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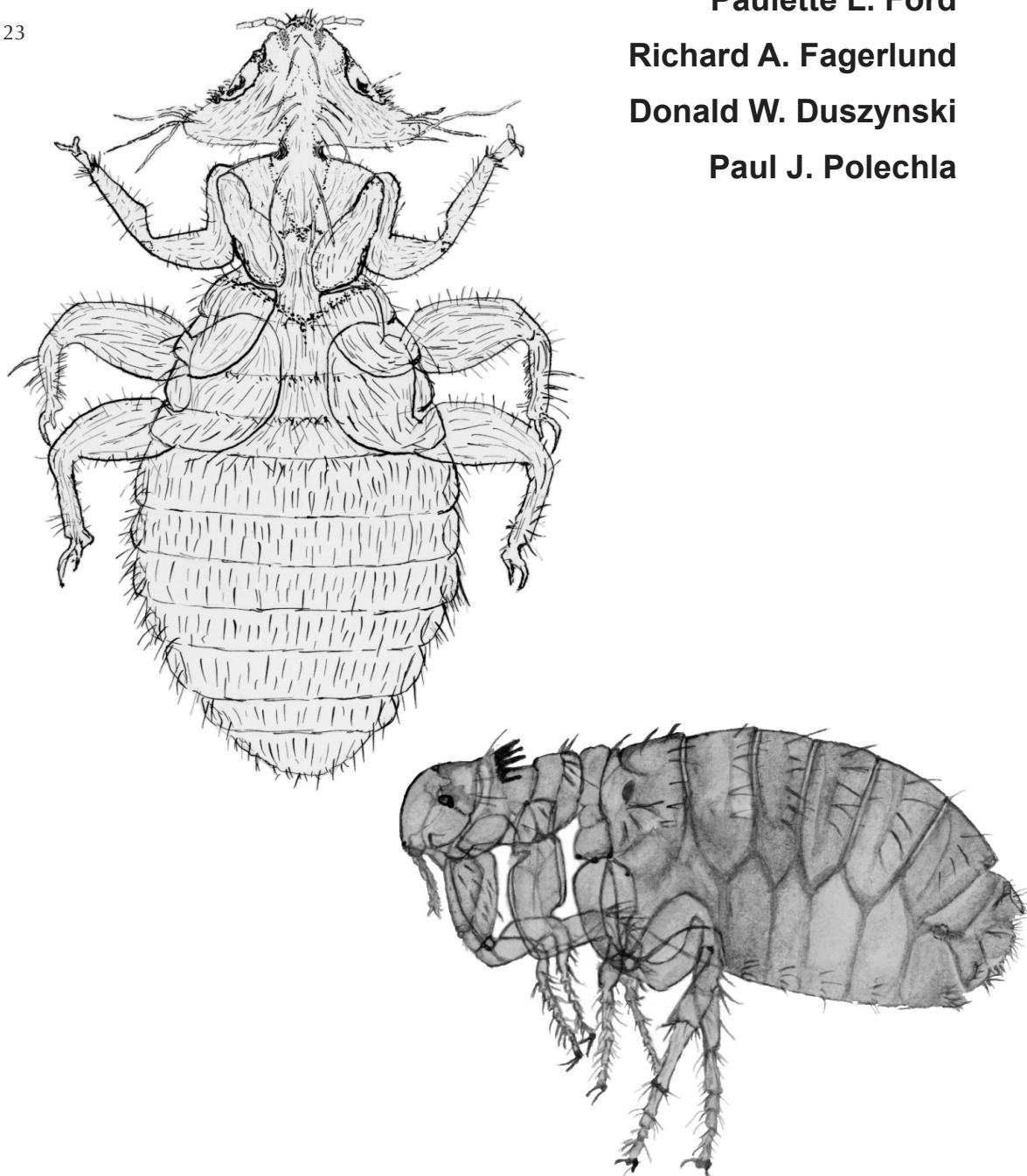
Fleas and Lice of Mammals in New Mexico

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Abstract

All available records are compiled for three orders of ectoparasites of mammals in New Mexico: fleas (Siphonaptera), sucking lice (Anoplura), and chewing lice (Mallophaga). We have drawn from records at the University of New Mexico's Museum of Southwestern Biology, the Vector Control Program of the New Mexico Environment Department, the Environmental Health Department of the City of Albuquerque, and several private collections. We list 99 species of fleas, 27 species of sucking lice, and two species of chewing lice. Included are appendices that list recorded ectoparasite species and their hosts in New Mexico and the counties associated with host ectoparasite infestations. We report at least four new state host records for fleas.

Keywords: Anoplura, chewing lice, ectoparasite, flea, lice, louse, Mallophaga, New Mexico mammalian hosts, Siphonaptera, sucking lice

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*cover illustrations by: Johnna Autumn Strange.
Louse (upper), flea (lower).*

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Fleas and Lice From Mammals in New Mexico

Paulette L. Ford, Richard A. Fagerlund,
Donald W. Duszynski, and Paul J. Polechla

Introduction

The purpose of this work is to provide baseline data of what is known and can be documented about the fleas and lice of New Mexico mammals. Within that context, we summarize the publications on this topic, document the fleas and lice that are accessioned into the Arthropod Division of the University of New Mexico's Museum of Southwestern Biology (UNM-MSB), and provide some general information about the biology of fleas and lice and the potential disease agents they may transmit to other mammals in New Mexico, including humans. Since infestations of fleas, sucking lice, and chewing lice in humans, domesticated animals, and wildlife may lead to discomfort, debilitating disease, and/or death, this information has implications for, but not limited to, federal, state, and private land managers, scientists, public health officials, and the general public.

New Mexico has the distinction of having one of the highest diversities of land mammals in the United States. There are approximately 150 extant, native mammal species representing eight orders, 25 families, and 71 genera in the state (Frey and Yates 1996). The potential for flea and louse diversity is, therefore, very great. In addition, when non-native mammals are introduced into the state or increase their range(s) from adjacent states, they bring with them their ectoparasites that may be transmitted to endemic species.

In this manuscript we compile all available records for three orders of ectoparasites of mammals in New Mexico: fleas (*Siphonaptera*), sucking lice (*Anoplura*), and chewing lice (*Mallophaga*). There is a lack of information about these ectoparasites, due to the low numbers of the host species studied and to the fact that not all areas of the state have been sampled thoroughly for fleas. Although there is some information on fleas from certain parts of the state, such as Santa Fe County, much less is known about the lice in New Mexico. There are few records of chewing lice from this state's mammals, and most of the recent records of sucking lice have come from small mammal population studies at the Sevilleta National Wildlife Refuge (SNWR) near Socorro, New Mexico.

Of the 150 mammal species in New Mexico that potentially act as host to one or more species of fleas and lice, only 82 are documented to host these ectoparasites. These reports are widespread temporally and geographically, and most represent only one collection event from one locality. A total of 99 species of fleas, 27 species of sucking lice, and two species of chewing lice are known and documented from New Mexico mammals. However, should every mammal species be thoroughly surveyed throughout its known range, the number of flea and lice species on New Mexico mammals would clearly be much higher than this. For example, we already have documented that at least 29 New Mexico mammals have 10 or more species of fleas recorded from them. For these reasons, it is clear that the study of the mammalian fleas and lice parasitizing New Mexico mammals is in need of attention.

Vertebrate biologists, who work in the field in New Mexico, can play a pivotal role in our understanding of the diversity and distribution of ectoparasites infesting this state's mammal (and other terrestrial vertebrate) populations by properly collecting specimens from study animals. The methods for collecting and preserving ectoparasites in the field are simple yet important:

1. Collect the organism(s) from the surface of the host and place them in a vial or other container with 70 percent ethanol or similar alcohol (see Gardner 1996 and Whitaker 1982 for more specific details).
2. Using a No. 2 pencil or indelible (India) ink pen, write the following information on a small label to be placed into the collection vessel: careful and correct identity of the host animal, its precise location of collection, the sex of the animal and its approximate age (juvenile, adult), the date (mm/dd/yy), and your name and collection number (if any).
3. Send or take specimens to the Arthropod Division, UNM-MSB. If possible, the host animal (symbiont-type host, see Frey and others 1992; Brooks 1993) should be collected and also taken to the Mammal Division, UNM-MSB, or placed in another accredited museum.

For each of the three orders of ectoparasites covered in this annotated list, we present information on

their general biology, their development, diseases they can carry and/or transmit, and the means of controlling them. Mammalian hosts from which we have reliable ectoparasite records are grouped alphabetically by order, and within their order, by family, genus, and species. Under each host species is a list of the specific type of ectoparasites known, the New Mexico counties in which they were collected, the UNM-MSB voucher number if available, any remarks that are appropriate to that parasite or its host, and pertinent reference material(s).

Fleas (Order Siphonaptera)

General

Fleas are small, wingless, hematophagous (blood feeding) insects that are compressed laterally and range in size from about 1 up to several millimeters in length. The head is roughly triangular in shape and usually bears a pair of conspicuous black eyes. The entire body, including legs, is covered with bristles and small spines. Approximately 2,500 species and subspecies belonging to 239 genera have been named to date (Roberts and Janovy 2000; Service 2000). They are all ectoparasites of warm-blooded (homiothermic) vertebrate hosts (birds, mammals), and both male and female adults feed on blood. About 94 percent of known species infest mammals, with the remainder infesting birds. Some fleas are highly specific, known from only one host species (Thomas 1996). However, most flea species have one or two preferred host species, others are more euryxenous (generalists) in their feeding preference and are known to parasitize hosts of a particular genus or family of hosts, and still others are cosmopolitan, feeding on virtually any vertebrate host they should chance upon (Thomas 1996). Conversely, some host species are known to harbor only one flea species while, at the other extreme, a few host species have been found to host more than 50 flea species throughout their range (Thomas 1988).

Fleas, like all insects, have three pairs of legs, but theirs are powerful and specialized for jumping, especially the longer hind legs. Some fleas can jump more than 100 times their body length and/or can execute a standing jump more than 120 times their height. In doing this, they can reach an acceleration of 140 times gravity in little more than a millisecond. How they can accomplish such extraordinary feats is not completely understood (Roberts and Janovy 2000). We do not understand yet the exact necessity of possessing such ability (e.g., avoiding predation, moving from host to host, demonstrating good genes in sexual selection).

Development

Fleas are all holometabolous, i.e., they undergo a complete metamorphosis with (usually) four distinct developmental stages between the egg and the adult. Egg laying behavior of adult fleas is almost always adapted and co-evolved to the behavior of the host upon which it lives (Kim 1985). Usually, females ready to oviposit leave the host to deposit eggs in the host's immediate or general territory (nest or burrow); in a few species, the female remains on the host, but her smooth eggs usually fall to the ground. Off the host, eggs are laid in/near cracks and crevices among dust, dirt, and debris. Generally, eggs hatch in a relatively short period of time (2-21 days), but this depends on environmental conditions (especially rodent burrow temperature and humidity) (Thomas 1996; Roberts and Janovy 2000; Service 2000). The stage that hatches from the egg is called larva (1st instar) because it does not look like the adult; it later will molt twice producing successive instars. Each of the three instars usually requires some blood in its diet, but this is not taken directly from feeding on a host. Rather, they ingest dried feces from adult fleas along with other debris from their immediate environment (fur, feathers) or, in some extreme cases, feed on fecal blood as it passes directly from the anus of their mother or another feeding adult, while they are attached to that adult's abdomen (Thomas 1996). The 3rd instar flea larva will spin a silken cocoon, or pupal case, often embedded with surrounding detritus, and enter the pupal stage. The pupa remains within its case and undergoes metamorphosis to the adult body form; it stays within the cocoon in the adult form--sometimes for weeks, months, or even up to one year--until certain host recognition factors stimulate it to leave the cocoon.

Upon hatching, the adult fleas must take a blood meal before mating and egg production occurs. In some species, certain growth hormones in the blood of the host may trigger the fleas to mate and lay eggs. Under adverse conditions (host absence), adult fleas can survive long periods without food (e.g., in nests, tunnels), especially under conditions of high humidity (Roberts and Janovy 2000). Unlike adults, however, larvae cannot tolerate extremes in relative humidity and will die if the humidity is either too high or too low (Service 2000).

Diseases Carried/Caused/Transmitted

Fleas are primarily a nuisance due to the considerable discomfort, irritation, and annoyance caused by their bites. The most common nuisance flea is the cat flea, *Ctenocephalides felis*. Other fleas of lesser importance

are the dog flea, *C. canis*, and the so-called human flea, *Pulex irritans*. Fleas of other domesticated animals may be of local importance. Fleas frequently bite humans on the ankles and legs, but at night during sleep, people may be bitten all over the body. Intense itching may result in a person becoming sensitized, and children usually experience greater discomfort than older persons (Service 2000). Some fleas of wild animals are important vectors of disease; these are summarized below.

Plague

Plague is primarily a disease of wild animals (a zoonosis), especially rodents. Over 200 mammal species have been shown to harbor plague bacteria, with some species being particularly susceptible. Prairie dogs, especially *Cynomys gunnisoni*, are uniformly susceptible to fatal infections with plague, and large proportions (99 percent) or even entire populations have been destroyed in a single epizootic event (Lechleitner and others 1962; Hubbard and Schmitt 1984).

Plague is caused by a bacterium, *Yersinia pestis* (syn. *Pasturella pestis*); it is of Old World origin and throughout history has been referred to as the "Black Death." The profound impact of plague on humans and on human history, more than any other single infectious agent ever, is summarized by Hubbard and Schmitt (1984), Roberts and Janovy (2000), and Marquardt and others (2000).

Plague was first discovered in North America from California ground squirrels (*Spermophilus beecheyi*) in 1905 (Barnes 1982). It was first detected in native New Mexico rodents in 1938 (Laney 1950), and the first documented human case of plague in New Mexico occurred in 1949 (Rollag and others 1981). In the United States, at least 19 different flea species have been found to bite humans, but species in more than 50 genera are important globally as potential vectors of plague. As of 1982, 18 rodent species (two lagomorphs and nine carnivores) were documented to have been infected by plague in New Mexico (Brown, undated). At least 33 species of flea have tested positive as vectors of sylvatic plague in New Mexico (Fagerlund and others 2001).

The normal cycle of plague transmission is between wild rodents and their fleas in nature and is termed sylvatic, campestral, rural, or endemic plague. When plague bacteria are transmitted to rats living in close association with people, such as in rat-infested slums, fleas (particularly, *Xenopsylla cheopis*) that normally feed on rats may turn their attention to humans. Rats infected with plague bacteria may develop acute and fatal septicemia. Upon the death of the host, infected fleas will leave this host and feed on humans.

When fleas ingest bacteria along with blood from infected rodents, the bacteria multiply rapidly in the gut of the flea to the extent that their mass blocks the passage of later blood meals through the flea's proventriculus. Thus, when the flea feeds again, the blood it takes in cannot pass the obstruction, becomes contaminated with bacteria, and is regurgitated back into the bite wound. Interestingly, the ability of various flea species to allow rapid growth of *Y. pestis* organisms that block the gut is a deciding factor of the efficacy of the flea as a good vector (Roberts and Janovy 2000).

Plague manifests itself in humans in one of three forms: bubonic, pneumonic, or septicemic. The most common, bubonic, causes swollen lymph nodes in the groin or armpits. These swellings or "buboies" can get as big as chicken eggs and occur in about 75 percent of all human cases during epidemics. Pneumonic plague occurs when the lungs are heavily involved and produces a pneumonia-like condition that is highly contagious to other humans. Septicemic plague is a generalized blood infection, often with little or no prior lymph node involvement (Roberts and Janovy 2000). Humans become infected with plague by being bitten by a *Yersinia pestis* infected flea or by handling a dead plague infected animal without gloves (NM Dept. of Health, Office of Epidemiology, pers. comm.).

Plague is most common in temperate regions during summer and autumn months and in the tropics during the cooler months. Heat and dryness negatively impact the spread of plague. Campestral plague, that seen in animals of open (rather than wooded) areas, is widespread and common in wild rodents and rabbits of the United States west of the 100th meridian. Human cases in these areas occur only sporadically, often after a person has had contact with wild rodents or rabbits and their fleas. New Mexico has had the highest case rate of human plague in the last decade (Roberts and Janovy 2000). For example, during 1988-2002, a total of 112 human cases of plague were reported from 11 western states. The majority, 97 of the 112 cases (87 percent), were exposed in the four states of Arizona, California, Colorado, and New Mexico, with 48 of the 97 (49 percent) occurring in New Mexico (CDC 2003).

Murine, Flea-Borne or Endemic Typhus

This form of typhus is caused by *Rickettsia typhi* (=*R. mooseri*), which is virtually identical to *R. prowazekii*, the typhus-causing organism transmitted to humans by body lice (see below). When ingested by the flea, the rickettsiae multiply in its gut, but unlike plague bacilli, they do not cause blockage. Rather, infection of the vertebrate host occurs when infected feces from the flea is

rubbed into abrasions or comes into contact with mucous membranes. The rickettsial organisms also can be released when fleas are crushed as they are biting, and then, inadvertently, their contaminated body juices are rubbed into wounds. Murine typhus is essentially a disease of murine rodents, especially *Rattus* species; it is common in warm climates and also infects a wide range of other small mammals. Murine typhus is transmitted by various fleas including *Xenopsylla*, *Nosopsyllus*, and *Leptopsyllus* species, as well as by the rat louse *Polyplax spinulosa* and the tropical rat mite *Ornithonyssus bacoti*. Transovarial transmission, when the rickettsial organism passes from an infected female flea to its ovaries, also occurs to transmit the infection from egg to larva to adult (Service 2000). In humans, the rickettsial organism causes a rather mild, febrile illness that lasts about two weeks, accompanied by headache, chills, body pain, and rash. The disease affects elderly people more severely than it does the young. Interestingly, the opossum (*Didelphis virginiana*), a New Mexico resident (Bermudez and others 1995), also is a reservoir host for murine typhus, and this species is proliferating in many urban and suburban areas, creating the possibility for resurgence of this disease (Roberts and Janovy 2000; Service 2000).

Myxomatosis

This is a disease of rabbits (Order: Lagomorpha) caused by a *Myxoma* virus that was native to South America, but it has spread to the USA and the UK. It is transmitted by a number of blood sucking arthropods including fleas, mites, and mosquitoes. The disease can and has caused considerable losses in the domestic rabbit (*Oryctolagus cuniculus*) industry.

Other Parasites

The flea *Nosopsyllus fasciatus* transmits the non-pathogenic kinetoplastid protist *Trypanosoma lewisi* from rat to rat. Fleas from dogs (*C. canis*), cats (*C. felis*), and humans (*P. irritans*) can serve as intermediate hosts of *Dipylidium caninum*, a tapeworm that is common in cats (*Felis catus*) and dogs (*Canis familiaris*) and can be transmitted to humans, especially children. Certain tapeworms of mice and rats also can be transmitted from host to host: *Nosopsyllus fasciatus* and *X. cheopis* for the rat tapeworm; and *Hymenolepis diminuta*, *X. cheopis*, *C. felis*, *C. canis*, and *P. irritans* for the mouse tapeworm *H. nana*. (*Hymenolepis nana* is a reasonably common parasite of children who have close contact with flea-infested cats and dogs.) These fleas consume the tapeworm eggs passed in the feces of their vertebrate host; they can act as intermediate hosts by

retaining the tapeworm larval stage, the cysticercoid, in their hemocoel until their metamorphosis to the adult form. Humans can then become infected by the inadvertent ingestion of infected fleas. A filarial nematode (*Dipetalonema reconditum*) that lives in the subcutaneous, connective, and perirenal tissues of dogs can be transmitted from host to host by *C. canis* and *C. felis*. The juvenile stage of the worm, called microfilariae, is ingested by fleas during their blood meals, develops to infective stages in the flea's fat body, migrates to the mouthparts, and then passes to the wound when the flea feeds the next time (Roberts and Janovy 2000). Fleas also may transmit *Francisella tularensis* (tularemia), *Rickettsia conori* (tick-borne typhus), *Coxiella burnetii* (Q fever), *Bartonella henselae* (cat-scratch fever), and a few other minor pathogens to humans (Thomas 1996; Service 2000).

Control

For public health reasons, it is important to control fleas of rodents around our homes and on our dog and cat pets. Places that may harbor fleas within our homes, such as under carpets, floor crevices, and pet bedding materials, should be cleaned often. Various insecticidal flea powders and flea collars with slow-release vapors are effective for ridding dogs and cats of these parasites. Recently, novel, non-chemical devices such as light traps with yellow-green filters to which fleas are attracted have been shown to attract fleas from as far away as 8 m (Dryden and Broce 1993; Roberts and Janovy 2000). Finally, it is important to keep areas where livestock are maintained as free as possible from the buildup of manure, debris, and other litter.

Sucking Lice (Order Anoplura)

General

There are only about 500 described species of sucking lice and they are found only on mammals. They have small, wingless bodies that are flattened dorsoventrally. Their head, which is narrower than their prothorax, bears a pair of inconspicuous eyes. Their mouthparts consist of a flexible, sucking tube-like structure called the haustellum, which is armed on the inner surface with minute teeth; the whole structure is retracted into the head when not feeding. Because they introduce their highly modified mouthparts directly into a blood vessel when feeding, they are called true *solenophages* (Greek for pipe + eating). Several species are of considerable importance

on domestic animals, and two or three species parasitize humans and can carry disease-producing microbes.

The two species of Anoplura found on humans are *Pediculus humanus* and *Phthirus pubis*. Some authorities say there are two distinct forms (subspecies) of *P. humanus*, body lice (*P. h. humanus*) and head lice (*P. h. capitis*), while others contend they are separate species, *P. capitis* and *P. humanus* (=*P. corporis*) because of subtle structural differences (Busvine 1978; Roberts and Janovy 2000; Service 2000). In either case, it is widely accepted that body lice descended from ancestral head lice after humans began to wear clothes. People who live in tropical climates often have head lice, but because they wear few clothes, body lice are usually absent. Consequently, body lice are much more prevalent in cooler, temperate regions. Although head lice stay closely associated with head hair, especially on the back of the neck and behind the ears, human body lice are unusual among Anoplura in that they spend most of their time in their host's clothing, intimately visiting their host only to take a blood meal. Both forms are highly contagious, especially under conditions of crowding and poor sanitation where people rarely wash or change their clothes. Thus, they are common in jails, refugee camps, trenches during wartime, and after disasters (wars, floods, earthquakes, etc.) where people are forced to live in unsanitary, overcrowded conditions. In the United States, elementary school children are susceptible to head lice when sharing hats, combs, and brushes.

Phthirus pubis, the "crab" louse of humans, is so-called because its middle and hind pair of legs are larger and stouter than the front pair and have massive claws that superficially resemble crabs' pincers. This species is found primarily in the pubic area, although specimens can be found amongst axillary and facial (i.e., beard, mustache, eyebrows, eyelashes) hair. It is transmitted primarily through sexual contact (Service 2000). Infestations also can arise from discarded clothing and infested bedding. Treatment involves the use of 1 percent permethrin solution available from drugstores.

Anoplura tend to be relatively host-specific, but many exceptions occur. For example, *P. humanus* also can live and breed on pigs (*Sus scrofa*), while *Haematopinus suis* of pigs readily feeds on humans. Other *Haematopinus* species infest cattle (*Bos taurus*), water buffalo (*Bubalus bubalis*), horses (*Equus caballus*), mules (*E. caballus* x *E. asinus*), and donkeys (*E. asinus*). Different *Linognathus* species parasitize cattle, sheep (*Ovis aries*), goats (*Capra hircus*), and dogs. The latter species may specialize on different regions of their host's body (e.g., legs, head), just as *Pediculus* species do on humans. Another species, *Polyplax spinulosa*, infests *Rattus*

species and transmits *Rickettsia typhi*, the causative agent of murine typhus, also carried by fleas (see above).

Development

The eggs of sucking lice, called nits, are cemented to the hair of their host, or in the case of body lice of humans, to fibers in the clothes. A female can produce up to 10 eggs per day and may produce 50-150 (head lice), 150-200 (pubic lice), or 200-300 (body lice) eggs in her life. Each egg has an operculum, or cap, at one end, usually with holes to allow the passage of air and to facilitate hatching. Lice have a hemimetabolous life cycle, meaning that the stage hatching from the egg is called a nymph, because it resembles a small adult. Depending on ambient temperature, eggs hatch in about a week, and the three nymphal stages (instars) require one to four weeks to complete their development to the adult. Nymphal stages also take blood meals, like the adults. Body lice usually do not leave their hosts voluntarily, but they are very sensitive to changes in host body temperature. Thus, they will leave their host's body when it cools after death or when the body heats due to high fever.

Diseases Carried/Caused/Transmitted

Infestation with lice is not life threatening, unless they carry disease-causing microbes. In general, the bites cause red, itching papules which may continue to exude lymph after the bite. Thus, continued scratching may lead to dermatitis and secondary bacterial infections. Years of infestation can lead to darkened, thickened areas of the skin. Allergies that produce severe itching may be caused by repeated inoculation of louse saliva when they bite. If inhaled, louse feces that are dried and become airborne may produce symptoms resembling hay fever. Human body lice can transmit three important diseases.

Louse-Borne, Endemic, or Epidemic Typhus

Typhus is caused by an obligate, intracellular bacterium *Rickettsia prowazekii*. Endemic typhus has had a significant impact on human history (see Zinsser 1934). Typhus epidemics usually coincide with anthropogenic events (war, crowding, stress, poverty, mass migrations) that favor heavy and widespread infestations of body lice; mortality during epidemics may approach 100 percent (Roberts and Janovy 2000). The disease manifests a large suite of symptoms including high fever, back- and headache, malaise, vertigo, flushed face, and petechial rashes on the armpits, flanks, chest,

abdomen, back, and extremities. After about two weeks, the fever drops, profuse sweating begins, and patients become more aware of their condition. At this point, either convalescence results or increased involvement of the central nervous system begins, resulting in death. Interestingly, *R. prowazekii* is a pathogenic, often fatal parasite of the lice themselves. The rickettsial organism invades the louse's gut cells and reproduces to the point that in about 10 days the cells are destroyed, killing the louse. Before death, however, the louse's feces contain massive numbers of rickettsiae, and scratching the louse bite inoculates the organism from the feces into the bite wound. Also, the louse's strong preference for a normal body temperature stimulates it to leave the febrile patient to search for new hosts and, thus, further spreads the disease during epidemics. The rickettsial organisms also can remain infective in louse feces for up to 60 days at room temperature, and humans can become infected with typhus by inhaling dried louse feces. Humans who have survived an initial infection are important reservoir hosts because, although asymptomatic, they are still capable of infecting new lice for years. Both humans and other animal reservoirs could provide the source for new epidemics, here or elsewhere, in the event of invasions, war, famine, or other disasters (Roberts and Janovy 2000; Service 2000).

Trench Fever

This is a relatively uncommon and debilitating but non-fatal disease caused by another rickettsial organism, *Bartonella (=Rochalimaea) quintana*. It also is transmitted by the human body louse. The disease was first documented during World War I (1914-1918) among soldiers in trenches (thus, the name), and it reappeared again in eastern Europe during World War II (1939-1945). Scattered recent foci of infections have been documented in Bolivia and Mexico, and some cases also have been reported in the United States and Europe, mostly in homeless people (Service 2000).

Relapsing Fever

This disease of humans, also transmitted by the human body louse, is caused by a spirochete, *Borrelia recurrentis*. Spirochetes are ingested during a blood meal but only a few pass from the gut of a louse into its body cavity (haemocoel), where they reproduce and reach enormous numbers. The only way humans are infected is when the louse is crushed on the skin, releasing spirochetes to enter the body through abrasions or mucus membranes (Service 2000). Louse-borne relapsing fever apparently has disappeared from the United States (Roberts and Janovy 2000).

Control

A large variety of over-the-counter products containing insecticides effective against lice are available at most drug and grocery stores. Several, containing permethrin, are incorporated into hair care products like shampoos and cream rinses. Fine-toothed nit combs, hot water washing, machine drying, and/or dry-cleaning clothes will control human body lice. Lice on pets and domestic food animals can be controlled by insecticidal dusts and dips.

Chewing Lice (Order Mallophaga)

General

Chewing lice are wingless, dorsoventrally flattened insects with reduced (or no) eyes. There are about 3,000 named species that infest many bird and mammal species. In fact, the majority of known species are parasites of birds. None, however, have any medical significance for humans or their domesticated animals other than being significant pests. They feed primarily on hair or feathers, but some eat sebaceous secretions, mucus, and sloughed epidermal cells, while others eat the eggs and nymphs of their own species, as well as ectoparasitic mites. They also will eat blood when an irritated host scratches itself to the point of causing bleeding. Most chewing lice are only a few millimeters long and have a head that is broader than their prothorax and lack ocelli. Although many fewer species infest mammals than birds, guinea pigs (*Cavia* spp.), dogs, cats, cattle, horses, mules, asses, sheep, goats, and even Indian elephants (*Elaphas maximus*) all commonly have chewing lice on them. Irritation of the skin can become severe, especially in the young host.

Development

The development of chewing lice, from egg to adult, is similar to that seen in the Anoplura.

Diseases Carried/Caused/Transmitted

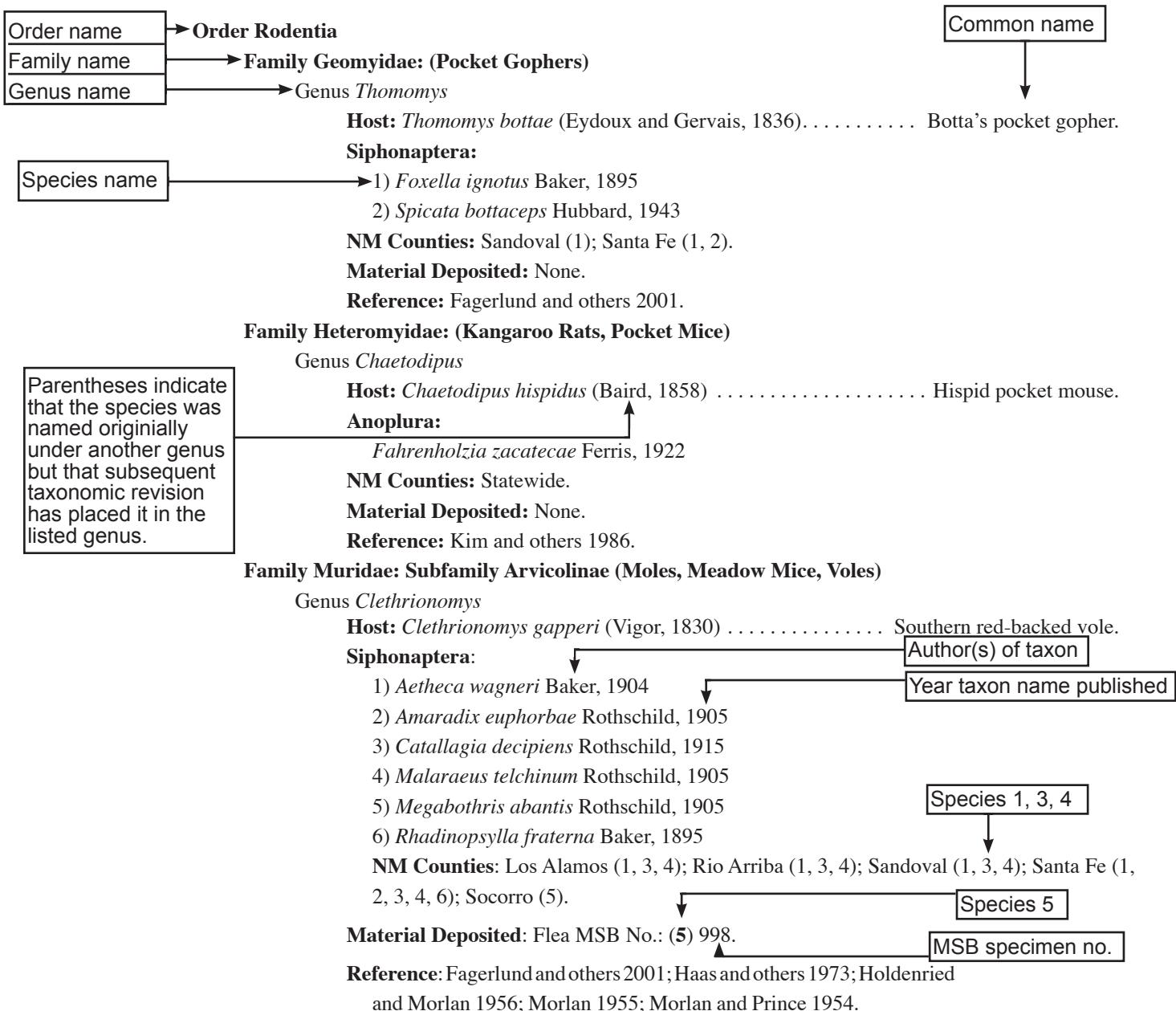
Some chewing lice can act as intermediate hosts for a number of endoparasites of mammals and birds. *Trichodectes canis*, an irritating louse of dogs that can present a severe problem to puppies, is an intermediate host for the double-pored dog tapeworm, *Dipylidium caninum*, which also can develop in people who may accidentally ingest these insects while playing with or

petting their pets. The worms are transmitted when the mallophagan picks up the microfilariae by chewing on skin and eating blood from minor wounds.

Control

Mammals help control biting and other lice by grooming themselves or others. Rodents such as kangaroo rats take dust baths, which may act as a way to rid themselves of chewing lice. Other control measures are similar to those listed above for sucking lice.

Guide to Checklist Format



Host List—New Mexico Mammals

Class Mammalia

Order Artiodactyla

Family Cervidae: (Deer and Elk)

Genus *Odocoileus*

Host: *Odocoileus hemionus* (Rafinesque, 1817) Mule deer.

Siphonaptera:

Ctenocephalides felis Bouche, 1835

NM Counties: Santa Fe.

Material Deposited: Flea MSB No.: 762.

Remarks/Observations: New state host record.

Reference: MSB Collection.

Family Bovidae: (Antelopes, Cattle, Goats, and Sheep)

Genus *Capra*

Host: *Capra hircus* Linnaeus, 1758 Domestic goat.

Anoplura:

Linognathus africanus Kellogg and Paine, 1911

NM Counties: Bernalillo.

Material Deposited: None.

Reference: Kim and others 1986.

Genus *Ovis*

Host: *Ovis aries* Linnaeus, 1758 Mouflon.

Anoplura:

Linognathus africanus Kellogg and Paine, 1911

NM Counties: Bernalillo.

Material Deposited: None.

Reference: Kim and others 1986.

Order Carnivora

Family Canidae: (Dogs)

Genus *Canis*

Host: *Canis familiaris* Linnaeus, 1758..... Domestic dog.

Siphonaptera:

1) *Euhoplopsyllus glacialis* Taschenberg, 1880

2) *Ctenocephalides felis* Bouche, 1835

3) *Pulex irritans* Linnaeus, 1758

4) *Spilopsyllus inaequalis* Baker, 1895

Anoplura:

5) *Linognathus setosus* (von Olfers, 1816)

NM Counties: Bernalillo (2, 5); Sandoval (1, 3, 4).

Material Deposited: Flea MSB No.: (2) 1567.

Reference: Haas and others 1973; MSB Collection.

Host: *Canis latrans* Say, 1823 Coyote.

Siphonaptera:

1) *Euhoplopsyllus glacialis* Taschenberg, 1880

2) *Spilopsyllus inaequalis* Baker, 1895

Anoplura:

3) *Linognathus setosus* (von Olfers, 1816)

NM Counties: Bernalillo (3); Sandoval (1, 2).

Material Deposited: Flea MSB No.: (1) 859.

Reference: Haas and others 1973.

Genus *Urocyon*

Host: *Urocyon cinereoargenteus* (Schreber, 1775) Gray fox.

Siphonaptera:

1) *Echidnophaga gallinaceus* Westwood, 1875

2) *Euhoplopsyllus affinis* Baker, 1904

3) *Foxella ignotus* Baker, 1895

4) *Pulex irritans* Linnaeus, 1758

5) *Pulex simulans* Baker, 1895

6) *Spilopsyllus inaequalis* Baker, 1895

NM Counties: Bernalillo (1, 2, 3, 4, 5, 6); Socorro (1, 2, 3, 4, 5, 6).

Material Deposited: Flea MSB No.: (5) 830.

Reference: Patrick and Harrison 1995.

Genus *Vulpes*

Host: *Vulpes macrotis macrotis* Merriam, 1888 Kit fox.

Siphonaptera:

1) *Euhoplopsyllus affinis* Baker, 1904

2) *Foxella apachinus* C. Fox, 1914

3) *Orchopeas agilis* Rothschild, 1905

4) *Orchopeas caedens* Jordan, 1925

5) *Oropsylla montanus* Baker, 1895

6) *Pleochaetis exilis* Jordan, 1937

7) *Pulex irritans* Linnaeus, 1758

8) *Pulex simulans* Baker, 1895

9) *Spilopsyllus inaequalis* Baker, 1895

10) *Stenistomera alpina* Baker, 1895

NM Counties: Chaves (1, 3, 4, 7, 8); DeBaca (6, 7); Eddy (4); Luna (7);

McKinley (2, 4, 5, 7, 10); San Juan (8, 9); Socorro (6); Torrance (7).

Material Deposited: None.

Reference: Harrison and others 2003.

Host: *Vulpes velox velox* (Say, 1823) Swift fox.

Siphonaptera:

1) *Echidnophaga gallinaceus* Westwood, 1875

2) *Euhoplopsyllus affinis* Baker, 1904

3) *Orchopeas agilis* Rothschild, 1905

4) *Orchopeas caedens* Jordan, 1925

5) *Pulex irritans* Linnaeus, 1758

6) *Pulex simulans* Baker, 1895

NM Counties: Chaves (5, 6); Dona Ana (3); Eddy (1); Lea (2, 3, 4, 5, 6);

McKinley (3); Roosevelt (5); Sandoval (3); Socorro (3); Union (5).

Material Deposited: Flea MSB No.: (1) 741; (5) 910; (6) 1048.

Reference: Harrison and others 2003.

Host: *Vulpes vulpes* (Linnaeus, 1758) Red fox.

Siphonaptera:

1) *Euhoplopsyllus affinis* Baker, 1904

2) *Pulex simulans* Baker, 1895

3) *Spilopsyllus inaequalis* Baker, 1895

NM Counties: McKinley (3); Roosevelt (1, 2); San Juan (2).

Material Deposited: Flea MSB No.: (2) 916. Lice MSB No.: None accessioned.

Reference: Harrison and others 2003.

Family Felidae: (Cats)

Genus *Felis*

Host: *Felis catus* Linnaeus, 1758 House cat.

Siphonaptera:

1) *Echidnophaga gallinaceus* Westwood, 1875

2) *Euhoplopsyllus glacialis* Taschenberg, 1880

3) *Pulex irritans* Linnaeus, 1758

4) *Spilopsyllus inaequalis* Baker, 1895

NM Counties: Bernalillo (4); Hidalgo (1); Sandoval (2, 3, 4).

Material Deposited: None.

Reference: Haas and others 1973; Jellison and Senger 1976.

Genus *Lynx*

Host: *Lynx rufus* (Schreber, 1777) Bobcat.

Siphonaptera:

1) *Euhoplopsyllus glacialis* Taschenberg, 1880

2) *Foxella ignotus* Baker, 1985

3) *Spilopsyllus inaequalis* Baker, 1895

4) *Stenistomera alpina* Baker, 1895

NM Counties: Sandoval (1, 2, 3, 4).

Material Deposited: None.

Reference: Haas and others 1973.

Family Mephitidae: (Skunks)

Genus *Mephitis*

Host: *Mephitis* sp.

Siphonaptera:

Echidnophaga gallinaceus Westwood, 1875

NM Counties: Santa Fe.

Material Deposited: Flea MSB No.: None accessioned.

Reference: Morlan 1955.

Genus *Spilogale*

Host: *Spilogale gracilis* Merriam, 1890..... Western spotted skunk.

Siphonaptera:

- 1) *Anomiopsyllus nudata* Baker, 1898
- 2) *Hoplopsyllus anomalus* Baker, 1904
- 3) *Oropsylla montanus* Baker, 1895

NM Counties: Santa Fe (1, 2, 3).

Material Deposited: None.

Reference: Morlan 1955.

Family Mustelidae: (Badgers and Weasels)

Genus *Mustela*

Host: *Mustela frenata* Lichtenstein, 1831 Long-tailed weasel.

Siphonaptera:

- 1) *Foxella ignotus* Baker, 1895
- 2) *Megabothris abantis* Rothschild, 1905
- 3) *Thrassis pansus* Jordan, 1925
- 4) *Thrassis stanfordi* Wagner, 1936
- 5) *Stenistomera alpina* Baker, 1895

NM Counties: Bernalillo (1); Rio Arriba (1, 3, 4); Sandoval (2).

Material Deposited: Flea MSB No.: (1) 1044.

Reference: Haas and others 1973; Link 1949; Traub and Hoff 1951.

Family Procyonidae: (Raccoons and Relatives)

Genus *Bassariscus*

Host: *Bassariscus astutus* (Lichtenstein, 1830) Ringtail.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Atyphloceras echis* Jordan and Rothschild, 1915
- 3) *Echidnophaga gallinaceus* Westwood, 1875
- 4) *Epitedia stanfordi* Traub, 1944
- 5) *Malaraeus sinomus* Jordan, 1925
- 6) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 7) *Meringis arachis* Jordan, 1929
- 8) *Orchopeas sexdentatus neotomae* Augustson, 1943
- 9) *Oropsylla montanus* Baker, 1895
- 10) *Pulex simulans* Baker, 1895
- 11) *Rhadinopsylla goodi* Hubbard, 1941
- 12) *Stenistomera alpina* Baker, 1895
- 13) *Thrassis aridis* Prince, 1944

NM Counties: Bernalillo (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13); Sandoval (3).

Material Deposited: Flea MSB No.: (3) 1464; (8) 883.

Reference: Eads and others 1979, 1987; Fagerlund and others 2001;
Haas and others 1973; Jellison and Senger 1976.

Order Chiroptera

Family Molossidae: (Molossid Bats)

Genus *Tadarida*

Host: *Tadarida brasiliensis* I. Geoffroy, 1824 Brazilian free-tailed bat.

Siphonaptera:

Sternopsylla texanus Fox, 1914

NM Counties: Eddy.

Material Deposited: None.

Reference: Jellison and Senger 1976.

Family Vespertilionidae: (Vesper Bats)

Genus *Myotis*

Host: *Myotis thysanoides* Miller, 1897. Fringed myotis.

Siphonaptera:

Myodopsylla nordina Traub and Hall, 1951

NM Counties: Bernalillo.

Material Deposited: None.

Reference: Traub and Hoff 1951.

Host: *Myotis yumanensis* (H. Allen, 1864) Yuma myotis.

Siphonaptera:

Myodopsylla gentilis Jordan and Rothschild, 1921

NM Counties: Santa Fe.

Material Deposited: None.

Reference: Haas and others 1973.

Order Insectivora

Family Soricidae: (Shrews)

Genus *Sorex*

Host: *Sorex cinereus* Kerr, 1792. Cinereus shrew.

Siphonaptera:

Corrodopsylla curvata Rothschild, 1915

NM Counties: Sandoval.

Material Deposited: Flea MSB No.: 1560.

Remarks/Observations: New state host record.

Reference: Haas and others 1973; MSB Collection.

Host: *Sorex preblei* Jackson, 1922 Preble's shrew.

Siphonaptera:

Orchopeas agilis Rothschild, 1905

NM Counties: Sandoval.

Material Deposited: Flea MSB No.: 865.

Remarks/Observations: New state host record.

Reference: MSB Collection.

Order Lagomorpha

Family Leporidae: (Hares)

Genus *Lepus*

Host: *Lepus californicus* Gray, 1837 Black-tailed jackrabbit.

Siphonaptera:

- 1) *Echidnophaga gallinaceus* Westwood, 1875
- 2) *Euhoplopsyllus affinis* Baker, 1904
- 3) *Euhoplopsyllus glacialis* Taschenberg, 1880
- 4) *Hoplopsyllus anomalus* Baker, 1904
- 5) *Pleochaetis exilis* Jordan, 1937
- 6) *Spilopsyllus inaequalis* Baker, 1895

Anoplura:

- 7) *Haemodipsus setoni* Ewing, 1924

NM Counties: Bernalillo (2, 4); Chaves (3); Curry (3, 7); Dona Ana (2); Grant (1, 2); Santa Fe (2, 4, 5); Torrance (2).

Material Deposited: None.

Reference: Fagerlund and others 2001; Holdenried and Morlan 1956; Jellison and Senger 1976; Kartman 1960; Kohls 1940; Morlan 1955; Pfaffenberger and Valencia 1988; Rodriguez 1977.

Genus *Sylvilagus*

Host: *Sylvilagus audubonii* (Baird, 1858) Desert cottontail.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 3) *Echidnophaga gallinaceus* Westwood, 1875
- 4) *Euhoplopsyllus affinis* Baker, 1904
- 5) *Euhoplopsyllus glacialis* Taschenberg, 1880
- 6) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 7) *Meringis bilsingi* Eads and Menzies, 1949
- 8) *Meringis dipodomys* Kohls, 1938
- 9) *Meringis nidi* Williams and Hoff, 1951
- 10) *Meringis rectus* Morlan, 1953
- 11) *Odontopsyllus dentatus* Baker, 1904
- 12) *Orchopeas sexdentatus* Baker, 1904
- 13) *Oropsylla hirsutus* Baker, 1895
- 14) *Polygenis gwynii* C. Fox, 1914
- 15) *Pulex irritans* Linnaeus, 1758
- 16) *Pulex simulans* Baker, 1895
- 17) *Rhadinopsylla fraterna* Baker, 1895
- 18) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 19) *Spilopsyllus inaequalis* Baker, 1895
- 20) *Thrassis campestris* Prince, 1944
- 21) *Thrassis fotus* Jordan, 1925

Anoplura:

- 22) *Haemodipsus setoni* Ewing, 1924
- 23) *Hoplopleura hirsuta* Ferris, 1916

NM Counties: Bernalillo (9); Catron (4); Chaves (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21); Curry (3, 5, 22); Grant (3, 4, 8, 19); Lea (3, 5); Otero (4); Rio Arriba (4, 19); Roosevelt (3, 4, 13, 16, 23); Santa Fe (1, 4, 9, 10, 11, 12, 19).

Material Deposited: Flea MSB No.: (5) 723; (7) 792; (19) 748.

Reference: Clark and others 1971; Eads and others 1987; Graves and others 1974; Holdenried and Morlan 1956; Kartman 1960; Kohls 1940; Link 1949; Miller and others 1970; Morlan 1955;

Pfaffenberger and Valencia 1988; Pfaffenberger and Wilson 1985;
Rail and others 1969; Rodriguez 1977.

Host: *Sylvilagus floridanus* (J.A. Allen, 1890) Eastern cottontail.

Siphonaptera:

- 1) *Euhoplopsyllus affinis* Baker, 1904

NM Counties: Sandoval.

Material Deposited: Flea MSB No.: 749.

Reference: MSB Collection.

Host: *Sylvilagus nuttalli* (Bachman, 1837) Mountain cottontail.

Siphonaptera:

- 1) *Euhoplopsyllus affinis* Baker, 1904
- 2) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 3) *Odontopsyllus dentatus* Baker, 1904
- 4) *Spilopsyllus inaequalis* Baker, 1895
- 5) *Stenistomera alpina* Baker, 1895

NM Counties: Rio Arriba (1, 4); Sandoval (1, 2, 3, 5).

Material Deposited: None.

Reference: Haas and others 1973; Link 1949; Mendez and Haas 1973.

Host: *Sylvilagus* sp.

Siphonaptera:

- 1) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 2) *Echidnophaga gallinaceus* Westwood, 1875
- 3) *Euhoplopsyllus affinis* Baker, 1904
- 4) *Eumolpianus eumolpi* Rothschild, 1905
- 5) *Hoplopsyllus anomalus* Baker, 1904
- 6) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 7) *Meringis bilsingi* Eads and Menzies, 1949
- 8) *Meringis dipodomys* Kohls, 1938
- 9) *Meringis nidi* Williams and Hoff, 1951
- 10) *Meringis rectus* Morlan, 1953
- 11) *Oropsylla montanus* Baker, 1895
- 12) *Polygenis gwyni* Fox, 1914
- 13) *Pulex irritans* Linnaeus, 1758
- 14) *Rhadinopsylla fraterna* Baker, 1895
- 15) *Thrassis fotsus* Jordan, 1925

NM Counties: Bernalillo (3, 4, 5); Chaves (1, 2, 3, 6, 7, 8, 9, 10, 12, 13, 14, 15); Sandoval (11).

Material Deposited: None.

Reference: Forcum and others 1969; Jellison and Senger 1976; Kohls 1940.

Family Ochotonidae: (Pikas)

Genus *Ochotona*

Host: *Ochotona princeps* (Richardson, 1828) American pika.

Siphonaptera:

- 1) *Amphalius necopinus* Jordan, 1925
- 2) *Ctenophyllus armatus* Wagner, 1901
- 3) *Megabothris abantis* Rothschild, 1905
- 4) *Megarthroglossus bisetis* Jordan and Rothschild, 1915

- 5) *Megarthroglossus divisus* Baker, 1898
 - 6) *Phalacropsylla morlani* Eads and Campos, 1982
 - 7) *Spilopsyllus inaequalis* Baker, 1895
 - 8) *Stenistomera alpina* Baker, 1895
- NM Counties:** Sandoval (4, 8); Santa Fe (1, 2, 3, 5, 6, 7, 8).
- Material Deposited:** None.
- Reference:** Haas and others 1973; Holdenried and Morlan 1956; Mendez and Haas 1973; Morlan 1955.

Order Perissodactyla

Family Equidae: (Equine)

Genus *Equus*

Host: *Equus asinus* Linnaeus, 1758 Ass.

Anoplura:

- 1) *Haematopinus asini* Linnaeus, 1758

Mallophaga:

- 2) *Werneckiella (Bovicola) equi* (Denny, 1842)

NM Counties: Otero (1, 2).

Material Deposited: None.

Reference: Kim and others 1986.

Host: *Equus caballus* Linnaeus, 1758 Horse.

Anoplura:

- 1) *Haematopinus asini* Linnaeus, 1758

Mallophaga:

- 2) *Werneckiella (Bovicola) equi* (Denny, 1842)

NM Counties: Otero (1, 2).

Material Deposited: None.

Reference: Kim and others 1986.

Order Primates

Family Hominidae: (Humans)

Genus *Homo*

Host: *Homo sapiens* Linnaeus, 1758 Human.

Siphonaptera:

- 1) *Pulex irritans*

Anoplura:

- 2) *Pediculus humanus* Linnaeus, 1758

- 3) *Phthirus pubis* (Linnaeus, 1758)

NM Counties: Bernalillo (2, 3); Los Alamos (1); Rio Arriba (1); Sandoval (1); Santa Fe (1).

Material Deposited: None.

Reference: MSB Collection.

Order Rodentia

Family Geomyidae: (Pocket Gophers)

Genus *Thomomys*

Host: *Thomomys bottae* (Eydoux and Gervais, 1836) Botta's pocket gopher.

Siphonaptera:

1) *Foxella ignotus* Baker, 1895

2) *Spicata bottaceps* Hubbard, 1943

NM Counties: Sandoval (1); Santa Fe (1, 2).

Material Deposited: None.

Reference: Fagerlund and others 2001; Haas and others 1973;
Holdenried and Morlan 1956; Morlan 1955.

Host: *Thomomys talpoides* (Richardson, 1828) Northern pocket gopher.

Siphonaptera:

1) *Anomiopsyllus nudata* Baker, 1898

2) *Ctenophyllus armatus* Wagner, 1901

3) *Dactylopsylla neomexicana* Prince, 1945

4) *Eumolpianus eumolpi* Rothschild, 1905

5) *Foxella ignotus* Baker, 1895

6) *Megarthroglossus bisetis* Jordan and Rothschild, 1915

7) *Spicata rara* Fox, 1940

NM Counties: San Miguel (3); Sandoval (5, 7); Santa Fe (1, 2, 4, 5, 6).

Material Deposited: None.

Reference: Haas 1973; Haas and others 1973; Holdenried and Morlan
1956; Morlan 1955; Prince 1945.

Family Heteromyidae: (Kangaroo Rats, Pocket Mice)

Genus *Chaetodipus*

Host: *Chaetodipus hispidus* (Baird, 1858) Hispid pocket mouse.

Anoplura:

Fahrenholzia zacatecae Ferris, 1922

NM Counties: Statewide.

Material Deposited: None.

Reference: Kim and others 1986.

Host: *Chaetodipus intermedius* Merriam, 1889 Rock pocket mouse.

Anoplura:

Fahrenholzia pinnata Kellogg and Ferris, 1915

NM Counties: Bernalillo, Luna, Otero, Roosevelt, Santa Fe, Socorro.

Material Deposited: None.

Reference: Kim and others 1986; Morlan and Hoff 1957; Pfaffenberger
and deBruin 1986.

Genus *Dipodomys*

Host: *Dipodomys merriami* Mearns, 1890 Merriam's kangaroo rat.

Siphonaptera:

1) *Aetheca wagneri* Baker, 1904

2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951

- 3) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 4) *Echidnophaga gallinaceus* Westwood, 1875
- 5) *Euhoplopsyllus affinis* Taschenberg, 1880
- 6) *Eumolpianus eumolpi* Rothschild, 1905
- 7) *Meringis altipecten* Traub and Hoff, 1951
- 8) *Meringis arachis* Jordan, 1929
- 9) *Meringis bilsingi* Eads and Menzies, 1949
- 10) *Meringis dipodomys* Kohls, 1938
- 11) *Meringis disparilis* Eads, 1979
- 12) *Meringis nidi* Williams and Hoff, 1951
- 13) *Meringis parkeri* Jordan, 1937
- 14) *Meringis rectus* Morlan, 1953
- 15) *Orchopeas leucopus* Baker, 1904
- 16) *Oropsylla montanus* Baker, 1895
- 17) *Rhadinopsylla fraterna* Baker, 1895
- 18) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 19) *Thrassis campestris* Prince, 1944
- 20) *Thrassis fotus* Jordan, 1925

Anoplura:

- 21) *Fahrenholzia pinnata* Kellogg and Ferris, 1915
- 22) *Haematopinus asini* Linnaeus, 1758

NM Counties: Chaves (2, 4, 5, 9, 10, 12, 14, 17, 18, 19, 20); Colfax (3); Dona Ana (7, 11); Eddy (11, 12); Hidalgo (8, 12); Luna (7, 11, 21); Otero (9, 12, 14, 21, 22); Rio Arriba (1, 13); Santa Fe (15); Sierra (9, 13); Socorro (5, 6, 15, 16); Valencia (2).

Material Deposited: Flea MSB No.: (2) 794; (4) 714; (6) 724; (7) 1060; (8) 940; (9) 992; (10) 1028; (12) 1003; (13) 956; (15) 838; (16) 1011; (19) 875.

Reference: Barnes and others 1977; Eads 1978; Eads and others 1987; Graves and others 1974; Kim and others 1986; Link 1949; Miller and others 1970; Rail and others 1969; Traub and Hoff 1951.

Host: *Dipodomys ordii* Woodhouse, 1853 Ord's kangaroo rat.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 3) *Echidnophaga gallinaceus* Westwood, 1875
- 4) *Malaraeus sinomus* Jordan, 1925
- 5) *Meringis altipecten* Traub and Hoff, 1951
- 6) *Meringis arachis* Jordan, 1929
- 7) *Meringis bilsingi* Eads and Menzies, 1949
- 8) *Meringis dipodomys* Kohls, 1938
- 9) *Meringis disparilis* Eads, 1979
- 10) *Meringis facilis* Eads, 1979
- 11) *Meringis nidi* Williams and Hoff, 1951
- 12) *Meringis parkeri* Jordan, 1937
- 13) *Meringis rectus* Morlan, 1953
- 14) *Orchopeas leucopus* Baker, 1904
- 15) *Peromyscopsylla adelpha* Rothschild, 1915
- 16) *Pleochaetis exilis* Jordan, 1937
- 17) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 18) *Thrassis aridis* Prince, 1944

- 19) *Thrassis bacchi consimilis* Stark, 1957
- 20) *Thrassis campestris* Prince, 1944
- 21) *Thrassis fotus* Jordan, 1925
- 22) *Thrassis pansus* Jordan, 1925

Anoplura:

- 23) *Fahrenholzia pinnata* Kellogg and Ferris, 1915
- 24) *Hoplopleura arboricola* Kellogg and Ferris, 1915
- 25) *Hoplopleura ferrisi* Cook and Beer, 1959
- 26) *Hoplopleura hesperomydis* (Osborn, 1891)
- 27) *Hoplopleura hirsuta* Ferris, 1916
- 29) *Neohaematopinus neotomae* Ferris, 1941
- 30) *Polyplax auricularis* Kellogg and Ferris, 1915

Mallophaga:

- 31) *Goniodes squamatus* Emerson, 1950

NM Counties: Bernalillo (7, 31); Catron (12); Chaves (3, 7, 8, 10, 11, 13, 20); Dona Ana (2, 9); Grant (6); Hidalgo (18); Lea (8, 11, 12, 21); Luna (2, 7, 9); Roosevelt (7, 16, 18, 23, 27, 30); Sandoval (8, 12); Santa Fe (1, 11, 12, 13, 14, 15, 16, 17, 20, 22); Sierra (5, 6); Socorro (4); Torrance (13).

Material Deposited: Flea MSB No.: (3) 732; (4) 1027; (5) 957; (11) 1004; (12) 928; (18) 844; (19) 898.

Reference: Barnes and others 1977; Eads 1978; Eads and others 1987; Fagerlund and others 2001; Graves and others 1974; Haas and others 1973; Holdenried and Morlan 1956; Jellison and Senger 1976; Kartman 1960; Kim 1965; Kim and others 1986; Miller and others 1970; Morlan 1955; Morlan and Prince 1954; Pfaffenberger and deBruin 1986; Prince 1944; Rail and others 1969; Williams and Hoff 1951.

Host: *Dipodomys spectabilis* Merriam, 1890 Banner-tailed kangaroo rat.

Siphonaptera:

- 1) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 2) *Echidnophaga gallinaceus* Westwood, 1875
- 3) *Euhoplopsyllus affinis* Taschenberg, 1880
- 4) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 5) *Meringis altipecten* Traub and Hoff, 1951
- 6) *Meringis arachis* Jordan, 1929
- 7) *Meringis bilsingi* Eads and Menzies, 1949
- 8) *Meringis dipodomys* Kohls, 1938
- 9) *Meringis jamesoni* Hubbard, 1943
- 10) *Meringis nidi* Williams and Hoff, 1951
- 11) *Meringis parkeri* Jordan, 1937
- 12) *Meringis rectus* Morlan, 1953
- 13) *Orchopeas sexdentatus* Baker, 1904
- 14) *Pleochaetus exilis* Jordan, 1937
- 15) *Polygenis gwynii* C. Fox, 1914
- 16) *Pulex irritans* Linnaeus, 1758
- 17) *Pulex simulans* Baker, 1895
- 18) *Rhadinopsylla fraterna* Baker, 1895
- 19) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 20) *Thrassis campestris* Prince, 1944
- 21) *Thrassis fotus* Jordan, 1925
- 22) *Thrassis pansus* Jordan, 1925

Anoplura:

- 23) *Fahrenholzia pinnata* Kellogg and Ferris, 1915
- 24) *Hoplopleura acanthopus* (Burmeister, 1839)
- 25) *Hoplopleura arboricola* Kellogg and Ferris, 1915

NM Counties: Bernalillo (10, 12, 25); Chaves (1, 2, 3, 4, 7, 8, 10, 12, 15, 16, 17, 18, 19, 20, 21); Dona Ana (6, 12); Lincoln (12); Luna (5, 6, 23); San Juan (12); Sandoval (12); Santa Fe (3, 6, 9, 10, 11, 12, 13, 19, 20, 22, 23, 24, 25); Sierra (6); Socorro (6); Valencia (12).

Material Deposited: Flea MSB No.: (2) 718; (5) 944; (6) 926; (8) 951; (10) 938.

Reference: Clark and others 1971; Eads and others 1987; Fagerlund and others 2001; Graves and others 1974; Holdenried and Morlan 1955, 1956; Jellison and Senger 1976; Kim and others 1986; Miller and others 1970; Morlan 1955; Morlan and Prince 1954; Rail and others 1969; Traub and Hoff 1951; Williams and Hoff 1951.

Genus *Perognathus*

Host: *Perognathus flavescens* Merriam, 1889 Plains pocket mouse.

Siphonaptera:

- 1) *Meringis arachis* Jordan, 1929
- 2) *Thrassis pansus* Jordan, 1925

NM Counties: Socorro (1, 2).

Material Deposited: Flea MSB No.: (1) 939; (3) 879.

Reference: MSB Collection.

Host: *Perognathus flavus* Baird, 1855 Silky pocket mouse.

Siphonaptera:

- 1) *Anomiopsyllus nudata* Baker, 1898
- 2) *Epitedia stanfordi* Traub, 1944
- 3) *Euhoplopsyllus affinis* Baker, 1904
- 4) *Meringis arachis* Jordan, 1929
- 5) *Meringis dipodomys* Eads, 1979
- 6) *Meringis facilis* Eads, 1979
- 7) *Meringis jamesoni* Hubbard, 1943
- 8) *Meringis nidi* Williams and Hoff, 1951
- 9) *Meringis parkeri* Jordan, 1937
- 10) *Meringis rectus* Morlan, 1953
- 11) *Orchopeas leucopus* Baker, 1904
- 12) *Oropsylla idahoensis* Baker, 1904

Anoplura:

- 13) *Fahrenholzia pinnata* Kellogg and Ferris, 1915

NM Counties: Chaves (5, 6, 10); Santa Fe (1, 2, 3, 7, 8, 9, 10, 11, 12, 13); Socorro (4, 12); Union (7).

Material Deposited: Flea MSB No.: (4) 1000; (8) 931; (12) 1007.

Reference: Eads 1978; Eads and others 1987; Fagerlund and others 2001; Graves and others 1974; Haas and others 1973; Holdenried and Morlan 1956; Kim and others 1986; Morlan 1955; Rail and others 1969.

Family Muridae: Subfamily Arvicolinae (Moles, Meadow Mice, Voles)

Genus *Clethrionomys*

Host: *Clethrionomys gapperi* (Vigor, 1830). Southern red-backed vole.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Amaradix euphorbae* Rothschild, 1905
- 3) *Catallagia decipiens* Rothschild, 1915
- 4) *Malaraeus telchinum* Rothschild, 1905
- 5) *Megabothris abantis* Rothschild, 1905
- 6) *Rhadinopsylla fraterna* Baker, 1895

NM Counties: Los Alamos (1, 3, 4); Rio Arriba (1, 3, 4); Sandoval (1, 3, 4); Santa Fe (1, 2, 3, 4, 6); Socorro (5).

Material Deposited: Flea MSB No.: (5) 998.

Reference: Fagerlund and others 2001; Haas and others 1973; Holdenried and Morlan 1956; Morlan 1955; Morlan and Prince 1954.

Genus *Microtus*

Host: *Microtus longicaudus* (Merriam, 1888) Long-tailed vole.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Catallagia decipiens* Rothschild, 1915
- 3) *Delotelis telegoni* Rothschild, 1905
- 4) *Eumolpianus eumolpi americanus* Hubbard, 1950
- 5) *Hystrichopsylla dippiei* Rothschild, 1902
- 6) *Malaraeus telchinum* Rothschild, 1905
- 7) *Megabothris abantis* Rothschild, 1905
- 8) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 9) *Oropsylla idahoensis* Baker, 1904
- 10) *Peromyscopsylla adelpha* Rothschild, 1915
- 11) *Peromyscopsylla hamifer vigens* Jordan, 1837
- 12) *Peromyscopsylla selenis* Rothschild, 1906

Anoplura:

- 13) *Hoplopleura acanthopus* (Burmeister, 1839)
- 14) *Hoplopleura hesperomydis* (Osborn, 1891)

NM Counties: Sandoval (1, 2, 5, 6, 7, 8, 9, 10, 11); Santa Fe (1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14).

Material Deposited: None.

Reference: Fagerlund and others 2001; Haas 1973; Haas and others 1973; Holdenried and Morlan 1956; Kim and others 1986; Mendez and Haas 1973; Morlan 1955.

Host: *Microtus mexicanus* (Saussure, 1861) Mexican vole.

Siphonaptera:

- 1) *Ctenophthalmus pseudagyrtes* Baker, 1904
- 2) *Hystrichopsylla dippiei* Rothschild, 1902
- 3) *Plusaetis equatorius asetus* Traub, 1950

NM Counties: Socorro (1, 2, 3).

Material Deposited: Flea MSB No.: (1) 743; (2) 1017; (3) 947.

Reference: Fagerlund and others 2001; MSB Collection.

Host: *Microtus montanus* (Peale, 1848) Montane vole.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Catallagia decipiens* Rothschild, 1915

- 3) *Corrodopsylla curvata* Rothschild, 1915
- 4) *Dactylopsylla bluei* Fox, 1909
- 5) *Foxella ignotus* Baker, 1895
- 6) *Hystrichopsylla dippiei* Rothschild, 1902
- 7) *Malaraeus telchinum* Rothschild, 1905
- 8) *Megabothris abantis* Rothschild, 1905
- 9) *Peromyscopsylla hamifer vigens* Jordan, 1937
- 10) *Peromyscopsylla selenis* Rothschild, 1906
- 11) *Spicata rara* Fox, 1940

NM Counties: San Miguel (4); Sandoval (1, 2, 3, 5, 6, 7, 8, 9, 10, 11).

Material Deposited: None.

Reference: Fagerlund and others 2001; Haas 1973; Haas and others 1973.

Host: *Microtus pennsylvanicus* (Ord, 1815). Meadow vole.

Siphonaptera:

- 1) *Megabothris megacolpus* Jordan, 1929
- 2) *Peromyscopsylla hamifer vigens* Jordan, 1937
- 3) *Peromyscopsylla selenis* Rothschild, 1906

NM Counties: Colfax (1); San Miguel (2, 3); Sandoval (2, 3).

Material Deposited: None.

Reference: Johnson and Traub 1954.

Host: *Microtus* sp.

Siphonaptera:

- 1) *Catallagia decipiens* Rothschild, 1915
- 2) *Megabothris abantis* Rothschild, 1905
- 3) *Meringis parkeri* Jordan, 1937
- 4) *Eumolpianus eumolpi* Rothschild, 1905

NM Counties: Rio Arriba (1, 2, 3, 4).

Material Deposited: None.

Reference: Link 1949.

Subfamily Murinae: (Old World Rats and Mice)

Genus *Mus*

Host: *Mus musculus* Linnaeus, 1758 House mouse.

Siphonaptera:

- Aetheca wagneri* Baker, 1904

NM Counties: Sandoval.

Material Deposited: None.

Reference: Fagerlund and others 2001; Haas and others 1973.

Genus *Rattus*

Host: *Rattus norvegicus* (Berkenhout, 1769). Brown rat.

Siphonaptera:

- 1) *Echidnophaga gallinaceus* Westwood, 1875
- 2) *Nosophyllus fasciatus* Bosc, 1800
- 3) *Xenopsylla cheopis* Rothschild, 1903

NM Counties: Bernalillo (1, 2, 3); Chaves (1); Hidalgo (3); Valencia (2).

Material Deposited: None.

Reference: Becker 1947; Prince 1943.

Host: *Rattus rattus* (Linnaeus, 1758) House rat.

Siphonaptera:

Xenopsylla cheopis Rothschild, 1903

NM Counties: Hidalgo.

Material Deposited: None.

Reference: Becker 1947; Prince 1943.

Subfamily Sigmodontinae: (New World Rats and Mice)

Genus *Neotoma*

Host: *Neotoma albigula* Hartley, 1894. White-throated woodrat.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus hiemalis* Eads and Menzies, 1948
- 3) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 4) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 5) *Anomiopsyllus nudata* Baker, 1898
- 6) *Atyphloceras echis* Jordan and Rothschild, 1915
- 7) *Echidnophaga gallinaceus* Westwood, 1875
- 8) *Epitedia stanfordi* Traub, 1944
- 9) *Hoplopsyllus anomalus* Baker, 1904
- 10) *Malaraeus sinomus* Jordan, 1925
- 11) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 12) *Megarthroglossus divisus* Baker, 1898
- 13) *Megarthroglossus procus* Jordan and Rothschild, 1915
- 14) *Meringis altipecten* Traub and Hoff, 1951
- 15) *Meringis arachis* Jordan, 1929
- 16) *Meringis jamesoni* Hubbard, 1943
- 17) *Meringis nidi* Williams and Hoff, 1951
- 18) *Meringis parkeri* Jordan, 1937
- 19) *Meringis rectus* Morlan, 1953
- 20) *Orchopeas agilis* Rothschild, 1905
- 21) *Orchopeas leucopus* Baker, 1904
- 22) *Orchopeas sexdentatus* Baker, 1904
- 23) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 24) *Oropsylla montanus* Baker, 1895
- 25) *Peromyscopsylla hesperomys* Baker, 1904
- 26) *Phalacropsylla hamata* Tipton and Mendez, 1968
- 27) *Pleochaetus exilis* Jordan, 1937
- 28) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 29) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 30) *Stenistomera alpina* Baker, 1895
- 31) *Stenistomera macrodactyla* Good, 1942
- 32) *Thrassis bacchi consimilis* Stark, 1957
- 33) *Thrassis campestris* Prince, 1944
- 34) *Thrassis pansus* Jordan, 1925

Anoplura:

35) *Neohaematopinus neotomae* Ferris, 1941

NM Counties: Bernalillo (3, 4, 11, 12, 22, 25, 26, 30, 35); Catron (3); Chaves (2); Colfax (3); Dona Ana (4, 14, 17, 20); Eddy (2, 14); Grant (6); Guadalupe (11); Hidalgo (4, 14, 15); Lea (2, 7, 22); Lincoln (3, 4, 12); Luna (4); McKinley (20); Otero (4, 12); Rio Arriba (1, 4, 7,

22, 23); San Juan (4); Sandoval (11, 13, 29); Santa Fe (1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17, 18, 19, 21, 22, 23, 24, 28, 30, 31, 33, 34, 35); Sierra (4); Socorro (3, 4, 18, 20, 32); Valencia (4).

Material Deposited: Flea MSB No.: (3) 701; (4) 702; (5) 758; (7) 720; (12) 1008; (13) 1006; (15) 977; (20) 784; (21) 771; (23) 971; (32) 884.

Reference: Barnes and others 1977; Eads and Campos 1982; Eads and others 1987; Fagerlund and others 2001; Good 1942; Haas and others 1973; Holdenried and Morlan 1955, 1956; Kartman 1960; Kim and others 1986; Link 1949; Mendez 1956; Mendez and Haas 1973; Morlan 1955; Morlan and Prince 1954; Tipton and others 1979; Traub and Hoff 1951.

Host: *Neotoma cinerea* (Ord, 1815) Bushy-tailed woodrat.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Amaradix vonfintelis* Prince, 1959
- 3) *Catallagia decipiens* Rothschild, 1915
- 4) *Hystrichopsylla dippiei* Rothschild, 1902
- 5) *Malaraeus telchinum* Rothschild, 1905
- 6) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 7) *Megarthroglossus caverniculus* Mendez and Haas, 1972
- 8) *Megarthroglossus divisus* Baker, 1898
- 9) *Orchopeas sexdentatus* Baker, 1904
- 10) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 11) *Phalacropsylla allos* Wagner, 1936
- 12) *Rhadinopsylla fraterna* Baker, 1895
- 13) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 14) *Stenistomera alpina* Baker, 1895

NM Counties: Colfax (6, 8); McKinley (6); Rio Arriba (9); Sandoval (1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14); Santa Fe (1, 3, 4, 9, 10, 14).

Material Deposited: Flea MSB No.: (14) 814.

Reference: Eads and others 1987; Haas and others 1973; Holdenried and Morlan 1956; Link 1949; Mendez 1956; Mendez and Haas 1973; Morlan 1955; Tipton and others 1979.

Host: *Neotoma lepida* Thomas, 1893 Desert wood rat.

Siphonaptera:

- Anomiopsyllus novomexicanensis* Williams and Hoff, 1951

NM Counties: Hidalgo.

Material Deposited: None.

Reference: Barnes and others 1977.

Host: *Neotoma mexicana* Baird, 1855 Mexican woodrat.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Amaradix vonfintelis* Prince, 1959
- 3) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 4) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 5) *Anomiopsyllus nudata* Baker, 1898
- 6) *Catallagia decipiens* Rothschild, 1915
- 7) *Eumolpianus eumolpi* Rothschild, 1905
- 8) *Hystrichopsylla dippiei* Rothschild, 1902

- 9) *Malaraeus sinomus* Jordan, 1925
- 10) *Malaraeus telchinum* Rothschild, 1905
- 11) *Megabothris abantis* Rothschild, 1905
- 12) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 13) *Orchopeas sexdentatus* Baker, 1904
- 14) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 15) *Phalacropsylla allos* Wagner, 1936
- 16) *Pleochaetus exilis* Jordan, 1937
- 17) *Stenistomera alpina* Baker, 1895

Anoplura:

- 18) *Neohaematopinus neotomae* Ferris, 1941

NM Counties: Bernalillo (14, 18); Catron (3); McKinley (12); Rio Arriba (4); Sandoval (1, 2, 6, 8, 10, 11, 12, 13, 14, 15, 17); Santa Fe (5, 7, 9, 13, 14, 16, 17, 18); Taos (3).

Material Deposited: None.

Reference: Barnes and others 1977; Haas and others 1973; Holdenried and Morlan 1956; Kim and others 1986; Link 1949; Mendez and Haas 1973; Morlan 1955; Tipton and others 1979; Traub and Hoff 1951.

Host: *Neotoma micropus* Baird, 1855 Southern plains woodrat.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 3) *Anomiopsyllus nudata* Baker, 1898
- 4) *Atyphloceras echis* Jordan and Rothschild, 1915
- 5) *Echidnophaga gallinaceus* Westwood, 1875
- 6) *Epitedia stanfordi* Traub, 1944
- 7) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 8) *Megarthroglossus divisus* Baker, 1898
- 9) *Meringis bilsingi* Eads and Menzies, 1949
- 10) *Meringis dipodomys* Kohls, 1938
- 11) *Meringis facilis* Eads, 1979
- 12) *Meringis nidi* Williams and Hoff, 1951
- 13) *Meringis parkeri* Jordan, 1937
- 14) *Meringis rectus* Morlan, 1953
- 15) *Orchopeas leucopus* Baker, 1904
- 16) *Orchopeas sexdentatus* Baker, 1904
- 17) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 18) *Peromyscopsylla draco* Hopkins, 1951
- 19) *Pleochaetus exilis* Jordan, 1937
- 20) *Polygenis gwynii* (C. Fox, 1914)
- 21) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 22) *Thrassis campestris* Prince, 1944
- 23) *Thrassis fotus* Jordan, 1925
- 24) *Thrassis pansus* Jordan, 1925

Anoplura:

- 25) *Neohaematopinus neotomae* Ferris, 1941

NM Counties: Bernalillo (2, 4, 6, 7, 13, 16); Chaves (1, 2, 5, 7, 9, 10, 11, 12, 14, 16, 20, 21, 22, 23); Santa Fe (1, 3, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 24).

Material Deposited: None.

Reference: Graves and others 1974; Holdenried and Morlan 1956; Jellison and Senger 1976; Kim and others 1986; Miller and others 1970; Morlan 1955; Morlan and Prince 1954; Williams and Hoff 1951.

Host: *Neotoma* sp.

Siphonaptera:

- 1) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 2) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 3) *Atyphloceras echis* Jordan and Rothschild, 1915
- 4) *Echidnophaga gallinaceus* Westwood, 1875
- 5) *Euhoplopsyllus affinis* Baker, 1904
- 6) *Malaraeus telchinum* Rothschild, 1905
- 7) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 8) *Meringis bilsingi* Eads and Menzies, 1949
- 9) *Meringis dipodomys* Kohls, 1938
- 10) *Meringis nidi* Williams and Hoff, 1951
- 11) *Meringis rectus* Morlan, 1953
- 12) *Orchopeas leucopus* Baker, 1904
- 13) *Orchopeas sexdentatus* Baker, 1904
- 14) *Polygenis gwynii* C. Fox, 1914
- 15) *Rhadinopsylla fraterna* Baker, 1895
- 16) *Thrassis campestris* Prince, 1944
- 17) *Thrassis fotus* Jordan, 1925

Anoplura:

- 18) *Linognathoides neotomae* Ferris, 1942

NM Counties: Bernalillo (1, 3, 7, 18); Chaves (1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17); Colfax (2); Otero (18); Lea (13); San Miguel (7); Santa Fe (7, 18); Valencia (2).

Material Deposited: None.

Reference: Barnes and others 1977; Jellison and Senger 1976; Jordan and Rothschild 1915; Kartman 1960; Kim and others 1986; Mendez 1956; Morlan 1955; Rail and others 1969.

Genus *Onychomys*

Host: *Onychomys arenicola* Mearns, 1896 Mearn's grasshopper mouse.

Siphonaptera:

- 1) *Meringis altipecten* Traub and Hoff, 1951
- 2) *Orchopeas caedens* Jordan, 1925

NM Counties: Socorro (1, 2).

Material Deposited: Flea MSB No.: (1) 967; (2) 870.

Reference: MSB Collection.

Host: *Onychomys leucogaster* (Wied-Neuwied, 1841) . . . Northern grasshopper mouse.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 3) *Echidnophaga gallinaceus* Westwood, 1875
- 4) *Epitedia stanfordi* Traub, 1944
- 5) *Malaraeus sinomus* Jordan, 1925
- 6) *Malaraeus telchinum* Rothschild, 1905
- 7) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 8) *Megarthroglossus divisus* Baker, 1898

- 9) *Meringis altipecten* Traub and Hoff, 1951
- 10) *Meringis arachis* (Jordan, 1929)
- 11) *Meringis bilsingi* Eads and Menzies, 1949
- 12) *Meringis dipodomys* Kohls, 1938
- 13) *Meringis disparilis* Eads, 1979
- 14) *Meringis facilis* Eads, 1979
- 15) *Meringis jamesoni* Hubbard, 1943
- 16) *Meringis nidi* Williams and Hoff, 1951
- 17) *Meringis parkeri* Jordan, 1937
- 18) *Meringis rectus* Morlan, 1953
- 19) *Orchopeas agilis* Rothschild, 1905
- 20) *Orchopeas leucopus* Baker, 1904
- 21) *Orchopeas sexdentatus* Baker, 1904
- 22) *Peromyscopsylla adelpha* Rothschild, 1915
- 23) *Peromyscopsylla draco* Hopkins, 1951
- 24) *Peromyscopsylla hesperomys* Baker, 1904
- 25) *Pleochaetis exilis* Jordan, 1937
- 26) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 27) *Thrassis aridis* Prince, 1944
- 28) *Thrassis bacchi consimilis* Stark, 1957
- 29) *Thrassis campestris* Prince, 1944
- 30) *Thrassis fotus* Jordan, 1925
- 31) *Thrassis pansus* Jordan, 1925

Anoplura:

- 32) *Fahrenholzia pinnata* Kellogg and Ferris, 1915
- 33) *Hoplopleura hesperomydis* (Osborn, 1891)
- 34) *Hoplopleura hirsuta* Ferris, 1916
- 35) *Hoplopleura onychomydis* Cook and Beer, 1959
- 36) *Polyplax auricularis* Kellogg and Ferris, 1915

NM Counties: Bernalillo (3, 14, 17, 31, 35); Chaves (2, 3, 7, 11, 12, 14, 16, 18, 23, 26, 27, 28, 29, 30); Colfax (6, 8, 25); Dona Ana (2, 10, 11, 13); Eddy (30); Hidalgo (10, 27, 31); Lea (11, 21, 30); Luna (3, 9, 10, 13); Roosevelt (11, 20, 24, 25, 27, 30, 32, 33, 34, 36); San Juan (17, 25); Sandoval (11); Santa Fe (1, 4, 5, 15, 16, 17, 18, 19, 20, 21, 25, 26, 27, 28, 31); Socorro (9); Union (1, 5, 22, 23, 25); Valencia (14).

Material Deposited: Flea MSB No.: (5) 1016; (10) 994, 1032; (12) 1024; (20) 887; (25) 889; (28) 881.

Reference: Barnes and others 1977; Eads 1978; Eads and others 1987; Fagerlund and others 2001; Graves and others 1974; Jellison and Senger 1976; Kartman 1960; Kim and others 1986; Morlan 1955; Morlan and Prince 1954; Pfaffenberger and deBruin 1986; Prince 1944; Rail and others 1969; Thomas, 1988; Traub and Hoff 1951; Williams and Hoff 1951.

Genus *Peromyscus*

Host: *Peromyscus boylii* (Baird, 1855) Brush mouse.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 3) *Atyphloceras echis* Jordan and Rothschild, 1915
- 4) *Atyphloceras multidentatus* C. Fox, 1909
- 5) *Callistopsyllus terinus* Rothschild, 1905

- 6) *Catallagia charlottensis* Baker, 1898
- 7) *Hoplopsyllus anomalus* Baker, 1904
- 8) *Malaraeus sinomus* Jordan, 1925
- 9) *Malaraeus telchinum* Rothschild, 1905
- 10) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 11) *Megarthroglossus divisus* Baker, 1898
- 12) *Meringis altipecten* Traub and Hoff, 1951
- 13) *Orchopeas leucopus* Baker, 1904
- 14) *Peromyscopsylla adelpha* Rothschild, 1915
- 15) *Plusaetus equatorius asetus* Traub, 1950
- 16) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 17) *Stenoponia ponera* Traub and Johnson, 1952

Anoplura:

- 18) *Hoplopleura hesperomydis* (Osborn, 1891)

NM Counties: Bernalillo (8, 11, 18); Grant (17); Lincoln (14); Los Alamos (14); McKinley (11); Rio Arriba (10, 11, 14); Sandoval (1, 5, 9, 14, 16); Santa Fe (1, 3, 4, 6, 7, 8, 13, 14); Sierra (12); Socorro (14, 15); Valencia (2, 14).

Material Deposited: Flea MSB No.: (8) 933; (14) 834; (15) 831.

Reference: Barnes and others 1977; Eads and others 1987; Fagerlund and others 2001; Haas and others 1973; Holdenried and Morlan 1956; Kim 1965; Mendez 1956; Mendez and Haas 1973; Morlan 1955; Tipton and others 1979; Traub and Hoff 1951; Traub and Johnson 1952.

Host: *Peromyscus eremicus* (Baird, 1858) Cactus mouse.

Siphonaptera:

- 1) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 2) *Orchopeas leucopus* Baker, 1904

Anoplura:

- 3) *Hoplopleura ferrisi* Cook and Beer, 1959

NM Counties: Colfax (1); Grant (3); Socorro (2).

Material Deposited: Flea MSB No.: (2) 840.

Reference: Barnes and others 1977; Kim 1965.

Host: *Peromyscus leucopus* (Rafinesque, 1818) White-footed mouse.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 3) *Anomiopsyllus nudata* Baker, 1898
- 4) *Echidnophaga gallinaceus* Westwood, 1875
- 5) *Epitedia stanfordi* Traub, 1944
- 6) *Malaraeus sinomus* Jordan, 1925
- 7) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 8) *Megarthroglossus divisus* (Baker, 1898)
- 9) *Meringis bilsingi* Eads and Menzies, 1949
- 10) *Meringis nidi* Williams and Hoff, 1951
- 11) *Meringis rectus* Morlan, 1953
- 12) *Orchopeas agilis* Rothschild, 1905
- 13) *Orchopeas caedens* Jordan, 1925
- 14) *Orchopeas leucopus* Baker, 1904
- 15) *Peromyscopsylla adelpha* Rothschild, 1915

- 16) *Peromyscopsylla draco* Hopkins, 1951
- 17) *Peromyscopsylla hesperomys* Baker, 1904
- 18) *Phalacropsylla hamata* Tipton and Mendez, 1968
- 19) *Pleochaetis exilis* Jordan, 1937
- 20) *Rhadinopsylla fraterna* Baker, 1895
- 21) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 22) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 23) *Thrassis campestris* Prince, 1944
- 24) *Thrasis fotus* Jordan, 1925
- 25) *Thrassis pansus* Jordan, 1925

Anoplura:

- 26) *Hoplopleura hesperomydis* (Osborn, 1891)

NM Counties: Bernalillo (6, 7, 17, 18); Chaves (1, 2, 7, 9, 10, 11, 14, 16, 20, 21, 23, 24); Dona Ana (12); Sandoval (1, 5, 6, 12, 15, 22); Santa Fe (1, 3, 4, 5, 6, 8, 14, 15, 16, 19, 21, 23, 25); Socorro (12).

Material Deposited: Flea MSB No.: (4) 765; (6) 960; (12) 857; (13) 785.

Reference: Eads and Campos 1982; Graves and others 1974; Haas and others 1973; Holdenried and Morlan 1955, 1956; Kartman 1960; Kim and others 1986; Morlan 1955; Morlan and Prince 1954; Rail and others 1969; Traub and Hoff 1951.

Host: *Peromyscus maniculatus* (Wagner, 1845). Deer mouse.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Amardix euphorbae* Rothschild, 1905
- 3) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 4) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 5) *Atyphloceras echis* Jordan and Rothschild, 1915
- 6) *Callistopsyllus terinus* Rothschild, 1905
- 7) *Catallagia decipiens* Rothschild, 1915
- 8) *Epitedia stanfordi* Traub, 1944
- 9) *Epitedia wnemannii* Rothschild, 1904
- 10) *Eumolpianus eumolpi* Rothschild, 1905
- 11) *Foxella ignotus* Baker, 1895
- 12) *Hystrichopsylla dippiei* Rothschild, 1902
- 13) *Malaraeus sinomus* Jordan, 1925
- 14) *Malaraeus telchinum* Rothschild, 1905
- 15) *Megabothris abantis* Rothschild, 1905
- 16) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 17) *Megarthroglossus divisus* Baker, 1898
- 18) *Meringis altipecten* Traub and Hoff, 1951
- 19) *Meringis arachis* Jordan, 1929
- 20) *Meringis bilsingi* Eads and Menzies, 1949
- 21) *Meringis nidi* Williams and Hoff, 1951
- 22) *Meringis parkeri* Jordan, 1937
- 23) *Meringis rectus* Morlan, 1953
- 24) *Orchopeas leucopus* Baker, 1904
- 25) *Orchopeas sexdentatus* Baker, 1904
- 26) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 27) *Peromyscopsylla adelpha* Rothschild, 1915
- 28) *Peromyscopsylla draco* Hopkins, 1951
- 29) *Peromyscopsylla hamifer vigens* Jordan, 1937

- 30) *Peromyscopsylla hesperomys* Baker, 1904
- 31) *Peromyscopsylla selenis* Rothschild, 1906
- 32) *Phalacropsylla allos* Wagner, 1936
- 33) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 34) *Stenoponia americana* Baker, 1899
- 35) *Thrassis campestris* Prince, 1944
- 36) *Thrassis pansus* Jordan, 1925

Anoplura:

- 37) *Hoplopleura hesperomydis* (Osborn, 1891)
- 38) *Polyplax auricularis* Kellogg and Ferris, 1915

NM Counties: Bernalillo (1, 4, 7, 13, 16, 17, 33, 37, 38); Dona Ana (20); Hidalgo (4, 5, 18, 19); Otero (21, 24); Rio Arriba (1, 7, 9, 10, 14, 15, 24); San Juan (2); Sandoval (1, 7, 8, 11, 12, 13, 14, 15, 16, 22, 24, 26, 27, 29, 30, 31, 32, 33, 34, 37); Santa Fe (2, 3, 6, 7, 8, 10, 13, 14, 17, 21, 22, 23, 24, 25, 27, 28, 33, 35, 36, 37, 38).

Material Deposited: Flea MSB No.: (1) 705; (2) 710; (8) 725; (13) 1001; (14) 987; (15) 982; (26) 852; (28) 854.

Reference: Barnes and others 1977; Eads and others 1987; Good 1942; Haas and others 1973; Holdenried and Morlan 1955, 1956; Kim and others 1986; Link 1949; Mendez 1956; Morlan 1955; Traub and Hoff 1951; Williams and Hoff 1951.

Host: *Peromyscus nasutus* (J.A. Allen, 1891) Northern rock mouse.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Atyphloceras echis* Jordan and Rothschild, 1915
- 3) *Ceratophyllus vison* Baker, 1904
- 4) *Epitedia stanfordi* Traub, 1944
- 5) *Hystrichopsylla dippiei* Rothschild, 1902
- 6) *Malaraeus sinomus* Jordan, 1925
- 7) *Megarthroglossus bisetis* Jordan and Rothschild, 1950
- 8) *Peromyscopsylla adelpha* Rothschild, 1915
- 9) *Peromyscopsylla hesperomys* Baker, 1904
- 10) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 11) *Stenoponia americana* Baker, 1899

Anoplura:

- 12) *Hoplopleura hesperomydis* (Osborn, 1891)
- 13) *Polyplax auricularis* Kellogg and Ferris, 1915

NM Counties: Bernalillo (1, 5, 6, 9, 12); Sandoval (11); Santa Fe (1, 2, 3, 4, 6, 7, 8, 10, 12, 13).

Material Deposited: None.

Reference: Holdenried and Morlan 1956; Kim 1965; Kim and others 1986; Morlan 1955; Traub and Hoff 1951; Williams and Hoff 1951.

Host: *Peromyscus* sp.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 3) *Atyphloceras echis* Jordan and Rothschild, 1915
- 4) *Callistopsyllus terinus* Rothschild, 1905
- 5) *Epitedia wenmanni* Rothschild, 1904
- 6) *Malaraeus sinomus* Jordan, 1925

7) *Megarthroglossus bisetis* Jordan and Rothschild, 1915

8) *Megarthroglossus divisus* Baker, 1898

NM Counties: Bernalillo (1, 3, 6, 7, 8); Rio Arriba (2); San Miguel (1, 2, 4); Torrance (5).

Material Deposited: None.

Reference: Barnes and others 1977; Chapin 1919; Jellison and Senger 1976; Mendez 1956; Mendez and Haas 1973; Traub and Hoff 1951.

Host: *Peromyscus truei* (Shufeldt, 1885) Pinyon mouse.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Amaradix euphorbae* Rothschild, 1905
- 3) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 4) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 5) *Anomiopsyllus nudata* Baker, 1898
- 6) *Atyphloceras echis* Jordan and Rothschild, 1915
- 7) *Callistopsyllus terinus* Rothschild, 1905
- 8) *Catallagia decipiens* Rothschild, 1915
- 9) *Echidnophaga gallinaceus* Westwood, 1875
- 10) *Epitedia stanfordi* Traub, 1944
- 11) *Epitedia wenmanni* Rothschild, 1904
- 12) *Euhoplopsyllus affinis* Baker, 1904
- 13) *Hystrichopsylla dippiei* Rothschild, 1902
- 14) *Malaraeus sinomus* Jordan, 1925
- 15) *Malaraeus telchinum* Rothschild, 1905
- 16) *Megabothris abantis* Rothschild, 1905
- 17) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 18) *Megarthroglossus divisus* Baker, 1898
- 19) *Meringis nidi* Williams and Hoff, 1951
- 20) *Meringis rectus* Morlan, 1953
- 21) *Opisodasyx keeni* Baker, 1896
- 22) *Orchopeas caedens* Jordan, 1925
- 23) *Orchopeas leucopus* Baker, 1904
- 24) *Orchopeas sexdentatus* Baker, 1904
- 25) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 26) *Oropsylla montanus* Baker, 1895
- 27) *Peromyscopsylla adelpha* Rothschild, 1915
- 28) *Peromyscopsylla draco* Hopkins, 1951
- 29) *Peromyscopsylla hesperomys* Baker, 1904
- 30) *Phalacropsylla allos* Wagner, 1936
- 31) *Pleochaetis exilis* (Jordan, 1937)
- 32) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 33) *Stenistomera alpina* Baker, 1895
- 34) *Stenistomera macrodactyla* Good, 1942
- 35) *Thrassis campestris* Prince, 1944

Anoplura:

- 36) *Hoplopleura hesperomydis* (Osborn, 1891)
- 37) *Polyplax auricularis* Kellogg and Ferris, 1915

NM Counties: Bernalillo (4, 10, 14, 29, 33); Catron (3); Los Alamos (17); McKinley (31); Rio Arriba (21); Sandoval (1, 6, 7, 8, 10, 13, 14, 15, 17, 18, 23, 25, 27, 28, 29, 32, 33, 34, 35); Santa Fe (1, 5, 6,

7, 9, 10, 12, 14, 17, 18, 19, 20, 23, 24, 26, 27, 28); Socorro (16); Valencia (4).

Material Deposited: Flea MSB No.: (1) 703; (3) 707; (10) 739; (11) 737; (14) 932; (16) 998; (18) 997; (22) 827; (23) 770; (31) 901.

Reference: Barnes and others 1977; Fagerlund and others 2001; Haas and others 1973; Holdenried and Morlan 1955, 1956; Mendez and Haas 1973; Morlan 1955; Traub and Hoff 1951.

Genus *Reithrodontomys*

Host: *Reithrodontomys megalotis* (Baird, 1858) Western harvest mouse.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Echidnophaga gallinaceus* Westwood, 1875
- 3) *Epitedia stanfordi* Traub, 1944
- 4) *Malaraeus telchinum* Rothschild, 1905
- 5) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 6) *Meringis bilsingi* Eads and Menzies, 1949
- 7) *Meringis nidi* Williams and Hoff, 1951
- 8) *Meringis rectus* Morlan, 1953
- 9) *Orchopeas caedens* Jordan, 1925
- 10) *Orchopeas leucopus* Baker, 1904
- 11) *Oropsylla montanus* Baker, 1895
- 12) *Peromyscopsylla adelpha* Rothschild, 1915
- 13) *Peromyscopsylla draco* Hopkins, 1951
- 14) *Rhadinopsylla sectilis* Jordan and Rothschild, 1923
- 15) *Thrassis fotus* Jordan, 1925
- 16) *Thrassis pansus* Jordan, 1925

Anoplura:

- 17) *Hoplopleura reithrodontomydis* Ferris, 1951

NM Counties: Chaves (1, 5, 6, 8, 10, 13, 15); McKinley (9); Sandoval (1, 3, 4, 10, 12, 14, 16); Santa Fe (1, 2, 7, 8, 10, 11, 12, 13); Socorro (9, 17); Taos (17).

Material Deposited: Flea MSB No.: (9) 858; (12) 893.

Reference: Graves and others 1974; Haas and others 1973; Holdenried and Morlan 1955, 1956; Morlan 1955.

Genus *Sigmodon*

Host: *Sigmodon hispidus* Say and Ord, 1825 Hispid cotton rat.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus novomexicanensis* Williams and Hoff, 1951
- 3) *Epitedia wenmanni* Rothschild, 1904
- 4) *Euhoplopsyllus affinis* Baker, 1904
- 5) *Euhoplopsyllus glacialis* Taschenber, 1880
- 6) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 7) *Meringis bilsingi* Eads and Menzies, 1949
- 8) *Meringis nidi* Williams and Hoff, 1951
- 9) *Meringis rectus* Morlan, 1953
- 10) *Orchopeas leucopus* Baker, 1904
- 11) *Orchopeas sexdentatus* Baker, 1904
- 12) *Peromyscopsylla draco* Hopkins, 1951
- 13) *Pleochaetus exilis* Jordan, 1937

- 14) *Polygenis gwyni* (C. Fox, 1914)
- 15) *Rhadinopsylla fraterna* Baker, 1895
- 16) *Rhadinopsylla multidenticulatus* Morlan and Prince, 1954
- 17) *Thrassis aridis* Prince, 1944
- 18) *Thrassis campestris* Prince, 1944
- 19) *Thrassis pansus* Jordan, 1925

Anoplura:

- 20) *Hoplopleura arizonensis* Stojanovich and Pratt, 1961
- 21) *Hoplopleura hirsuta* Ferris, 1916

NM Counties: Chaves (1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 18); Roosevelt (5, 10, 13, 17, 21); Socorro (20).

Material Deposited: Flea MSB No.: (19) 864.

Reference: Clark and others 1971; Graves and others 1974; Miller and others 1970; Pfaffenberger and deBruin 1988; Rail and others 1969.

Host: *Sigmodon ochrognathus* Bailey, 1902 Yellow-nosed cotton rat.

Siphonaptera:

- Polygenis martinezbaezi* Vargas, 1951

NM Counties: Hidalgo.

Material Deposited: None.

Reference: Haas and Wilson 1998.

Family Sciuridae: (Squirrels, Prairie Dogs, and Chipmunks)

Genus *Ammospermophilus*

Host: *Ammospermophilus harrisii* Harris's antelope squirrel.
(Audubon and Bachman, 1854)

Siphonaptera:

- 1) *Thrassis pansus* Jordan, 1925

Anoplura:

- 2) *Enderleinellus suturalis* Osborn, 1891

NM Counties: Bernalillo (2); Santa Fe (2); Socorro (1); Torrance (1).

Material Deposited: Flea MSB No.: (1) 813.

Reference: Jellison and Senger 1976; Kim and others 1986; MSB Collection.

Host: *Ammospermophilus leucurus* (Merriam, 1889) . . . White-tailed antelope squirrel.

Siphonaptera:

- Thrassis pansus* Jordan, 1925

NM Counties: Socorro.

Material Deposited: Flea MSB No.: 818.

Remarks/Observations: New state host record.

Reference: MSB Collection.

Genus *Cynomys*

Host: *Cynomys gunnisoni* (Baird, 1855) Gunnison's prairie dog.

Siphonaptera:

- 1) *Echidnophaga gallinaceus* Westwood, 1875
- 2) *Hoplopsyllus anomalus* Baker, 1904
- 3) *Meringis rectus* Morlan, 1953
- 4) *Oropsylla hirsutus* Baker, 1895
- 5) *Oropsylla idahoensis* Baker, 1904

- 6) *Oropsylla labis* Jordan and Rothschild, 1922
- 7) *Oropsylla montanus* Baker, 1895
- 8) *Oropsylla tuberculatus cynomuris* Jellison, 1939
- 9) *Thrassi pansus* Jordan, 1925
- 10) *Thrassis stanfordi* Wagner, 1936

Anoplura:

- 11) *Enderleinellus suturalis* Osborn, 1981
- 12) *Linognathoides citellinus* Ferris, 1942
- 13) *Neohaematopinus citellinus* Ferris, 1942

NM Counties: Bernalillo (4, 10); Colfax (5, 6, 8); Rio Arriba (4, 10); Sandoval (4, 5, 7, 8); Santa Fe (1, 2, 4, 8, 9, 11, 12, 13); Taos (4); Torrance (4).

Material Deposited: None.

Reference: Fagerlund and others 2001; Haas and others 1973; Holdenried and Morlan 1956; Hopkins and Rothschild 1953; Jellison and Senger 1976; Kim and others 1986; Link 1949; Morlan 1955; Morlan and Hoff 1957; O'Connor and Pfaffenberger 1987.

Host: *Cynomys ludovicianus* (Ord, 1815) Black-tailed prairie dog.

Siphonaptera:

- 1) *Oropsylla hirsutus* Baker, 1895
- 2) *Pulex simulans* Baker, 1895

NM Counties: Chaves (1); Roosevelt (1, 2).

Material Deposited: None.

Reference: Clark and others 1971; Pfaffenberger and others 1984.

Host: *Cynomys* sp.

Siphonaptera:

- 1) *Meringis parkeri* Jordan, 1937
- 2) *Oropsylla hirsutus* Baker, 1895

NM Counties: Catron (1, 2).

Material Deposited: None.

Reference: Jellison and Senger 1976.

Genus *Marmota*

Host: *Marmota flaviventris* (Audubon and Bachman, 1841) Yellow-bellied marmot.

Siphonaptera:

- 1) *Thrassis stanfordi* Wagner, 1936

Anoplura:

- 2) *Linognathoides marmotae* (Ferris, 1923)

NM Counties: Rio Arriba (1); Santa Fe (1, 2).

Material Deposited: None.

Reference: Holdenried and Morlan 1956; Kim and others 1986; Link 1949; Morlan 1955.

Genus *Sciurus*

Host: *Sciurus aberti* Woodhouse, 1853 Abert's squirrel.

Siphonaptera:

- 1) *Anomiopsyllus martini* Holland, 1965
- 2) *Anomiopsyllus nudata* Baker, 1898
- 3) *Ceratophyllus vison* Baker, 1904
- 4) *Eumolpianus eumolpi americanus* Hubbard, 1950

- 5) *Opisodasys robustus* Jordan, 1925
- 6) *Orchopeas caedens* Jordan, 1925
- 7) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 8) *Tarsopsylla coloradensis* Baker, 1895

NM Counties: Catron (1, 3, 5, 6); Sandoval (2, 4, 5, 7, 8); Socorro (5, 6, 7).

Material Deposited: Flea MSB Nos. respectively: (4) 1531; (5) 1534; (7) 1551.

Reference: Barnes 1982; Barnes and others 1977; Haas and others 1973; Jellison 1939; Jordan 1925; Patrick and Wilson 1995.

Host: *Sciurus arizonensis* Coues, 1867 Arizona gray squirrel.

Siphonaptera:

- Orchopeas fulleri* Traub, 1950

NM Counties: Catron.

Material Deposited: None.

Reference: Haas 1973.

Genus *Spermophilus*

Host: *Spermophilus lateralis* (Say, 1823) Golden-mantled ground squirrel.

Siphonaptera:

- 1) *Catallagia decipiens* Rothschild, 1915
- 2) *Eumolpianus eumolpi* Rothschild, 1905
- 3) *Eumolpianus eumolpi americanus* (Hubbard, 1950)
- 4) *Hystrichopsylla dippiei* Rothschild, 1902
- 5) *Malaraeus telchinum* Rothschild, 1905
- 6) *Megabothris abantis* Rothschild, 1905
- 7) *Oropsylla hirsutus* Baker, 1895
- 8) *Oropsylla idahoensis* Baker, 1904
- 9) *Oropsylla montanus* Baker, 1895
- 10) *Oropsylla tuberculatus cynomuris* Jellison, 1939

NM Counties: Rio Arriba (5, 8, 10); Sandoval (1, 3, 4, 6, 7, 8, 9); Santa Fe (2, 8, 9).

Material Deposited: None.

Reference: Haas and others 1973; Holdenried and Morlan 1956; Link 1949; Morlan 1955.

Host: *Spermophilus spilosoma* Bennett, 1833 Spotted ground squirrel.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Echidnophaga gallinaceus* Westwood, 1875
- 3) *Euhoplopsyllus affinis* Baker, 1904
- 4) *Hoplopsyllus anomalus* Baker, 1904
- 5) *Meringis jamesoni* Hubbard, 1943
- 6) *Meringis nidi* Williams and Hoff, 1951
- 7) *Meringis parkeri* Jordan, 1937
- 8) *Meringis rectus* Morlan, 1953
- 9) *Orchopeas leucopus* Baker, 1904
- 10) *Thrassis bacchi consimilis* Stark, 1957
- 11) *Thrassis campestris* Prince, 1944
- 12) *Thrassis fotus* Jordan, 1925
- 13) *Thrassis pansus* Jordan, 1925

Anoplura:

- 14) *Enderleinellus suturalis* Osborn, 1891
- 15) *Linognathoides spilosomae* Stojanovich and Pratt, 1961
- 16) *Neohaematopinus citellinus* Ferris, 1942
- 17) *Neohaematopinus spilosomae* Stojanovich and Pratt, 1961

NM Counties: Bernalillo (2, 8, 13, 14, 15, 16, 17); Chaves (3, 11, 12); Santa Fe (1, 2, 4, 5, 6, 7, 8, 9, 13, 14, 16).

Material Deposited: Flea MSB No.: (2) 1599; (10) 868; (13) 823.

Reference: Graves and others 1974; Holdenried and Morlan 1956; Jellison and Senger 1976; Kim et al, 1986; Rail and others 1969; Williams and Hoff 1951.

Host: *Spermophilus tridecemlineatus* (Mitchill, 1821) . . . Thirteen-lined ground squirrel.

Siphonaptera:

- Catallagia neweyi* Holland and Loshbaugh, 1958

NM Counties: Colfax.

Material Deposited: None.

Reference: Fagerlund and others 2001.

Host: *Spermophilus variegatus* (Erxleben, 1777) Rock squirrel.

Siphonaptera:

- 1) *Anomiopsyllus hiemalis mexicanus* Holland, 1965
- 2) *Echidnophaga gallinaceus* Westwood, 1875
- 3) *Hoplopsyllus anomalus* Baker, 1904
- 4) *Meringis rectus* Morlan, 1953
- 5) *Orchopeas caedens* Jordan, 1925
- 6) *Orchopeas leucopus* Baker, 1904
- 7) *Oropsylla hirsutus* Baker, 1895
- 8) *Oropsylla idahoensis* Baker, 1904
- 9) *Oropsylla montanus* Baker, 1895
- 10) *Thrassis fotus* Jordan, 1925

Anoplura:

- 11) *Linognathoides laeviusculus* (Grube, 1851)
- 12) *Neohaematopinus citellinus* Ferris, 1842

NM Counties: Bernalillo (2, 3, 7, 11); Catron (1); Otero (5, 9); Rio Arriba (7); Sandoval (2, 3, 8); Santa Fe (2, 3, 4, 7, 10, 11, 12).

Material Deposited: Flea MSB No.: (3) 733; (6) 930.

Reference: Barnes and others 1977; Haas and others 1973; Holdenried and Morlan 1955, 1956; Jellison and Senger 1976; Kim and others 1986; Link 1949; Morlan 1955; Williams and Hoff 1951.

Genus *Tamias*

Host: *Tamias dorsalis* Baird, 1855 Cliff chipmunk.

Siphonaptera:

- Eumolpianus eumolpi americanus* Hubbard, 1950

NM Counties: McKinley.

Material Deposited: Flea MSB No.: 717.

Reference: MSB Collection.

Host: *Tamias minimus* Bachman, 1839 Least chipmunk.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus nudata* Baker, 1898
- 3) *Ceratophyllus vison* Baker, 1904

- 4) *Eumolpianus eumolpi* Rothschild, 1905
- 5) *Eumolpianus eumolpi americanus* (Hubbard, 1950)
- 6) *Hystrichopsylla dippiei* Rothschild, 1902
- 7) *Megarthroglossus wilsoni* Mendez and Haas, 1973
- 8) *Oropsylla idahoensis* Baker, 1905

NM Counties: Colfax (7); Sandoval (1, 2, 3, 5, 6, 8); Santa Fe (4).

Material Deposited: None.

Reference: Fagerlund and others 2001; Haas and others 1973; Holdenried and Morlan 1956; Morlan 1955; Tipton and others 1979.

Host: *Tamias quadrivittatus* (Say, 1823) Colorado chipmunk.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Anomiopsyllus nudata* Baker, 1898
- 3) *Catallagia decipiens* Rothschild, 1915
- 4) *Epitedia stanfordi* Traub, 1944
- 5) *Eumolpianus eumolpi* Rothschild, 1905
- 6) *Eumolpianus eumolpi americanus* (Hubbard, 1950)
- 7) *Hystrichopsylla dippiei* Rothschild, 1902
- 8) *Orchopeas leucopus* Baker, 1904
- 9) *Oropsylla idahoensis* Baker, 1904
- 10) *Peromyscopsylla adelpha* Rothschild, 1915
- 11) *Stenistomera alpina* Baker, 1895

Anoplura:

- 12) *Hoplopleura arboricola* Kellogg and Ferris, 1915
- 13) *Neohaemotopinus pacificus* Kellogg and Ferris, 1915

NM Counties: Bernalillo (5, 7, 11, 12); Rio Arriba (5, 8); Sandoval (1, 2, 3, 4, 6, 7); Santa Fe (1, 5, 7, 9, 10, 11, 13); Socorro (12).

Material Deposited: None.

Reference: Fagerlund and others 2001; Haas and others 1973; Holdenried and Morlan 1955, 1956; Kim and others 1986; Link 1949; Morlan 1955; Traub and Hoff 1951.

Host: *Tamias* sp.

Siphonaptera:

- 1) *Eumolpianus eumolpi* Rothschild, 1905
- 2) *Eumolpi eumolpi americanus* Hubbard, 1950

Anoplura:

- 3) *Hoplopleura arboricola* Kellogg and Ferris, 1915
- 4) *Linognathoides pacificus* Kellogg and Ferris, 1915

NM Counties: Bernalillo (3); Otero (1, 2); Santa Fe (4).

Material Deposited: Flea MSB No.: (1) 747.

Reference: Jellison and Senger 1976; Kim and others 1986.

Genus *Tamiasciurus*

Host: *Tamiasciurus hudsonicus* (Erxleben, 1777) Red squirrel.

Siphonaptera:

- 1) *Aetheca wagneri* Baker, 1904
- 2) *Amaradix bitterootensis* Dunn, 1923
- 3) *Catallagia decipiens* Rothschild, 1915
- 4) *Ceratophyllus vison* Baker, 1904
- 5) *Eumolpianus eumolpi* Rothschild, 1915

- 6) *Eumolpianus eumolpi americanus* (Hubbard, 1950)
- 7) *Hystrichopsylla dippiei* Rothschild, 1902
- 8) *Malaraeus telchinum* Rothschild, 1905
- 9) *Megarthroglossus bisetis* Jordan and Rothschild, 1915
- 10) *Megarthroglossus divisus* Baker, 1898
- 11) *Opisodasys robustus* Jordan, 1925
- 12) *Orchopeas caedens* Jordan, 1925
- 13) *Orchopeas leucopus* Baker, 1904
- 14) *Orchopeas sexdentatus* Baker, 1904
- 15) *Orchopeas sexdentatus neotomae* Auguston, 1943
- 16) *Oropsylla idahoensis* Baker, 1904
- 17) *Tarsopsylla coloradensis* Baker, 1895

NM Counties: Catron (4, 11, 12, 16); Los Alamos (4); Sandoval (1, 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15); Santa Fe (4, 5, 12, 17); Taos (4, 11); Valencia (9).

Material Deposited: Flea MSB No.: (2) 1529; (3) 1530; (11) 1538; (12) 1543.

Reference: Haas 1972; Haas and others 1973; Holdenried and Morlan 1956; Mendez and Haas 1973; Morlan 1955; Patrick and Wilson, 1995.

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Appendix A. New Mexico Ectoparasites and Their Mammal Hosts

Order Siphonaptera (Fleas)

Family Ceratophyllidae

Aetheca wagneri Baker, 1904

Bassariscus astutus

Clethrionomys gapperi

Dipodomys merriami

D. ordii

Microtus longicaudus

M. montanus

Mus musculus

Neotoma albigenula

N. cinerea

N. mexicana

N. micropus

Onychomys leucogaster

Peromyscus boylii

P. leucopus

P. maniculatus

P. nasutus

P. truei

Peromyscus sp.

Reithrodontomys megalotis

Sigmodon hispidus

Spermophilus spilosoma

Sylvilagus audubonii

Tamias minimus

T. quadrivittatus

Tamiasciurus hudsonicus

Amaradix bitterootensis Dunn, 1923

Tamiasciurus hudsonicus

Amaradix euphorbae Rothschild, 1905

Clethrionomys gapperi

Peromyscus maniculatus

P. truei

Amphalius necopinus Jordan, 1925

Ochotona princeps

Ceratophyllus vison Baker, 1904

Peromyscus nasutus

Sciurus aberti

Tamias minimus

Tamiasciurus hudsonicus

Eumolpianus eumolpi Rothschild, 1905

Dipodomys merriami

Microtus sp.

Neotoma mexicana

Peromyscus maniculatus

Spermophilus lateralis

Sylvilagus sp.

Tamias minimus

T. quadrivittatus

Tamiasciurus hudsonicus

Thomomys talpoides

Eumolpianus eumolpi americanus Hubbard, 1950

Microtus longicaudus

Sciurus aberti

Spermophilus lateralis

Tamias dorsalis

T. minimus

T. quadrivittatus

Tamiasciurus hudsonicus

Dactylopsylla bluei Fox, 1909

Microtus montanus

Dactylopsylla neomexicana Prince, 1945

Thomomys talpoides

Foxella apachinus C. Fox, 1914

Vulpes macrotis macrotis

Foxella ignotus Baker, 1895

Lynx rufus

Microtus montanus

Mustela frenata

Peromyscus maniculatus

Thomomys bottae

T. talpoides

Urocyon cinereoargenteus

Vulpes macrotis macrotis

Malaraeus sinomus Jordan, 1925

Bassariscus astutus

Dipodomys ordii

Neotoma albigenula

N. mexicana

Onychomys leucogaster

Peromyscus boylii

P. leucopus

P. maniculatus

P. nasutus

Peromyscus sp.

P. truei

***Malaraeus telchinum* Rothschild, 1905**

Clethrionomys gapperi
Microtus longicaudus
M. montanus
Neotoma cinerea
N. mexicana
Neotoma sp.
Onychomys leucogaster
Peromyscus boylii
P. maniculatus
P. truei
Reithrodontomys megalotis
Spermophilus lateralis
Tamiasciurus hudsonicus

***Megabothris abantis* Rothschild, 1905**

Clethrionomys gapperi
Microtus longicaudus
M. montanus
Microtus sp.
Mustela frenata
Neotoma mexicana
Ochotona princeps
Peromyscys maniculatus
P. truei
Spermophilus lateralis

***Nosophyllus fasciatus* Bosc, 1800**

Rattus norvegicus

***Opisodasys keeni* Baker, 1896**

Peromyscus truei

***Opisodasys robustus* Jordan, 1925**

Sciurus aberti
Tamiasciurus hudsonicus

***Orchopeas agilis* Rothschild, 1905**

Neotoma albicula
Onychomys leucogaster
Peromyscus leucopus
Sorex preblei
Vulpes macrotis macrotis
V. velox velox

***Orchopeas caedens* Jordan, 1925**

Onychomys arenicola
Peromyscus leucopus
P. truei
Reithrodontomys megalotis
Sciurus aberti
Spermophilus variegatus
Tamiasciurus hudsonicus
Vulpes macrotis
V. velox velox

***Orchopeas fulleri* Traub, 1950**

Sciurus arizonensis

***Orchopeas leucopus* Baker, 1904**

Dipodomys merriami
D. ordii
Neotoma albicula
N. micropus
Neotoma sp.
Onychomys lecuogaster
Perognathus flavus
Peromyscus boylii
P. eremicus
P. leucopus
P. maniculatus
P. truei
Reithrodontomys megalotis
Sigmodon hispidus
Spermophilus spilosoma
S. variegatus
Tamias quadriovittatus
Tamiasciurus hudsonicus

***Orchopeas sexdentatus* Baker, 1904**

Dipodomys spectabilis
Neotoma albicula
N. cinerea
N. mexicana
N. micropus
Neotoma sp.
Onychomys leucogaster
Peromyscus maniculatus
P. truei
Sigmodon hispidus
Sylvilagus audubonii
Tamiasciurus hudsonicus

***Orchopeas sexdentatus neotomae* Augustson, 1943**

Bassariscus astutus
Neotoma albicula
N. cinerea
N. mexicana
N. micropus
Peromyscus maniculatus
P. truei
Sciurus aberti
Tamiasciurus hudsonicus

***Oropsylla hirsutus* Baker, 1895**

Cynomys gunnisoni
C. ludovicianus
Cynomys sp.
Spermophilus lateralis
S. variegatus
Sylvilagus audubonii

***Oropsylla idahoensis* Baker, 1904**

Cynomys gunnisoni
Microtus longicaudus

<i>Perognathus flavus</i>	<i>N. micropus</i>
<i>Spermophilus lateralis</i>	<i>Neotoma</i> sp.
<i>S. variegatus</i>	<i>Onychomys leucogaster</i>
<i>Tamias minimus</i>	<i>Peromyscus leucopus</i>
<i>T. quadrivattus</i>	<i>P. maniculatus</i>
<i>Tamiasciurus hudsonicus</i>	<i>P. truei</i>
<i>Oropsylla labis</i> Jordan and Rothschild, 1922	<i>Sigmodon hispidus</i>
<i>Cynomys gunnisoni</i>	<i>Spermophilus spilosoma</i>
<i>Oropsylla montanus</i> Baker, 1895	<i>Sylvilagus audubonii</i>
<i>Bassariscus astutus</i>	<i>Thrassis fotus</i> Jordan, 1925
<i>Cynomys gunnisoni</i>	<i>Dipodomys merriami</i>
<i>Dipodomys merriami</i>	<i>D. ordii</i>
<i>Neotoma albicula</i>	<i>D. spectabilis</i>
<i>Peromyscus truei</i>	<i>Neotoma albicula</i>
<i>Reithrodontomys megalotis</i>	<i>N. micropus</i>
<i>Spermophilus lateralis</i>	<i>Neotoma</i> sp.
<i>S. variegatus</i>	<i>Onychomys leucogaster</i>
<i>Spilogale gracilis</i>	<i>Reithrodontomys megalotis</i>
<i>Sylvilagus</i> sp.	<i>Spermophilus spilosoma</i>
<i>Vulpes macrotis macrotis</i>	<i>S. variegatus</i>
<i>Pleochaetus exilis</i> Jordan, 1937	<i>Sylvilagus audubonii</i>
<i>Dipodomys ordii</i>	<i>Thrassis pansus</i> Jordan, 1925
<i>D. spectabilis</i>	<i>Ammospermophilus harrisi</i>
<i>Lepus californicus</i>	<i>A. leucurus</i>
<i>Neotoma albicula</i>	<i>Dipodomys ordii</i>
<i>N. mexicana</i>	<i>D. spectabilis</i>
<i>N. micropus</i>	<i>Mustela frenata</i>
<i>Onychomys leucogaster</i>	<i>Neotoma albicula</i>
<i>Peromyscus leucopus</i>	<i>N. micropus</i>
<i>P. truei</i>	<i>Onychomys leucopus</i>
<i>Sigmodon hispidus</i>	<i>Perognathus flavescens</i>
<i>Vulpes macrotis macrotis</i>	<i>Peromyscus leucopus</i>
<i>Spicata bottaceps</i> Hubbard, 1943	<i>P. maniculatus</i>
<i>Thomomys bottae</i>	<i>Reithrodontomys megalotis</i>
<i>Tarsopsyllus coloradensis</i> Baker, 1904	<i>Sigmodon hispidus</i>
<i>Sciurus aberti</i>	<i>Spermophilus spilosoma</i>
<i>Tamiasciurus hudsonicus</i>	<i>Thrassis stanfordi</i> Wagner, 1936
<i>Thrassis aridis</i> Prince, 1944	<i>Cynomys gunnisoni</i>
<i>Bassariscus astutus</i>	<i>Marmota flaviventris</i>
<i>Dipodomys ordii</i>	<i>Mustela frenata</i>
<i>Onychomys leucogaster</i>	
<i>Sigmodon hispidus</i>	
<i>Thrassis bacchi consimilis</i> Stark, 1957	
<i>D. ordii</i>	<i>Anomiopsyllus hiemalis</i> Eads and Menzies, 1948
<i>Neotoma albicula</i>	<i>Neotoma albicula</i>
<i>Onychomys leucogaster</i>	<i>Anomiopsyllus martini</i> Holland, 1965
<i>Spermophilus spilosoma</i>	<i>Sciurus aberti</i>
<i>Thrassis campestris</i> Prince, 1944	<i>Anomiopsyllus hiemalis mexicanus</i> Holland, 1965
<i>Dipodomys merriami</i>	<i>Dipodomys merriami</i>
<i>D. ordii</i>	<i>Neotoma albicula</i>
<i>D. spectabilis</i>	<i>N. mexicana</i>
<i>Neotoma albicula</i>	<i>Neotoma</i> sp.

Family Ctenophthalmidae

<i>Anomiopsyllus hiemalis</i> Eads and Menzies, 1948
<i>Neotoma albicula</i>
<i>Anomiopsyllus martini</i> Holland, 1965
<i>Sciurus aberti</i>
<i>Anomiopsyllus hiemalis mexicanus</i> Holland, 1965
<i>Dipodomys merriami</i>
<i>Neotoma albicula</i>
<i>N. mexicana</i>
<i>Neotoma</i> sp.

<i>Peromyscus eremicus</i>	<i>Catallagia neweyi</i> Holland and Loshbaugh, 1958
<i>P. maniculatus</i>	<i>Spermophilus tridecemlineatus</i>
<i>P. truei</i>	<i>Corrodopsylla curvata</i> Rothschild, 1915
<i>Spermophilus variegatus</i>	<i>Microtus montanus</i>
Anomiopsyllus novomexicanus Williams and Hoff, 1951	<i>Sorex cinereus</i>
<i>Dipodomys merriami</i>	Delotelis telegoni Jordan, 1937
<i>D. ordii</i>	<i>Microtus longicaudus</i>
<i>D. spectabilis</i>	Epitedia stanfordi Traub, 1944
<i>Neotoma albigula</i>	<i>Bassariscus astutus</i>
<i>N. mexicana</i>	<i>Neotoma albigula</i>
<i>N. micropus</i>	<i>N. micropus</i>
<i>Neotoma</i> sp.	<i>Onychomys leucogaster</i>
<i>Onychomys leucogaster</i>	<i>Perognathus flavus</i>
<i>Peromyscus boylii</i>	<i>Peromyscus leucopus</i>
<i>P. leucopus</i>	<i>P. maniculatus</i>
<i>P. maniculatus</i>	<i>P. nasutus</i>
<i>P. truei</i>	<i>P. truei</i>
<i>Sigmodon hispidus</i>	<i>Reithrodontomys megalotis</i>
<i>Sylvilagus audubonii</i>	<i>Tamias quadrivittatus</i>
<i>Sylvilagus</i> sp.	Epitedia wenmanni Rothschild, 1904
Anomiopsyllus nudata Baker, 1898	<i>Peromyscus</i> sp.
<i>Neotoma albigula</i>	<i>P. truei</i>
<i>N. mexicana</i>	<i>Sigmodon hispidus</i>
<i>N. micropus</i>	Megarthroglossus bisetis Jordan and Rothschild, 1915
<i>Perognathus flavus</i>	<i>Bassariscus astutus</i>
<i>Peromyscus leucopus</i>	<i>Dipodomys spectabilis</i>
<i>P. truei</i>	<i>Microtus longicaudus</i>
<i>Sciurus aberti</i>	<i>Neotoma albigula</i>
<i>Spilogale gracilis</i>	<i>N. cinerea</i>
<i>Tamias minimus</i>	<i>N. mexicana</i>
<i>T. quadrivittatus</i>	<i>N. micropus</i>
<i>Thomomys talpoides</i>	<i>Neotoma</i> sp.
Callistopsyllus terinus Rothschild, 1905	<i>Ochotona princeps</i>
<i>Peromyscus boylii</i>	<i>Onychomys leucogaster</i>
<i>P. maniculatus</i>	<i>Peromyscus boylii</i>
<i>Peromyscus</i> sp.	<i>P. leucopus</i>
<i>P. truei</i>	<i>P. maniculatus</i>
Catallagia charlottensis Baker, 1898	<i>P. nasutus</i>
<i>Peromyscus boylii</i>	<i>Peromyscus</i> sp.
Catallagia decipiens Rothschild, 1915	<i>P. truei</i>
<i>Clethrionomys gapperi</i>	<i>Reithrodontomys egalotis</i>
<i>Microtus longicaudus</i>	<i>Sigmodon hispidus</i>
<i>M. montanus</i>	<i>Sylvilagus audubonii</i>
<i>Microtus</i> sp.	<i>S. nuttalli</i>
<i>Neotoma cinerea</i>	<i>Sylvilagus</i> sp.
<i>N. mexicana</i>	<i>Tamiasciurus hudsonicus</i>
<i>Peromyscus maniculatus</i>	Megarthroglossus caverniculus Mendez and Haas, 1972
<i>P. truei</i>	<i>Neotoma cinerea</i>
<i>Spermophilus lateralis</i>	Megarthroglossus divisus Baker, 1898
<i>Tamias quadrivittatus</i>	<i>Neotoma albigula</i>
<i>Tamiasciurus hudsonicus</i>	<i>N. cinerea</i>
	<i>N. micropus</i>

<i>Ochotona princeps</i>	<i>Sylvilagus</i> sp.
<i>Onychomys leucogaster</i>	<i>Meringis disparilis</i> Eads, 1979
<i>Peromyscus boylii</i>	<i>Dipodomys merriami</i>
<i>P. leucopus</i>	<i>D. ordii</i>
<i>P. maniculatus</i>	<i>Onychomys leucogaster</i>
<i>Peromyscus</i> sp.	<i>Meringis facilis</i> Eads, 1979
<i>P. truei</i>	<i>Neotoma micropus</i>
<i>Tamiasciurus hudsonicus</i>	<i>Onychomys leucogaster</i>
<i>Megarthroglossu procus</i> Jordan and Rothschild, 1915	<i>Perognathus flavus</i>
<i>Neotoma albicula</i>	<i>Meringis jamesoni</i> Hubbard, 1943
<i>Megarthroglossus wilsoni</i> Mendez and Haas, 1973	<i>Dipodomys spectabilis</i>
<i>Tamias minimus</i>	<i>Neotoma albicula</i>
<i>Meringis altipecten</i> Traub and Hoff, 1951	<i>Onychomys leucogaster</i>
<i>Dipodomys merriami</i>	<i>Perognathus flavus</i>
<i>D. ordii</i>	<i>Spermophilus spilosoma</i>
<i>D. spectabilis</i>	<i>Meringis nidi</i> Williams and Hoff, 1951
<i>Neotoma albicula</i>	<i>Dipodomys merriami</i>
<i>Onychomys arenicola</i>	<i>D. ordii</i>
<i>O. leucogaster</i>	<i>D. spectabilis</i>
<i>Peromyscus boylii</i>	<i>Neotoma albicula</i>
<i>P. maniculatus</i>	<i>N. micropus</i>
<i>Meringis arachis</i> Jordan, 1929	<i>Neotoma</i> sp.
<i>Bassariscus astutus</i>	<i>Onychomys leucogaster</i>
<i>Dipodomys merriami</i>	<i>Perognathus flavus</i>
<i>D. ordii</i>	<i>Peromyscus leucopus</i>
<i>D. spectabilis</i>	<i>P. maniculatus</i>
<i>Neotoma albicula</i>	<i>P. truei</i>
<i>Onychomys leucogaster</i>	<i>Reithrodontomys megalotis</i>
<i>Perognathus flavescens</i>	<i>Sigmodon hispidus</i>
<i>P. flavus</i>	<i>Spermophilus spilosoma</i>
<i>Peromyscus maniculatus</i>	<i>Sylvilagus audubonii</i>
<i>Meringis bilsingi</i> Eads and Menzies, 1949	<i>Sylvilagus</i> sp.
<i>Dipodomys merriami</i>	<i>Meringis parkeri</i> Jordan, 1937
<i>D. ordii</i>	<i>Cynomys</i> sp.
<i>D. spectabilis</i>	<i>Dipodomys merriami</i>
<i>Neotoma micropus</i>	<i>D. ordii</i>
<i>Neotoma</i> sp.	<i>D. spectabilis</i>
<i>Onychomys leucogaster</i>	<i>Microtus</i> sp.
<i>Peromyscus leucopus</i>	<i>Neotoma albicula</i>
<i>P. maniculatus</i>	<i>N. micropus</i>
<i>Reithrodontomys megalotis</i>	<i>Onychomys leucogaster</i>
<i>Sigmodon hispidus</i>	<i>Perognathus flavus</i>
<i>Sylvilagus audubonii</i>	<i>Peromyscus maniculatus</i>
<i>Meringis dipodomys</i> Kohls, 1938	<i>Spermophilus spilosoma</i>
<i>Dipodomys merriami</i>	<i>Meringis rectus</i> Morlan, 1953
<i>D. ordii</i>	<i>Cynomys gunnisoni</i>
<i>D. spectabilis</i>	<i>Dipodomys merriami</i>
<i>Neotoma micropus</i>	<i>D. ordii</i>
<i>Neotoma</i> sp.	<i>D. spectabilis</i>
<i>Onychomys leucogaster</i>	<i>Neotoma albicula</i>
<i>Perognathus flavus</i>	<i>N. micropus</i>
<i>Sylvilagus audubonii</i>	<i>Neotoma</i> sp.

<i>Onychomys leucogaster</i>	<i>Reithrodontomys megalotis</i>
<i>Perognathus flavus</i>	<i>Stenistomera alpina</i> Baker, 1895
<i>Peromyscus leucopus</i>	<i>Bassariscus astutus</i>
<i>P. maniculatus</i>	<i>Lynx rufus</i>
<i>P. truei</i>	<i>Mustela frenata</i>
<i>Reithrodontomys megalotis</i>	<i>Neotoma albicula</i>
<i>Sigmodon hispidus</i>	<i>N. cinerea</i>
<i>Spermophilus spilosoma</i>	<i>N. mexicana</i>
<i>S. variegatus</i>	<i>Ochotona princeps</i>
<i>Sylvilagus audubonii</i>	<i>Peromyscus truei</i>
<i>Sylvilagus</i> sp.	<i>Sylvilagus nuttallii</i>
<i>Phalacropsylla allos</i> Wagner, 1936	<i>Tamias quadrivittatus</i>
<i>Neotoma cinerea</i>	<i>Vulpes macrotis macrotis</i>
<i>N. mexicana</i>	<i>Stenistomera macrodactyla</i> Good, 1942
<i>Peromyscus maniculatus</i>	<i>Neotoma albicula</i>
<i>P. truei</i>	<i>Peromyscus truei</i>
<i>Phalacropsylla hamata</i> Tipton and Mendez, 1968	<i>Stenoponia americana</i> Baker, 1899
<i>Neotoma albicula</i>	<i>Peromyscus maniculatus</i>
<i>Peromyscus leucopus</i>	<i>P. nasutus</i>
<i>Phalacropsylla morlani</i> Eads and Campos, 1982	<i>Stenoponia ponera</i> Traub and Johnson, 1952
<i>Ochotona princeps</i>	<i>Peromyscus boylii</i>
<i>Rhadinopsylla fraterna</i> Baker, 1895	 Family Hystrichopsyllidae
<i>Clethrionomys gapperi</i>	<i>Atyphloceras echis</i> Jordan and Rothschild, 1915
<i>Dipodomys merriami</i>	<i>Bassariscus astutus</i>
<i>D. spectabilis</i>	<i>Neotoma albicula</i>
<i>Neotoma cinerea</i>	<i>N. micropus</i>
<i>Neotoma</i> sp.	<i>Neotoma</i> sp.
<i>Peromyscus leucopus</i>	<i>Peromyscus boylii</i>
<i>Sigmodon hispidus</i>	<i>P. maniculatus</i>
<i>Sylvilagus audubonii</i>	<i>P. nasutus</i>
<i>Sylvilagus</i> sp.	<i>Peromyscus</i> sp.
<i>Rhadinopsylla goodi</i> Hubbard, 1941	<i>P. truei</i>
<i>Bassariscus astutus</i>	<i>Atyphloceras multidentatus</i> C. Fox, 1909
<i>Rhadinopsylla multidenticulatus</i> Morlan and Prince, 1954	<i>Peromyscus boylii</i>
<i>Dipodomys merriami</i>	<i>Hystrichopsylla dippiei</i> Rothschild, 1902
<i>D. ordii</i>	<i>Microtus longicaudus</i>
<i>D. spectabilis</i>	<i>M. montanus</i>
<i>Neotoma albicula</i>	<i>Neotoma cinerea</i>
<i>N. micropus</i>	<i>N. mexicana</i>
<i>Onychomys leucogaster</i>	<i>Peromyscus maniculatus</i>
<i>Peromyscus leucopus</i>	<i>P. nasutus</i>
<i>Sigmodon hispidus</i>	<i>P. truei</i>
<i>Sylvilagus audubonii</i>	<i>Spermophilus lateralis</i>
<i>Rhadinopsylla sectilis</i> Jordan and Rothschild, 1923	<i>Tamias minimus</i>
<i>Neotoma albicula</i>	<i>T. quadrivittatus</i>
<i>N. cinerea</i>	<i>Tamiasciurus hudsonicus</i>
<i>Peromyscus boylii</i>	
<i>P. leucopus</i>	
<i>P. maniculatus</i>	
<i>P. nasutus</i>	
<i>P. truei</i>	

Family Ischnopsyllidae

***Myodopsylla gentilis* Jordan and Rothschild, 1921**
Myotis yumanensis

***Myodopsylla nordina* Traub and Hoff, 1951**

Myotis thysanodes

***Sternopsylla texanus* Fox, 1914**

Tadarida brasiliensis

Family Leptopsyllidae

***Ctenophyllus armatus* Wagner, 1901**

Ochotona princeps

Thomomys talpoides

***Odontopsyllus dentatus* Baker, 1904**

Sylvilagus audubonii

S. nuttalli

***Peromyscopsylla adelpha* Rothschild, 1915**

Dipodomys ordii

Microtus longicaudus

Onychomys leucogaster

Peromyscus boylii

P. leucopus

P. maniculatus

P. nasutus

P. truei

Reithrodontomys megalotis

Tamias quadrivittatus

***Peromyscopsylla draco* Hopkins, 1951**

Neotoma micropus

Onychomys leucogaster

Peromyscus leucopus

P. maniculatus

Reithrodontomys megalotis

Sigmodon hispidus

***Peromyscopsylla hamifer* vigens Jordan, 1937**

Microtus longicaudus

M. montanus

M. pennsylvanicus

Peromyscus maniculatus

***Peromyscopsylla hesperomys* Baker, 1904**

Neotoma albigula

Onychomys leucogaster

Peromyscus leucopus

P. maniculatus

P. nasutus

P. truei

***Peromyscopsylla selenis* Rothschild, 1906**

Microtus longicaudus

M. montanus

M. pennsylvanicus

Peromyscus maniculatus

Family Pulicidae

***Ctenocephalides felis* Bouche, 1835**

Canis familiaris

Odocoileus hemionus

***Echidnophaga gallinaceus* Westwood, 1875**

Bassariscus astutus

Cynomys gunnisoni

Dipodomys merriami

D. ordii

D. spectabilis

Felis catus

Lepus californicus

Mephitis sp.

Neotoma albigenula

N. micropus

Neotoma sp.

Onychomys leucogaster

Peromyscus leucopus

P. truei

Rattus norvegicus

Reithrodontomys megalotis

Spermophilus spilosoma

S. variegatus

Sylvilagus audubonii

Sylvilagus sp.

Urocyon cinereoargenteus

Vulpes velox velox

***Euhoplopsyllus affinis* Baker, 1904**

Dipodomys merriami

D. spectabilis

Lepus californicus

Neotoma sp.

Perognathus flavus

Peromyscus truei

Sigmodon hispidus

Spermophilus spilosoma

Sylvilagus audubonii

S. floridanus

S. nuttalli

Sylvilagus sp.

Urocyon cinereoargenteus

Vulpes macrotis macrotis

V. velox velox

V. vulpes

***Euhoplopsyllus glacialis* Taschenberg, 1880**

Canis familiaris

C. latrans

Felis catus

Lepus californicus

Lynx rufus

Sigmodon hispidus

Sylvilagus audubonii

***Hoplopsyllus anomalus* Baker, 1904**

Cynomys gunnisoni

Lepus californicus

- Neotoma albicula*
Peromyscus boylii
Spermophilus spilosoma
S. variegatus
Spilogale gracilis
Sylvilagus sp.
***Pulex irritans* Linnaeus, 1758**
Canis familiaris
Dipodomys spectabilis
Felis catus
Homo sapiens
Sylvilagus audubonii
Sylvilagus sp.
Urocyon cinereoargenteus
Vulpes macrotis
V. velox
***Pulex simulans* Baker, 1895**
Bassariscus astutus
Cynomys ludovicianus
Dipodomys spectabilis
Sylvilagus audubonii
Urocyon cinereoargenteus
Vulpes macrotis macrotis
V. velox velox
V. vulpes
***Spilopsyllus inaequalis* Baker, 1895**
Canis familiaris
C. latrans
Felis catus
Lepus californicus
Lynx rufus
Ochotona princeps
Sylvilagus audubonii
S. floridanus
Urocyon cinereoargenteus
Vulpes macrotis macrotis
V. vulpes
***Xenopsylla cheopis* Rothschild, 1903**
Rattus norvegicus
R. rattus
- Family Rhopalopsyllidae**
- Polygenis gwyni* C. Fox, 1914**
Dipodomys spectabilis
Neotoma micropus
Neotoma sp.
Sigmodon hispidus
Sylvilagus audubonii
Sylvilagus sp.
***Polygenis martinezbaezi* Vargas, 1951**
Sigmodon ochrognathus

- Order Anoplura (Sucking Lice)**
- Enderleinellus suturalis* Osborn, 1891**
Ammospermophilus harrisii
Cynomys gunnisoni
Spermophilus spilosoma
***Fahrenholzia pinnata* Kellogg and Ferris, 1915**
Chaetodipus intermedius
Dipodomys merriami
D. ordii
D. spectabilis
Onychomys leucogaster
Perognathus flavus
***Fahrenholzia zacatecae* Ferris, 1922**
Chaetodipus hispidus
***Haemodipsus setoni* Ewing, 1924**
Lepus californicus
Sylvilagus audubonii
***Haematopinus asini* Linnaeus, 1758**
Equus asinus
Equus caballus
Dipodomys merriami
***Hoplopleura acanthopus* Burmeister 1839**
Dipodomys spectabilis
Microtus longicaudus
***Hoplopleura arboricola* Kellogg and Ferris, 1915**
Dipodomys ordii
D. spectabilis
Tamias quadrivittatus
***Hoplopleura arizonensis* Stojanovich and Pratt, 1961**
Sigmodon hispidus
***Hoplopleura ferrisi* Cook and Beer, 1959**
Dipodomys ordii
Peromyscus eremicus
***Hoplopleura hesperomydis* Osborn, 1891**
Dipodomys ordii
Microtus longicaudus
Onychomys leucogaster
Peromyscus boylii
P. leucopus
P. maniculatus
P. nasutus
P. truei
***Hoplopleura hirsuta* Ferris, 1916**
Dipodomys ordii
Onychomys leucogaster
Sigmodon hispidus
Sylvilagus audubonii
***Hoplopleura onychomydis* Cook and Beer, 1959**
Onychomys leucogaster
***Hoplopleura reithrodontomydis* Ferris, 1951**
Reithrodontomys megalotis

***Linognathus africanus* Kellogg and Paine, 1911**

Capra hircus

Ovis aries

***Linognathus setosus* von Olfers, 1816**

Canis familiaris

Canis latrans

***Linognathoides citellinus* Ferris, 1942**

Cynomys gunnisoni

***Linognathoides laeviusculus* Grube, 1851**

Spermophilus variegatus

***Linognathoides marmotae* Ferris, 1923**

Marmota flaviventris

***Linognathoides neotomae* Ferris, 1942**

Neotoma sp.

***Linognathoides spilosomae* Stojanovich and Pratt, 1961**

Spermophilus spilosoma

***Neohaematopinus citellinus* Ferris, 1942**

Cynomys gunnisoni

Spermophilus spilosoma

S. variegatus

***Neohaematopinus neotomae* Ferris, 1941**

Dipodomys ordii

Neotoma albigenula

N. mexicana

N. micropus

***Neohaematopinus pacificus* Kellogg and Ferris, 1915**

Tamias quadrivittatus

***Neohaematopinus spilosomae* Stojanovich and Pratt, 1961**

Spermophilus spilosoma

***Pediculus humanus* Linnaeus, 1758**

Homo sapiens

***Phthirus pubis* Linnaeus, 1758**

Homo sapiens

***Polyplax auricularis* Kellogg and Ferris, 1915**

Onychomys leucogaster

Peromyscus maniculatus

P. nasutus

P. truei

Order Mallophaga (Chewing Lice)

***Goniodes squamatus* Emerson, 1950**

Dipodomys ordii

***Werneckiella (Bovicola) equi* Denny, 1842**

Equus asinus

E. caballus

Appendix B.

New Mexico County Records of Fleas (Siphonaptera)

Bernalillo

Aetheca wagneri
Anomiopsyllus novomexicanensis
A. hiemalis mexicanus
Atyphloceras echis
Catallagia decipiens
Ctenocephalides felis
Echidnophaga gallinaceus
Epitedia stanfordi
Euhoplopsyllus affinis
Eumolpianus eumolpi
Hoplopsyllus anomalus
Hystrichopsylla dippiei
Foxella ignotus
Malaraeus sinomus
Megarthroglossis bisetis
M. divisus
M. arachis
M. bilsingi
M. facilis
M. nidi
M. parkeri
M. rectus
Myodopsylla nordina
Nosopsyllus fasciatus
Orchopeas sexdentatus
O. sexdentatus neotomae
Oropsylla hirsutus
O. montanus
Peromyscopsylla hesperomys
Phalacropsylla allos
P. hamata
Pulex irritans
Pulex simulans
Rhadinopsylla goodi
R. sectilis
Spilopsyllus inaequalis
Stenistomera alpina
Thrassis aridis
T. campestris
T. pansus
Thrassis stanfordi
Xenopsyllus cheopis

Catron

Anomiopsyllus hiemalis mexicanus

A. martini

Ceratophyllus vison
Meringis parkeri
Opisodasys robustus
Orchopeas caedens
O. fulleri
Oropsylla hirsutus
O. idahoensis

Chaves

Aetheca wagneri
Anomiopsyllus hiemalis mexicanus
A. novomexicanensis
Atyphloceras echis
Echidnophaga gallinaceus
Epitedia wenmanni
Euhoplopsyllus affinis
E. glacialis
Malaraeus telchinum
Megarthroglossus bisetis
M. bilsingi
M. dipodomys
M. facilis
M. nidi
M. rectus
Orchopeas agilis
O. caedens
O. leucopus
O. sexdentatus
O. sexdentatus neotomae
Oropsylla hirsutus
Peromyscopsylla draco
Polygenis gwyni
Pulex irritans
P. simulans
Rhadinopsylla fraterna
R. multidenticulatus
Spilopsyllus inaequalis
Thrassis aridis
T. bacchi consimilis
T. campestris
T. fotus
T. pansus

Cibola

None recorded.

Colfax

Anomiopsyllus hiemalis mexicanus
Catallagia neweyi
Malaraeus telchinum
Megabothris megacolpus
Megarthroglossus bisetis
M. divisus
M. wilsoni
Oropsylla tuberculatus cynomuris
O. idahoensis
O. labis
Pleochaetus exilis

Curry

Echidnophaga gallinaceus
Euhoplopsyllus affinis
E. glacialis

DeBaca

Pleochaetus exilis
Pulex irritans

Dona Ana

Anomiopsyllus novomexicanensis
Euhoplopsyllus affinis
Meringis altipectin
M. arachis
M. bilsingi
M. disparilis
M. nidi
M. rectus
Orchopeas agilis

Eddy

Anomiopsyllus hiemalis
Echidnophaga gallinaceus
Meringis altipectin
M. disparilis
M. nidi
Orchopeas caedens
Sternopsylla texanus
Thrassis fatus

Grant

Atyphloceras echis
Echidnophaga gallinaceus
Euhoplopsyllus affinis
Meringis arachis
M. dipodomys
Spilopsyllus inaequalis
Stenoponia ponera

Guadalupe

Megarthroglossus bisetis

Harding

None recorded.

Hidalgo

Anomiopsyllus novomexicanensis
Atyphloceras echis
Echidnophaga gallinaceus
Meringis altipectin
M. arachis
M. nidi
Polygenis martinezbaezi
Thrassis aridis
Thrassis pensus
Xenopsylla cheopis

Lea

Anomiopsyllus hiemalis
Echidnophaga gallinaceus
Euhoplopsyllus affinis
E. glacialis
Meringis bilsingi
M. dipodomys
M. nidi
M. parkeri
Orchopeas agilis
O. caedens
O. sexdentatus
Pulex irritans
P. simulans
Thrassis fatus

Lincoln

Anomiopsyllus novomexicanensis
A. hiemalis mexicanus
Megarthroglossus divisus
Meringis rectus
Peromyscopsylla adelpha

Los Alamos

Aetheca wagneri
Catallagia decipiens
Ceratophyllus vison
Malaraeus telchinum
Megarthroglossus bisetis
Peromyscopsylla adelpha
Pulex irritans

Luna

Anomiopsyllus novomexicanensis
Echidnophaga gallinaceus
Meringis altipectin
M. arachis
M. bilsingi
M. disparilis
Pulex irritans

McKinley

Eumolpianus eumolpi americanus
Foxella apachinus
Megarthroglossus bisetis

<i>M. divisus</i>	<i>Thrassis pansus</i>
<i>Orchopeas agilis</i>	<i>T. stanfordi</i>
<i>O. caedens</i>	Roosevelt
<i>Oropsylla montanus</i>	<i>Euhoplopsyllus affinis</i>
<i>Phalacropsylla hamata</i>	<i>E. glacialis</i>
<i>Pleochaetis exilis</i>	<i>Meringis bilsingi</i>
<i>Pulex irritans</i>	<i>Orchopeas leucopus</i>
<i>Spilopsyllus inaequalis</i>	<i>Oropsylla hirsutus</i>
<i>Stenistomera alpina</i>	<i>Peromyscopsylla hesperomys</i>
Mora	<i>Pleochaetis exilis</i>
<i>None recorded.</i>	<i>Pulex irritans</i>
Otero	<i>P. simulans</i>
<i>Anomiopsyllus novomexicanensis</i>	<i>Thrassis aridis</i>
<i>Eumolpianus eumolpi</i>	<i>T. fotus</i>
<i>E. eumolpi americanus</i>	San Juan
<i>Euhoplopsyllus affinis</i>	<i>Amaradix euphorbae</i>
<i>Megarthroglossus divisus</i>	<i>Anomiopsyllus novomexicanensis</i>
<i>Meringis bilsingi</i>	<i>Meringis parkeri</i>
<i>M. nidi</i>	<i>M. rectus</i>
<i>M. rectus</i>	<i>Pleochaetis exilis</i>
<i>Orchopeas caedens</i>	<i>Pulex simulans</i>
<i>O. leucopus</i>	<i>Spilopsyllus inaequalis</i>
<i>Oropsylla montanus</i>	San Miguel
Quay	<i>Aetheca wagneri</i>
<i>None recorded.</i>	<i>Atyphloceras echis</i>
Rio Arriba	<i>Callistopsyllus teinus</i>
<i>Aetheca wagneri</i>	<i>Dactylopsylla bluei</i>
<i>Anomiopsyllus heimalis mexicanus</i>	<i>D. neomexicana</i>
<i>A. novomexicanensis</i>	<i>Megarthroglossus bisetis</i>
<i>Callistopsyllus terinus</i>	<i>Peromyscopsylla hamifer vigens</i>
<i>Catallagia decipiens</i>	<i>P. selenis</i>
<i>Echidnophaga gallinaceus</i>	Sandoval
<i>Epitedia wenmanni</i>	<i>Aetheca wagneri</i>
<i>Euhoplopsyllus affinis</i>	<i>Amaradix bitterootensis</i>
<i>Eumolpianus eumolpi</i>	<i>A. vonfintelis</i>
<i>E. eumolpi americanus</i>	<i>Anomiopsyllus nudata</i>
<i>Foxella ignotus</i>	<i>Atyphloceras echis</i>
<i>Malaraeus telchinum</i>	<i>Callistopsylla terinus</i>
<i>Megabothris abantis</i>	<i>Catallagia decipiens</i>
<i>Megarthroglossus bisetis</i>	<i>Ceratophyllus vison</i>
<i>M. divisus</i>	<i>Corrodopsylla curvata</i>
<i>Meringis parkeri</i>	<i>Echidnophaga gallinaceus</i>
<i>Opisodasys keeni</i>	<i>Epitedia stanfordi</i>
<i>Orchopeas leucopus</i>	<i>Euhoplopsyllus affinis</i>
<i>O. sexdentatus</i>	<i>E. glacialis</i>
<i>O. sexdentatus neotomae</i>	<i>Eumolpianus eumolpi americanus</i>
<i>Oropsylla hirsutus</i>	<i>Foxella ignotus</i>
<i>O. idahoensis</i>	<i>Hoplopsyllus anomalus</i>
<i>O. tuberculatus cynomuris</i>	<i>Hystrichopsylla dippiei</i>
<i>Peromyscopsylla adelpha</i>	<i>Malaraeus sinomus</i>
<i>Pulex irritans</i>	<i>M. telchinum</i>
<i>Spilopsyllus inaequalis</i>	<i>Megabothris abantis</i>

<i>Megarthroglossus bisetis</i>	<i>Epitedia stanfordi</i>
<i>M. caverniculus</i>	<i>Euhoplopsyllus affinis</i>
<i>M. procus</i>	<i>Eumolpianus eumolpi americanus</i>
<i>Meringis bilsingi</i>	<i>Foxella ignotus</i>
<i>M. dipodomys</i>	<i>Hoplopsyllus anomalus</i>
<i>M. jamesoni</i>	<i>Hystrichopsylla dippiei</i>
<i>M. parkeri</i>	<i>Malaraeus sinomus</i>
<i>M. rectus</i>	<i>M. telchinum</i>
<i>Odontopsyllus dentatus</i>	<i>Megabothris abantis</i>
<i>Opisodasys robustus</i>	<i>Megarthroglossus bisetis</i>
<i>Orchopeas agilis</i>	<i>M. divisus</i>
<i>O. caedens</i>	<i>Meringis arachis</i>
<i>O. leucopus</i>	<i>M. jamesoni</i>
<i>O. sexdentatus</i>	<i>M. nidi</i>
<i>O. sexdentatus neotomae</i>	<i>M. parkeri</i>
<i>Oropsylla hirsutus</i>	<i>M. rectus</i>
<i>O. idahoensis</i>	<i>Myodopsylla gentilis</i>
<i>O. montanus</i>	<i>Odontopsyllus dentatus</i>
<i>O. tuberculatus cynomuris</i>	<i>Orchopeas agilis</i>
<i>Peromyscopsylla adelpha</i>	<i>O. caedens</i>
<i>P. draco</i>	<i>O. leucopus</i>
<i>P. hamifer vigens</i>	<i>O. sexdentatus</i>
<i>P. hesperomys</i>	<i>O. sexdentatus neotomae</i>
<i>P. selenis</i>	<i>Oropsylla hirsutus</i>
<i>Phalacropsylla allos</i>	<i>O. idahoensis</i>
<i>Pulex irritans</i>	<i>O. montanus</i>
<i>Rhadinopsylla fraterna</i>	<i>O. tuberculatus cynomuris</i>
<i>R. sectilis</i>	<i>Peromyscopsylla adelpha</i>
<i>Spicata rara</i>	<i>P. draco</i>
<i>Spilopsyllus inaequalis</i>	<i>P. hamifer vigens</i>
<i>Stenistomera alpina</i>	<i>P. selenis</i>
<i>S. macrodactyla</i>	<i>Phalacropsylla morlani</i>
<i>Stenoponia Americana</i>	<i>Pleochaetus exilis</i>
<i>Tarsopsylla coloradensis</i>	<i>Pulex irritans</i>
<i>Thrassis campestris</i>	<i>Rhadinopsylla fraterna</i>
<i>T. pansus</i>	<i>R. multidenticulatus</i>
Santa Fe	
<i>Aetheca wagneri</i>	<i>R. sectilis</i>
<i>Amaradix euphorbae</i>	<i>Spicata bottaceps</i>
<i>Amphalius necopinus</i>	<i>Spilopsyllus inaequalis</i>
<i>Anomiopsyllus hiemalis mexicanus</i>	<i>Stenistomera alpina</i>
<i>A. nudata</i>	<i>S. macrodactyla</i>
<i>Atyphloceras echis</i>	<i>Tarsopsylla coloradensis</i>
<i>A. multidentatus multidentatus</i>	<i>Thrassis aridis</i>
<i>Callistopsylla terinus</i>	<i>T. bacchi consimilis</i>
<i>Catallagia decipiens</i>	<i>T. campestris</i>
<i>C. charlottensis</i>	<i>T. fotus</i>
<i>Ceratophyllus vison</i>	<i>T. pansus</i>
<i>Ctenocephalides felis</i>	<i>T. stanfordi</i>
<i>Ctenophyllus armatus</i>	
<i>Delotelis telegoni</i>	
<i>Echidnophaga gallinaceus</i>	
Sierra	
	<i>Anomiopsyllus novomexicanensis</i>
	<i>Meringis altipectin</i>
	<i>M. arachis</i>

<i>M. bilsingi</i>	<i>Meringis facilis</i>
<i>M. parkeri</i>	<i>M. rectus</i>
Socorro	
<i>Anomiopsyllus hiemalis mexicanus</i>	<i>Nosopsyllus fasciatus</i>
<i>A. novomexicanensis</i>	<i>Peromyscopsylla adelpha</i>
<i>Ctenophthalmus pseudagyrtes</i>	
<i>Echidnophaga gallinaceus</i>	
<i>Euhoplopsyllus affinis</i>	
<i>Eumolpianus eumolpi</i>	
<i>Foxella ignotus</i>	
<i>Hystrichopsylla dippei</i>	
<i>Malaraeus sinomus</i>	
<i>Megabothris abantis</i>	
<i>Meringis altipectin</i>	
<i>M. arachis</i>	
<i>M. parkeri</i>	
<i>Opisodasy robustus</i>	
<i>Orchopeas agilis</i>	
<i>O. caedens</i>	
<i>O. leucopus</i>	
<i>O. sexdentatus neotomae</i>	
<i>O. montanus</i>	
<i>Pleochaetis exilis</i>	
<i>Plusaetus equatorius asetus</i>	
<i>Pulex irritans</i>	
<i>P. simulans</i>	
<i>Spilopsyllus inaequalis</i>	
<i>Thrassis bacchi consimilis</i>	
<i>T. pansas</i>	
Taos	
<i>Anomiopsylla hiemalis mexicanus</i>	
<i>Ceratophyllus vison</i>	
<i>Opisodasy robustus</i>	
<i>Oropsylla hirsutus</i>	
Torrance	
<i>Epitedia wenmanni</i>	
<i>Euhoplopsyllus affinis</i>	
<i>Meringis rectus</i>	
<i>Oropsylla hirsutus</i>	
<i>Pulex irritans</i>	
<i>Thrassi pansas</i>	
Union	
<i>Aetheca wagneri</i>	
<i>Malaraerus sinomus</i>	
<i>Peromyscopsylla adelpha</i>	
<i>P. draco</i>	
<i>Pleochaetis exilis</i>	
<i>Pulex irritans</i>	
Valencia	
<i>Anomiopsyllus hiemalis mexicanus</i>	
<i>A. novomexicanensis</i>	
<i>Megarthroglossus bisetis</i>	

New Mexico County Records of Lice Order Anoplura and Order Mallophaga (as noted)

Bernalillo

Enderleinellus suturalis
Fahrenholzia pinnata
F. zacatecae
Goniodes squamatus (O. Mallophaga)
Hoplopleura arboricola
H. onychomydis
H. hesperomydis
Linognathus africanus
L. setosus
Linognathoides laeviusculus
L. neotomae
L. spilosomae
Neohaematopinus citellinus
N. neotomae
N. spilosomae
Pediculus humanus
Phthirus pubis
Polyplax auricularis

Catron

Fahrenholzia zacatecae

Chaves

Fahrenholzia zacatecae

Cibola

Fahrenholzia zacatecae

Colfax

Fahrenholzia zacatecae

Curry

Fahrenholzia zacatecae
Haemodipsus setoni

DeBaca

Fahrenholzia zacatecae

Dona Ana

Fahrenholzia zacatecae

Eddy

Fahrenholzia zacatecae

Grant

Fahrenholzia zacatecae
Hoplopleura ferrisi

Guadalupe

Fahrenholzia zacatecae

Harding

Fahrenholzia zacatecae

Hidalgo

Fahrenholzia zacatecae

Lea

Fahrenholzia zacatecae

Lincoln

Fahrenholzia zacatecae

Los Alamos

Fahrenholzia zacatecae

Luna

Fahrenholzia zacatecae

McKinley

Fahrenholzia zacatecae

Mora

Fahrenholzia zacatecae

Otero

Fahrenholzia pinnata

Haematopinus asini

Werneckiella (Bovicola) equi (O. Mallophaga)

Quay

Fahrenholzia zacatecae

Rio Arriba

Fahrenholzia zacatecae

Roosevelt

Fahrenholzia pinnata

Fahrenholzia zacatecae

Hoplopleura hesperomydis

H. hirsuta

Polyplax auricularis

San Juan

Fahrenholzia zacatecae

San Miguel

Fahrenholzia zacatecae

Sandoval

Fahrenholzia zacatecae

Hoplopleura hesperomydis

Santa Fe

Enderleinellus suturalis

Fahrenholzia zacatecae

Hoplopleura acanthopus

H. arboricola

H. hesperomydis

Linognathoides citellinus

L. laeviusculus

L. marmotae

L. neotomae

L. pacificus

Neohaematopinus citellinus

N. neotomae

N. pacificus

Polyplax auricularis

Sierra

Fahrenholzia zacatecae

Socorro

Fahrenholzia zacatecae

Hoplopleura arboricola

H. arizonensis

H. reithrodontomydis

Taos

Fahrenholzia zacatecae

Hoplopleura reithrodontomydis

Torrance

Fahrenholzia zacatecae

Union

Fahrenholzia zacatecae

Valencia

Fahrenholzia zacatecae



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