rather narrow; fur not specially fine and soft. Total length, 180 (6½); tail vertebrae, 50 (2); hind foot, 21 (1½)

The common eastern meadow mouse is abundant in fields and marshes throughout the eastern United States and southern Canada from well within the Canadian zone to the lower edge of the upper austral zone.

Microtus pennsylvanicus labradorius Bailey Labrador field mouse


1900 Microtus pennsylvanicus labradorius, Bailey, North American fauna. 6 June 1900. no. 17, p. 22.

Dark brown above, whitish below; skull not very narrow. Total length, 138 (5½); tail vertebrae, 38 (1½); hind foot, 19 (½). (labradorius; N. Lat., Labradorean)

The Labrador field mouse inhabits the barrens of northern Labrador.
**Microtus pennsylvanicus fontigenus** (Bangs) *Northern field mouse*


1900 *Microtus pennsylvanicus fontigenus* Bailey, North American fauna. 6 June 1900. no. 17, p. 21.

Upper parts clear sepia brown without tawny tinge; under parts light gray; skull narrow. Total length, 140 (5½); tail vertebrae, 40 (4½); hind foot, 20 (4). *(fontigenus; Lat., spring-born)*

The northern field mouse inhabits fields, barrens and dry woods in the Hudsonian zone of eastern North America from Quebec to the north shore of Lake Superior.

**Microtus pennsylvanicus acadicus** Bangs *Acadian field mouse*

1897 *Microtus pennsylvanicus acadicus* Bangs, American naturalist. Mar. 1897. 30:239. (Digby, Nova Scotia)

1900 *Microtus pennsylvanicus acadicus* Bailey, North American fauna. 6 June 1900. no. 17, p. 19.

Upper parts varying from bister shaded with russet to almost clear russet; under parts dark gray; skull slender. Total length, 167 (6½); tail vertebrae, 45 (1½); hind foot, 20 (4). *(acadicus; N. Lat., Acadian)*

The Acadian meadow mouse is confined to the fields, fresh water marshes and forest glades of Nova Scotia.

**Microtus nesophilus** Bailey *Gull island mouse*


1899 *Microtus nesophilus* Bailey, Science. n. s. 2 Dec. 1898, 8:782.


Upper parts dark brown, slightly darker than in average specimens of *M. pennsylvanicus*; under parts dusky, washed with cinnamon; teeth as in *M. pennsylvanicus*; skull with short broad braincase. Tail vertebrae, 29 (1½); hind foot, 20 (4). *(nesophilus; Gk., island lover)*

The Gull island mouse is confined to Great Gull island and Little Gull island, off the eastern extremity of Long Island, New York. The species is probably extinct.
Genus Phenacomys Merriam


Front teeth without grooves, broader than deep; grinding teeth rooted (pronged) in adults, large and heavy; bony palate not ending in a thin-edged shelf behind; body short and thick; tail short; ears just appearing above fur; color never distinctly red. (Phenacomys; Gk., impostor mouse)

So far as at present known the genus Phenacomys is peculiar to North America. Six species are recognized, two of which occur within our limits.

**SPECIES OF PHENACOMYS**

Total length about 150 (5½); skull with a deep groove between eye sockets.......................... P. celatus

Total length about 130 (5½); skull without distinct groove between eye sockets.......................... P. latimanus

Phenacomys celatus Merriam *Large yellow-faced phenacomys*

1889 Phenacomys celatus Merriam, North American fauna. 30 Oct. 1889. no. 2, p. 33. (Godbout, Quebec, Canada)


Yellowish brown above; whitish below; face suffused with reddish. Total length, 150 (5½); tail vertebrae, 35 (1½); hind foot, 20 (1½). (celatus; Lat., secret)

The large yellow-faced phenacomys ranges throughout the Hudsonian zone in Labrador and eastern Canada, south to southeastern Quebec. It has not yet been taken in Nova Scotia or the United States.

Phenacomys latimanus Merriam *Small yellow-faced phenacomys*

1889 Phenacomys latimanus Merriam, North American fauna. 30 Oct. 1889. no. 2, p. 34. (Fort Chimo, Ungava, Labrador)


Color as in P. celatus. Total length, 130 (5½); tail vertebrae, 30 (1½); hind foot, 18 (1½). (latimanus; Lat., broad hand)

The small yellow-faced phenacomys ranges from western Labrador to the north shore of Lake Superior. It is apparently confined to barrens and open places, seldom if ever entering the dense forests inhabited by the red-backed mice.
Genus *Evotomys* Coues


Front teeth without grooves, broader than deep; *grinding teeth rooted* (pronged) in adults, small and weak; bony palate ending in thin-edged shelf behind; body short and thick; tail short, ears usually just appearing above fur; *color of back usually distinctly red.* (*Evotomys*; Gk., well-eared mouse)

The genus *Evotomys* which occurs throughout the cooler part of the northern hemisphere is represented in America by about 25 forms. Five species occur within our limits.

**SPECIES OF EVOTOMYS**

- Red area on back fading insensibly into color of sides
  - Ears small, completely covered by the surrounding fur;
    - teeth small .............................................. E. *ungava*
  - Ears large, appearing conspicuously above surrounding fur; teeth very heavy .................................. E. *carolinensis*
- Red area on back sharply defined from color of sides
  - Tail considerably more than twice length of hind foot... E. *pruteus*
  - Tail scarcely more than twice length of hind foot, or less
    - Hind foot about 19 (4); skull small; teeth light ...... E. *gapperi*
    - Hind foot about 21 (11); skull large; teeth heavy..... E. *rhoadsi*

*Evotomys ungava* Bailey *Ungava red-backed mouse*

1897 *Evotomys ungava* Bailey, Proc. biolog. soc. Washington. 13 May 1897. 11:130. (Fort Chimo, Ungava, Labrador)

Ears very small, not projecting above fur; back dull brownish chestnut, fading insensibly into buffy gray of sides; tail about twice as long as hind foot. Total length, 135 (54); tail vertebrae, 40 (13); hind foot, 19 (4). (*ungava*; N. Lat., Ungava)

The Ungava red-backed mouse is known from Ungava, Labrador only.

*Evotomys carolinensis* Merriam *Carolina red-backed mouse*


Ears large, projecting conspicuously above fur; back dark chestnut fading insensibly into bister of sides; tail about twice as long as hind foot. Total length, 150 (54); tail vertebrae, 45 (13); hind foot, 21 (11). (*carolinensis*; N. Lat., Carolinian)

The Carolina red-backed mouse is confined to the boreal mountain forests of the southern Alleghanies (Tennessee, North Carolina, West Virginia and Virginia).
Evotomys proteus Bangs *Variable red-backed mouse*


*Ears large, projecting conspicuously above fur, back varying from slate color and dark sepia to dull yellowish and bright chestnut, usually sharply marked off from gray of sides; tail much more than twice as long as hind foot. Total length, 160 (6); tail vertebrae, 50 (2); hind foot, 21 (1).* (*proteus*; Lat., a many formed sea god)

The variable red-backed mouse has been taken in the stunted spruce forest at Hamilton Inlet, Labrador, only.

Evotomys gapperi (Vigors) *Common red-backed mouse*

*Ears large, projecting conspicuously above fur; color of back sharply defined from that of sides, tail about twice as long as hind foot. (*gapperi*; name from that of Dr Gapper)

The common red-backed mouse occurs in the forests of the boreal zone and cooler parts of the transition zone throughout the greater part of the northern United States and southern Canada. It is divisible into six or more well marked geographic races, two of which are found within our limits. In the northern part of its range brown individuals (*E. fuscodorsalis* Allen) are of frequent occurrence.

**SUBSPECIES OF EVOTOMYS GAPPERI**

Back bright chestnut sprinkled with black hairs. *E. gapperi gapperi*

Back dull rusty rufous without sprinkling of black hairs.................................*E. gapperi ochraceus*

Evotomys gapperi gapperi (Vigors) *Eastern red-backed mouse*

1830 Arvicola gapperi Vigors, Zool. jour. 5: 204. (Region between York and Lake Simcoe, Ontario, Canada)


*Back bright chestnut, sprinkled with blackish hairs; sides bright buffy ochraceous; belly gray washed with pale buff. Total length, 140 (5); tail vertebrae, 40 (1); hind foot, 18 (4).* (*gapperi*; name from that of Dr Gapper)

The eastern red-backed mouse is abundant in the forests of the boreal zone and cooler parts of the transition zone from Quebec to Pennsylvania and from the Atlantic coast to Dakota.
Evotomys gapperi ochraceus Miller, *Mount Washington red-backed mouse*


*Back pale, dull, rusty rufous, without sprinkling of blackish hairs, sides buffy clay color; belly dirty whitish. Total length, 150 (5f); tail vertebrae, 40 (1α); hind foot, 19 (½). (ochraceus; Lat., ochraceous)*

The Mt Washington red-backed mouse is so far as known confined to the upper boreal zone of Mt Washington, New Hampshire.

Evotomys rhoadsi (Stone) *New Jersey red-backed mouse*


*Ears large, projecting conspicuously above fur; back dark chestnut, sharply marked off from buffy gray of sides; skull and teeth much heavier than in *E. gapperi*, in this respect resembling *E. carolinensis*. Total length, 140 (5½); tail vertebrae, 40 (1½); hind foot, 21 (½). (rhoadsi; name from that of Samuel N. Rhoads)*

The New Jersey red-backed mouse has thus far been found in the cool bogs of southern New Jersey and southern New York only.

**Family Dipodidae Jerboas and jumping mice**

*Front teeth two, compressed (in our genera each with a deep longitudinal groove on front face); cheek teeth in upper jaw usually four on each side (three in *Napaeozapus*); skull with a conspicuous aperture opening forward in front of the eye socket; tail and hind legs elongated for jumping. (Dipodidae; genus, Dipus)*

The family Dipodidae is widely distributed through North America, Asia, Africa and eastern and northern Europe. Half a dozen or more old world genera are now recognized, while only two are found in America. The latter form the subfamily Zapodinae.

**Genera of Dipodidae**

A small, probably useless tooth in front of first well developed grinder in upper jaw................................. *Zapus*

No small tooth in front of first well developed grinder in upper jaw............................................. *Napaeozapus*
Genus Zapus Coues


Tooth 18; tail considerably longer than head and body; hind foot greatly elongated, between one half and one third as long as head and body. (Zapus; Gk., much foot)

The genus Zapus reaches its greatest development in boreal North America. Several species are known, all North American but one, which occurs in western China. Only one is found within our limits.

Zapus hudsonius (Zimmermann) Meadow jumping mouse

Back and sides yellowish brown, the former heavily, the latter lightly sprinkled with darker hairs; belly white, usually strongly tinged with yellowish; tail brown to extreme tip. (hudsonius; N. Lat., Hudsonian)

The meadow jumping mouse is common in meadows, old fields and open woods throughout eastern North America south to the northern edge of the upper austral zone. It is divisible into several races, three of which occur within our limits.

**SUBSPECIES OF ZAPUS HUDSONIUS**

Total length under 200 (8); hind foot less than 30 (1½)

---

Zapus hudsonius americanus

Total length over 215 (8½); hind foot more than 30 (1)

---

Total length about 220 (8½)

---

Z. hudsonius hudsonius

Total length about 230 (9½)

---

Z. hudsonius ladas

Zapus hudsonius americanus (Barton) Southern meadow jumping mouse

1799 Meriones americanus Barton, Trans. Am. philos. soc. 4:115. (Philadelphia Pa.)


Back dusky brown faintly tinged with reddish buff, sides reddish buff, very slightly grizzled. Total length, 190 (7½); tail vertebrae, 115 (4½); hind foot, 18 (1½). (americanus; N. Lat., American)

The southern meadow jumping mouse occurs throughout the upper austral zone of the eastern United States from North Carolina northward. In the transition zone it intergrades with the next race.
Zapus hudsonius hudsonius (Zimmermann) *Northern meadow jumping mouse*

1780 *Dipus hudsonius* Zimmermann, Geogr. Gesch. 2:358. (Hudson bay)


1899 *Zapus hudsonius* Preble, North American fauna. 8 Aug. 1899. no. 15, p. 15.

Back yellowish brown; sides light grayish buff, slightly sprinkled with black. Total length, 220 (8½); tail vertebrae, 130 (5½); hind foot, 31 (1½). (*hudsonius*; N. Lat., Hudsonian)

The northern meadow jumping mouse occurs throughout the Canadian zone and lower part of the Hudsonian zone of eastern North America except in the area occupied by the following form.

Zapus hudsonius ladas Bangs *Labrador meadow jumping mouse*


1899 *Zapus hudsonius ladas* Preble, North American fauna. 8 Aug. 1899. no. 15, p. 17.

Back blackish; sides tawny ochraceous, conspicuously sprinkled with black. Total length, 230 (9½); tail vertebrae, 145 (5¾); hind foot, 32 (1¼). (*ladas*; from name of a famous runner of Alexander the Great)

The Labrador meadow jumping mouse is at present known from eastern Labrador only.

Genus *Napaeozapus* Preble

1899 *Napaeozapus* Preble, North American fauna. 8 Aug. 1899. no. 15, p. 33.

Type *Zapus insignis* Miller.

Teeth 16; otherwise as *Zapus*. (*Napaeozapus*; Gk., woodland *Zapus*)

The genus *Napaeozapus* is peculiar to eastern North America, where it is represented by one species only.

*Napaeozapus insignis* Miller *Woodland jumping mouse*

Back and sides yellowish brown, the former heavily, the latter scarcely, sprinkled with black; belly always pure white; tail tipped with white. (*insignis*; Lat., distinguished)

The woodland jumping mouse is abundant in heavy woods (chiefly near watercourses) throughout the Hudsonian and Canadian zones of eastern North America. It also occurs sparingly in isolated cool localities in the upper edge of the transition zone. It is divisible into three races.
**Subspecies of Napaeozapus Insignis**

Total length about 250 (9\(\frac{1}{2}\)); hind foot about 33

(1\%)

\[ \text{N. insignis abietorum} \]

Total length about 225 (8\(\frac{1}{2}\)); hind foot about 30

(1\%)

Colors bright; hind foot usually more than 30

(1\%)

\[ \text{N. insignis insignis} \]

Colors dull; hind foot usually less than 30 (1\%)

\[ \text{N. insignis roanensis} \]

**Napaeozapus insignis abietorum** (Preble) *Hudsonian woodland jumping mouse*

1899 *Zapus (Napaeozapus) insignis abietorum* Preble, North American fauna. 8 Aug. 1899. no. 15, p. 36. (North shore of Lake Superior)

Size very large; skull broad between eye sockets. Total length, 250 (9\(\frac{1}{2}\)); tail vertebrae, 160 (6\(\frac{1}{2}\)). (abietorum; Lat., of the firs)

The northern woodland jumping mouse is confined to the Hudsonian zone of eastern Canada.

**Napaeozapus insignis insignis** Miller *Northern woodland jumping mouse*

1891 *Zapus insignis* Miller, American naturalist. Aug. 1891. 25: 472. (Restigouche river, New Brunswick)

1899 *Zapus (Napaeozapus) insignis* Preble, North American fauna. 8 Aug. 1899. no. 15, p. 33.

Size medium; skull narrow between eye sockets; color bright. Total length, 235 (9\(\frac{1}{2}\)); tail vertebrae, 145 (5\(\frac{1}{2}\)); hind foot, 31 (1\(\frac{3}{4}\)). (insignis; Lat., distinguished)

The northern woodland jumping mouse is abundant throughout the Canadian forests of the eastern United States and Canada.

**Napaeozapus insignis roanensis** (Preble) *Mountain woodland jumping mouse*

1899 *Zapus (Napaeozapus) insignis roanensis* Preble, North American fauna. 8 Aug. 1899. no. 15, p. 35. (Roan mountain, N. C.)

Size small; skull narrow between eye sockets; colors dull. Total length, 220 (8\(\frac{1}{2}\)); tail vertebrae, 130 (5\(\frac{1}{2}\)); hind foot, 30 (1\(\frac{1}{2}\)). (roanensis; N. Lat., inhabiting Roan mountain)

The mountain woodland jumping mouse is at present known from the evergreen forests of Roan mountain only. It probably occurs in the Canadian zone throughout the southern Alleghanies.
Family Erethizontidae  *New world porcupines*

Cheek teeth rooted; no thumb; fur mixed with long stiff quills. (*Erethizontidae; genus Erethizon*)

The new world porcupines are represented by three genera, two of which are tropical. The third occurs throughout the wooded portion of boreal North America.

Genus *Erethizon* F. Cuvier

1825 *Erethizon* F. Cuvier, Dents des mammifères, p. 256. Type *Hystrix dorsatus* Linnaeus

Tail short, not prehensile; toes four in front, five behind. (*Erethizon; Gk., to irritate*)

The genus *Erethizon* is confined to the northern parts of North America. Two species are known, one of which occurs within our limits.

*Erethizon dorsatus* (Linnaeus) *Canada porcupine, “hedgehog”*

1758 *Hystrix dorsatus* Linnaeus, Systema naturae, ed. 10. 1:57. (Canada)


Blackish; quills whitish tipped. Total length, 700 (28); tail vertebrae, 200 (8) hind foot, 90 (31). (*dorsatus; Lat., large-backed*)

The Canada porcupine occurs throughout the Canadian zone of northeastern North America wherever are still found sufficiently extensive tracts of unbroken forest. It is chiefly arboreal in habits. The true hedgehogs are very different animals (insectivores) confined to the old world.

Family Leporidae  *Hares*

Upper front teeth four, *a large pair in front and a small pair immediately behind*; front legs short; hind legs elongated for jumping; tail very short or rudimentary. (*Leporidae; genus Lepus*)

The family *Leporidae*, though nearly universally distributed outside of Australia and the neighboring islands, contains only two genera, one of which is peculiar to the high mountains of southern Mexico.

Genus *Lepus* Linnaeus

1758 *Lepus* Linnaeus, Systema naturae, ed. 10. 1:57. Type *Lepus timidus*, Linnaeus.

Tail well developed; ears long and narrow; hind legs very long. (*Lepus; Lat., a hare*)

The genus *Lepus*, the range of which is coincident with that of the family, probably contains more than one hundred species. Four of these occur in northeastern North America.
SPECIES OF LEPUS

Size small; hind foot under 115 (4); fur never turning white in winter (cottontails, subgenus Sylvilagus) L. floridanus

Size medium or large; hind foot 125 (5) to 165 (6); fur in American species generally turning white in winter (hares, subgenus Lepus)

Total length usually less than 500 (19); fur usually but not always turning white in winter (varying hares) L. americanus

Total length about 600 (23\textfrac{1}{2}) or more; fur always turning white in winter (arctic hares)

Hind foot, 145 (5\textfrac{1}{2}); ear from crown, 100 (4) L. labradorius

Hind foot, 165 (6\textfrac{1}{2}); ear from crown, 85 (3\textfrac{1}{2}) L. bangsi

Lepus labradorius Miller Labrador arctic hare


1899 Lepus labradorius Miller, Proc. biolog. soc. Washington. (Fort Chimo, Ungava, Labrador)

General color in summer light brown, turning to dusky bluish gray on sides and to white on under parts; in winter pure white; ears always tipped with black; tail snowy white. Total length, 600 (23\textfrac{1}{2}); tail vertebrae, 55 (2\textfrac{1}{2}); hind foot, 145 (5\textfrac{1}{2}); ear from crown, 100 (4). (labradorius; N. Lat., Labradorian)

The Labrador arctic hare is confined to the barren region of northern Labrador, where it is abundant. Its range extends as far south as Hamilton inlet.

Lepus bangsi (Rhoads) Newfoundland arctic hare


General color in summer light brown, turning to dusky bluish gray on sides and to white on under parts, in winter pure white; ears always tipped with black; tail snowy white. Total length, 600 (23\textfrac{1}{2}); tail vertebrae, 65 (2\textfrac{1}{2}); hind foot, 165 (6\textfrac{1}{2}); ear from crown, 85 (3\textfrac{1}{2}). (bangsi; name from that of Outram Bangs)

The Newfoundland arctic hare is confined to the island of Newfoundland.

Lepus americanus Erxleben American varying hare

Size medium (much less than that of the western jack rabbits, and northern arctic hares); fur usually undergoing marked periodic changes, from brown to white in autumn and from white to brown in spring; tail (in dark pelage), dull yellowish or whitish beneath. (americanus; N. Lat., American)

The American varying hare is a wide ranging species divisible into numerous geographic races. Three of these occur in northeastern North America.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

SUBSPECIES OF LEPUS AMERICANUS

Hind foot small, about 127 (5) in length... L. americanus struthopus

Hind foot large, about 140 (5½) in length

General color (in summer coat) light yellowish brown or drab; ears conspicuously rimmed with white. L. americanus americanus

General color (in summer coat) russet or rusty; ears inconspicuously rimmed with white. L. americanus virginianus

Lepus americanus struthopus Bangs Nova Scotian hare


Hind foot small; color in summer dull tawny brown, (varying from raw umber to bister); black-tipped hairs on back not numerous; ears dusky or black at tip; borders of ears yellowish brown. Length, 470 (18¼); tail, 50 (2); hind foot, 127 (5). (struthopus; Lat., small-footed)

The Nova Scotian hare, as its name implies, is confined to the province of Nova Scotia, where it is exceedingly abundant.

Lepus americanus americanus Erxleben Northern varying hare

1777 Lepus americanus Erxleben, Syst. regn. anim. 1:330.

Hind foot large; color in summer pale tawny brown, (varying from hair brown and drab to tawny clay color); black-tipped hairs on back numerous; ears dusky at tips; borders of ears conspicuously white. Length, 470 (18½); tail, 38 (1½); hind foot, 150 (6). (americanus; N. Lat., American)

The northern varying hare occupies the wooded portions of Labrador. Its southern limit is not definitely known; but the animal does not reach the northern border of the United States.

Lepus americanus virginianus (Harlan) Southern varying hare

1825 Lepus virginianus Harlan, Fauna Americana, p. 196. (Blue mountains of Pennsylvania)

Hind foot large; color in summer bright rusty brown, (varying from russet to deep rust color); black-tipped hairs on back numerous; ears dusky at tip; borders of ears very inconspicuously whitish. Length, 485 (19); tail, 50 (2); hind foot, 140 (5½). (virginianus; N. Lat., Virginian)
The southern varying hare inhabits the Canadian zone and cool, damp situations in the transition zone of the eastern United States and southeastern Canada. At the southern extremity of its range the animal does not assume the white coat in winter.

Lepus floridanus Allen Cottontail

Size small; fur always dark; feet stout, well furred; tail conspicuously snowy white beneath. (floridanus; N. Lat., Floridian)

The cottontail like the varying hare is a wide ranging species. It is divisible into even more local races than its larger relative. Only three of these subspecies occur within our limits. The typical form, Lepus floridanus floridanus, is confined to the peninsula of Florida.

SUBSPECIES OF LEPUS FLORIDANUS

General color bright yellowish brown with
a strong admixture of black; a distinct
black spot between ears.............. L. floridanus transitionalis

General color pale yellowish brown with
very faint admixture of black; no
black spot between ears
Rump noticeably paler than back; hind
foot often over 100 (4) .............. L. floridanus mearnsi
Rump not noticeably paler than back;
hind foot generally under 100 (4).... L. floridanus mallurus

Lepus floridanus transitionalis (Bangs) Northeastern cottontail


Hair long, full and silky; color bright, chiefly russet, wood brown and hazel; back heavily sprinkled with black-tipped hairs; rump not noticeably paler than back, a black spot between ears; ears thickly furred and with decided black margin on outer edge. Length, 430 (17); tail, 55 (2½); hind foot, 95 (3½). (transitionalis; N. Lat., pertaining to the transition zone)

The northeastern cottontail inhabits the transition zone of southern New England and eastern New York.

Lepus floridanus mearnsi Allen Eastern prairie cottontail

1894 Lepus sylvaticus mearnsi Allen, Bull. Am. mus. nat. hist. 6: 171. (Fort Snelling Minn.)

Hair long, full and soft; color pale, chiefly wood brown and gray; back not heavily sprinkled with black-tipped hairs; rump very noticeably paler than back; no black spots between ears; ears thinly furred and without distinct black margins. Length, 475 (18½); tail, 65 (2½); hind foot, 100 (4). (mearnsi; name from that of Edgar A. Mearns)

The eastern prairie cottontail is a member of the eastern prairie fauna of the transition and upper austral zones. It would therefore not come within the scope of the present paper had it not recently extended its range as far as Toronto, Ontario and central New York.

Lepus floridanus mallurus (Thomas) Southeastern cottontail

1837 Lepus sylvaticus Bachman, Jour. acad. nat. sci. Philadelphia. 7: 403. Eastern United States. (Not Lepus borealis sylvaticus Nilsson, 1832)


1898 Lepus nuttalli mallurus Thomas, Ann. and mag. nat. hist. ser. 7, 2: 320. (Raleigh N. C.)


Hair short and coarse; color dull, chiefly wood brown and cinnamon; back not heavily sprinkled with black-tipped hairs; rump not noticeably paler than back; no black spot between ears; ears rather thinly furred, and without distinct dark margins. Length, 430 (17); tail, 55 (2½); hind foot, 95 (3½). (mallurus; Gk., wool tail)

The southeastern cottontail is abundant through the austral zones of the eastern United States. Its northern limit reaches the lower Hudson valley.

Order Ferae Flesh-eaters or carnivores

Canine teeth well developed; cheek teeth formed for cutting; front teeth small, in a row between the canines; toes provided with claws; brain large, well developed; species occurring within our limits large or medium sized, the smallest (weasels) about 300 (1 ft) in length; eyes well developed; fur not modified for an underground life. (Ferae; Lat., wild beasts)

The order Ferae, containing the cats, dogs, bears, weasels, raccoons, etc., is distinguished among the groups of mammals occurring in North America by the high development of the teeth for flesh-cutting. The order is very generally distributed in the new world and in the old world outside of Australia. It contains about a dozen families, six of which are found in northeastern North America.
FAMILIES OF FERAE

Limbs so highly modified for swimming as to be practically useless for walking (Pinnipedia; seals and their allies)

Hind feet capable of turning forward under the body; a large tusk on each side of upper jaw (walruses). Rosmaridae, p. 120

Hind feet permanently directed backward; no tusks (seals) ........................................ Phocidae, p. 121

Limbs normal (Fissipedia; the true carnivores)

Hind foot with four toes

Claws retractile into a sheath; muzzle broad and short; teeth not more than 30 (cats) ............... Felidae, p. 123

Claws not retractile; muzzle narrow and long; teeth 42 (dogs) ........................................ Canidae, p. 126

Hind foot with five toes

Entire sole not applied to ground in walking (weasels, otters, martins etc.) .................. Mustelidae, p. 129

Entire sole applied to ground in walking

Size small or medium; tail well developed; teeth 36 to 40 (raccoons, etc.) ...................... Procyonidae, p. 137

Size very large, tail rudimentary; teeth 42 (bears) Ursidae, p. 138

Family Rosmaridae Walruses

Hind feet capable of turning forward under body; no external ears; a large tusk growing downward from each side of upper jaw. (Rosmáridae; genus Rosmarus)

The family Rosmaridae contains the one genus Rosmarus.

Genus Rosmarus Scopoli


Characters of the family. (Rosmárus; an old name for the walrus first used by Olaus Magnus in the 16th century)

The genus Rosmarus is represented by two species, one each in the north Atlantic and north Pacific.

Rosmarus rosmarus (Linnaeus) Atlantic walrus

1766 Trichechus rosmarus Linnaeus, Systema naturae. ed. 12. 1:49. (North Atlantic ocean)


1894 Rosmarus rosmarns Rhoads, American naturalist. 28:523.

Characters as above; bristly nose pad narrow. (rosmárus; an old name)

The Atlantic walrus, within our limits is now restricted to northern Labrador; its range formerly extended much farther south.
Family Phocidae  

*Earless seals*

Hind feet directed *permanently* backward; no external ears; no tusks. (Phocidae; genus Phoca)

The family Phocidae contains a dozen or more genera distributed on practically all sea coasts. Four occur in North America, all of which are represented within our limits.

**Genera of Phocidae**

Teeth 30; snout of male developed into a conspicuous "hood"  
(subfamily Cystophorinae)........................................ Cystophora

Teeth 34; snout not specially developed (subfamily Phocinae)  
Braincase forming less than one third of length of skull.... Halichoerus  
Braincase forming nearly one half of length of skull  
Cheek teeth large and strong; forehead high, arched.............. Phoca  
Cheek teeth small and weak; forehead low, flat.............. Erignathus

Genus Cystophora Nilsson

Teeth 30 (only two front teeth in lower jaw); muzzle elongated, that of male capable of inflation. (Cystophora; Gk., bladder-bearer)

The genus Cystophora is peculiar to the coasts and islands of the North Atlantic. Only one species is known.

**Cystophora cristata** (Erxleben)  

*Hooded seal*

1777 [Phoca] cristata Erxleben, Syst. regn. anim. 1:590. (Greenland)  
1884 Cystophora cristata Merriam, Science. 5 Dec. 1884. 4:514.  
Bluish black, lighter on sides and belly; back thickly sprinkled with irregular whitish spots. Total length 2450 (7 ft) to 2800 (8 ft). (cristata; Lat., crested)

The hooded seal occurs on the northern coasts of western Europe and eastern North America. In the latter country its southward range extends about to Nova Scotia, though stragglers have been taken as far south as Long Island.

Genus Halichoerus Nilsson

Teeth 34 (four front teeth in lower jaw); braincase very small, forming less than one third length of skull. (Halichoerus; Gk., sea pig)

The genus Halichoerus is peculiar to the coasts and islands of the North Atlantic. Only one species is known.
Halichoerus grypus (Fabricius) **Gray seal**


Gray (silvery, ashy or dusky) with ill-defined dark spots. Total length 2450 (7 ft) to 3150 (9 ft). (*grypus*; Lat., hook-nosed)

The gray seal occurs on the northern coasts of western Europe and eastern North America. Its southward range in America extends about to Nova Scotia.

Genus *Phoca* Linnaeus

1758 *Phoca* Linnaeus, Systema naturae, ed. 10. 1:37. Type *Phoca vitulina* Linnaeus.

Teeth 34 (*four front teeth in lower jaw*); the cheek teeth large and strong, *not falling out with age*; braincase forming nearly one half of length of skull; forehead high, arched. (*Phoca*; Lat., a seal)

The genus *Phoca* is widely distributed on the coasts of the northern hemisphere. About a half dozen species are known, three of which occur within our limits.

**SPECIES OF PHOCA**

Male whitish with a black stripe crossing shoulder and running back along sides (subgenus *Pagophilus* Gray).

---

P. groenlandica

Male not white with black markings

First finger slightly longer than others; back generally blackish with whitish spots (subgenus *Pusa* Scopoli).

P. hispida

First finger not longer than others; back generally light brown or gray with dark spots (subgenus *Phoca*).

---

P. vitulina

**Phoca groenlandica** Fabricius *Harp seal*

1776 *Phoca groenlandica* Fabricius, Müller's Zool. Dan. prodr., 8. (Coast of Greenland)

Male whitish, with black face, and a black stripe crossing shoulders and extending backward along sides. Female less distinctly marked. Total length (male) about 1750 (5 ft), female smaller. (*groenlandica*; N. Lat., pertaining to Greenland)

The harp seal is a circumpolar species, confined to the icy northern seas. In America its southward range extends to Newfoundland and the Magdalen islands.
Phoca hispida Schreber  *Ringed seal*

1775 *Phoca hispida* Schreber, Säugethiere. 3: 312.

*First finger longest*, the others successively decreasing in length. General color blackish brown above, yellowish white below, the back with large oval whitish spots; muzzle and eye ring usually black. Total length (male) about 1750 (5 ft), female smaller. (*hispida*; Lat., harsh)

The ringed seal occurs on the Arctic coasts of both hemispheres. In eastern North America its range extends to Labrador and Newfoundland.

Phoca vitulina Linnaeus  *Harbor seal*

1758 [*Phoca*] *vitulina* Linnaeus, Systema naturae, ed. 10. 1: 38. (Coast of Europe)

*Fingers not distinctly graduated*; general color grayish or brownish; paler below; the back with dark spots, muzzle and eye ring usually yellowish. Total length about 1750 (5 ft); female smaller. (*vitulina*; Lat., calf-like)

The harbor seal is peculiar to the north Atlantic. Its normal range in North America extends about to Long Island, though individuals straggle much farther south. It is frequently taken in rivers and lakes at some distance from the sea.

Family Felidae  *Cats*

*Heel never applied to ground in walking*; claws sharp, compressed, retractile, *hind toes 4*; *teeth 28 or 30*; head short, round. (*Felidae*, genus *Felis*)

The well known cat family, though distributed throughout the warmer parts of the world (Australia and neighboring islands excepted) contains only a small number of genera. Two are all that are commonly recognized, but this number should probably be doubled. Two only occur in America, both of which are found in the northeastern United States.

**GENERA OF FELIDAE**

Tail long; teeth 30 .............................................................. *Felis*
Tail short; teeth 28 .............................................................. *Lynx*

Genus *Felis* Linnaeus


Form slender; tail long; teeth 30; no mane; ears not tufted; pupil of eye when contracted a vertical slit. (*Felis*; Lat., a cat)

The range of the genus *Felis* is the same as that of the family. Some 50 species are known, about a dozen of which occur in America.
north of Panama. The following is the only wild\(^1\) species found in northeastern North America.

**Felis oregonensis** Rafinesque *Puma*

Yellowish brown above, middle line of back darker; under parts whitish; feet large and heavy. (*oregonensis*; N. Lat., Oregonian)

While its typical subspecies *F. oregonensis oregonensis* is confined to the northwest coast region, the puma occurs throughout the wilder parts of North America south of the upper part of the Canadian zone. It is divisible into several geographic races, one of which is found within our limits.

**Felis oregonensis hippolestes** (Merriam) *Northern puma*


Total length, 2600 (8½ ft); tail vertebrae, 930 (36½); hind foot, 270 (10½). (*hippolestes*; Gk., horse thief)

The northern puma formerly occurred throughout the wooded portions of the northeastern United States and southern Canada. It is now exterminated except in the remotest districts. This is the *Felis concolor* of writers on the mammals of eastern North America. True *Felis concolor* is, however, confined to South America. The proper subspecific name for the puma of the northeastern United States is still a matter of doubt. I use *hippolestes* provisionally only.

**Genus Lynx** Kerr

1792 *Lynx* Kerr, Animal kingdom, 1, Systematic catalogue (inserted between p. 32 and 33). Type *Lynx vulgaris* Kerr= *Felis lynx* Linnaeus.

Form robust; tail short; teeth 2½; ears tufted; otherwise as in *Felis*.

The genus *Lynx* contains a dozen or more species, confined for the most part to the middle and lower boreal regions of the northern hemisphere. About a dozen species or races, the status of which is not yet well understood, occur in North America. Four of these are found within our limits.

---

\(^1\)The house cat is often found in a half wild state.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

SPECIES OF LYNX

Feet very large; tail very short; fur long and loose; ear tufts long; skull broad (subgenus Lynx)
Upper parts light (a mixture of dark brown and gray) ..... L. canadensis
Upper parts dark (a mixture of black and hazel) ............ L. subsolanus

Feet moderate; tail moderate; fur short and dense; ear tufts short; skull narrow (subgenus Cervaria)
Color rich, with much black on upper parts; greatest length of skull about 132 (5½). L. gigas
Color dull, little black on upper parts; greatest length of skull about 120 (4½). L. ruffus

Lynx canadensis Kerr Canada lynx
1792 Lynx canadensis Kerr, Animal kingdom, 1, Systematic catalogue (inserted between p. 32 and 33), no. 298. (Canada)
Back a grizzle of dark brown and light gray; belly dirty white; ear tufts about 50 (2). Total length, 1000 (39½); tail vertebrae, 100 (4); hind foot, 225 (8½); breadth of front foot about 80 (3½). (canadensis; N. Lat., Canadian)
The Canada lynx occurs in the forested region of "the whole of boreal North America from Maine and northern New York to Alaska, but now very rare and apparently becoming extirpated in the east."—Bangs

Lynx subsolanus Bangs Newfoundland lynx
Back a grizzle of black and hazel; belly pale yellowish brown with irregular spots of black. Total length, 920 (36); tail vertebrae, 110 (4½); hind foot, 220 (8½); breadth of front foot about 75 (3). (subsolanus; Lat., under the east wind, i.e. eastern)
The Newfoundland lynx is confined to the island of Newfoundland.

Lynx ruffus (Gueldenstaedt) Bay lynx; wildcat

Back yellowish gray tinged with rufous, much spotted and streaked with black; belly whitish spotted with black; a brownish collar on throat. Total length 900 (35½); tail vertebrae, 170 (6½); hind foot, 180 (7½); breadth of front foot about 50 (2). (ruffus; Lat., reddish)
The wildcat ranges from northern Georgia to the coast of Maine. It is often common in comparatively thickly settled districts. The species is divisible into numerous subspecies, of which the typical form only (L. ruffus ruffus) occurs within our limits.
Lynx gigas Bangs _Nova Scotia lynx_


*Back cinnamon rufus,* much spotted and streaked with black; belly dull white, spotted with black; a collar of cinnamon on throat. Total length, 1000 (39); tail vertebrae, 180 (7); hind foot, 200 (8); breadth of front foot about 50 (2). (*gigas*; *Lat.*, a giant)

The *Nova Scotia* lynx is confined to the forested regions of the peninsula of *Nova Scotia*.

**Family Canidae** *Dogs*

Heel never applied to the ground in walking, claws blunt, not compressed or retractile; hind toes 4; teeth 42 or more; head generally long and narrow. (*Canidae; genus Canis*)

The dog family is even more widely distributed than are the cats, since some of its members reach the highest northern limits of mammalian life. Like the cat family it contains a few genera only. Three of these occur in North America, and all are found within our limits.

**Genera of Canidae**

Upper front teeth distinctly lobed; pupil of eye circular. .............. *Canis*

Upper front teeth without lobes; pupil of eye elliptic

Tail without concealed mane and with abundant soft under-fur. . . . . *Vulpes*

Tail with a concealed mane of stiff hairs and without soft fur. . . . . *Urocyon*

**Genus Canis Linnaeus**

1758 *Canis Linnaeus*, Systema naturae. ed. 10, 1: 38. Type *Canis familiaris* Linnaeus.

Teeth 42, upper front teeth distinctly lobed; pupil of eye circular. (*Cánis Lat.*, a dog)

This extensive genus may be considered as truly cosmopolitan. One or more species occur in every part of the American continent from Greenland to Patagonia and the Falkland isles; and similarly in the old world, Europe, Africa and Asia, with most of the large islands adjacent, and even Australia, have their wild dogs, though in the last case they may belong to a feral race, introduced originally by man.—*Flower & Lydekker*. A dozen or more species occur in North America, only two of which are found within our limits.
KEY TO LAND MAMMALS OF NORTHEASTERN-NORTH AMERICA

SPECIES OF CANIS

Fur white in winter................................................. C. albus
Fur always dark.................................................. C. occidentalis

Canis albus (J. Sabine) Arctic wolf
(Fort Enterprise)
1898 Canis albus Bangs, American naturalist. July 1898. 32:505.

Fur white in winter. (This animal is very slightly known. I have seen no specimens, nor can I find reliable published measurements.) (albus; Lat., white)

The arctic wolf inhabits the barren arctic regions of America. Within our limits it is confined to northern Labrador.

Canis occidentalis (Richardson) American wolf
1829 Canis lupus, occidentalis Richardson, Fauna Boreali-Americana. 1:60. (Northern North America)
1898 Canis occidentalis Bangs, American naturalist. July 1898. 32:505.

Back brownish or blackish mixed with tawny; belly light tawny or dirty whitish. Total length, 1465 (57); tail vertebrae, 405 (16); hind foot, 225 (9). (occidentalis; Lat., western, i.e. inhabiting the western hemisphere)

The American wolf is now exterminated within our limits in all but the wildest and most sparsely settled regions. The exact boundaries of the animal's range are unknown.

Genus Vulpes Richardson

Teeth 42; upper front teeth not lobed; pupil of eye elliptic; tail with a uniform coat of long hair and an abundant soft under-fur. (Vulpes; Lat., a fox)

The genus Vulpes contains a half dozen or more species, all of which are peculiar to the northern hemisphere. Four or more occur in North America. Three of these are found within our limits.

SPECIES OF VULPES

Ear rounded, scarcely overtopping fur, color bluish gray in summer, white in winter.................... V. lagopus

Ear pointed, long and conspicuous; fur normally fulvous or reddish at all seasons (occasionally black or gray)

Claws short, mostly hidden by the fur; color dark............ V. fulvus

Claws very long and conspicuous; color pale.................... V. deletrix
**Vulpes lagopus** (Linnaeus) *Arctic fox*

1758 *Canis lagopus* Linnaeus, Systema naturae. ed. 10. 1: 40 (Lapland)
1854 *Vulpes lagopus* Audubon and Bachman, Quadr. N. Am. 3: 89.

Fur dark bluish gray in summer, turning to pure white in winter; sooty black individuals occasionally found. Total length, 1100 (43½); tail vertebrae, 350 (13½); hind foot, 145 (5¼); ear, 45 (1½). (*lagopus*; Gk., hare foot)

The arctic fox occurs in the arctic regions of both hemispheres. It ranges throughout northern Labrador and on the coast occasionally reaches James bay and the strait of Belle Isle.

**Vulpes fulvus** (Desmarest) *Red fox*

Reddish; feet and ears blackish; tip of tail white; ear pointed, about 80 (3½) in length. The following color variations occur more commonly in the northern part of the animal's range than elsewhere. *The cross fox*, like the last but with a dark half ring on back of neck crossed by a dark line along middle of back. *The silver fox* entirely silver gray. *The black fox* entirely blackish. All of these phases intergrade with each other and with the red phase. (*fulvus*; Lat., yellowish)

The well known red fox ranges throughout the greater part of North America south to the lower edge of the upper austral zone. Two subspecies are known within our limits.

**Subspecies of Vulpes fulvus**

<table>
<thead>
<tr>
<th>Subspecies</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Vulpes fulvus fulvus</em></td>
<td>Upper parts tawny yellowish; total length, 1000 (39½)</td>
</tr>
<tr>
<td><em>Vulpes fulvus rubricatus</em></td>
<td>Upper parts bright rust color; total length, 1080 (42½)</td>
</tr>
</tbody>
</table>

**Vulpes fulvus fulvus** (Desmarest) *Southeastern red fox*

1820 *Canis fulvus* Desmarest, Mammalogie. 1: 203. (Virginia)
1842 *Vulpes fulvus* DeKay, Zoology of New York, Mammalia, p. 44.

*Back tawny yellowish, never strongly rust color.* Total length, 1000 (39½); tail vertebrae, 360 (14); hind foot, 150 (5½). (*fulvus*; Lat., yellowish)

The southeastern red fox is common throughout the eastern United States south to the lower edge of the upper austral zone. The northern limits of range is not yet known.

**Vulpes fulvus rubricatus** Bangs *Nova Scotia red fox*

1898 *Vulpes pennsylvanica rubricata* Bangs, Science, n. s. 25 Feb. 1898. 7: 272. (Digby N. S.)

*Back bright rust color.* Total length, 1080 (42½); tail vertebrae, 400 (15½); hind foot, 160 (6½). (*rubricatus*; Lat., reddened)

The Nova Scotia red fox is not at present known to occur outside of
the peninsula of Nova Scotia. The relationships of this race, the typical form and the large form occurring in the Hudsonian zone of Ontario and Quebec are not well understood.

**Vulpes deletrix** Bangs *Newfoundland red fox*


Like *Vulpes fulvus*, but hind foot *proportionally very large*; claws long and stout; color in red phase *pale ochre yellow*; black and silver gray phases very common. Total length, 960 (37½); tail vertebrae, 336 (13); hind foot, 160 (6½). *(delétrix* Lat., a destroyer)

The Newfoundland fox is confined to the island of Newfoundland.

**Genus Urocyon** Baird


Teeth 42, upper front teeth not lobed; pupil of eye elliptic; *tail with a concealed mane of stiff hairs and no soft under-fur.* *(Urocyon; Gk., tail dog)*

Peculiar to the new world. Ranges from South America north to the lower edge of the transition zone in the eastern United States. Several species are known, two of which occur in North America. Only one of these is found within our limits.

**Urocyon cinereoargenteus** (Müller) *Gray fox*

1776 *Canis cinereoargenteus* Müller, Natursyst. Suppl. p. 29. (Eastern United States)


Back a coarse grizzle of blackish and white, belly tawny; region about ears tawny; a black line along back of tail. Total length, 900 (35½); tail vertebrae, 260 (10½); hind foot, 125 (5). *(cinereoargenteus; Lat., gray-silvered)*

The gray fox ranges throughout the southern United States from Atlantic to Pacific. It is divisible into six or more geographic races. The typical subspecies alone, *Urocyon cinereoargenteus cinereoargenteus*, occurs within our limits. It is common in the region east of the Alleghanies from Long Island and the lower Hudson valley southward.

**Family Mustelidae** *Weasels*

Entire sole to heel not habitually applied to ground in walking; claws never fully retractile; hind toes five; teeth 32 to 38; head variable in form. *(Mustelidae; genus Mustela)*

The family *Mustelidae* is distributed throughout both hemispheres with the exception of the Australian region. It contains about twenty genera, nine of which occur in North America. Five of these are found within our limits.
Toes conspicuously webbed; the whole animal highly modified for an aquatic life (otters).............................. Lutra, p. 130

Toes not conspicuously webbed; animal not specially modified for an aquatic life

Teeth 38

Body stout; part of sole applied to ground in walking

(Wolverine) ........................................ Gulo, p. 131

Body slender; only the toes applied to ground in walking (martius and fishers)......................... Mustela, p. 132

Teeth 34

Tail closely furred; claws short (weasels).............. Putorius, p. 133

Tail bushy; claws long (skunk) .......................... Mephitis, p. 136

Genus Lutra Brisson

1756 Lutra Brisson, Regnum animale in classes 9 distributum. Type Mustela lutra Linnaeus.

Teeth 36; feet short and rounded; toes webbed; claws small, curved, blunt; head broad, flat; tail thick at base, tapering; fur short and dense. (Lutra; Lat., an otter)

The genus Lutra is distributed throughout the greater part of the world, north to the limit of tree growth. It is not found in the Australian region. A dozen or more species are known, two of which occur in eastern North America.

Species of Lutra

Total length about 1100 (43\%); skull about 105 (4\%).......... L. hudsonica

Total length about 995 (39\%); skull about 95 (3\%). ............... L. degener

Lutra hudsonica (Desmarest) North American otter

Size large; total length about 1100 (43\%); greatest length of skull about 105 (4\%). (hudsonica; N. Lat., Hudsonian)

The North American otter inhabits marshes, lakes and watercourses throughout the continent of North America from the extreme north at least to the southern boundary of the United States. It is divisible into four or more subspecies, two of which occur within our limits.

Subspecies of Lutra hudsonica

General color dark; webs between toes densely

haired below............................... L. hudsonica hudsonica

General color light; webs between toes sparsely

haired below............................... L. hudsonica lataxina

Lutra hudsonica hudsonica (Desmarest) Northeastern otter

1803 Mustela hudsonica Desmarest, Novv. dict. d'hist. nat. 13:384. (Eastern Canada)

1831 Lutra hudsonica F. Cuvier, Suppl. Oeuvres de Buffon. 1:194.

KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

Upper parts seal brown; under parts grayish brown; under surface of webs between toes densely hairy. Total length, 1100 (43f); tail vertebrae, 420 (16f); hind foot, 120 (4f). (hudsonica; N. Lat., Hudsonian)

The northeastern otter occurs throughout the less densely inhabited portions of eastern North America from the lower edge of the transition zone northward.

Lutra hudsonica lataxina (F. Cuvier) Southeastern otter
1823 Lutra lataxina F. Cuvier, Diet. des sci. nat. 27:242. (South Carolina)

Upper parts yellowish brown; under parts light grayish brown; under surface of webs between toes sparsely hairy. Total length, 1100 (43f); tail vertebrae, 420 (16f); hind foot, 125 (4f). (lataxina; N. Lat., like the genus Latax)

The southeastern otter occupies the austral zones of the eastern United States north of the peninsula of Florida, where it gives way to the Florida otter, L. hudsonica vaga Bangs.

Lutra degener Bangs Newfoundland Otter

Size small, total length about 995 (39f); greatest length of skull about 95 (3f); hind foot about 112 (4f); color blackish. (degener; Lat., degenerate)

The Newfoundland otter is confined to the island of Newfoundland.

Genus Gulo Storr
1780 Gulo Storr, Prodr. meth. mamm. p. 34. Type Ursus gulo Linnaeus.

Part of sole applied to ground in walking; body stout; claws large, compressed, curved; ears very short; tail short, bushy; teeth 38. (Gulo; Lat., a glutton)

The genus Gulo contains two species only, both inhabitants of the northern hemisphere. G. gulo of the old world, and the following:

Gulo luscus (Linnaeus) Wolverine
1758 Ursus luscus, Linnaeus, Systema naturae. ed. 10. 1:47. (Hudson bay)
1823 Gulo luscus J. Sabine, Franklin's journal, p. 650.

Dark brown or blackish; a pale area on sides. Total length, 760 (30); tail vertebrae, 200 (8); hind foot, 170 (6f). (luscus; Lat., one-eyed)

The wolverine inhabits the boreal forests of North America. Within our limits it is now chiefly, if not wholly confined to Canada.
Genus Mustela Linnaeus

1758 Mustela Linnaeus, Systema naturae. ed. 10. 1:45. Type by elimination Mustela maries Linnaeus.

Only the toes applied to ground in walking; body slender; claws small, sharp, partly retractile; ears short; tail long, not conspicuously bushy; teeth 38. (Mustela; Lat., a martin)

The genus Mustela occurs throughout the forested boreal regions of the northern hemisphere. About a dozen species are known. Four of the five American forms occur within our limits.

**SPECIES OF MUSTELA**

Length over 760 (30); ear low, rounded (Fisher) .............. M. pennanti
Length under 760 (30); ear high, pointed (Martin)
Greatest length of skull about 85 (3½) ......................... M. brumalis
Greatest length of skull about 80 (3½)
General color light rich brown ................................. M. americana
General color deep chocolate brown ......................... M. atrata

**Mustela pennanti** Erxleben Fisher

1777 Mustela pennanti Erxleben, Syst. regu. anim. 1:470. (Eastern Canada)

Dark brown or blackish, darker on under parts; no pale throat patch. Ears low and rounded. Total length, 890 (35); tail vertebrae, 355 (14); hind foot, 120 (4½). (pennanti; name from that of Thomas Pennant)

The fisher occurs in the boreal forests of North America from Maine and southern Labrador west to the Pacific coast. The typical subspecies M. pennanti pennanti is the only geographic race found within our limits.

**Mustela brumalis** Bangs North Labrador martin


Dimensions of skull (the only part of the animal now known); greatest length, 85 (3½); width of muzzle across canines, 17.2 (1½). (brumalis; Lat., wintery northern)

The north Labrador martin is known from three skulls collected at Okak Labrador.

**Mustela americana** Turton Eastern martin

1800 Mustela americana Turton, System of nature. 1:60. (Eastern North America)

General color light rich brown, slightly paler on under parts; throat usually with a light (tawny or whitish) patch; ears high pointed. Total length, 610 (24);
tail vertebrae, 205 (8); hind foot 90 (34). Skull: greatest length, 80 (34); width of muzzle across canines, 14 (8). (American; N. Lat., American)

The eastern pine martin inhabits the boreal forests of North America from the Atlantic coast west at least to the Rocky mountains. On the Pacific coast it is replaced by the closely related M. caurina Merriam. It is still common in northern New England and northern New York.

**Mustela atrata** Bangs *Newfoundland martin*


(Bay St George, Newfoundland).

General color _deep chocolate_ and black; throat patch orange. Total length, 550 (17f); tail vertebrae, 185 (7f); hind foot, 88 (7f). (atrata; Lat., wearing mourning)

The Newfoundland martin is confined to the island of Newfoundland.

**Genus Putorius** Cuvier

1817 *Putorius* Cuvier, Régne animal. 1:147. Type *Mustela putorius* Linnaeus.

Like *Mustela*, but _teeth only 34_. (Putorius; Lat., a bad odor)

The genus _Putorius_ is widely distributed in Europe, Asia, Africa, North America and South America. 50 or more forms will doubtless eventually be recognized. In America north of Panama, 22 are now known to occur, and four of these are found within our limits.

**SPECIES OF PUTORIUS**

Total length over 500 (20); (subgenus Lutreola

Wagner) .................................................. P. vison

Total length under 500 (20); toes without webs (subgenus Arctogale Kaup)

Tail forming about one fourth of total length .......... P. cicognani
Tail forming about one third of total length

Tail slender and closely haired, its black tip short

(about 60 (2f) in male, 28 (1f) in female) ............... P. occisor

Tail somewhat bushy, its black tip long (about

80 (3f) in male, 50 (2) in female) ................... P. novoboracensis

**Putorius vison** (Schreber) *Mink*

Total length over 500 (20); color brown throughout varying much in

exact shade; chin usually spotted with white. (vison; derivation not known)

The mink ranges throughout the greater part of North America north of Mexico. It is divisible into half a dozen or more geographic races, two of which occur within our limits.
SUBSPECIES OF PUTORIUS VISON

Total length under 600 (23\(\text{a}\)) ; color blackish
P. vison vison

Total length over 600 (23\(\text{a}\)) ; color chestnut
P. vison lutreocephalus

Putorius vison vison (Schreber)  Northeastern mink

1778 Mustela vison Schreber, Säugethiere, 3: 463 (eastern Canada)

Color rich dark brown, often nearly black. Total length, 520 (20\(\text{a}\)) ; tail vertebrae, 185 (7\(\text{a}\)) ; hind foot, 55 (2\(\text{a}\)).

The northeastern mink inhabits the border of watercourses in the boreal forests of northern North America, south into the northern tier of states. West of the Rocky mountains it is replaced by the larger P. vison energumenos Bangs.

Putorius vison lutreocephalus (Harlan)  Southeastern mink

1825 Mustela lutreocephala Harlan, Fauna americana, p. 63.

Color dark chestnut brown, the tail darker. Total length, 635 (27) ; tail vertebrae, 210 (8\(\text{a}\)) ; hind foot, 70 (2\(\text{a}\)). (lutreocephalus; Lat. and Gk., otter head)

The southeastern mink inhabits the borders of watercourses in the transition zone and upper austral zone of the eastern United States, from central New York and the coast of Maine southward. In the lower austral zone it is replaced by two nearly related forms, P. vison vulgivagus Bangs, of the gulf coast, and P. visonlutensis Bangs, of the south Atlantic coast.

Putorius cicognanii (Bonaparte)  Small brown weasel

1838 Mustela cicognanii Bonaparte, Charlesworths magazine. Jan. 1838. 2: 37. (Eastern United States)
1839 Putorius cicognanii Richardson, Zoölogy of Beechey's voyage of the blossom, p. 10.
1896 Putorius cicognanii Merriam, North American fauna. 30 June 1896. no. 11, p. 10.

Color in summer dark brown above, pure white below, tail forming about one fourth of total length, the terminal third black, winter coat pure white except tip of tail, which remains black. Total length, male, 285 (11\(\text{a}\)).
female, 225 (10); tail vertebrae, male, 77 (3⅔), female, 69 (2⅔); hind foot, male, 37 (1⅔), female, 30 (1⅔). (cicognanii; name from that of Felice Cicognani)

The small brown weasel inhabits woods and fields in the boreal and transition zones throughout eastern North America from the limit of tree growth south to Long Island and in the mountains probably much farther. The change to the white winter coat always takes place. The form occurring within our limits is the typical subspecies P. cicognanii cicognanii. In northwestern British America and in Alaska this is replaced respectively by P. cicognanii richardsoni (Bonaparte) and P. cicognanii alascaeensis (Merriam).

**Putorius occisor** Bangs *Slender-tailed weasel*

1899 *Putorius occisor* Bangs. Proc. New England zoological club. 9 June 1899. 1: 54. (Bucksport Me.)

Tail closely haired, forming nearly one third of total length, its black tip short (about 60 (2⅔) in male, 30 (1⅔) in female) and mostly confined to the terminal tuft of hair; winter coat pure white except the black tip of tail and a slight wash of pale yellow on belly; summer coat not known. Total length, male, 460 (18), female, 350 (13⅔); tail vertebrae, male, 170 (6⅔), female, 115 (4⅔); hind foot, male, 50 (2), female, 36 (1⅔). (occisor; Lat., a slayer)

The slender-tailed weasel is at present very slightly known. It probably occurs in the forests of the Canadian zone from Maine to Manitoba. Like the New York weasel, it is remarkable for the great difference in size between the sexes.

**Putorius niveboracensis** Emmons *New York weasel*

Tail somewhat bushy, forming about one third of total length, its black tip long (about 80 (3⅔) in male, 50 (2) in female) and extending considerably beyond the terminal tuft of hairs (often occupying nearly one half of tail); summer coat brown above, white or yellow below; winter coat white (northern) or drab (southern). Total length, male, 405 (16), female, 325 (12¼); tail vertebrae, male, 140 (5⅔), female, 108 (4¼); hind foot, male, 47 (1⅔), female, 34 (1⅔). (niveboracensis; N. Lat., pertaining to New York)

The New York weasel inhabits woods and fields in the transition and upper austral zones throughout the eastern United States from Maine and New York to North Carolina. The change to the white winter coat always takes place in the northern part of the animal’s range; at the south the change is to a drab coat. The latter is not well understood. This species is divisible into two geographic races.
SUBSPECIES OF PUTORIUS NOVEBORACENSIS

Under parts white .................. P. noveboracensis noveboracensis
Under parts yellow.......................... P. noveboracensis notius

Putorius noveboracensis noveboracensis Emmons White-bellied New York weasel

1840 Putorius noveboracensis Emmons, Report on the quadrupeds of Massachusetts, p. 45. (Southern New York)
1896 Putorius noveboracensis Merriam, North American fauna. 30 June 1896. no. 11, p. 16. (part)

Under parts always pure white; winter coat white. (noveboracensis; N. Lat., pertaining to New York)

The white-bellied New York weasel occupies the range of the species north of the upper austral zone.

Putorius noveboracensis notius Bangs Yellow-bellied New York weasel

1896 Putorius noveboracensis Merriam, North American fauna. 30 June 1896. no. 11, p. 16. (part)

Under parts always pale yellow; winter coat drab. (notius; Lat., southern)

The yellow-bellied New York weasel is confined to the austral zones of the eastern United States. The exact limits of its range are not known.

Genus Mephitis Cuvier


Part of sole applied to ground in walking; body stout; claws large, curved and strong; ears short; tail very long and bushy; teeth 34; secretion of anal glands (not urine as commonly supposed) so copious and offensive as to be the animal's chief weapon of defense. (Mephitis; Lat., a bad odor)

The genus Mephitis is peculiar to America, where it is very generally distributed. It probably contains a dozen or more species, half of which occur in North America. Only one is found within our limits.

Mephitis mephitica (Shaw) Common skunk

Black, with a white stripe on forehead; a white patch on nape; a white stripe extending backward from nape patch for a varying distance on each side of body; and a white tip to tail; tail slightly more than one third of total length, the terminal brush tapering. (mephitica; Lat., having a bad odor)

The common skunk inhabits both forests and cleared lands throughout the greater part of eastern North America. It is divisible into two subspecies.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

SUDSPECIIES OF MEPHITIS MEPHITICA

Hind foot 83 (3½) ........................................ M. mephitica mephitica
Hind foot 65 (2½) ........................................ M. mephitica scrutator

Mephitis mephitica mephitica (Shaw) Northeastern skunk
1792 Viverra mephitica Shaw, Museum Leverianum, p. 172. (North America; name afterward restricted to the northern form)
Total length, 650 (25½); tail vertebrae, 165 (6½); hind foot 83 (3½). (mephitica; Lat., having a bad odor)
The northeastern skunk inhabits the boreal zone of eastern North America.

Mephitis mephitica scrutator Bangs Southeastern skunk
Total length 590 (23½); tail vertebrae, 210 (8½); hind foot, 65 (2½). (s crut ator; Lat., an examiner)
The southeastern skunk inhabits the austral zones of the eastern United States. In the transition zone it gradually merges into M. mephitica mephitica.

Family Procyonidae Racoons

Whole sole to heel applied to ground in walking; claws not retractile; hind toes 5; teeth 36 to 40; size medium; tail well developed. (Procyonidae; genus Procyon)
The Procyonidae are typically tropical American, though one genus is oriental. Seven or eight genera are now usually placed in this family, though the number is probably too great. Two of these occur in the United States, and one is found within our limits.

Genus Procyon Storr
1780 Procyon Storr, Prodr. meth. mamm. p. 35. Type Ursus lotor Linnaeus.
Form stout; tail short, cylindric; head round; muzzle pointed; teeth 40. (Procyon; Gk., false dog)
The genus Procyon ranges from tropical South America north through Mexico about to the northern limit of the United States. It contains several species, only one of which occurs in North America.
**Procyon lotor** (Linnaeus) *Raccoon*

1758 *Ursus* lotor Linnaeus, Systema naturae. ed. 10. 1:48. (Eastern United States)

1780 *Procyon lotor* Storr, “Prodr. meth. mamm.”

Yellowish brown, the hairs tipped with black; tail ringed with black; a black area about eye. Total length, 830 (32") ; tail vertebrae, 250 (9½); hind foot, 120 (4½). (lotor; Lat., one who washes)

The racoon occurs throughout the forested regions of North America south of the lower edge of the boreal zone. The form found within our limits is typical *Procyon lotor lotor*. In Florida this is replaced by *P. lotor elucus* Bangs.

**Family Ursidae Bears**

*Whole sole to heel applied to ground in walking; claws not retractile; hind toes 5; teeth 40 to 42; size very large; tail rudimentary. (Ursidae; genus Ursus)*

The family Ursidae is widely distributed throughout both hemispheres outside of Africa and Australia. Four genera are usually recognized, but this number will doubtless be increased. Two occur in North America and both of these are found within our limits.

**Genera of Ursidae**

Head long and narrow; cheek teeth relatively small and weak;

- color always white .................................................. *Thalarctos*

Head short and broad; cheek teeth relatively large and strong;

- color never white .................................................. *Ursus*

Genus *Thalarctos* Gray


Head long and narrow; cheek teeth small and weak relatively to size of skull; *color always white*. (*Thalarctos*; Gk., sea bear)

The genus *Thalarctos* occurs in the polar regions of both eastern and western hemispheres. Only one species is at present recognized.

**Thalarctos maritimus** (Phipps) *Polar bear*

1774 *Ursus maritimus* Phipps. A voyage toward the north pole, p. 185. (Spitzbergen)


White at all seasons. Total length, 2135 (7 ft). (*maritimus* Lat., maritime)

The range of the polar bear in eastern North America extends as far south on the Atlantic coast of Labrador as the strait of Belle Isle. The animal is nowhere found far away from salt water.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

Genus **Ursus** Linnaeus


Head short and broad; cheek teeth large and strong relatively to size of skull; *color never white*. (*Ursus*; Lat., a bear)

The distribution of the genus *Ursus* is essentially the same as that of the family to which it belongs. The species are at present little known; probably 30 or more forms will eventually be recognized. About a dozen occur in North America, only one of which is certainly known within our limits. It is a member of the subgenus *Euarctos*.

**Ursus americanus** Pallas  *Black bear*

Front claws slightly if at all longer than the hind ones; color black or dark brown, the exact shade variable; length of skull under 350 (13½). (*americanus*; N. Lat., American)

The black bear is widely distributed in North America from Mexico and the gulf states northward. It is divisible into numerous geographic races, at least two of which occur within our limits.

**SUBSPECIES OF URSUS AMERICANUS**

Length of adult skull about 250 (9½)...........  *U. americanus americanus*  
Length of adult skull about 200 (8)...........  *U. americanus sornborgeri*

**Ursus americanus americanus** Pallas  *Northern black bear*

1780 *Ursus americanus* Pallas, Spicilegia zoologica. fasc. 14, p. 5. (North America)


Skull long and narrow, its greatest length about 250 (9½). (*americanus*; N. Lat., American)

The northern black bear is abundant throughout the wilder forested parts of the boreal and transition zones of eastern North America. The characters of the bear inhabiting the austral zones are not at present understood.

**Ursus americanus sornborgeri** Bangs  *Labrador black bear*

1898 *Ursus (Euarctos) americanus sornborgeri* Bangs, American naturalist. July 1898. 32: 500. (Okak, Labrador)

Skull broad and short, its greatest length about 200 (8). (*sornborgeri*; name from that of J. D. Sornborger)

The Labrador black bear, known only from the skull, is common throughout Labrador north of the tree limit.

A large bear related to the grizzlies (perhaps *Ursus richardsoni*) probably occurs on the barrens of interior Labrador. The species has not yet been determined.
Order Insectivora Insect-eaters

Canine teeth present but usually not conspicuously developed; cheek teeth formed for chopping; toes provided with claws; brain small. (Species occurring within our limits mostly very small, the largest seldom reaching 200 (8) in length; eyes small or rudimentary; fur distinctly modified for an underground life.) (Insectivora; N. Lat., insect eaters)

The American insectivores are readily distinguished among the orders of mammals occurring in North America by their small size, small or rudimentary eyes, soft dense fur, many-pointed cheek teeth, and general modification for an underground life. The order is widely distributed in both hemispheres, but is absent in Australia; and in South America is at present known from the extreme northwest only. Two of the nine families into which the order is usually divided occur in North America, and both of these are found within our limits.

Families of Insectivora

Fore feet highly modified for digging; external ear absent (moles). Talpidae

Fore feet not modified for digging; external ear present (shrews). Soricidae

Family Talpidae Moles

Body thick, stout and clumsy, without distinct neck; eyes rudimentary or concealed; no external ear; front feet very large, the nearly circular palm held edge-wise; fur very soft and velvety. (Talpidae; from genus Talpa)

Moles are found throughout the northern hemisphere except in the extreme north. Eight or more genera are known, five of which occur in North America. Three of these are found within our limits. They are all members of the subfamily Talpinae.

Genera of Talpidae

Tip of muzzle with a fringe of fleshy projections; tail long. Condylura

Tip of muzzle without fleshy projections; tail short.

Teeth 36; tail slender, nearly naked. Scalops

Teeth 44; tail thick, very hairy. Parascalops

Genus Condylura Illiger

1811 Condylura Illiger, Prodr. syst. mamm. et avium, p. 125. (Type Sorex cristatus Linnaeus)

Teeth 44; nostrils at tip of conspicuously fringed muzzle; tail nearly as long as body, densely haired. (Condylura; Gk., knotted tail)

The genus Condylura is confined to eastern North America. Only one species is known.
Condylura cristata (Linnaeus)  *Star-nosed mole*

1758 *Sorex cristatus* Linnaeus, Systema naturae. ed. 10. 1: 53. (Pennsylvania)

Dusky brown, paler and grayer below. Total length, 170 (6½); tail vertebrae, 72 (2½); hind foot, 27 (1½). (*cristata*; Lat., crested)

The star-nosed mole inhabits wet places in the boreal and transition zones of eastern North America. Its northward range is more extensive than that of any other American species.

Genus Scalops Illiger

1811 *Scalops* Illiger, Prodr. syst. mamm. et avium, p. 126. Type *Sorex aquaticus* Linnaeus.

Teeth 36; nostrils on upper side of simple muzzle; tail short, not thickened, nearly naked. (*Scalops*; Gk., a mole)

The genus *Scalops* is confined to eastern North America. It contains five or six forms whose interrelationships are not fully understood. Only one of these occurs within our limits.

*Scalops aquaticus* (Linnaeus)  *Naked-tailed mole*

1758 *Sorex aquaticus* Linnaeus, Systema naturae. ed. 10. 1: 53. (Eastern United States)
1825 *Scalops aquaticus* F. Cuvier, Dents des mammifères, p. 251.

Light, glossy slate-brown, often tinged with rusty; tail whitish. Total length, 162 (6½); tail vertebrae, 27 (1½); hind foot, 16.5 (½). (*aquaticus*; from Lat., aquatic)

The naked-tailed mole inhabits dry sandy soil in the eastern United States and southern Canada from the northern limits of the transition zone southward. The form found within our limits is the typical subspecies, *S. aquaticus aquaticus*.

Genus Parascalops True


*Teeth 44; nostrils on outer side of simple muzzle; tail short, thick, densely haired. (Parascalops; Gk., near to the genus *Scalops*)* 

The genus *Parascalops* is confined to eastern North America. Only one species is known.
Parascalops breweri (Bachman) *Eastern hairy-tailed mole*

1844 *Scalops breweri* Bachman, Boston jour. nat. hist. 4: 32. ("Island of Marthas Vineyard, Mass." This doubtless an error.)


Dark lead-gray, seldom if ever tinged with rusty; tail dark. Total length, 147 (5½); tail vertebrae, 30 (1½); hind foot, 19 (½). (*b* r*é*w*é*r*i; name from that of Thomas Mayo Brewer)

The eastern hairy-tailed mole inhabits dry soil in the boreal and transition zones of the eastern United States and southern Canada.

**Family Soricidae** *Shrews*

Body usually slender and mouse-like, with a distinct neck; eyes well developed but very small; a distinct external ear; front feet small, not specially modified; fur only moderately soft and dense. (*Soricidae*; from genus *Sorex*).

The range of the family *Soricidae* is essentially the same as that of the order *Insectivora*. 10 or more genera are known, three of which occur in North America. Two of these are found within our limits. Shrews are small animals much like mice in general appearance but readily distinguishable by their pointed snouts and small eyes.

**Genera of Soricidae**

Ears completely hidden by the fur; tail scarcely longer than head. *Blarina*

Ears distinctly visible; tail much longer than head. *Sorex*

**Genus Blarina** Gray


*Ears very small*, completely hidden by the fur; body stout, somewhat mole-like; tail scarcely longer than head. (*Blarina*; a coined word)

The genus *Blarina* is peculiar to America. All but one of the 23 known forms are North American or Central American. The exception, *B. thomasi* Merriam, is the only known South American member of the order *Insectivora*. Two species only are found within our limits.

**Species of Blarina**

Teeth 32; total length about 120 (4½) (subgenus *Blarina*). *B. brevicaudus*

Teeth 30; total length about 75 (3) (subgenus *Cryptotis*). *B. parva*

**Blarina brevicaudus** (Say) *Large blarina*

1823 *Sorex brevicaudus* Say, Long's exped. to the Rocky mts. 1: 164. (Near Blair Neb.)


Teeth 32; color sooty slate-brown above, more ashy below. Total length, 120, (4$\frac{1}{2}$); tail vertebrae, 25 (1); hind foot, 15 (r). (brevicauda; Lat., short tail)

The typical form of the large blarina, Blarina brevicauda, is one of the most abundant mammals in dry woods and old fields throughout eastern North America, from the lower edge of the upper austral zone north into the boreal zone. In the lower austral zone of the southeastern United States it gives way to a smaller form, B. brevicauda carolinensis (Bachman).

Blarina parva (Say) Small blarina

1823 Sorex parvus Say, Long's exp. to the Rocky mts. 1:164. (Near Blair Neb.)

Teeth 30; color brownish above, ashy below. Total length, 75 (3); tail vertebrae, 15 (r); hind foot, 10 (g). (parva; Lat., small)

The small blarina is common in meadows and old fields throughout the upper austral and lower austral zones in the eastern United States. Its range therefore extends north about to the southern border of New York.

Genus Sorex Linnaeus

1758 Sorex Linnaeus, Systema naturae. ed. 10. 1:53. Type Sorex araneus Linnaeus.

Ears well developed, generally appearing distinctly above the fur; body slender, mouse-like; tail much longer than head. (Sorex; Lat., a field mouse)

The genus Sorex is very generally distributed throughout the boreal portion of the northern hemisphere. It probably contains 75 or more species. In America 42 forms are known; of these six occur within our limits.

**SPECIES OF SOREX**

Total length over 140 (5$\frac{1}{2}$); hind feet conspicuously fringed
(subgenus Neosorex).......................... S. albibarbis

Total length under 130 (5$\frac{1}{2}$); hind feet not fringed

Fourth tooth in upper jaw exceedingly minute (almost invisible without aid of lens), closely wedged between well developed third and fifth (subgenus Microsorex)........ S. hoyi

Fourth tooth in upper jaw well developed (subgenus Sorex)

Tail vertebrae about 55 (2$\frac{1}{2}$) ......................... S. macrurus

Tail vertebrae less than 50 (2)

Back conspicuously blackish.............................. S. richardsoni
Back not conspicuously blackish
Hind foot about 14 (\(\frac{1}{2}\)); general color smoky slate-color throughout .......... ...................... S. fumeus
Hind foot about 12 (\(\ell\)); back clear brown, belly whitish gray ................................ S. personatus

**Sorex albibarbis** (Cope) *Eastern marsh shrew*

1895 *Sorex albibarbis* Miller, North American fauna. 31 Dec. 1895. no. 10, p. 46.

Upper parts blackish slate with a slight hoary cast; chin and throat grayish white; rest of lower parts dusky. Total length, 155 (6\(\frac{1}{2}\)); tail vertebrae, 70 (2\(\ell\)); hind foot, 19 (\(\ell\)). (albibarbis; Lat., white beard)

The marsh shrew inhabits marshes and the banks of the watercourses in the boreal zone of eastern North America south in the mountains at least to Pennsylvania and probably farther.

**Sorex hoyi** Baird *Hoy's shrew*

1857 *Sorex hoyi* Baird, Mamm. N. Am. p. 32 (Racine Wis.)
1895 *Sorex hoyi* Miller, North American fauna. 31 Dec. 1895. no. 10, p. 43.

Upper parts sepia-brown; lower parts whitish gray *usually washed with yellowish on chest*. Total length, 90 (3\(\frac{1}{2}\)); tail vertebrae, 32 (1\(\ell\)); hind foot, 10 (\(\ell\)). (hoyi; name from that of P. R. Hoy)

Hoy's shrew, a little known animal, inhabits open fields, plains and clearings in the boreal zone and upper part of the transition zone from British Columbia to Nova Scotia, south to Wisconsin and northern New York.

**Sorex macrurus** Batchelder *Big-tailed shrew*


*Upper parts blackish slate, lower parts dark smoke gray.* Total length, 125 (5); tail vertebrae, 57 (2\(\ell\)); hind foot, 15 (\(\ell\)). (macrurus; Gk., big tail)

The big-tailed shrew is known from the eastern Adirondacks and the Catskills only. Thus far only 10 specimens have been recorded.

**Sorex richardsoni** Bachman *Richardson's shrew*

1857 *Sorex richardsoni* Bachman, Jour. acad. nat. sci. Philadelphia. 7: 383. (Probably from plains of Saskatchewan)

*Back* very dark (almost blackish) brown, without slaty tinge; *sides* dull yellowish brown; *under parts* grayish, washed with chestnut. Total length,
Richardson’s shrew, an imperfectly known species, occurs in the boreal zone of Saskatchewan, northern Minnesota, the north shore of Lake Superior and in New Brunswick.

**Sorex fumeus** Miller *Smoky shrew*

1895 *Sorex fumeus* Miller, North American fauna. no. 10, p. 50. (Peterboro, Madison co. N. Y.)

*Smoky slate color*, slightly paler below. Total length, 115 (4½); tail vertebrae, 45 (1½); hind foot, 14 (½). (*fumeus*; Lat., smoky)

The smoky shrew inhabits the forests of the boreal zone and upper part of the transition zone in eastern North America, south into the southern Alleghenies.

**Sorex personatus** Geoffroy St Hilaire *Maskea shrew*

*Clear brown* (*sepia or drab*) above, whitish gray below. Total length, 90 (3½) to 110 (4½); hind foot, 13 (½) or less. (*personatus*; Lat., masked)

The masked shrew occurs throughout the greater part of boreal North America, and in cold situations even in the upper austral zone. It is divisible into several races, three of which occur within our limits.

**SUBSPECIES OF SOREX PERSONATUS**

Total length about 95 (3½) …………………… S... *personatus lesueuri*

Total length about 105 (4½)

Back sepia brown at all seasons ……………... S. *personatus personatus*

Back light (broecoli) brown in summer, drab gray in winter …………………… S. *personatus miseix*

**Sorex personatus personatus** I. Geoffroy St Hilaire *Northern masked shrew*

1827 *Sorex personatus* E. Geoffroy St Hilaire, Mem. du muséum, d' hist. nat. Paris. 15:122. (Eastern United States, probably New York)


Upper parts sepia brown; under parts whitish gray. Total length, 105 (4½); tail vertebrae, 40 (1½); hind foot, 12 (½). (personatus; Lat., masked)

The northern masked shrew is abundant in a great variety of situations throughout the transition zone and Canadian zone of the eastern United States and eastern Canada.

---

Sorex personatus lesueuri (Duvernoy) *Southern masked shrew*

1842 Amphisorex lesueuri Duvernoy, Magasin de zoologie. mamm. Nov. 1848. p. 33. (Wabash river, Indiana)


Color as in *S. personatus personatus*; size smaller. Total length, 90 (3¼); tail vertebrae, 33 (¼); hind foot, 10.5 (64/16). (*lesueuri*; name from that of Lesueur)

The southern masked shrew is confined to the cool, boreal sphagnum bogs of the upper austral zone. It is the smallest of our mammals, and at present very rare in collections.

Sorex personatus miscix Bangs *Labrador masked shrew*


Upper parts in winter drab gray, in summer very light (broccoli) brown; under parts pale gray. Total length, 102 (4½); tail vertebrae, 43 (1½); hind foot, 13 (½) (*miscix*; Lat., changeable)

The Labrador masked shrew is at present known from Black bay, Labrador only.

Order Chiroptera *Bats*

Fore limbs greatly developed, the elongated fingers supporting a membrane by means of which true flight is performed. (*Chiroptera*; Gk., hand-wings)

The bats, though most numerous in the tropics, are almost universally distributed. The order contains two suborders, one the Megachiroptera (flying foxes) peculiar to the old world, the other, the Microchiroptera, (true bats) with the same range as the order. The Microchiroptera are usually divided into five families, but this number will probably be greatly increased. Only one family, the Vespertilionidae, occurs in northeastern North America.

Family Vespertilionidae *Typical bats*

Tail included in membrane nearly or quite to tip; nose without leaf-like fleshy outgrowths. (*Vespertilionidae*; from genus *Vespertilio*)

The family *Vespertilionidae* has essentially the same range as the order Chiroptera. It contains many genera, 12 of which occur in North America. Six are found within our limits; all of these are members of the subfamily Vespertilioninae, or typical bats with simple nostrils and separate ears.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA

GENERAE OF VESPERTILIONIDAE

Membrane between legs completely furred above............. Lasiurus, p. 147
Membrane between legs not completely furred above

Fur blackish, frosted with white...................... Lasiomycteris, p. 149
Fur not blackish, frosted with white

Total length over 100 (4).............................. Vespertilio, p. 151
Total length under 100 (4)

Individual hairs on back with three distinct color bands.............. Pipistrellus, p. 150
Individual hairs on back with less than three distinct color bands

Upper front teeth 2.............................. Nycticeius, p. 148
Upper front teeth 4.............................. Myotis, p. 148

Genus Lasiurus Gray
1831 Lasiurus Gray, Zoological miscellany. no. 1, p. 38 (based on the American hairy-tailed bats).

Teeth 32; only two front teeth in upper jaw between canines; back of membrane between legs densely furred; ears short and round. (Lasiurus; Gk., silk tail)

The genus Lasiurus is peculiar to America, where it is represented by half a dozen or more species. Two of these occur within our limits.

SPECIES OF LASIURUS

Total length 135 (5½); general color hoary; rim of ear dark... L. cinereus
Total length 110 (4½); general color reddish; rim of ear light... L. borealis

Lasiurus cinereus (Beauvois) Hoary bat
1897 Lasiurus cinereus Miller, North American fauna. 16 Oct. 1897. no. 13, p. 112.

General color a mixture of light yellowish brown, deep umber brown, and white. Total length, 135 (5½); tail vertebrae, 50 (2); forearm, 40 (2½). (cinéreus; Lat., gray)

The hoary bat breeds throughout the forests of the boreal zone of North America. In autumn and winter it migrates far to the southward of its breeding range.

Lasiurus borealis (Müller) Red bat
1776 Vespertilio borealis Müller, Naturyst. suppl.-u. regist.-band. p. 21. (New York)
General color varying from rufous red to yellowish gray; a white spot at shoulder, sometimes connected with its fellow by a white chest band. Total length, 110 (4½); tail vertebrae, 50 (2); forearm, 40 (1½). (borealis; Lat., northern)

The red bat occurs in a great variety of situations throughout most of North America. It is divisible into several geographic races. The typical form, L. borealis borealis is the only one that occurs within our limits.

Genus Nycticeius Rafinesque


Teeth 30; only two front teeth in upper jaw between canines; back of membrane between legs furred at extreme base only; ears short, obtusely pointed. (Nycticeius; Gk., night being).

Nycticeius is peculiar to North America, though closely related to an old world genus (Scoptophilus). It is represented by one species only, a small but thickset bat with broad muzzle and blunt ears.

Nycticeius humeralis Rafinesque Rafinesque's bat

1818 Vespertilio humeralis Rafinesque, American monthly magazine. 3: 445. (Kentucky)


Dullumber brown above, paler below. Total length 90 (3½); tail vertebrae, 35 (1½); forearm, 36 (1½). (humeralis; Lat., humeral)

Rafinesque's bat inhabits the austral zones of the eastern United States. At present it has not been found north of Carlisle Pa.

Genus Myotis Kaup


Teeth 38; two pairs of front teeth in upper jaw between canines; back of membrane between legs naked except at extreme base. (Myotis; Gk., mouse ear)

The genus Myotis is very widely distributed in both eastern and western hemispheres. The species are still imperfectly known. In North America 16 forms are known, but only two of these occur within our limits. These are small delicately formed bats with slender muzzles and narrow ears.
KEY TO LAND MAMMALS OF NORTHEASTERN NORTH AMERICA 149

SPECIES OF MYOTIS

Ear, when laid forward, reaching considerably beyond tip of muzzle.................. M. subulatus

Ear, when laid forward, reaching about tip of muzzle...... M. lucifugus

Myotis subulatus (Say) Say's bat
1823 Vespertilio subulatus Say, Long's exped. to Rocky mts. 2:65. (Arkansas river, near La Junta Col.)
1864 Vespertilio subulatus H. Allen, Monogr. bats. N. Am. p. 51. (Eastern United States)
1897 Myotis subulatus Miller, North American fauna. 16 Oct. 1897. no. 13, p. 75.

Dull brown, slightly paler and more yellowish below; ear reaching considerably beyond tip of nose when laid forward. Total length, 85 (3½); tail vertebrae, 38 (1¼); forearm, 35 (1½). (subulatus; Lat., awl-shaped)

Say's bat is locally common throughout eastern North America, south into the upper austral zone. The details of its distribution are imperfectly known. The form found within our limits is M. subulatus subulatus.

Myotis lucifugus (Le Conte) Little brown bat
1831 Vespertilio lucifugus Le Conte, McMurtrie's Cuvier, Animal kingdom, 1, append. p. 431. (Southern Georgia)

Dull brown, slightly paler and more yellowish below; ear reaching barely to nostril when laid forward. Total length, 85 (3½); tail vertebrae, 38 (1¼); forearm, 38 (1½) (lucifugus; Lat., light-fleeing)

The little brown bat is abundant throughout eastern North America, south to the gulf coast. Within our limits it is represented by the typical race, M. lucifugus lucifugus.

Genus Lasionycteris Peters

Teeth 36; two pairs of front teeth in upper jaw between canines; back of membrane between legs furred to about middle. (Lasionycteris; Gk., silk bat)

The genus Lasionycteris is peculiar to North America. It contains one species only.

Lasionycteris noctivagans (Le Conte) Silvery bat
1831 Vespertilio noctivagans Le Conte, McMurtrie's Cuvier, Animal kingdom. June 1831. Append. p. 431. (Eastern United States)
1897 Lasionycteris noctivagans Miller, North American fauna. 16 Oct. 1897. no. 13, p. 86.

Blackish, frosted with white. Total length, 100 (4); tail vertebrae, 40 (1½); forearm, 40 (1½). (noctivagans; Lat., night wanderer)

The silvery bat is a common species in eastern North America. It is apparently most numerous in the boreal and transition zones.

Genus Pipistrellus Kaup


Teeth 34; two pairs of front teeth in upper jaw between canines; back of membrane between legs thinly haired on basal third. (Pipistrellus; N. Lat., a pipistrelle)

The genus Pipistrellus is widely distributed in both old and new worlds. It contains numerous species, only three of which are American. One of these occurs within our limits.

Pipistrellus subflavus (F. Cuvier) American pipistrelle

Hairs on back with three distinct color bands. Total length, 85 (3½); tail vertebrae, 40 (1½); forearm, 35 (1½). (subflavus; Lat., yellowish.)

The pipistrelle inhabits the eastern United States north to Lake George, New York. It is one of the most abundant bats throughout the austral zones. It is divisible into two subspecies.

SUBSPECIES OF PIPISTRELLUS SUBFLAVUS

General color light yellowish brown ............ P. subflavus subflavus
General color drab brown........................ P. subflavus obscurus

Pipistrellus subflavus subflavus (F. Cuvier) Southeastern pipistrelle


1897 Pipistrellus subflavus Miller, North American fauna. 16 Oct. 1897. no. 13, p. 90.

General color light yellowish brown, the individual hairs on back deep plum-beous at base, yellowish brown at middle and dark brown at tip. (subflavus; Lat., yellowish)

The southeastern pipistrelle is very abundant throughout the austral zones of the eastern United States, north to the lower Hudson valley.

Pipistrellus subflavus obscurus Miller Northeastern pipistrelle

1897 Pipistrellus subflavus obscurus Miller, North American fauna. 16 Oct. 1897. no. 13, p. 93. (Lake George, New York)

General color dull, pale, drab brown. (obscurus; Lat., dusky)

The northeastern pipistrelle is at present known from one locality only, Lake George, Warren co. N. Y.
Genus *Vespertilio* Linnaeus

1758 *Vespertilio* Linnaeus, Systema naturae. ed. 10. 1:31. Type *V. murinus*, Linnaeus.

*Teeth 32; two pairs of front teeth in upper jaw between canines; back of membrane between legs naked except for a sprinkling of fine hairs on basal fourth. (*Vespertilio*; Lat., a bat)*

The genus *Vespertilio* is widely distributed in both hemispheres, but the species are very imperfectly known. Only one occurs in North America.

*Vespertilio fuscus* Beauvois *Big brown bat*


Sepia brown, paler below. Total length, 110 (4½); tail vertebrae, 45 (1½); forearm, 45 (1½). (*fuscus*; Lat., dark)

The big brown bat occurs throughout Mexico, the United States and southern Canada north to the lower edge of the boreal zone. It is divisible into several races, of which the typical, *V. fuscus fuscus*, is abundant in eastern North America.

**CORRECTIONS**

Corrections of the names of two of the mammals occurring in eastern North America have been published too late to be inserted in the body of this paper. They are as follows:

The house rat (p. 95) should be *Mus norvegicus* Erxleben, Syst. regn. anim. p. 381. 1777.


---

INDEX

The superior figures tell the exact place on the page in ninths; e. g. 62° means page 62, beginning in the third ninth of the page, i. e. about one third of the way down. Synonyms are printed in italics.

Alces, 81°-82°
Americanus, 81°-82°
machlis, 81°-82°
Amphisorex lesueuri, 146°
Arctic zone, 62°
Arctomys, 89°
Ignavus, 89°
monax, 89°
canadensis, 89°
monax, 89°
Artiodactyla, 78°
Arvicola brevicauda, 104°
chrotorrhinus, 104°
gapperi, 110°
sealopsoiides, 103°-4°
terraenovae, 104°
Austral zone, 32°

Bat, 146°-51°
big brown, 151°
hoary, 147°
little brown, 149°
Raïmesque’s, 148°
red, 147°-48°
Say’s, 149°
silvery, 149°-50°
true, 146°
typical, 146°-51°

Bear, 138°-39°
black, 139°
Labrador black, 139°
northern black, 139°
polar, 138°

Beaver, 91°-92°
American, 92°
northeastern, 92°
southeastern, 92°

Bison, 79°
American, 79°
 plains, 79°

Bison, 79°
bison, 79°
athabascae, 79°
bison, 79°

Blarina, large, 142°-43°
small, 143°

Blarina, 142°-43°
brevicauda, 142°-43°
brevicauda, 143°
carolinensis, 143°
parva, 143°
thomasi, 142°

Bos bison, 79°
Bovidae, 79°

Canadian zone, 62°

Canidae, 126°-29°

Canis, 126°-27°
albus, 127°
cinereocarneus, 129°
fulvus, 128°
lupus, 128°
lupus albus, 127°
occidentalis, 127°
occidentalis, 127°

Cariacus, see Odocolleus
Caribou, barren ground, 81°
Newfoundland, 81°
woodland, 80°
Carnivores, 119°-39°
Castor, 91°-92°
canadensis, 92°
Castoridae, 91°-92°
Cats, 123°-26°
Cattle, 79°
Cervidae, 79°-83°
Cervus, 82°
canadensis, 82°
[dama] Americanus, 83°
[elaphus] canadensis, 82°
tarandus var. arcticus, 81°
caribou, 80°
virginianus, 83°
Chimpmunk, eastern, 88°
northeastern, 88°
southeastern, 88°
Chiroptera, 146°-51°
Condylura, 140°-41°
cristata, 141°
Cottontail, 118°-19°
eastern prairie, 118°-19°
northeastern, 118°
southeastern, 119°
Cystophora, 121°
cristata, 121°
Deer, 79°-83°
northern Virginia, 83°
southern Virginia, 83°
Virginia, 82°-83°
Dicrostonyx, 101°
hudsonius, 101°
Didelphidae, 77°-78°
Didelphis, 78°
virginiana, 78°
Dipodidae, 111°-14°
Dipus hudsonius, 113°
Dogs, 126°-29°
Dorcelaphus, sec Odocoileus
Erethizon, 115°
dorsatus, 115°
Erethizontidae, 115°
Euarctos, 139°
Eutheria, 76°
Evotomys, 109°-11°
carolinensis, 109°
fuscodorsalis, 110°
gapperi, 110°-11°
gapperi, 110°
gapperi, 110°
ochraceus, 111°
rufoventris, 111°
pruinus, 110°
rhoadsi, 111°
Ferae, 119°-39°
Fell, 123°-24°
concolor, 124°
hippolestes, 124°
oregonensis, 124°
hippolestes, 124°
oregonensis, 124°
rufus, 125°
Fiber, 119°-39°
obscurus, 102°
zibethicus, 101°-2°
zibethicus, 102°
aquilounius, 102°
rivalicus, 102°
zibethicus, 102°
Fisher, 132°
Flesh-eaters, 119°-39°
Fox, arctic, 128°
flies, 146°
grey, 129°
Newfoundland red, 129°
Nova Scotia red, 128°-29°
red, 128°-29°
southeastern red, 128°
Glires, 83°-119°
Ground-hog, 89°
INDEX TO KEY TO LAND MAMMALS 155

Gulo, 131°
gulo, 131°
Iuscus, 131°

Halichoerus, 121°-22°
grypsum, 122°

Hare, 115°-19°
American varying, 116°-18°
Labrador arctic, 116°
Newfoundland arctic, 116°
northern varying, 117°
Nova Scotian, 117°
southern varying, 117°-18°

Hedgehog, 115°

Hesperomys maniciilatus, 98°

Hoofed animals, 78°-83°

Hudsonian zone, 62°

Hystrix dorsatus, 115°

Insect-eaters, 140°-46°
Insectivora, 140°-46°

Jerboas, 111°-14°

Lasionycteris, 149°-50°
noctivagans, 149°-50°

Lasius, 147°-48°
borealis, 147°-48°
borealis, 148°
cinerus, 147°

Lemming, Bangs's, 100°
Cooper's, 100°
Labrador, 101°
Preble's, 100°
True's, 100°

Leporidae, 115°-19°

Lepus, 115°-19°
americanus, 116°-18°
americana, 117°
americanus, 117°
struthopus, 117°
virginianus, 117°-18°
arcticus bangsi, 116°, 116°
bangsi, 116°

Lepus (continued)
floridanus, 118°-19°
floridanus, 118°
mallurus, 119°
mearnsi, 118°-19°
transitionalis, 118°
labradorus, 116°
megallani mallurus, 119°
sylvaticus, 119°
mearnsi, 118°-19°
transitionalis, 118°
virginianus, 117°

Life zones, 61°-62°

Lutra, 130°-31°
degener, 131°
hudsonica, 130°-31°
hudsonica, 130°-31°
hudsonica, 130°-31°
lataxina, 131°

Lynx, bay, 125°
Canada, 125°
Newfoundland, 125°
Nova Scotia, 126°

Lynx, 124°-26°
canadensis, 125°
gigas, 126°
rufus, 125°
rufus, 125°
subsolanus, 125°

Marsupialia, 77°-78°

Marsupials, 77°-78°
Martin, eastern, 132°-33°
Newfoundland, 133°
north Labrador, 132°

Masuma americana, 83°

Megachiroptera, 146°

Mephitis, 136°-37°
mephitica, 136°-37°
mephitica, 137°
mephitica, 137°
mephitica, 137°
scrutator, 137°

Meriones americanus, 112°
Metatheria, 76°
Microchiroptera, 116°
Microtus, 105°-7°
breueri, 105°
chrotorrhinus, 104°-5°
chrotorrhinus, 104°
ravus, 105°
enixus, 105°
fontigenus, 107°
insularis, 107°
esophillus, 107°
pennsylvanicus, 105°-7°
pennsylvanicus, 106°
acadicus, 107°
fontigenus, 107°
laboratorius, 106°
pennsylvanicus, 106°
pienetorum, 106°-9°
salopoides, 103°-4°
terrnearvae, 104°
Mictomys innuitalis, 100°
Mink, 133°-34°
northeastern, 134°
southeastern, 134°
Mole, 140°-42°
eastern hairy-tailed, 142°
naked-tailed, 141°
star-nosed, 141°
Mouse, 92°-111°
acadian field, 107°
Canadian white-footed, 97°-98°
Carolina redbacked, 109°
cloudland white-footed, 98°
common eastern field, 106°
common redbacked, 110°-11°
deer, 98°
eastern redbacked, 110°
field, 105°-7°
Gull island, 107°
harvest, 97°
house, 94°-95°
Hudsonian white-footed, 97°
Hudsonian woodland jumping, 114°

Mouse (continued)
jumping, 111°-14°
Labrador deer, 98°
Labrador field, 106°
Labrador meadow jumping, 113°
meadow, 107°
meadow jumping, 112°-13°
Mount Washington redbacked, 111°
mountain woodland jumping, 114°
New Jersey redbacked, 111°
northern field, 107°
northern meadow jumping, 113°
northern pine, 103°-4°
northern woodland jumping, 114°
pine, 103°-4°
rice field, 99°
southern meadow jumping, 112°
uegava redbacked, 109°
variable redbacked, 110°
Virginia harvest, 99°
woodland jumping, 113°-14°
Muridae, 92°-111°
Mus, 94°-95°
alexandrinus, 94°
decumanus, 95°
hudsonius, 101°
lecuntii, 95°
monar, 89°
musculus, 94°-95°
palustris, 96°
pennsylvanicus, 106°
ratus, 95°
rolan, 90°
Musculus leucopus, 98°
Muskrat, 101°-21°
Labrador, 102°
Newfoundland, 102°
northern, 102°
Mustela, 132°-33°
americana, 132°-33°
attrata, 133°
brunalis, 132°
caurina, 133°
INDEX TO KEY TO LAND MAMMALS

Mustela (continued)
cicognani, 134'-35'
hudsonica, 130°-31°
lutrococphala, 134°
pennanti, 132°
pennanti, 132°
vison, 134°

Mustelidae, 129°-37°

Myotis, 148°-49°
lucifugus, 149°
lucifugus, 149°
subulatus, 149°
subulatus, 149°

Napaeozapus, 113°-14°

Neoscoeur, 63°

Neosorex albitarbis, 144°

Neotoma, 98°-99°
pennsylvanica, 99°

Nycticeius, 148°
humeralis, 148°

Odobenus rosmarus, 120°
Odocolicus, 82°-83°
americanus, 82°-83°
americanus, 83°
borealis, 83°

Opossum, 77°-78°
common, 78°

Oryzomys, 96°
palustris, 96°
palustris, 96°

Otter, Newfoundland, 131°
North American, 130°-31°
northeastern, 130°-31°
southeastern, 131°

Parascalops, 141°-42°
breweri, 142°

Paraschurus, 63°

Peromyscus, 96°-98°
canadensis, 97°-98°

Phoca, 122°-23°
cristata, 121°
foetida, 123°
groenlandica, 122°
grypus, 122°
hispida, 123°
vitulina, 123°

Phocidae, 121°-23°

Pipistrelle, American, 150°
northeastern, 150°
southeastern, 150°

Pipistrellus, 150°
subflavus, 150°

Porcupine, Canada, 115°
new world, 115°

Procyon, 137°-38°
lotor, 138°
elucus, 138°
lotor, 138°

Procyonidae, 137°-38°

Prototheria, 76°
Puma, 124°
northern, 124°

Putorius, 133°-36°
cicognani, 134°
cicognani, 134°-35°
alascensis, 135°
cicognani, 135°
richardsoni, 135°

Peromyscus canadensis (continued)
canadensis, 97°
nubiterrae, 98°
leucopus, 98°
noveboracensis, 98°
nubiterrae, 98°
maniculatus, 98°

Phenacomys, large yellow-faced,
108°
small yellow-faced, 108°

Phenacomys, 108°
celatus, 108°
alimans, 108°
unaga, 108°

Phoca, 122°-23°
cristata, 121°
foetida, 123°
groenlandica, 122°
grypus, 122°
hispida, 123°
vitulina, 123°

Phocidae, 121°-23°

Pipistrelle, American, 150°
northeastern, 150°
southeastern, 150°

Pipistrellus, 150°
subflavus, 150°

Porcupine, Canada, 115°
new world, 115°

Procyon, 137°-38°
lotor, 138°
elucus, 138°
lotor, 138°

Procyonidae, 137°-38°

Prototheria, 76°
Puma, 124°
northern, 124°

Putorius, 133°-36°
cicognani, 134°
cicognani, 134°-35°
alascensis, 135°
cicognani, 135°
richardsoni, 135°
Putorius (continued)
noveboracensis, 135°-36°
noveboracensis, 136°, 136°
notius, 136°
noveboracensis, 136°
occisor, 135°
vison, 133°-34°
vison, 134°
erengumenos, 134°
leutenis, 134°
introcephalus, 134°
vison, 134°
vulgivagus, 134°

Raccoon, 137°-38°
Rangifer, 80°-81°
arcticus, 81°
caribou, 80°
tarandus arcticus, 81°
caribou, 80°
terracorae, 81°
terraeœvæ, 81°

Rat, 92°-111°
Allegany cave, 90°
black, 95°
house, 95°
roof, 94°
Reindeer, 80°-81°
Reithrodontomyys, 95°-96°
leontil, 95°-96°
dickinsoni, 95°
impiger, 96°
leontil, 95°
Rodents, 83°-119°
Rosmaridae, 120°
Rosmarus, 120°
orosmarus, 120°

Scalops, 141°
aquaticus, 141°
brewcri, 142°
Schridae, 84°-91°
Sciuropterus, 90°-91°
sabrinus, 90°-91°
sabrinus, 91°, 91°
macrotis, 91°
sabrinus, 91°

Sciuropterus (continued)
volans, 90°
volut, 90°

Sciurus, 63°, 83°-87°
carolinensis, 86°-87°
carolinensis, 86°-87°, 87°
carolinensis, 86°-87°
leucotis, 87°
hudsonicus, 83°-86°
hudsonicus, 86°
gymnicus, 85°
hudsonicus, 86°
loquax, 86°
leucotis, 87°
luyteri, 88°
ludovicianus, 63°, 87°
ludovicianus, 87°
vicius, 63°, 87°
sabrinus, 91°
striatus, 88°
[Culveria] hudsonicus, 86°

Scotophilus, 148°
Seal, earless, 121°-23°
gray, 122°
harbor, 123°
barp, 122°
hooded, 121°
ringed, 123°

Sheep, 73°
Shrew, 142°-46°
big-tailed, 144°
eastern marsh, 144°
Hoy’s, 144°
Labrador masked, 146°
masked, 145°-46°
northern masked, 145°
Richardson’s, 144°-45°
smoky, 145°
southern masked, 146°

Silomys americanus canadensis, 97°
Skunk, common, 136°-37°
northeastern, 137°
southeastern, 137°

Sorex, 143°-46°
albibarbis, 144°
aquaticus, 141°
Sorex (continued)  
*brevicaudus*, 142*-43°  
*crinitus*, 141°  
*fumens*, 145°  
*hoyi*, 144°  
*macrurus*, 144°  
*parvus*, 143°  
*personatus*, 145°-46°  
*personatus*, 145°  
*lieneul*, 146°  
*miscix*, 140°  
*personatus*, 145°  
*richardsonii*, 144°-45°

Soricidae, 142°-46°

Squirrel, 84°-91°  
Canadian flying, 91°  
Canadian red, 85°  
fox, 87°  
gray, 86°-87°  
Hudsonian flying, 91°  
Hudsonian red, 86°  
northeastern gray, 87°  
northern flying, 90°-91°  
northern fox, 87°  
red, 85°-86°  
southeastern gray, 86°-87°  
southeastern red, 86°  
southern flying, 90°  
western fox, 87°

Synaptomys, 99°-100°  
*cooperi*, 100°  
*fatuus*, 100°  
inuitus, 100°  
sphagnicola, 100°

Synopsis, 65-76

**Talpidae**, 140°-42°

**Talpinae**, 140°

Tamias, 88°  
*stripatus*, 88°  
*stripatus*, 88°  
*lysteri*, 88°  
*stripatus*, 88°

Tamiasciurus, 63°

Thalarctos, 138°  
*maritimus*, 138°  
*maritimus*, 138°  
*polaris*, 138°

Transition zone, 62°

*Trichechus rosmarus*, 126°

Ungulata, 78°-83°

Upper austral zone, 62°

*Urocyon*, 129°  
cinereoargenteus, 129°  
cinereoargentus, 129°

Ursidae, 138°-39°

*Ursus*, 139°  
americanus, 139°  
americanus, 139°  
sornhorgeri, 139°  
*litor*, 138°  
*luscus*, 131°  
*maritimus*, 138°  
*richardsonii*, 139°

Vespertilio, 151°  
*borealis*, 147°-48°  
fuscus, 151°  
fuscus, 151°  
*humeralis*, 148°  
linaeus, 147°  
*lutitigus*, 149°  
*noctivagans*, 149°-50°  
subfuscus, 150°  
sublatus, 149°

Vespertilionidae, 146°-51°

Vespertilioninae, 146°

*Viverra mephistica*, 137°

Vole, Hamilton inlet, 105°  
Labrador rock, 105°  
Muskeget island, 105°  
Newfoundland, 104°  
rock, 104°-5°  
southern rock, 104°

Vulpes, 127°-29°  
deletrix, 129°  
fulvus, 128°-29°
Vulpes (continued)

*fulvus*, 128°
*fulvus*, 128°
*rubricatus*, 128°-29°
*lagopus*, 128°
*pennsylvanica rubricata*, 128°-29°
*vafra*, 128°-29°

Walrus, 120°
Atlantic, 120°

Wapiti, east American, 82°

Weasel, 129°-37°
New York, 135°-36°
slender-tailed, 135°
small brown, 134°-35°
white-bellied New York, 136°
yellow-bellied New York, 136°

Wildcat, 125°
Wolf, American, 127°
arctic, 127°
Wolverine, 131°
Woodchuck, common, 89°
Labrador, 89°

Zapodinae, 111°
Zapus, 112°-13°
hudsonius, 112°-13°
hudsonius, 113°
americanus, 112°
hudsonius, 113°
ladas, 113°
insignis, 114°
obietorum, 114°
roanensis, 114°
New York State Museum

PUBLICATIONS

Museum reports. New York state museum. Annual report, 1847-date. O. Albany 1848-date. Average 300 pages a year. Price for all in print to 1892, 50 cents a volume; 75 cents in cloth; 1892-date, 75 cents cloth


Volume 1. 6 nos. Price $1.50 in cloth

Volume 2. 4 nos. Price $1.50 in cloth
7 Smock, J: C. First report on the iron mines and iron ore districts in N. Y. 6+7op. map 58x60 cm. June 1889. Price 20 cents.
10 Smock, J: C. Building stone in New York. 21op. map 58x60 cm, tab. Sep. 1890. Price 40 cents.

Volume 3. 5 nos. Price $1.35 in cloth
14 Kemp, J. F. Geology of Moriah and Westport townships, Essex co. N. Y., with notes on the iron mines. 38p. 7 pl. 2 maps 30x33, 38x44 cm. Sep. 1895. Price 10 cents.

Volume 4. 4 nos. Price $1.35 in cloth
18 Beauchamp, W: M. Polished stone articles used by the New York aborigines. 104p. 35 pl. Nov. 1897. Price 25 cents

Volume 5. 6 nos. Price $1.50 in cloth

Volume 6. 6 nos.  Price $1.50 in cloth

Volume 7
34  Cumings, E. R. Lower Silurian system of eastern Montgomery county; Prosser, C. S. Notes on the stratigraphy of the Mohawk valley and Saratoga county, N. Y. 74p. 10 pl. 1 map.  May 1900.  Price 15 cents.

Volume 8


3  Clarke, J. M.  The Oriskany fauna of Becraft mountain, Columbia co. N. Y.  In press.


Division 1  De Kay, J. E.  Zoology. 5 v. 1842-44.
  1 Torrey, John. Botany. 2 v. 1843.
  3 Mather, W. W.; Emmons, Ebenezer; Vanuxem, Lardner & Hall, James. Geology. 4 v. 1842-43.
  4 Emmons, Ebenezer. Agriculture. 5 v. 1846-54.
  6 Hall, James. Paleontology. 8 v. 1847-94.