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John O. Whitaker Jr.

*Indiana State University, Terra Haute*

Chris Maser

*U.S. Department of the Interior, Bureau of Land Management, Corvallis, Oregon*

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# MITES (EXCLUDING CHIGGERS) OF MAMMALS OF OREGON<sup>1</sup>

John O. Whitaker, Jr.,<sup>2</sup> and Chris Maser

ABSTRACT.—New information on the ectoparasitic mites of the following species of mammals from Oregon is presented: (1) pika—*Ochotona*; (2) squirrels—*Eutamias*, *Spermophilus*, *Tamiasciurus*; (3) grasshopper mouse—*Onychomys*; (4) woodrats—*Neotoma*; (5) muskrat—*Ondatra*; (6) jumping mice—*Zapus*; and (7) weasels—*Mustela*, *Spilogale*. New records of species for the state and new host records are also given. Finally, a cross-referenced list of all known mites of wild mammals from Oregon is presented.

Over the past several years, we have written a series of papers on the ectoparasites of mammals from Oregon that include data on the mites of mammals from the following genera: *Zapus* (Whitaker 1979), *Arborimus* and *Lagurus* (Whitaker and Maser 1979), *Aplodontia* (Whitaker et al. 1979), *Neurotrichus* and *Scapanus* (Whitaker et al. 1979a), *Sorex* (Whitaker et al. 1980), *Dipodomys* and *Perognathus* (Maser and Whitaker 1980), *Myotis*, *Antrozous*, *Eptesicus*, *Lasionycteris*, *Lasiurus*, *Pipistrellus*, and *Plecotus* (Whitaker et al. 1983b), *Microtus* and *Clethrionomys* (Whitaker and Maser 1984), and *Thomomys* (Whitaker et al., in press). Still in preparation are papers on the ectoparasites of the Townsend chipmunk (*Eutamias townsendi*) and of the genus *Peromyscus*.

One purpose of this paper (Part I) is to present new data on the ectoparasitic, phoretic, and other mites regularly associated with mammals for which we have small sample sizes. The second purpose (Part II) is to present a cross-referenced list of all known ectoparasitic and phoretic mites (excluding chiggers) from the wild mammals of Oregon and their host associations.

## PART I. MITES OF SELECTED MAMMALS FROM OREGON

Mammals for which new data are presented in this paper were from various parts of the state, as given in the species accounts. Mites were preserved in 70% ethanol, cleared

and stained in Nesbitt's solution containing acid fuchsin, and mounted in Hoyer's solution. Cover slips were ringed with Euperal. Identifications were verified by specialists as necessary.

Mites that constitute new records from mammals from Oregon are listed below. Numbers in parentheses are the number of hosts with mites and the number of mites found.

### LAGOMORPHA

#### Pika, Ochotonidae:

*Ochotona princeps*. Pika (4 from Linn Co.). Mite: *Echinonyssus utahensis* (1/1).

### RODENTIA

#### Squirrels, Sciuridae:

*Eutamias amoenus*. Yellow-pine chipmunk (2 from Union County). Mites: *Androlaelaps fahrenheitzi* (2/4), and *Proctolaelaps* sp. (1/4).

*Spermophilus beecheyi*. Beechey ground squirrel (3 from Curry County). Mites: *Androlaelaps fahrenheitzi* (2/2) and *Hacmogamasus occidentalis* (1/1).

*Spermophilus beldingi*. Belding ground squirrel (3 from Malheur County, 1 from Klamath County). Mites: *Androlaelaps fahrenheitzi* (4/23), *Dermacarus reticulosus* (3/25), and *Cheyletus linsdalei* (1/1).

*Spermophilus lateralis*. Mantled ground squirrel (2 from Harney County, 1 from Deschutes County). Mites: *Androlaelaps fahrenheitzi* (2/4) and *Dermacarus spermophilus* (1/2). The latter species was described by Fain and Whitaker (1978a).

*Spermophilus townsendi*. Townsend ground squirrel (10 from Malheur County). Mites: *Androlaelaps fahrenheitzi* (7/40), *Macrocheles* sp. (1/2), *Dermacarus spermophilus* (1/2), and *Euryparasitus* sp. (3/3).

*Spermophilus washingtoni*. Washington ground squirrel (3 from Morrow County). Mites: *Androlaelaps fahrenheitzi* (1/25) and *Macrocheles* sp. (2/2).

<sup>1</sup>This paper represents a partial contribution of the Oregon Coast Ecological Survey, Puget Sound Museum of Natural History, University of Puget Sound, Tacoma, Washington 98416.

<sup>2</sup>Department of Life Sciences, Indiana State University, Terre Haute, Indiana 47809.

<sup>3</sup>U.S. Department of the Interior, Bureau of Land Management, Forestry Sciences Laboratory, 3200 Jefferson Way, Corvallis, Oregon 97331.

*Tamiasciurus douglasi*. Chickaree (6 from Benton, Deschutes, Coos, and Linn counties). Mites: *Haemogamasus reidi* (5/16), *Eulaelaps stabularis* (1/1), and *Euryparasitus* sp. (1/1).

#### Native mice and woodrats, Cricetidae:

*Reithrodontomys megalotis*. Western harvest mouse (1 from Jefferson County, 1 from Malheur County). Mites: *Androlaelaps fahrenheitzi* (3/2), *Eubrachylaelaps debilis* (2/1).

*Peromyscus maniculatus*. Deer mouse (134 from Lincoln, Lane, Coos, Curry, Linn, Deschutes, Jefferson, Harney, Malheur, and Union counties). Included here is information on ectoparasites of 134 deer mice. Since we have not published this information, we give it here even though the sample size is larger than for most species included in this section. Mites: *Glycyphagus hypudaei* (1/1), *Androlaelaps casalis* (1/1), *A. fahrenheitzi* (197/50), *Echinonyssus obsoletus* (10/2), *E. "obsoletus" variant* (1/1), *E. utahensis* (11/9), *Eubrachylaelaps circularis* (6/2), *E. debilis* (72/25), *Eulaelaps stabularis* (2/2), *Haemogamasus reidi* (3/3), *Laelaps kochi* (1/1), *Anoetidae* (1/1), *Cyrtolaelaps* sp. (2/2), *Euryparasitus* sp. (27/11), *Proctolaelaps* sp. (2/2).

*Onychomys leucogaster*. Northern grasshopper mouse (2 from Malheur County). Mites: *Androlaelaps fahrenheitzi* (2/45), *Haemogamasus onychomydis* (2/49), *Ischyropoda armatus* (1/1), *Ornithonyssus bacoti* (1/2), *Radfordia subuliger* (1/1), *Myocoptes musculus* (1/1), *Glycyphagus hypudaei* (1/1), *Euryparasitus* sp. (2/32), *Proctolaelaps* sp. (2/4), *Bakerdania* sp. (2/79), and *Klemania* sp. (2/9).

*Neotoma cinerea*. Bushy-tailed woodrat (11 from Lane, Lincoln, Malheur, and Union counties). Mites: *Androlaelaps fahrenheitzi* (2/6), *Haemogamasus reidi* (3/10), *Eulaelaps stabularis* (3/5), *Haemogamasus pontiger* (2/2), *Echinonyssus neotomae* (1/1), *E. utahensis*? (2/2), and *Euryparasitus* sp. (2/2).

*Neotoma fuscipes*. Dusky-footed woodrat (4 from Curry, Klamath, and Lane counties). Mites: *Androlaelaps fahrenheitzi* (1/2) and *Haemogamasus reidi* (2/2).

*Neotoma lepida*. Desert woodrat (3 from Malheur County). Mites: *Androlaelaps fahrenheitzi* (3/6).

#### Voles, Arvicolidae:

*Ondatra zibethicus*. Muskrat (12 from Coos and Malheur counties). Mites: *Laelaps multispinosa* (12/317), *Zibethacarus ondatrae* (8/1213), *Listrophorus faini* 5/81, *L. ondatrae* (4/40), *L. americanus* (4/94), *L. validus* (6/46), *L. dozieri* (6/129), and *Radfordia zibethicalis* (1/3).

The muskrat is unique in having several species all in the same genus (*Listrophorus*), often in large numbers on the same individual (see Bauer and Whitaker 1981).

Mites of the genera *Zibethacarus* and *Listrophorus* are tiny and cling to individual hairs. Thus they are often overlooked or taken in relatively small numbers, although they are abundant on nearly every muskrat. Only six of the muskrats in this study were examined thoroughly for these mites.

#### Jumping mice, Zapodidae:

*Zapus trinotatus*. Pacific jumping mouse (28 from Lincoln, Lane, Coos, and Linn counties). Mites: *Androlaelaps fahrenheitzi* (14/129), *Haemogamasus reidi* (4/6), *H. occidentalis* (1/1), *Dermacarus newyorkensis* (2/11), *Bakerdania* sp. (1/1), and *Euryparasitus* sp. (5/9). Whitaker

(1979) reported the following ectoparasites on this host from Oregon: *Androlaelaps fahrenheitzi*, *Neotrombicula microti*, *N. harperi*, and *Radfordia cicingi*.

#### CARNIVORA

#### Weasels, Mustelidae:

*Mustela erminea*. Short-tailed weasel (8 from Lane, Coos, and Curry counties). Mites: *Haemogamasus occidentalis* (3/5), *H. reidi* (1/1), *Eulaelaps stabularis* (1/2), *Eubrachylaelaps debilis* (1/1), *Echinonyssus obsoletus* (1/1), *E. utahensis* (1/3), *Glycyphagus hypudaei* (1/12), *Orycterxenus soricis* (1/1), *Euryparasitus* sp. (1/1), and *Anoetidae* (1/1).

*Mustela frenata*. Long-tailed weasel (4 from Coos, Malheur, and Union counties). Mites: *Androlaelaps fahrenheitzi* (2/8), *Echinonyssus cynomys* (3/34), *E. longichelae* (3/14), *E. thomomys* (3/9), *E. obsoletus* (1/24), and *Lynxacarus mustelae* (1/16).

*Mustela vison*. Mink (1 from Lincoln County, 1 from Coos County). Mites: *Lynxacarus nearcticus* (2/875+), *Echinonyssus staffordi* (1/1), *E. obsoletus* (1/1), and *Pseudoparasitus* sp. nymph (1/2).

*Spilogale putorius*. Spotted skunk (12 from Lincoln, Coos, and Curry counties). Mites: *Androlaelaps fahrenheitzi* (1/1), *Eulaelaps stabularis* (3/18), *Haemogamasus reidi* (8/105), *Xenoryctes latiporus* (1/4), *Echinonyssus staffordi* (1/1), *Pugmeophorus designatus* (1/1), *Eucheyletia bishoppi* (1/1), and *Euryparasitus* sp. (1/1).

#### NEW STATE RECORDS FOR MITES:

**Laelapidae:** *Haemogamasus onychomydis*, *Echinonyssus neotomae*, *E. staffordi*, *E. thomomys*, *Eubrachylaelaps circularis*, *Laelaps multispinosa*. **Glycyphagidae:** *Dermacarus reticulosus*, *D. newyorkensis*, *Xenoryctes latiporus*. **Cheyletidae:** *Cheyletus linsdalei*. **Myobiidae:** *Radfordia subuliger*. **Mycoptidae:** *Myocoptes musculus*. **Listrophoridae:** *Listrophorus americanus*, *L. dozieri*, *L. faini*, *L. ondatrae*, *L. validus*, *Lynxacarus mustelae*, *L. nearcticus*.

#### NEW HOST RECORDS FOR PARASITIC MITES:

*Ochetona princeps*—*Echinonyssus utahensis*.  
*Eutamias amoenus*—*Androlaelaps fahrenheitzi*.  
*Spermophilus beecheyi*—*Haemogamasus occidentalis*.  
*Spermophilus beldingi*—*Androlaelaps fahrenheitzi*, *Dermacarus reticulosus*, *Cheyletus linsdalei*.  
*Spermophilus townsendi*—*Dermacarus spermophilus*.  
*Spermophilus washingtoni*—*Androlaelaps fahrenheitzi*.  
*Tamiasciurus douglasi*—*Eulaelaps stabularis*.  
*Peromyscus maniculatus*—*Echinonyssus obsoletus*, *E. obsoletus* "variant".

*Onychomys leucogaster*—*Haemogamasus onychomydis*, *Radfordia subuliger*, *Myocoptes musculus*, *Glycyphagus hypudaei*.

*Neotoma cinerea*—*Eulaelaps stabularis*, *Haemogamasus pontiger*, *Echinonyssus utahensis*.

*Neotoma fuscipes*—*Androlaelaps fahrenheitzi*.  
*Zapus trinotatus*—*Haemogamasus occidentalis*.

*Mustela erminea*—*Haemogamasus occidentalis*, *H. reidi*, *Eubrachylaelaps debilis*, *Echinonyssus obsoletus*, *E. utahensis*, *Glycyphagus hypudaei*, *Orycterxenus soricis*. Most of these parasites are a result of host transfer during predation.

*Mustela frenata*—*Echinonyssus cynomys*, *E. longichelae*, *E. thomomys*, *E. obsoletus*, *Echinonyssus* spp.

are a result of host transfer during predation; particularly interesting are the first three species, which are indicative of predation on pocket gophers.

*Spilogale putorius*-*Androlaelaps fahrenholzi*, *Eulaelaps stabularis*, *Hacmogamasus reidi*, *Xenoryctes latiporus*, *Pygmephorus designatus*, and *Eucheyletia bishoppi*.

## Part II: MITES (EXCLUDING CHIGGERS) of Mammals from Oregon

The following list summarizes information on ectoparasitic and phoretic mites currently known from wild mammals of Oregon. Data are presented alphabetically by family, genus, and species. Host taxa identified only to genus are not included. Numbers after the species refer to papers, listed by number, in the literature cited. Those marked with an X are reported for the first time in this paper.

### ACARIDAE

*Acotyledon* nr *paradoxus* Oudemans,  
1903

RODENTIA  
*Glaucomys sabrinus* 32

### CHEYLETIIDAE

*Acaropsellina sumnersi* Smiley &  
Whitaker, 1981

RODENTIA  
*Glaucomys sabrinus* (nest) 29

*Camincheyletus glaucomys* Smiley  
& Whitaker, 1981

RODENTIA  
*Glaucomys sabrinus* (nest) 29

*Cheyletus linsdalei* Baker, 1949

RODENTIA  
*Spermophilus beldingi* X

*Eucheyletia bishoppi* Baker, 1949

INSECTIVORA  
*Sorex pacificus* 38

*S. trochbridgei* 38

### CARNIVORA

*Spilogale putorius* X

*Eucheyletia oregonensis* Smiley &  
Whitaker, 1981

RODENTIA  
*Glaucomys sabrinus* (nest) 29

### CHIRODISCIDAE

*Alabidocarpus calcaratus* Lawrence,  
1952

CHIROPTERA  
*Myotis californicus* 41

*M. volans* 41

### CHORTOGLYPHIDAE

*Aplodontopus latus* Fain, 1967

RODENTIA  
*Aplodontia rufa* 5, 37

### DERMANYSSIDAE

*Dermanyssus gallinoides* Moss, 1966

RODENTIA  
*Glaucomys sabrinus* 32

### GLYCYPHAGIDAE

*Dermacarus hylandi* Fain, 1969

RODENTIA  
*Lagurus curtatus* 33

*Microtus oregoni* 34

*Dermacarus jonesi* Fain & Whitaker,  
1976

RODENTIA  
*Eutamias townsendi* 39

*Dermacarus newyorkensis* Fain,  
1969

RODENTIA  
*Zapus trinitatus* X

*Dermacarus reticulosus* Spicka &  
Gerrits, 1977

RODENTIA  
*Spermophilus beldingi* X

*Dermacarus spermophilus* Fain &  
Whitaker, 1978a

RODENTIA  
*Eutamias townsendi* 39

*Spermophilus lateralis* X, 7

*S. townsendi* X

*Dermacarus tamsi* Rupes,  
Yunker, & Wilson, 1971

RODENTIA  
*Glaucomys sabrinus* (nest) 32

*Tamiasciurus douglasi* 22

*Glycyphagus hypudaci* (Koch, 1841)

INSECTIVORA  
*Scapanus townsendi* 36

*Sorex bendirei* 38

*S. pacificus* 38

*S. trochbridgei* 38

### RODENTIA

*Arborimus albipes* 33

*A. longicaudus* 33

*Clethrionomys californicus* 34

*C. gapperi* 34

*Eutamias townsendi* 39

*Lagurus curtatus* 33

*Microtus montanus* 34

*M. oregoni* 34

*M. richardsoni* 34

*M. townsendi* 34

*Onychomys leucogaster* X

*Peromyscus maniculatus* X

*Tamiasciurus douglasi* 22

*Thomomys mazama* 35

### CARNIVORA

*Mustela erminea* X

*Gohieria* sp.

RODENTIA  
*Glaucomys sabrinus* 32

*Microblabidopus americanus* Fain,  
1967

RODENTIA  
*Aplodontia rufa* 4, 5, 37

*Orycterxenex soricis* (Oudemans,  
1915)

INSECTIVORA  
*Sorex bendirei* 38

*S. pacificus* 38

*S. trochbridgei* 38

*S. yaquinae* 38

### CARNIVORA

*Mustela erminea* X

<i>Xenoryctes latiporus</i> Fain & Whitaker, 1973		<i>S. washingtoni</i>	X
CARNIVORA		<i>Zapus trinotatus</i>	30, X
<i>Spilogale putorius</i>	X	CARNIVORA	
<i>Zibethacarus ondatrae</i> (Rupes & Whitaker, 1968)		<i>Mustela frenata</i>	X
RODENTIA		<i>Spilogale putorius</i>	X
<i>Microtus oregoni</i>	34	<i>Androlaelaps geomys</i> (Strandtmann, 1949)	
<i>Ondatra zibethicus</i>	X	RODENTIA	
LAELAPIDAE		<i>Thomomys bulbivorus</i>	35
<i>Alphalaelaps aplodontiae</i> (Jellison, 1945)		<i>T. mazama</i>	35
INSECTIVORA		<i>Echinomys affinis</i> (Jameson, 1950b)	
<i>Sorex trowbridgei</i>	38	RODENTIA	
<i>S. vagrans</i>	38	<i>Eutamias townsendi</i>	39
RODENTIA		<i>Echinomys arcuatus</i> (Koch, 1839)	
<i>Aplodontia rufa</i>	18, 23, 37	RODENTIA	
<i>Eutamias townsendi</i>	39	<i>Peromyscus maniculatus</i> (probably a misidentification)	12
<i>Androlaelaps casalis</i> (Berlese, 1887)		<i>Echinomys cynomys</i> (Radford, 1941)	
INSECTIVORA		CARNIVORA	
<i>Scapanus orarius</i>	36	<i>Mustela frenata</i>	X
<i>Sorex trowbridgei</i>	38	<i>Echinomys</i> <i>nr</i> <i>cynomys</i>	
RODENTIA		RODENTIA	
<i>Claucomys sabrinus</i>	32	<i>Claucomys sabrinus</i>	32
<i>Microtus montanus</i>	12	<i>Echinomys fcmuralis</i> (Allred, 1957)	
<i>Neotoma lepida</i>	12	RODENTIA	
<i>Onychomys leucogaster</i>	12	<i>Thomomys bulbivorus</i>	35
<i>Peromyscus maniculatus</i>	X	<i>T. talpoides</i>	35
<i>Androlaelaps fahrenheitzi</i> (Berlese, 1911)		<i>Echinomys hilli</i> (Jameson, 1950b)	
MARSPALIA		RODENTIA	
<i>Didelphis virginiana</i>	14	<i>Dipodomys ordi</i>	21
INSECTIVORA		<i>Perognathus parvus</i>	21
<i>Scapanus orarius</i>	36	<i>Echinomys incompitis</i> (Eads & Hightower, 1952)	
<i>S. townsendi</i>	36	RODENTIA	
<i>Sorex bendirei</i>	38	<i>Dipodomys ordi</i>	21
<i>S. pacificus</i>	38	<i>Echinomys isabellinus</i> (Oudemans, 1913)	
<i>S. palustris</i>	12	INSECTIVORA	
<i>S. preblei</i>	12	<i>Sorex vagrans</i>	12
<i>S. trowbridgei</i>	38	RODENTIA	
<i>S. vagrans</i>	12, 38	<i>Clethrionomys californicus</i>	34
<i>S. yaquinae</i>	38	<i>C. gapperi</i>	34
RODENTIA		<i>Lagurus curtatus</i>	33
<i>Arborimus albipes</i>	33	<i>Microtus longicaudus</i>	12, 13
<i>A. longicaudus</i>	33	<i>M. montanus</i>	12, 13, 34
<i>Clethrionomys californicus</i>	34	<i>M. richardsoni</i>	34
<i>C. gapperi</i>	34	<i>M. townsendi</i>	34
<i>Dipodomys ordi</i>	21	<i>Echinomys laticutatus</i> (de Meillon & Lavoipierre, 1944)	
<i>Eutamias amoenus</i>	X	RODENTIA	
<i>E. townsendi</i>	39	<i>Mus musculus</i>	2
<i>Claucomys sabrinus</i>	32	<i>Echinomys longichelae</i> (Allred & Beck, 1966)	
<i>Lagurus curtatus</i>	12, 33	RODENTIA	
<i>Microtus longicaudus</i>	12, 34	<i>Claucomys sabrinus</i> (nest)	32
<i>M. montanus</i>	12, 34	<i>Thomomys mazama</i>	35
<i>M. oregoni</i>	34	<i>T. talpoides</i>	13, 35
<i>M. richardsoni</i>	34	CARNIVORA	
<i>M. townsendi</i>	34	<i>Mustela frenata</i>	X
<i>Neotoma cinerea</i>	X	<i>Echinomys longichelae</i> "variant"	
<i>N. fuscipes</i>	X	RODENTIA	
<i>N. lepida</i>	X	<i>Thomomys mazama</i>	35
<i>Onychomys leucogaster</i>	12, X	<i>T. talpoides</i>	35
<i>Perognathus parvus</i>	12, 21		
<i>Peromyscus maniculatus</i>	12		
<i>Spermophilus beecheyi</i>	X		
<i>S. bellingi</i>	X		
<i>S. lateralis</i>	X		
<i>S. townsendi</i>	X		

<i>Echinonyssus neotomae</i> (Eads & Hightower, 1951)		<i>Eubrachylaclaps debilis</i> Jameson, 1950a	
RODENTIA		INSECTIVORA	
<i>Neotoma cinerea</i>	X	<i>Sorex trowbridgei</i>	38
<i>Echinonyssus obsoletus</i> (Jameson, 1950b)		RODENTIA	
INSECTIVORA		<i>Eutamias townsendi</i>	39
<i>Scapanus townsendi</i>	13	<i>Microtus montanus</i>	34
<i>Sorex trowbridgei</i>	13	<i>M. townsendi</i>	34
RODENTIA		<i>Peromyscus maniculatus</i>	X
<i>Clethrionomys californicus</i>	34	CARNIVORA	
<i>Microtus townsendi</i>	34	<i>Mustela erminca</i>	X
<i>Peromyscus maniculatus</i>	X	<i>Eulaclaps stabularis</i> (Koch, 1836)	
CARNIVORA		MARSUPIALIA	
<i>Mustela erminca</i>	X	<i>Didelphis virginiana</i>	14
<i>M. frenata</i>	X	INSECTIVORA	
<i>M. vison</i>	X	<i>Scapanus orarius</i>	36
<i>Echinonyssus obsoletus</i> "variant"		<i>S. townsendi</i>	36
INSECTIVORA		<i>Sorex trowbridgei</i>	38
<i>Scapanus orarius</i>	36	<i>S. vagrans</i>	38
<i>Sorex bendirei</i>	38	RODENTIA	
<i>S. pacificus</i>	38	<i>Arborimus albipes</i>	33
<i>S. trowbridgei</i>	38	<i>Clethrionomys californicus</i>	34
<i>S. vagrans</i>	38	<i>Eutamias townsendi</i>	39
<i>S. yaquinae</i>	38	<i>Microtus longicaudus</i>	34
RODENTIA		<i>M. montanus</i>	12, 34
<i>Peromyscus maniculatus</i>	X	<i>M. oregoni</i>	34
<i>Echinonyssus staffordi</i> (Strandtmann & Hunt, 1951)		<i>M. townsendi</i>	34
CARNIVORA		<i>Neotoma cinerea</i>	X
<i>Mustela frenata</i>	X	<i>Peromyscus maniculatus</i>	12, X
<i>Spilogale putorius</i>	X	<i>Tamiasciurus douglasi</i>	X
<i>Echinonyssus thomomys</i> (Allred & Beck, 1966)		CARNIVORA	
RODENTIA		<i>Mustela erminca</i>	X
<i>Thomomys mazama</i>	35	<i>Spilogale putorius</i>	X
<i>T. talpoides</i>	35	<i>Haemogamasus ambulans</i> (Thorell, 1872)	
<i>T. townsendi</i>	35	(recorded from refs. 12, 19, 33, 36, 38, 40; probably all incorrect and should be referred to other species)	
CARNIVORA		<i>Haemogamasus keegani</i> (Jameson, 1952)	
<i>Mustela frenata</i>	X	INSECTIVORA	
<i>Echinonyssus triacanthus</i> (Jameson, 1950b)		<i>Scapanus townsendi</i>	17
RODENTIA		<i>Haemogamasus liponyssoides</i> Ewing, 1925	
<i>Dipodomys</i> sp.	16	RODENTIA	
<i>D. ordi</i>	21	<i>Microtus longicaudus</i>	12
<i>Echinonyssus utahensis</i> (Allred & Beck, 1966)		<i>M. montanus</i>	12
LAGOMORPHA		<i>Haemogamasus mandschuricus</i> Vitzthum, 1930	
<i>Ochotona princeps</i>	X	RODENTIA	
RODENTIA		<i>Onychomys leucogaster</i>	12
<i>Dipodomys ordi</i>	21	<i>Haemogamasus nidi</i> Michael, 1892	
<i>Lagurus curtatus</i>	33	MARSUPIALIA	
<i>Neotoma cinerea</i>	X	<i>Didelphis virginiana</i>	14
<i>Peromyscus maniculatus</i> (originally reported as <i>E. obsoletus</i> )	12, 13, X	(probably misidentification)	
<i>Thomomys talpoides</i>	35	<i>Haemogamasus occidentalis</i> (Keegan, 1951)	
CARNIVORA		INSECTIVORA	
<i>Mustela erminca</i>	X	<i>Neotrichus gibbsi</i>	19, 37
<i>Eubrachylaclaps circularis</i> (Ewing, 1933)		<i>Scapanus orarius</i>	37
RODENTIA		<i>S. townsendi</i>	19, 37
<i>Peromyscus crinitus</i>	X	<i>Sorex bendirei</i>	38
<i>Eubrachylaclaps croncei</i> Jameson, 1947		<i>S. pacificus</i>	38
RODENTIA			
<i>Microtus montanus</i>	12		
<i>Onychomys leucogaster</i>	12		

<i>S. townbridgei</i>	38	CARNIVORA	
<i>S. vagrans</i>	38	<i>Mustela erminea</i>	X
<i>S. yaquinae</i>	38	<i>Spilogale putorius</i>	X
RODENTIA		(*Originally listed as <i>ambulans</i> , reidentified by Redington)	
<i>Arborimus albipes</i>	33	<i>Haemogamastus thomomysi</i>	
<i>Clethrionomys californicus</i>	34	Williams, Smiley, & Redington 1978	
<i>Eutamias townsendi</i>	39	RODENTIA	
<i>Microtus longicaudus</i>	34	<i>Thomomys mazama</i>	35
<i>M. montanus</i>	34	<i>T. talpoides</i>	35
<i>M. oregoni</i>	34	<i>Haemogamastus</i> sp.	
<i>M. richardsoni</i>	34	RODENTIA	
<i>M. townsendi</i>	19, 34	<i>Aplodontia rufa</i>	37
<i>Spermophilus beecheyi</i>	X	<i>Haemogamastus</i> n. sp.	
<i>Zapus trinotatus</i>	X	RODENTIA	
CARNIVORA		<i>Clethrionomys californicus</i>	34
<i>Mustela erminea</i>	X	<i>Microtus oregoni</i>	34
<i>M. fuscata</i>	19	<i>M. townsendi</i>	34
<i>Haemogamastus onychomyidis</i> (Ewing, 1933)		<i>Hypoaspis miles</i> (Berlese, 1892)	
RODENTIA		RODENTIA	
<i>Dipodomys ordi</i>	21	<i>Microtus townsendi</i>	34
<i>Onychomys leucogaster</i>	X	<i>Ischyropoda armatus</i> Keegan, 1951	
<i>Perognathus parvus</i>	21	RODENTIA	
<i>Thomomys mazama</i>	35	<i>Dipodomys ordi</i>	21
<i>T. talpoides</i>	35	<i>Onychomys leucogaster</i>	X
<i>T. townsendi</i>	35	<i>Perognathus parvus</i>	21
<i>Haemogamastus pontiger</i> (Berlese, 1904)		<i>Ischyropoda furmani</i> Keegan, 1956	
RODENTIA		RODENTIA	
<i>Glaucomyis sabrinus</i>	32	<i>Dipodomys ordi</i>	21
<i>Neotoma cinerea</i>	X	<i>Laelaps alaskensis</i> Grant, 1947	
<i>N. lepida</i>	12	RODENTIA	
<i>Haemogamastus reidi</i> Ewing, 1925		<i>Lagurus curtatus</i>	12
INSECTIVORA		<i>Microtus montanus</i>	12, 34
<i>Scapanus orarius</i>	37	<i>M. richardsoni</i>	34
<i>S. townsendi</i>	37	<i>Onychomys leucogaster</i>	12
<i>Sorex bendirei</i>	38	<i>Thomomys mazama</i>	35
<i>S. townbridgei</i>	38	<i>Laelaps kochii</i> Oudemans, 1936	
<i>S. vagrans</i>	38, 40	INSECTIVORA	
<i>S. yaquinae</i>	38, 40	<i>Neurotrichus gibbsi</i>	36
RODENTIA		RODENTIA	
<i>Aplodontia rufa</i>	37	<i>Microtus longicaudus</i>	12*, 34
<i>Arborimus albipes</i>	3	<i>M. montanus</i>	12*, 34
<i>Clethrionomys californicus</i>	34	<i>M. oregoni</i>	34
<i>C. gapperi</i>	34	<i>M. townsendi</i>	34
<i>Dipodomys ordi</i>	21	<i>Peromyscus maniculatus</i>	X
<i>Eutamias townsendi</i>	39	(*identified as <i>Laelaps</i> <i>pachyptus</i> )	
<i>Glaucomyis sabrinus</i>	32	<i>Laelaps multispinosa</i> (Banks, 1910)	
<i>Lagurus curtatus</i>	12*, 26, 33	RODENTIA	
<i>Microtus longicaudus</i>	12*, 26, 34	<i>Ondatra zibethicus</i>	X
<i>M. montanus</i>	34	<i>Peromyscus hubbardi</i> (Jameson, 1949)	
<i>M. richardsoni</i>	34	RODENTIA	
<i>M. townsendi</i>	34	<i>Aplodontia rufa</i>	37
<i>Neotoma cinerea</i>	X	RODENTIA	
<i>N. fuscipes</i>	X	<i>Aplodontochirus borealis</i> Fain & Hyland, 1972	
<i>Peromyscus maniculatus</i>	X	RODENTIA	
<i>Tamiasciurus douglasi</i>	X	<i>Aplodontia rufa</i>	37
<i>Thomomys mazama</i>	35	<i>Geomys bursarius</i> Fain & Whitaker, 1980	
<i>T. talpoides</i>	12*, 35, 36	RODENTIA	
<i>Zapus princeps</i>	12*, 26	<i>Perognathus parvus</i>	9, 21
<i>Z. trinotatus</i>	X		
Also "Forest Tree Mouse"			
= <i>Arborimus longicaudus</i>	26		

<i>Geomys texensis</i> Fain, Whitaker, Schwan, & Lukoschus, 1981		<i>M. volans</i>	41
RODENTIA		<i>M. yumanensis</i>	41
<i>Dipodomys ordi</i>	21	<i>Macronyssus longisetosus</i> (Furman, 1950)	
<i>Leporacarus sylvilagi</i> Fain, Whitaker, & Lukoschus, 1981		CHIROPTERA	
LAGOMORPHIA		<i>Plecotus townsendi</i>	41
<i>Sylvilagus bachmani</i>	11	<i>Macronyssus macrodactylus</i> Radovsky & Beck, 1971	
<i>Listrophorus americanus</i> Radford, 1944		CHIROPTERA	
RODENTIA		<i>Lasionycteris noctivagans</i>	41
<i>Ondatra zibethicus</i>	X	<i>Ornithonyssus bacoti</i> (Hirst, 1913) (host not given)	42
<i>Listrophorus dozieri</i> Radford, 1944		RODENTIA	
RODENTIA		<i>Onychomys leucogaster</i>	X
<i>Ondatra zibethicus</i>	X	<i>Steatonyssus antrozoi</i> Radovsky & Furman, 1963	
<i>Listrophorus faini</i> Dubinina, 1972		CHIROPTERA	
RODENTIA		<i>Antrozous pallidus</i>	41
<i>Ondatra zibethicus</i>	X	<i>Steatonyssus emarginatus</i> Radovsky & Furman, 1963	
<i>Listrophorus mexicanus</i> Fain, 1970		CHIROPTERA	
INSECTIVORA		<i>Pipistrellus hesperus</i>	41
<i>Scapanus townsendi</i>	36	<i>Steatonyssus furmani</i> Tipton & Boese, 1958	
<i>Sorex bendirei</i>	38	CHIROPTERA	
RODENTIA		<i>Lasiurus cinereus</i>	41
<i>Clethrionomys californicus</i>	34	<i>Steatonyssus occidentalis</i> (Ewing, 1933)	
<i>Lagurus curtatus</i>	33	CHIROPTERA	
<i>Microtus montanus</i>	34	<i>Eptesicus fuscus</i>	25, 41
<i>M. oregoni</i>	34	macronyssid n. sp.	
<i>M. richardsoni</i>	34	CHIROPTERA	
<i>M. townsendi</i>	34	<i>Eptesicus fuscus</i>	41
<i>Listrophorus ondatrae</i> Fain, Kok, & Lukoschus, 1970		<i>Lasionycteris noctivagans</i>	41
RODENTIA		<i>Myotis californicus</i>	41
<i>Ondatra zibethicus</i>	X	<i>M. evotis</i>	41
<i>Listrophorus validus</i> Banks, 1910		<i>M. lucifugus</i>	41
RODENTIA		<i>M. volans</i>	41
<i>Ondatra zibethicus</i>	X	<i>M. yumanensis</i>	41
<i>Lynxacarus mustelae</i> (Megnin, 1885)		<i>Plecotus townsendi</i>	41
CARNIVORA		MYOBIIDAE	
<i>Mustela frenata</i>	X	<i>Acanthophthirus caudatus eptesicus</i> Fain & Whitaker, 1978	
<i>Lynxacarus ncarcticus</i> Fain & Hyland, 1973		CHIROPTERA	
CARNIVORA		<i>Eptesicus fuscus</i>	41
<i>Mustela vison</i>	X	<i>Acanthophthirus</i> sp. nr <i>gracilis</i> Fain & Whitaker, 1978	
<i>Quasilistrophorus microticolus</i> Fain, Whitaker, & Lukoschus, 1978		CHIROPTERA	
RODENTIA		<i>Myotis volans</i>	41
<i>Arborimus albipes</i>	10, 33	<i>Acanthophthirus oregonensis</i> Fain & Whitaker, 1978	
<i>A. longicaudus</i>	10, 33	CHIROPTERA	
MACRONYSSIDAE		<i>Myotis volans</i>	41
<i>Cryptonyssus desulterioris</i> Radovsky, 1967		<i>Acanthophthirus oregonensis</i> Fain & Whitaker, 1978	
CHIROPTERA		CHIROPTERA	
<i>Eptesicus fuscus</i>	41	<i>Pipistrellus hesperus</i>	8, 41
<i>Myotis californicus</i>	41	<i>Amorphacarus hengererorum</i> Jameson, 1948	
<i>M. lucifugus</i>	41	INSECTIVORA	
<i>M. volans</i>	41	<i>Sorex pacificus</i>	38
<i>Macronyssus crosbyi</i> (Ewing & Stover, 1915)		<i>S. vagrans</i>	38
CHIROPTERA		<i>S. yaguinae</i>	38
<i>Eptesicus fuscus</i>	41	<i>Amorphacarus soricis</i> Fain & Whitaker, 1978	
<i>Myotis californicus</i>	41	INSECTIVORA	
<i>M. evotis</i>	41	<i>Sorex bendirei</i>	8, 38
<i>M. lucifugus</i>	41		



<i>Eadiea neurotrichus</i> Lukoschus, Klompen, & Whitaker, 1980			
INSECTIVORA			
<i>Neurotrichus gibbsi</i>	20		
<i>Eadiea scapanus</i> Fain & Whitaker, 1975			
INSECTIVORA			
<i>Scapanus townsendi</i>	6, 36		
<i>Eutalpacarus peltatus</i> Jameson, 1949			
INSECTIVORA			
<i>Neurotrichus gibbsi</i>	36		
<i>Protomyobia brevisetosa</i> Jameson, 1948			
INSECTIVORA			
<i>Scapanus townsendi</i>	36		
<i>Sorex bendirei</i>	38		
<i>S. pacificus</i>	38		
<i>S. townbridgei</i>	38		
<i>S. vagrans</i>	38		
<i>S. yagouinae</i>	38		
RODENTIA			
<i>Clethrionomys californicus</i>	34		
<i>Pteracarus aculeus</i> Dusbabek & Lukoschus, 1973			
CHIROPTERA			
<i>Eptesicus fuscus</i>	41		
<i>Pteracarus</i> sp. nr <i>minutus</i> <i>daubertoni</i> Dusbabek, 1973			
CHIROPTERA			
<i>Myotis volans</i>	41		
<i>Radfordia arborinus</i> Fain & Whitaker, 1975			
INSECTIVORA			
<i>Scapanus townsendi</i>	6, 33		
<i>Radfordia cicingi</i> (Fox, 1937)			
RODENTIA			
<i>Zapus trinotatus</i>	31		
<i>Radfordia hylandi</i> Fain & Lukoschus, 1977			
RODENTIA			
<i>Microtus oregoni</i>	34		
<i>Radfordia subudiger</i> Ewing, 1938			
RODENTIA			
<i>Onychomys leucogaster</i>	X		
<i>Radfordia zibethialis</i> (Radford, 1936)			
RODENTIA			
<i>Ondatra zibethicus</i>	X		
MYCOPTIDAE			
<i>Mycoptes japonensis</i> Radford, 1955			
RODENTIA			
<i>Clethrionomys californicus</i>	34		
<i>Microtus richardsoni</i>	34		
<i>Mycoptes musculus</i> (Koch, 1844)			
RODENTIA			
<i>Onychomys leucogaster</i>	X		
NOTOEBRIDAE			
<i>Notodreps (Bakeracarus)</i> sp.			
CHIROPTERA			
<i>Eptesicus fuscus</i>	41		
<i>Myotis volans</i>	41		
<i>M. yumanensis</i>	41		
<i>Plecotus townsendi</i>	41		
PYGMEPHORIDAE			
<i>Pygmephorus designatus</i> Mahunka, 1973			
INSECTIVORA			
<i>Sorex townbridgei</i>	38		
RODENTIA			
<i>Clethrionomys californicus</i>	34		
CARNIVORA			
<i>Spilogale putorius</i>	X		
<i>Pygmephorus horridus</i> Mahunka, 1973			
INSECTIVORA			
<i>Scapanus orarius</i>	36		
<i>Sorex townbridgei</i>	38		
<i>S. yagouinae</i>	28, 38		
<i>Pygmephorus johnstoni</i> Smiley & Whitaker, 1979			
INSECTIVORA			
<i>Neurotrichus gibbsi</i>	28		
<i>Pygmephorus lutterloughae</i> Smiley & Whitaker, 1979			
INSECTIVORA			
<i>Scapanus townsendi</i>	28		
<i>Pygmephorus mahunkai</i> Smiley & Whitaker, 1979			
INSECTIVORA			
<i>Scapanus townsendi</i>	28		
<i>Pygmephorus scalopi</i> Mahunka, 1973			
INSECTIVORA			
<i>Scapanus orarius</i>	28		
<i>Pygmephorus schitakeri</i> Mahunka, 1973			
INSECTIVORA			
<i>Scapanus orarius</i>	28		
SPINTURNICIDAE			
<i>Spinturnix americanus</i> (Banks, 1902)			
CHIROPTERA			
<i>Antrozous pallidus</i>	41		
<i>Eptesicus fuscus</i>	41		
<i>Myotis evotis</i>	27, 41		
<i>M. lucifugus</i>	12, 41		
<i>M. volans</i>	41		
<i>M. yumanensis</i>	27, 41		
<i>Spinturnix bakeri</i> Rudnick, 1960			
CHIROPTERA			
<i>Eptesicus fuscus</i>	41		
<i>Myotis volans</i>	41		
<i>Spinturnix globosus</i> (Rudnick, 1960)			
CHIROPTERA			
<i>Myotis volans</i>	41		
<i>Spinturnix orri</i> Rudnick, 1960			
CHIROPTERA			
<i>Antrozous pallidus</i>	27, 41		
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