diversity

MDPI

Article

The Biodiversity of Demodecid Mites (Acariformes: Prostigmata), Specific Parasites of Mammals with a Global Checklist and a New Finding for *Demodex sciurinus*

Joanna N. Izdebska * and Leszek Rolbiecki

Department of Invertebrate Zoology and Parasitology, Faculty of Biology, University of Gdańsk, Wita Stwosza 59, 80-308 Gdańsk, Poland; leszek.rolbiecki@ug.edu.pl

* Correspondence: biojni@ug.edu.pl

Received: 31 May 2020; Accepted: 24 June 2020; Published: 30 June 2020

Abstract: Demodecidae are the most specialized parasitic mites of mammals; they typically inhabit the skin, but they have been found in other tissues and organs. They can cause demodecosis (a disease which is hazardous and difficult to cure) in humans, domestic animals and livestock. They are parasites with high host and topical specificity. They have been found for most orders of mammals, and they are common in the populations of numerous host species. Therefore, they not only constitute an important subject of veterinary and medical study, but also comprise an excellent model for faunistic and parasitological analyses concerning different aspects of functioning and evolution of the host–parasite relationship. The current level or knowledge of demodecid mites is irregular and fragmentary, and numerous questions require elaboration and ordering, from the taxonomic diversity to geographic distribution and relations with hosts. Such data may be of use i.a. for the development of more efficient and reliable diagnostic methods, as well as understanding the etiology and pathogenesis mechanisms of demodecosis, currently a contentious issue. The present paper lists all formally-described valid species of demodecid mites, together with other functioning specific names, verified and with comments on their status. This is significant for correct species identification and demodecosis diagnostics. The list has been drawn up on the basis of data acquired in the period 1842−2020. It contains 122 valid species of parasite, including their hosts and geographic distribution, data on parasitism, as well as only the second record of *Demodex sciurinus* in Eurasian red squirrel *Sciurus vulgaris* in over 100 years since its initial discovery.

Keywords: Acariformes; Demodecidae; Prostigmata; checklist; diversity; parasites

1. Introduction

The members of the Demodecidae are specialized, typically monoxenic mammal parasites, and are likely abundant within host populations. They are stationary parasites, with their whole life cycle spent on the host; however, depending on the species, its topography, seasonal dynamics and transmission mechanism, they may exhibit a variable level of infestation prevalence, which may reach up to 100% [1,2]. Typically, the presence of demodecid mites does not produce disease symptoms, even at high infestation intensity and high density on the skin [3–5]. However, under favorable host circumstances, the high density of these mites may be linked to the development of demodecosis (formerly demodicosis, demodicidosis). Demodecosis often has a complicated course, depending on various factors including the species constituting the etiologic factor. Its symptoms typically include the presence of various skin lesions with different topography, hair loss, eyelid margin inflammation and conjunctivitis, and changes within gum mucous membranes; however, it also can occur in generalized form. Complications may

also occur in the form of secondary bacterial or fungal infections. It is suspected that the possibility of developing the parasitosis may be increased by reduced host immunity, poor condition or incorrect diet, such as deficiencies in vitamins and micronutrients [6,7]. Despite the high infestation prevalence in wild mammal populations, demodecosis is observed relatively rarely. However, it constitutes a serious problem for humans, domestic animals and livestock. *Demodecosis canina*, a domestic dog disease, typically caused by *D. canis* is characterized by a particularly hazardous course, with a chronic or even fatal result [2,8]. It has a highly variable course and symptoms, which on the one hand may be linked to the vast diversity of its hosts, with different breeds demonstrating variable susceptibility, as well as etiological factors, as three new species of these mites have been identified in dogs relatively recently (Table 1). Another burdensome and resilient parasitosis is *demodecosis hominis*, caused in humans by the synhospital human demodecid mite *D. brevis*, associated with skin sebaceous glands, and *D. folliculorum*, found in hair follicles. It manifests there typically in the form of skin lesions (e.g., pityriasis folliculorum, rosacea-like demodecidosis, pustular folliculitis, papulo-pustular scalp eruptions, perioral dermatitis and hyperpigmented patches of the face) in the head area (skin and facial hair), hair loss and eyelid margin inflammation, as well as conjunctivitis. The nature of the pathogenesis depends on various factors, such as the etiological agent (i.e., demodecid species), and the symptoms are reminiscent of other dermatoses; therefore, diagnostics, including demodecid species identification, is important for efficient treatment [6]. A number of demodecosis variants, dictated by the host inhabited by the demodecid mite, have been described for cats and cattle, or laboratory animals such as mice and hamsters (Table 1).

Due to their morphological modifications, including miniaturization, or various adaptations to parasitism within the different microhabitats, offered by the skin, tissues and organs of the host, the Demodecidae can claim to be the most specialized parasitic mites of mammals. Moreover, they demonstrate high host and topical specificity, representing the majority of orders of mammals [9]. Their long evolutionary relationship with hosts makes them the perfect model for faunistic or parasitological analyses concerning different aspects of the functioning of a host–parasite relationship and the co-evolution of these mites and their hosts. Although the family includes species of high medical and veterinary importance, their level of recognition is insufficient, and the available information regarding them is fragmentary and dispersed. A series of issues need to be studied and ordered, from taxonomic diversity, to geographic distribution and relations with hosts. In particular, data on their distribution, including their occurrence in different areas of the host range, remains incomplete. The majority of records describe cases of these parasites found in relation to parasitosis (*demodecosis*) symptoms, and these are relatively rare, being restricted mostly to domestic mammals and humans, and are only sporadically observed in wild animals [2,4,10]. Detecting an asymptomatic infestation is complicated by the miniature size of the mite, with the smallest species reaching only 70–80 µm in length, and its secretive life history; in addition, the parasites inhabit a range of skin structures, including normal and sensory hair follicles and different types of glands, as well as a variety of organ tissue types, such as the tongue, gums, anterior segments of the digestive tract or auditory canals [11]. Therefore, certain species, despite inhabiting widely distributed and common hosts, are known only from singular case studies or in sparse records [4,12].

Furthermore, the literature, particularly parasitological and veterinarian studies, encompasses a series of unverified data, including species with an actual *nomen nudum* status, invalid-unauthorized synonyms or information based on doubtful identification [2,10]: The numbers of species classified into this family varies from several dozen to over one hundred depending on the source [10,13,14]. Originally, one comprehensive study existed, covering the 16 then-known species [15], including full data on their distribution and documented records. Only one global checklist, covering 100 species and their hosts, has been published in modern times [13], this being a part of a more extensive study of the Eleutherengona as obligatory mammal parasites. However, it does not include data on records or any validation of the functioning of the names in the literature, and Demodecidae checklists for the selected host group, i.e., rodents and soricomorphs, that have been published [16–18].

The present paper serves as a comprehensive study of all known species, and includes a verification of the unauthorized names, including the *nomen nudum*. Furthermore, it also includes a new record: The second finding of *Demodex sciurinus* globally, confirming the existence of this species close to one hundred years from its original discovery. Another significant objective of the revision is to organize currently-available Demodecidae records, not only for faunistic purposes, but also for parasitological, veterinary and medical research. A key value of such a summary of the current state of research is that it also highlights the absence of information from numerous countries where demodecid mites, and its relationship with demodecosis, are a significant area of study: In some of these areas, no information on the distribution of demodecid mite species has been published. Our global data also constitute a significant starting point for future, more comprehensive regional analyses, as well as the development of diversity models in the context of host–parasite relationships. These more specific findings would be of great value in the development of more efficient and reliable diagnostic methods, and in improving our understanding of the etiological mechanisms and pathogenesis of demodecosis, which is currently a contentious issue.

2. Materials and Methods

2.1. Detection of Demodecidae in Sciurus vulgaris

One squirrel, *Sciurus vulgaris,* originating from northern Poland (Gdynia 54°30′ N 18°32′ E), collected in 2017, was examined for demodecid mites.

Demodecid mites were isolated using skin digestion methods [19]. Skin fragments of 1 cm^2 were collected from several body regions, including the head (around eyes, ear pinnae, nose, lips, chin, cheeks and vertex), neck, abdomen, back, limbs, tail and genital-anal area. Skin samples were preserved in 70% ethanol and digested in 10% potassium hydroxine solution. The obtained samples were decanted and analyzed using phase-contrast microscopy; an examination of 1 cm^2 of skin was equal to the analysis of approximately 100 wet preparations. The mites were mounted in polyvinyl-lactophenol solution and photographed. The following measurements (μm) were taken as follows: Total body length equals length of gnathosoma, podosoma and opisthosoma; gnathosomal width equals width at base; and podosomal and opisthosomal width equals maximum width. The specimens were deposited in scientific collections within the framework of the Collection of Extant Invertebrates in Department of Invertebrate Zoology and Parasitology, University of Gdańsk, Gdańsk, Poland (UGDIZP).

2.2. Literature Review—The Checklist Structure, Biogeographic and Parasitological Data Analysis

The checklist has been drawn up based on manuscripts published during the period 1842–2020 (278 items). It also contains a new record, marked in the Table 1 as the present study. Demodecidae species have been listed in systematic order, and in alphabetical order within the genera. The list includes all formally described species and other functioning specific names; all of which are verified and provided with comments on their status. Information on dates of host species, as well as the occurrence have been also included. Wherein, for cosmopolitan demodecid mite species, selected records from various range regions were given. Host records related to unidentified *Demodex* spp. have not been included.

The scientific names, common names, and systematics of the hosts follow Wilson and Reeder [20] and the Taxonomic Information System [21].

3. Results

3.1. A New Record of Demodex sciurinus

The examined squirrel specimens were found to have *D. sciurinus* (Table 2, Figure 1). A total number of 13 females and 8 males were identified, as well as several specimens at nymphal stages; male and immature stages were demonstrated for the first time. All mites were found in the skin of the penis. The presence of demodecid mites was not associated with demodecosis symptoms.

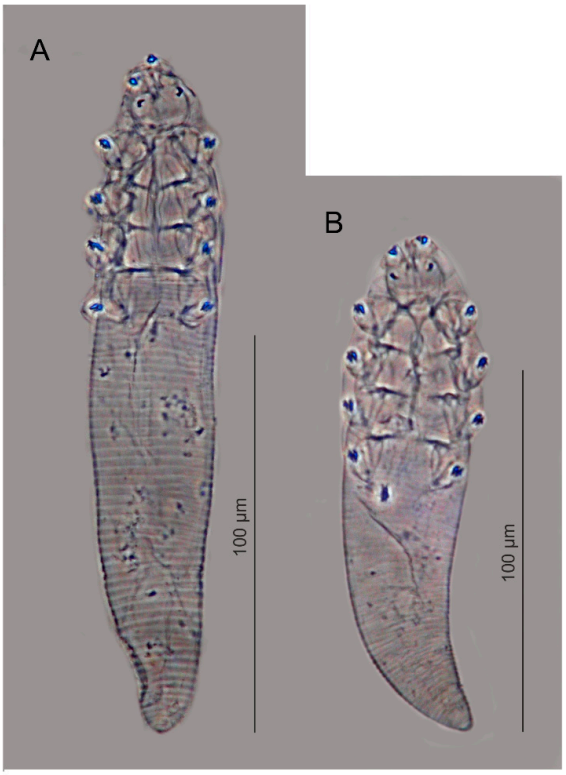

Figure 1. *Demodex sciurinus*: (**A**) female. (**B**) male.

3.2. Biodiversity and Geographic Distribution of Demodecidae Mites

A total of 122 demodecid mite species with verified systematic status are presently known, of which one represents *Apodemodex*, 106 *Demodex*, one *Glossicodex*, seven *Ophthalmodex*, one *Pterodex*, one *Rhinodex*, one *Soricidex* and four *Stomatodex* (Table 1). Representatives of the Demodecidae have been recorded on all continents outside of the polar regions (Figure 2), and their presence is typically dictated by the presence of a typical host; however, no studies of this group have been conducted in numerous areas of its range, even for common mammal species. Many species of hosts have wide distribution ranges and are also considered cosmopolitan.

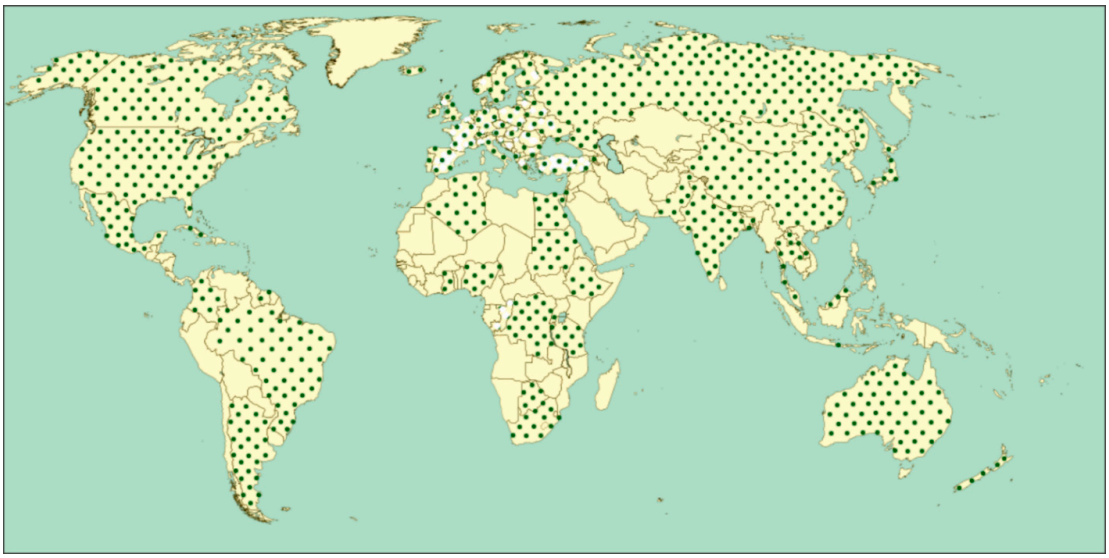

Figure 2. Geographis distribution (green dots) of Demodecidae in the world.

3.3. Demodecidae Parasitism and Relationships with Hosts

The greatest diversity of Demodecidae has, thus far, been described for bats (five genera), followed by rodents (three genera) and soricomorphs (two genera) as hosts; only *Demodex* representatives have been recorded in the remaining mammal orders. In turn, the species diversity in the individual host groups typically corresponds to the species diversity of the host (Figures 3 and 4). Hence the highest number of Demodecidae species have been described from the most abundant groups of mammals, e.g., 43 from rodents, 27 from bats, 17 from ungulates and 15 from carnivorans. In contrast, the Demodecidae from primates (six species) or marsupials (three species) have been especially poorly studied, which may be associated with limited access to the material. More than one species of Demodecidae has been recorded in 27 species of mammals, and the greatest number of synhospital species have been described among rodents and bats (Table 3).

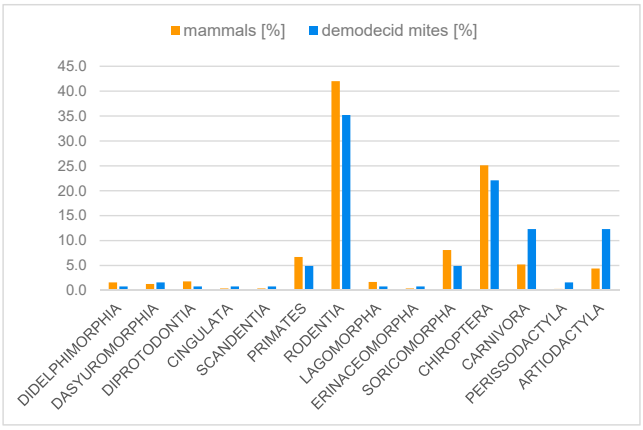

Figure 3. Share (%) of species from particular orders within mammals in comparison with the participation (%) of related demodecid mites.

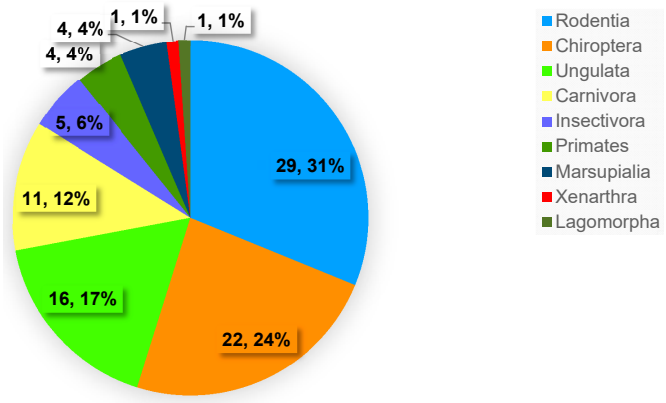

Figure 4. Mammals—hosts of Demodecidae (species number and % of mammals from different orders).

4. Discussion

Although the Demodecidae are associated with almost all of the modern mammalian orders (Table 1), their distribution and occurrence in host populations have been poorly and unevenly studied. This paucity of information has been attributed to the difficulty in detecting asymptomatic infestation, the low number of faunistic studies and issues associated with correct species identification. This is confirmed by the high number of records for demodecid mites without species identification, listed as *Demodex* sp. e.g., [22–29], including valuable new records of hosts.

4.1. Demodecidae Biodiversity Analysis in the Light of Taxonomic Identification Problems

The number of demodecid mite species described thus far (122) does not seem to be very high when considering that over 5000 mammal species could act as potential hosts. This primarily stems from technical issues linked to their detection (e.g., miniature size, secretive life history with rare manifesting of their presence in the form of demodecosis), and the strict species description criteria used for the group: Representative series of specimens of both sexes are used, often with juvenile stages [9,11].

Demodecidae species associated with human, domestic and livestock mammals are an important issue in the comprehensive elaboration of this group. Although demodecid mites have been listed in handbooks and other overview papers, in lists with parasites with data on their pathogenic importance for hosts in different countries and continents, comparatively few published records exist. Therefore, verification of whether these purported Demodecidae indeed occur in these sources, or can be potentially detected in them, has proven difficult. A series of demodecosis descriptions, case studies or clinical studies exist indicating occurrence of individual demodecid mites in a given area; however, these descriptions typically lack the information needed to determine the geographic locality of the parasite or its frequency of occurrence, or whether earlier records exist. Often the identification of the demodecid mite is limited only to the genus e.g., [30–35].

In addition, a number of species with unverified status or *nomen nudum* exist in the parasitological or veterinary literature. As the Demodecidae are monoxenic parasites, hosts are often assigned species solely on the basis of an alleged host specificity. Recording the presence of a *Demodex* species in a new host species suggests a high probability that this species is new to Science; however, this requires an appropriate taxonomic analysis to be conducted and a description in accordance with the International Commission on Zoological Nomenclature (ICZN) requirements to be published [2,10]. Unfortunately, such newly-discovered taxa have been assigned unsupported names with suitable descriptions; these have also been copied in other publications, thus becoming established in the specialist literature. For instance, the lists of the parasitofauna of the gerbil, a commonly-used laboratory animal, frequently contain a reference to *Demodex merioni* [36,37]: An alleged species not supported with a description and not assigned to any concrete host species, since the term gerbil is used to refer to a multitude of taxa. A similar situation concerned *D. cornei* from the domestic dog. The name had functioned for many years to describe an alleged species referred to as "short form" from the dog epidermis. Although morphological and morphometric research [8,38] has confirmed the existence of such species, the lack of a formal, unambiguous description meant that it was impossible to verify records from different parts of the world, as these were mostly based on the criterion of length, possibly confirmed with topical distinctiveness. Although, eventually, the specific status has been explained and confirmed with an appropriate species description [2], this does not provide any possibility to verify earlier records not supported with morphological characteristics. The groundlessness of using size as a criterion to identify species within the same host has been further confirmed by the discovery of another "short" canine demodecid species, *D. cyonis*. Furthermore, literature data including the *nomina nuda D. araneae* and *D. bonaparti* has been published without an appropriate description [39], despite being correctly distinguished by the author: A specialist on Demodecidae research. Likewise, the description of *D. myotidis, D. sciurei, D. sylvilagi* or *D. transitionalis* were included in an unpublished dissertation, a procedure that does not meet the ICZN criterion on the publication of species descriptions (Table 1).

At present, numerous directions in Demodecidae research have employed molecular methods; however, their outcomes are not reliable given the lack of correlation between morphological taxonomy and molecular divergence. An example here would be *D. "felis"*, which was recorded for the domestic cat in a study solely based on molecular analyses [40]. The authors, who assigned it a temporary name, giving the impression of a species name, stipulate that it is only a working name proposal, intended for the purpose of distinguishing the alleged species, which, according to those authors, differs from other feline demodecid mites e.g., [41–44]. Such a study where cladistics is based solely on molecular data without confirming that the inferred genetic distance is a reliable evidence at the infraspecific

level, cannot provide a sufficient basis to assign a species name for an identified demodicid mite; this is especially true as the results, in this case, have not been supported with any other evidence, including morphology, and it cannot be said which taxa they concern. However, despite this irregularity, the species already functions in the veterinary literature at the specific name level.

Another issue in the study of Demodecidae distribution concerns the existence of uncertainties with regards to correct identification. Individual species can differ with regard to sets of characters and small morphological elements which may be only several micrometers in size, sometimes less than 1 µm; such minute variation requires the use of suitable preparation methods, phase contrast techniques and immersion microscopy, as well as experience in such taxonomic analyses. At the same time, some studies use alleged host specificity or, sometimes, size as the basis for identification; however, the study methods described in the works do not leave any doubt that a correct identification had not been possible. As a host may be associated with different specific Demodecidae species with similar sizes and proportions, any application of the host specificity criterion in species identification is not only insufficient, but also groundless. An accidental transfer onto atypical hosts cannot be excluded, which may happen under favorable conditions, even in the case of highly-specialized parasites.

4.2. State and Perspectives for the Study on Geographic Distribution

In view of presented data, the highest number of species (confirmed records) have been recorded in Poland (51 species), the USA (23), Czech Republic (18) and Great Britain (18). Naturally, this does not stem from any special preferences of the Demodecidae for the hosts occurring in those countries, but it is consequence of sampling bias. A clear contrast can be seen between Demodecidae records obtained from wild, domestic and livestock mammals. Detections in wild animals are rare, because demodecid mites rarely manifest their presence in the form of *demodecosis*.

It is also possible that the occurrence of the known Demodecidae species is considerably wider than that indicated by the published data, and likely coincides with the ranges of their hosts. This has been confirmed by the latest records of *D. chiropteralis*, *D. melesinus* and, the present record of, *D. sciurinus*: Species formerly known only from individual records from England, and a single observation recorded a hundred years previously from distant Poland. The currently identified individuals of *D. sciurinus* exhibited traits complying with the description and figures published by Hirst [45], despite the description deviating from the modern standards assumed for the Demodecidae taxonomy. Therefore, a redescription will definitely be necessary in the future; this would include an initial description of the juvenile stages, which will be possible after collecting a wider range of material from a greater number of hosts. Current intensive research conducted within the area of Poland has further confirmed the presence of almost all species formerly described from the Czech Republic, the Netherlands or the USA, provided that typical hosts are to be found. It should be added that many species exhibit very high infestation prevalence in the host populations, reaching up to 100% e.g., [1,4,12,18,19].

It is currently important to organize the diverse body of data concerning the occurrence of species of medical and veterinary significance, i.e., to verify and correlate data on the occurrence of demodecosis in various host species with information on the occurrence of the agent species, as confirmed by taxonomic identification.

4.3. Host-Parasite Relationships

The diversity of Demodecidae in individual host groups is typically convergent with the species richness of the host group (Figures 2 and 3). Moreover, the study of this group of species is also related to the incidence rate of demodecosis and the practical importance of hosts, thus the number of species described from carnivores is relatively higher (with regards to the biodiversity of this group) than for other mammals. Among the 17 demodecid mite species described for carnivorous mammals, six originate from domestic dogs and cats. In addition, the availability of material for study, and the technical issues related to detection, are other significant factors. The detection of asymptomatic infestation is labor-intensive, with an efficiency that is inversely proportionate to the host size. It is

therefore unsurprising that the highest number of species have been described from small mammals. In contrast, the Demodecidae from primates (six species), or marsupials (three species) have been especially poorly studied, which may be associated with the limited access to the material, with only individual specimens of selected species obtained from zoological gardens being tested, and the fact that certain areas of the world, such as Asia and Australia, are absent from the body of data (Tables 1 and 2). Therefore, it is possible that the number of existing species is considerably higher than presented herein.

The Demodecidae exhibit high specificity towards hosts (monoxeny). Only five species are considered oligoxenic, i.e., recorded from more than one host; however, all host species were closely related. Of this group, *D. apodemi* and *S. corneti* have been described according to insufficient criteria, based on the current state of knowledge, and hence require redescription. In turn, *D. sabani* and *D. kutzeri* also require taxonomic revision, as they may constitute aggregate species, with their taxa being difficult to distinguish according to morphological criteria; such revision should include additional criteria such as ontogeny, molecular characteristics and parasitological testing. Furthermore, the host status is not always clear, e.g., *D. kutzeri* has been recorded from various deer species, with ambiguous species status (*Cervus canadensis* or *C. elaphus canadensis*).

Demodecid mites are generally characterized by monoxeny and a strict co-evolutionary relationship with their hosts, which is linked with the development of advanced adaptations to parasitism [9]. The mites also tend to inhabit different microhabitats within the host species, and synhospital (co-occurring) species are known to occur [46]. Although such species have been described for rodents, soricomorphs, bats, carnivores, ruminants and primates, the amount of knowledge regarding these species corresponds more to the amount of research performed on their hosts, rather than their actual distribution in the environment (Table 3). Until recently, the highest number of Demodecidae species were known from *C. perspicillata*, a species of bat that has been thoroughly studied for the presence of these mites (Table 3); in contrast, until the end of the 20th Century, only two demodecid species were known for the house mouse: A cosmopolitan, synanthropic animal used as a laboratory subject, pet or as food for other animals and one of the best-studied mammals. Intensive research conducted in recent years has revealed five further species of parasite, including one from a new genus: *Glossicodex* (Figure 5) [11,47].

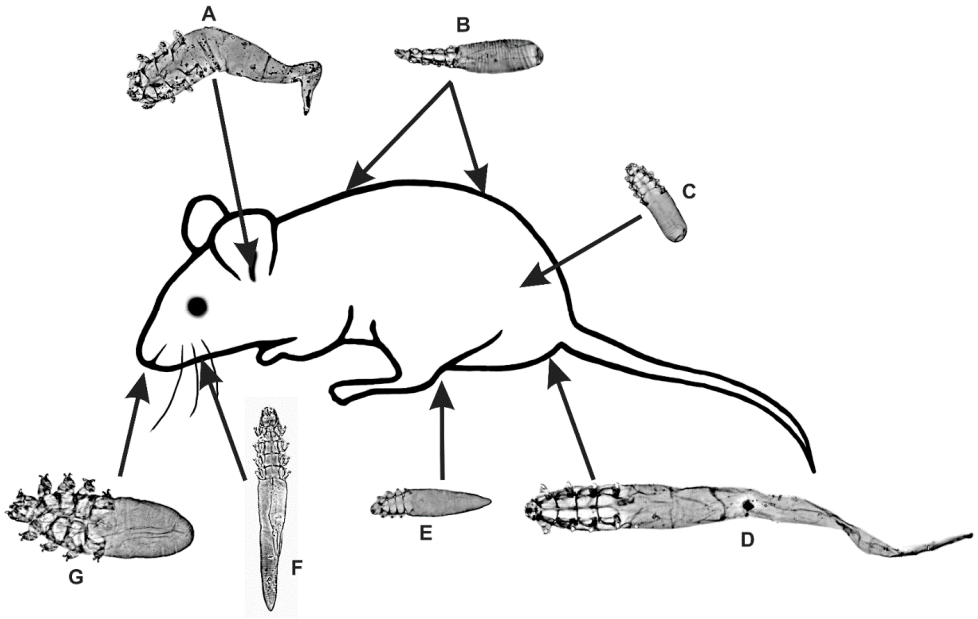

Figure 5. Topographic preferences of demodecid mites in house mouse: (**A**) *Demodex conicus*. (**B**) *Demodex musculi*. (**C**) *Demodex marculus*. (**D**). *Demodex flagellurus*. (**E**) *Demodex fusiformis*. (**F**) *Demodex vibrissae*. (**G**) *Glossicodex musculi*.

Table 1. Checklist of demodecid mites.

Demodecid Mites	Host Species (Ordo, Family)	Occurrence	Comments to the Status of Demodecid Mite Species
Apodemodex cornutus Bukva, 1996	*Neomys anomalus* Cabrera, 1907 (Soricomorpha, Soricidae)	Czech Republic loc. class. [48]	Valid
Demodex acutipes Bukva and Preisler, 1988	*Cervus elaphus* Linnaeus, 1758 (Artiodactyla, Cervidae)	Czech Republic loc. class. [49], Poland [50]	Valid
Demodex aelleni Fain, 1960	*Myotis daubentonii* (Kuhl, 1817) (Chiroptera, Vespertilionidae)	Switzerland loc. class. [51]	Valid
Demodex agrarii Bukva, 1994	*Apodemus agrarius* (Pallas, 1771) (Rodentia, Muridae)	Poland [46,52], Slovak Republic loc. class. [53]	Valid
Demodex ailuropodae Xu, Xie, Liu, Zhou and Shi, 1986	*Ailuropoda melanoleuca* (David, 1869) (Carnivora, Ursidae)	China, zoological garden ex situ [54]	Valid
Demodex antechini Nutting and Sweatman, 1970	*Antechinus stuartii* Macleay, 1841 (Dasyuromorphia, Dasyuridae)	Australia loc. class. [55]	Valid
Demodex apodemi Hirst, 1918	*Apodemus agrarius* (Rodentia, Muridae)	Poland [52], Russia [56]	Valid; described by Hirst [57], next considered as a subspecies *D. arvicolae* var. *apodemi* [15], and verified by Izdebska [16] as *D. apodemi*; specimens from *A. agrarius*, probably belongs to the separate species
	Apodemus sylvaticus (Linnaeus, 1758) (Linnaeus, 1758)	Great Britain loc. class [15,57], Poland [58], Russia [56]	
Demodex araneae Nutting, 1950	*Ateles* sp. (Primates, Atelidae)	Nutting [39] after Nutting [59]	Nom. nud.; description not published within the meaning of the ICZN
Demodex aries Desch, 1986	*Ovis aries* Linnaeus, 1758 (Artiodactyla, Bovidae)	New Zealand loc. class [60], Czech Republic [61]	Valid
Demodex artibei Vargas, Bassols, Desch, Quintero and Polaco, 1995	*Artibeus aztecus* K. Andersen, 1906 (Chiroptera, Phyllostomidae)	Mexico loc. class. [62]	Valid
Demodex arvicolae Zschokke, 1888	*Microtus agrestis* (Linnaeus, 1761) (Rodentia, Cricetidae)	Astrahan/Europe on the border with Asia [56], Europe loc. class. [15]	Valid; the record from the *M. arvalis* is questionable; maybe *D. microti* was found
	Microtus arvalis (Pallas, 1778) (Rodentia, Cricetidae)	Astrahan/Europe on the border with Asia [56]	
Demodex aurati Nutting, 1961	*Mesocricetus auratus* (Waterhouse, 1839) (Rodentia, Cricetidae)	Described and finding in laboratory animals, e.g., ex situ [37,63–69]	Valid
Demodex auricularis Izdebska, Rolbiecki and Fryderyk, 2014	*Apodemus sylvaticus* (Rodentia, Muridae)	Poland loc. class. [58]	Valid
Demodex bandicotae Izdebska, Rolbiecki, Morand and Ribas, 2017	*Bandicota indica* (Beschstein, 1800) (Rodentia, Muridae)	Laos loc. class. [17]	Valid
Demodex bantengi Firda, Nutting and Sweatman, 1987	*Bos javanicus* d'Alton, 1823 (Artiodactyla, Bovidae)	Bali loc. class. [70]	Valid
Demodex bicaudatus Kniest and Lukoschus, 1981	*Macroglossus minimus* (E. Geoffroy, 1810) (Chiroptera, Pteropodidae)	Australia loc. class. [71]	Valid
Demodex bisonianus Kadulski and Izdebska, 1996	*Bison bonasus* (Linnaeus, 1758) (Artiodactyla, Bovidae)	Poland loc. class. [72–78]	Valid
Demodex bonapartei Nutting, 1950	*Mustela erminea cicognanii* Bonaparte, 1838 (Carnivora, Mustelidae)	Nutting [39] after Nutting [59]	Nom. nud.; description not published within the meaning of the ICZN
Demodex bovis Stiles, 1892 (redescription Desch and Nutting 1971)	*Bos taurus* Linnaeus, 1758 (Artiodactyla, Bovidae)	Probably cosmopolitan, e.g., s. loc. [79], Egypt [80], Ethiopia [81], Nigeria [82], Sudan [83–85], Canada [86], USA [87], Argentina [88], Colombia [89], India [90], Mongolia [91], New Zealand [92,93], Czech Republic [94], Germany [95], Hungary [96], Italy [97], Poland [78,98]	Valid; European bison - an accidental finding in a closed farm
	Bos taurus indicus Linnaeus, 1758 (Artiodactyla, Bovidae) [*B. indicus* given by the Authors [99] is actually *B. t. indicus*]	Brazil [99]	
	Bison bonasus (Artiodactyla, Bovidae)	Poland, in the breeding condition ex situ [74,77]	

Table 1. *Cont.*

Demodecid Mites	Host Species (Ordo, Family)	Occurrence	Comments to the Status of Demodecid Mite Species
Demodex brevis Akbulatova, 1963 (redescription, Desch and Nutting 1972)	*Homo sapiens* Linnaeus, 1758 (Primates, Hominidae)	Cosmopolitan, e.g., USA [100–102], China [103,104], Australia [105], New Zealand [93], Poland [106], Russia loc. class. [107], Turkey [108–110]	Valid
Demodex buccalis Bukva, Vítovec and Vlček 1985	*Myodes glareolus* (Schreber, 1780) (Rodentia, Cricetidae)	Czech Republic loc. class [111], Poland [112]	Valid
Demodex caballi (Railliet, 1895) (redescription, Desch and Nutting 1978)	*Equus caballus* Linnaeus, 1758 (Perissodactyla, Equidae)	Probably cosmopolitan, e.g., s. loc. [113], USA [114,115], New Zealand [116]	Valid
Demodex cafferi Nutting and Guilfoy, 1979	*Syncerus caffer* (Sparrman, 1779) (Artiodactyla, Bovidae)	Botswana loc. class. [117], Republic of South Africa [118,119]	Valid
Demodex canis (Leydig, 1859) (redescription, Nutting and Desch, 1978)	*Canis lupus familiaris* Linnaeus, 1758 (Carnivora, Canidae)	Probably cosmopolitan, e.g., s. loc. [120], USA [121], Colombia [122], Cuba [123], India [124–126], Nepal [127], Pakistan [128], Thailand [129], New Zealand [93,130], Bangladesh [131], Poland [2,8,38,132,133], Russia [134], Turkey [135]	Valid
Demodex caprae Railliet, 1895	*Capra hircus* Linnaeus, 1758 (Artiodactyla, Bovidae)	Probably cosmopolitan, e.g., Ethiopia [136], China [137], New Zealand [93], Czech Republic [138], France loc. class. [113], Poland [139], Switzerland [113,140]	Valid
Demodex carolliae Desch, Lebel, Nutting and Lukoschus, 1971	*Carollia perspicillata* (Linnaeus, 1758) (Chiroptera, Phyllostomidae)	Republic of Suriname loc. class. [141]	Valid
Demodex castoris Izdebska, Fryderyk and Rolbiecki, 2016	*Castor fiber* Linnaeus, 1758 (Rodentia, Castoridae)	Poland loc. class. [142]	Valid
Demodex cati Megnin, 1877 (redescription, Desch and Nutting, 1979)	*Felis catus* Linnaeus, 1758 (Carnivora, Felidae)	Probably cosmopolitan, e.g., s. loc. [143], USA [144,145], Brazil [146], New Zealand [116], Bulgaria [147], Germany [148], Great Britain [15], Italy [149], Poland [132], Spain [150]	Valid
Demodex caviae Bacigalupo and Roveda, 1954	*Cavia porcellus* (Linnaeus, 1758) (Rodentia, Caviidae)	Described and finding in laboratory animals, e.g., ex situ [151–153]	Valid
Demodex cervi Prietsch, 1886	*Rusa unicolor* (Kerr, 1792) (Artiodactyla, Cervidae)	Germany ex situ [154]	Valid; hom. for *D. cervi* sensu Kutzer and Grünberg, 1972 (see *D. kutzeri*)
Demodex chiropteralis Hirst, 1921	*Plecotus auritus* (Linnaeus, 1758) (Chiroptera, Vespertilionidae)	Great Britain loc. class. [155], Poland [12]	Valid
Demodex conicus Izdebska and Rolbiecki, 2015	*Mus musculus* Linnaeus, 1758 (Rodentia, Muridae)	Poland loc. class. [156]	Valid
Demodex cornei: Izdebska and Rolbiecki, 2018	*Canis lupus familiaris* Linnaeus, 1758 (Carnivora, Canidae)	Probably cosmopolitan, Poland loc. class. [2]	Valid; records before 2018 have uncertain status, except Izdebska [8] and Izdebska and Fryderyk [38]
Demodex corniculatus Izdebska, 2012	*Apodemus flavicollis* (Melchior, 1834) (Rodentia, Muridae)	Poland loc. class. [1,16]	Valid
Demodex criceti Nutting and Rauch, 1958	*Mesocricetus auratus* (Waterhouse, 1839) (Rodentia, Cricetidae)	Described and finding in laboratory animals, e.g., ex situ [37,65,66,68,69,157]	Valid
Demodex cricetuli Hurley and Desch, 1994	*Cricetulus migratorius* (Rodentia, Cricetidae)	Described in laboratory animals ex situ [158]	Valid
Demodex cuniculi Pfeiffer, 1903	*Oryctolagus cuniculus* (Linnaeus, 1758) (Lagomorpha, Leporidae)	In the breeding condition, e.g., China [15], Great Britain loc. class. [15,159]	Valid
Demodex cyonis Morita, Ohmi, Kiwaki, Ike and Nagata, 2018	*Canis lupus familiaris* Linnaeus, 1758 (Carnivora, Canidae)	Japan loc. class. [160]	Valid
Demodex dasypodi Desch and Stewart, 2002	*Dasypus novemcinctus* Linnaeus, 1758 (Cingulata, Dasypodidae)	USA loc. class. [161]	Valid
Demodex desmodi Desch, 1994	*Desmodus rotundus* (E. Geoffroy, 1810) (Chiroptera, Phyllostomidae)	Republic of Suriname loc. class. [162]	Valid

Table 1. *Cont.*

Demodecid Mites	Host Species (Ordo, Family)	Occurrence	Comments to the Status of Demodecid Mite Species
Demodex erinacei Hirst, 1917	*Erinaceus europaeus* Linnaeus, 1758 (Erinaceomorpha, Erinaceidae)	Great Britain loc. class. [163]	Valid
Demodex erminae Hirst, 1919	*Mustela erminea* Linnaeus, 1758 (Carnivora, Mustelidae)	New Zealand [93], Great Britain loc. class. [15]	Valid
Demodex equi Railliet, 1895	*Equus caballus* Linnaeus, 1758 (Perissodactyla, Equidae)	Probably cosmopolitan, e.g., s. loc. [113], USA [164], Great Britain [15], Poland [165]	Valid
Demodex felis	*Felis catus* Linnaeus, 1758 (Carnivora, Felidae)	[40]	Nom. nud.
Demodex flagellurus Bukva, 1985	*Mus musculus* (Rodentia, Muridae)	Czech Republic loc. class. [166], Poland [167–169]	Valid
Demodex folliculorum (Simon, 1842) (redescription Desch and Nutting, 1972)	*Homo sapiens* (Primates, Hominidae)	Cosmopolitan, e.g., Algeria [170], Egypt [171], USA [100,101], China [103], India [172,173], Australia [105], New Zealand [93,130], Belgium [174], Croatia [175], Germany loc. class. [176], Great Britain [177], Greece [178], Iceland [179], Ireland [180], Poland [106], Turkey [108–110,181,182]	Valid
Demodex folliculorum sinensis Xie, Liu, Hsu and Hsu, 1982	*Homo sapiens* (Primates, Hominidae)	China [183]	
Demodex foveolator Bukva, 1984	*Crocidura suaveolens* (Pallas, 1811) (Soricomorpha, Soricidae)	Czech Republic loc. class. [184], Poland [18]	Valid
Demodex fusiformis Izdebska and Rolbiecki, 2015	*Mus musculus* (Rodentia, Muridae)	Poland loc. class. [169]	Valid
Demodex gapperi Nutting, Emejuaiwe and Tisolel, 1971	*Myodes gapperi* (Rodentia, Cricetidae)	USA loc. class. [185]	Valid
Demodex gatoi Desch and Stewart, 1999	*Felis catus* Linnaeus, 1758 (Carnivora, Felidae)	USA loc. class. [186,187], Austria [188], Finland [189], Poland [44,132], Spain [150])	Valid
Demodex ghanensis Oppong, Lee and Yasin, 1975	*Bos taurus* (Artiodactyla, Bovidae)	Ghana loc. class. [190], Sudan [83]	Valid
Demodex glareoli Hirst, 1919	*Myodes glareolus* (Rodentia, Cricetidae)	Great Britain loc. class. [15], Poland [112]	Valid; described by Hirst [15] as a subspecies *D. arvicolae* var. *glareoli*, than verified by Izdebska [112] as *D. glareoli*
Demodex gliricolens Hirst, 1921	*Arvicola amphibius* (Linnaeus, 1758) (Rodentia, Cricetidae)	Great Britain loc. class. [155]	Valid
Demodex gracilentus Izdebska and Rolbiecki, 2013	*Apodemus agrarius* (Rodentia, Muridae)	Poland loc. class. [46]	Valid
Demodex huttereri Mertens, Lukoschus and Nutting, 1983	*Apodemus agrarius* (Rodentia, Muridae)	Germany loc. class. [191], Poland [192]	Valid
Demodex injai Desch and Hillier, 2003	*Canis lupus familiaris* Linnaeus, 1758 (Carnivora, Canidae)	Probably cosmopolitan, USA loc. class. [193], Brazil [194], Spain [195], Poland [8,38]	Valid
Demodex intermedius Lukoschus, Mertesn, Nutting and Nadchatram, 1984	*Tupaia glis* (Diard, 1820) (Scandentia, Tupaiidae)	Malaysia loc. class. [196]	Valid
Demodex kutzeri Bukva, 1987	*Alces alces* (Linnaeus, 1758) (Atriodactyla, Cervidae)	Poland [197]	Valid; (=*D. cervi* sensu Kutzer and Grünberg, 1972; hom. for *D. cervi* Prietsch, 1886)
	Capreolus capreolus (Linnaeus, 1758) (Artiodactyla, Cervidae)	Poland [198,199]	
	Cervus elaphus Linnaeus, 1758 (Artiodactyla, Cervidae)	Austria [200], Czech Republic loc. class. [154], Poland [198,201]	
	Cervus elaphus nelsoni Nelson, 1902 (Artiodactyla, Cervidae)	USA [202,203]	
	Cervus nippon pseudaxis Gervais, 1841 (Artiodactyla, Cervidae)	Berlin, zoological garden ex situ [154]	
	Dama dama (Linnaeus, 1758)	Poland [204]	
	Odocoileus hemionus hemionus (Rafinesque, 1817) (Artiodactyla, Cervidae)	USA [202,203]	

Table 1. *Cont.*

Demodecid Mites	Host Species (Ordo, Family)	Occurrence	Comments to the Status of Demodecid Mite Species
	Odocoileus virginianus (Zimmermann, 1780) (Artiodactyla, Cervidae)	USA [202]	
Demodex lacrimalis Lukoschus and Jongman, 1974	*Apodemus sylvaticus* (Rodentia, Muridae)	Italy [205], Netherlands loc. class. [205], Poland [206]	Valid
Demodex leucogasteri Hughes and Nutting, 1981	*Onychomys leucogaster* (Wied-Neuwied, 1841) (Rodentia, Cricetidae)	USA loc. class. [207]	Valid
Demodex longior Hirst, 1918	*Apodemus sylvaticus* (Rodentia, Muridae)	Great Britain loc. class. [15,57], Poland [46], Russia [56]	Valid
Demodex longissimus Desch, Nutting and Lukoschus, 1972	*Carollia perspicillata* (Chiroptera, Phyllostomidae)	Republic of Suriname loc. class. [208]	Valid
Demodex lutrae Izdebska and Rolbiecki, 2014	*Lutra lutra* (Linnaeus, 1758) (Carnivora, Mustelidae)	Poland loc. class. [3]	Valid
Demodex macaci Karjala, Desch and Starost, 2005	*Macaca mulatta* (Zimmermann, 1780) (Primates, Cercopithecidae)	USA, laboratory colony ex situ [209]	Valid
Demodex macroglossi Desch, 1981	*Macroglossus minimus* (Chiroptera, Pteropodidae)	Australia loc. class. [210]	Valid
Demodex marculus Izdebska and Rolbiecki, 2015	*Mus musculus* (Rodentia, Muridae)	Poland loc. class. [169]	Valid
Demodex marsupiali Nutting, Lukoschus and Desch, 1980	*Didelphis marsupialis* Linnaeus, 1758 (Didelphimorphia, Didelphidae)	Republic of Surinam loc. class. [211]	Valid
Demodex melanopteri Lukoschus, Jongman and Nutting, 1972	*Eptesicus brasiliensis melanopterus* (Jentink, 1904) (Chiroptera, Vespertilionidae) [*E. melanopterus* given by the Authors [212] is actually *E. b. melanopterus*]	Republic of Suriname loc. class. [212]	Valid
Demodex melesinus Hirst, 1921	*Meles meles* (Linnaeus, 1758) (Carnivora, Mustelidae)	Great Britain loc. class. [213], Poland [4]	Valid
Demodex merioni (=*meriones*)	*Meriones* spp. (Rodentia, Muridae)	Finding in laboratory animals, e.g., [36,37]	Nom. nud.
Demodex mexicanus Vargas, Bassols, Desch, Quintero and Polaco, 1995	*Corynorhinus mexicanus* G. M. Allen, 1916 (Chiroptera, Vespertilionidae)	Mexico loc. class. [62]	Valid
Demodex microti Izdebska and Rolbiecki, 2013	*Microtus arvalis* (Rodentia, Cricetidae)	Poland loc. class. [214]	Valid
Demodex mollis Izdebska, Rolbiecki, Fryderyk and Mierzyński, 2017	*Apodemus flavicollis* (Rodentia, Muridae)	Poland loc. class. [1]	Valid
Demodex molossi Desch, Nutting and Lukoschus, 1972	*Molossus molossus* (Pallas, 1766) (Chiroptera, Molossidae)	Republic of Suriname loc. class. [208]	Valid
Demodex muscardini Hirst, 1917	*Muscardinus avellanarius* (Linnaeus, 1758) (Rodentia, Gliridae)	Armenia [56], Great Britain loc. class. [15,163]	Valid
Demodex musculi Oudemans, 1897 (redescription, Izdebska and Rolbiecki, 2015)	*Mus musculus* (Rodentia, Muridae)	Europe [15], ds loc. class. [215], Poland [167,169], Russia [56], Spain [216]; laboratory animals, e.g., ex situ [7,217,218]	Valid
Demodex myotidis	*Myotis lucifugus lucifugus* (Le Conte, 1831) (Chiroptera, Vespertilionidae)	Nutting [39] after Nutting [59]	Nom. nud.; description not published within the meaning of the ICZN
	Myotis septentrionalis Trouessart, 1897 (Chiroptera, Vespertilionidae)	Nutting [39] after Di Benedetto [219]	
	Eptesicus fuscus (Beauvois, 1796) (Chiroptera, Vespertilionidae)	Nutting [39] after Di Benedetto [219]	
Demodex mystacina Desch, 1989	*Mystacina tuberculata* Gray, 1843 (Chiroptera, Mystacinidae)	New Zealand loc. class. [220]	Valid
Demodex nanus Hirst, 1918 (redescription Desch, 1987)	*Rattus norvegicus* (Berkenhout, 1769) (Rodentia, Muridae)	Great Britain [57], Poland [19,221,222], Russia [56]; laboratory animals ex situ [223]	Valid
	Rattus rattus (Linnaeus, 1758) (Rodentia, Muridae)	New Zealand [223], Great Britain loc. class. [57], Russia [56]	

Table 1. *Cont.*

Demodecid Mites	Host Species (Ordo, Family)	Occurrence	Comments to the Status of Demodecid Mite Species
Demodex neomydis Bukva, 1995	*Neomys anomalus* (Soricomorpha, Soricidae)	Czech Republic loc. class. [224]	Valid
Demodex neoopisthosomae Desch, Lukoschus and Nadchatram, 1986	*Eonycteris spelaea* (Dobson, 1871) (Chiroptera, Pteropodidae)	Malaysia loc. class. [225]	Valid
Demodex norvegicus Bukva, 1995	*Rattus norvegicus* (Rodentia, Muridae)	Czech Republic loc. class. [226], Poland [19,221,222]	Valid
Demodex novazelandica Desch, 1989	*Mystacina tuberculata* (Chiroptera, Mystacinidae)	New Zealand loc. class. [220]	Valid
Demodex nycticeii Desch, 1996	*Nycticeius humeralis* (Rafinesque, 1818) (Chiroptera, Vespertilionidae)	USA loc. class. [227]	Valid
Demodex odocoilei Desch and Nutting, 1974	*Odocoileus virginianus* (Artiodactyla, Cervidae)	USA loc. class. [228]	Valid
	Odocoileus hemionus columbianus (Richardson, 1829) (Artiodactyla, Cervidae)	USA [229]	
Demodex ovis Railliet, 1895 (redescription, Desch 1986)	*Ovis aries* (Artiodactyla, Bovidae)	s. loc. [113], Australia [60], New Zeland [60], Czech Republic [61], Israel [230], Poland [231]	Valid
Demodex peromysci Lambert, Lukoschus and Whitaker, 1983	*Peromyscus leucopus* (Rafinesque, 1818) (Rodentia, Cricetidae)	USA loc. class. [232]	Valid
Demodex phocidi Desch, Dailey and Tuomi, 2003	*Phoca vitulina* Linnaeus, 1758 (Carnivora, Phocidae)	USA, sealife center ex situ [233], Poland in situ [5]	Valid
Demodex phodopi Desch, Davis and Klompen, 2006	*Phodopus sungorus* (Pallas, 1773) (Rodentia, Cricetidae)	Described in laboratory animals ex situ [234]	Valid
Demodex phylloides Csokor, 1879	*Sus scrofa scrofa* Linnaeus, 1758 (Artiodactyla, Suidae)	Poland [235–238]	Valid
	Sus scrofa domesticus Erxleben, 1777 (Artiodactyla, Suidae)	Probably cosmopolitan, e.g., Tanzania [239], Canada [240], USA [87], Brasil [241,242], New Zealand [93,130], historical Galicia loc. class. [243], Italy [244]	
Demodex phyllostomatis Leydig, 1859	*Phyllostomus hastatus* (Pallas, 1767) (Chiroptera, Phyllostomidae)	Republic of Suriname loc. class. [51,120]	Valid
Demodex plecoti Izdebska Rolbiecki, Mierzyński and Bidziński, 2019	*Plecotus auritus* (Chiroptera, Vespertilionidae)	Poland loc. class. [10]	Valid
Demodex ponderosus Izdebska and Rolbiecki, 2014	*Rattus norvegicus* (Rodentia, Muridae)	Poland loc. class. [222]	Valid
Demodex pseudaxis Schpringol'ts-Schmidt, 1937	*Cervus nippon hortulorum* Swinhoe, 1864 (Artiodactyla, Cervidae)	Russia/Far east [245]	Valid; need verification
Demodex ratti Hirst, 1917 (redescription Bukva, 1995)	*Rattus norvegicus* (Rodentia, Muridae)	Czech Republic [226], Europe, s. loc. [15,246], Poland [19,221,222,246–248], Russia [56]	Valid
Demodex ratticola Bukva, 1995	*Rattus norvegicus* (Rodentia, Muridae)	Czech Republic loc. class. [226], Poland [222,247,248]	Valid
Demodex rosus Bukva, Vítovec and Vlček, 1985	*Apodemus flavicollis* (Rodentia, Muridae)	Czech Republic loc. class. [111], Poland [249]	Valid
Demodex sabani Desch, Lukoschus and Nadchatram, 1984	*Leopoldamys edwardsi* (Thomas, 1882) (Rodentia, Muridae)	Malaysia [250]	Valid
	Leopoldamys sabanus (Thomas, 1887) (Rodentia, Muridae)	Malaysia loc. class. [250]	
	Niviventer cremoriventer (Miller, 1900) (Rodentia, Muridae)	Malaysia [250]	
	Niviventer rapit (Bonhote, 1903) (Rodentia, Muridae)	Malaysia [250]	
	Rattus annandalei (Bonhote, 1903) (Rodentia, Muridae)	Malaysia [250]	
	Rattus tiomanicus (Miller, 1900) (Rodentia, Muridae)	Malaysia [250]	
	Sundamys muelleri (Jentink, 1879) (Rodentia, Muridae)	Malaysia [250]	
Demodex saimiri Lebel and Nutting 1973	*Saimiri sciureus* (Linnaeus, 1758) (Primates, Cebidae)	Biological supply houses ex situ [251]	Valid
Demodex sciurei Lebel, 1970	*Saimiri sciureus* (Primates, Cebidae)	[252]	Nom. nud.; description not published within the meaning of the ICZN

Table 1. *Cont.*

Demodecid Mites	Host Species (Ordo, Family)	Occurrence	Comments to the Status of Demodecid Mite Species
Demodex sciurinus Hirst, 1923	*Sciurus vulgaris* Linnaeus, 1758 (Rodentia, Sciuridae)	Great Britain loc. class. [45], Poland [present study]	Valid
Demodex sinocricetuli Desch and Hurley, 1997	*Cricetulus barabensis* (Pallas, 1773) (Rodentia, Cricetidae)	laboratory animals ex situ [253]	Valid
Demodex soricinus Hirst, 1918 (redescription Bukva, 1993	*Plecotus auritus* (Chiroptera, Vespertilionidae)	Great Britain [57,155]	Valid; *P. auritus* -probably wrong host record
	Sorex araneus Linnaeus, 1758 (Soricomorpha, Soricidae) [*S. vulgaris* given by the Author [57] is actually *S. araneus*]	Czech Republic [254], Great Britain loc. class. [57], Poland [255]	
Demodex spelaea Desch, Lukoschus and Nadchatram, 1986	*Eonycteris spelaea* (Chiroptera, Pteropodidae)	Malaysia loc. class. [225]	Valid
Demodex suis (Kadlec, 1975)	*Sus scrofa domesticus* (Artiodactyla, Suidae)	s. loc. [256], s. loc. [257], Czech Republic [258]	Nom abort.; syn. *D. phylloides*
Demodex sungori Desch, Davis and Klompen, 2006	*Phodopus sungorus* (Rodentia, Cricetidae)	Described in laboratory animals ex situ [234]	Valid
Demodex sylvilagi Maravelas, 1962	*Sylvilagus transitionalis* (Bangs, 1895) (Lagomorpha, Leporidae)	Nutting [39] after Maravelas [259]	Nom. nud.; description not published within the meaning of the ICZN
Demodex talpae Hirst, 1921	*Talpa europaea* Linnaeus, 1758 (Soricomorpha, Talpidae)	Great Britain loc. class. [155], Poland [260]	Valid
Demodex tauri Bukva, 1986	*Bos taurus* (Artiodactyla, Bovidae)	Czech Republic loc. class. [261]	Valid
Demodex tigris Shi, Xie and Hsu, 1985	*Panthera tigris amoyensis* (Hilzheimer, 1905) (Carnivora, Felidae)	China, zoological garden ex situ [262]	Valid
Demodex tortellinioides Desch and Holz, 2006	*Antechinus agilis* Dickman, Parnaby, Crowther and King, 1998 (Dasyuromorphia, Dasyuridae)	Australia loc. class. [263]	Valid
Demodex transitionalis Moravelas, 1962	*Sylvilagus transitionalis* (Bangs, 1895) (Lagomorpha, Leporidae)	Nutting [39] after Maravelas [259]	Nom. nud.; description not published within the meaning of the ICZN
Demodex uncii Desch, 1993	*Uncia uncia* (Schreber, 1775) (Carnivora, Felidae)	USA, zoological garden ex situ Desch [264]	Valid
Demodex ursi Desch, 1995	*Ursus americanus* Pallas, 1780 (Carnivora, Ursidae)	USA loc. class. [265,266]	Valid
Demodex vibrissae Izdebska, Rolbiecki and Fryderyk, 2016	*Mus musculus* (Rodentia, Muridae)	Poland loc. class. [47]	Valid
Demodex zalophi Dailey and Nutting, 1979	*Zalophus californianus* (Lesson, 1828) (Carnivora, Otariidae)	USA, Australia loc. class. [267]	Valid
Glossicodex musculi Izdebska and Rolbiecki, 2016	*Mus musculus* (Rodentia, Muridae)	Poland loc. class. [11]	Valid
Ophthalmodex apodemi Bukva, Nutting and Desch, 1992	*Apodemus sylvaticus* (Rodentia, Muridae)	Czech Republic loc. class. [268]	Valid
Ophthalmodex artibei Lukoschus and Nutting, 1979	*Artibeus lituratus* (Chiroptera, Phyllostomidae)	Republic of Surinam loc. class. [269]	Valid
Ophthalmodex australiensis Woeltjes and Lukoschus, 1981	*Rhinonicteris aurantia* (Gray, 1845) (Chiroptera, Hipposideridae)	Australia loc. class. [270]	Valid
Ophthalmodex carolliae Lukoschus, Woeltjes, Desch and Nutting, 1980	*Carollia perspicillata* (Chiroptera, Phyllostomidae)	Republic of Surinam loc. class. [271]	Valid
Ophthalmodex juniatae Veal, Giesen and Whitaker, 1984	*Myotis lucifugus* (Le Conte, 1831) (Chiroptera, Vespertilionidae)	USA loc. class. [272]	Valid
Ophthalmodex molossi Lukoschus, Woeltjes, Desch and Nutting, 1980	*Molossus molossus* (Chiroptera, Molossidae)	Republic of Surinam loc. class. [271]	Valid
Ophthalmodex wilsoni Woeltjes and Lukoschus, 1981	*Vespadelus pumilus* (Gray, 1841 (Chiroptera, Vespertilionidae)	Australia loc. class. [270]	Valid
Pterodex carolliae Lukoschus, Woeltjes, Desch and Nutting, 1980	*Carollia perspicillata* (Chiroptera, Phyllostomidae)	Republic of Suriname loc. class. [273]	Valid
Rhinodex baeri Fain, 1959	*Galago moholi* A. Smith, 1836 (Primates, Galagidae)	Rwanda loc. class. [274]	Valid

Table 1. *Cont.*

Demodecid Mites	Host Species (Ordo, Family)	Occurrence	Comments to the Status of Demodecid Mite Species
Soricidex dimorphus Bukva, 1982	*Sorex araneus* Linnaeus, 1758 (Soricomorpha, Soricidae)	Czech Republic loc. class. [275,276], Poland [255]	Valid
Stomatodex cercarteti Desch, 1991	*Cercartetus nanus* (Desmarest, 1818) (Diprotodontia, Burramyidae)	Australia loc. class. [277]	Valid
Stomatodex corneti Fain, 1960			Valid
Stomatodex corneti corneti Fain, 1960	*Barbastella barbastellus* (Schreber, 1774) (Chiroptera, Vespertilionidae)	Belgium loc. class. [51], Great Britain [278]	
	Nycteris sp. (Chiroptera, Nycteridae)	Rwanda [51]	
Stomatodex corneti myotis Fain, 1960	*Myotis dasycneme* (Boie, 1825) (Chiroptera, Vespertilionidae)	Belgium [51]	
	Myotis myotis (Borkhausen, 1797) (Chiroptera, Vespertilionidae)	Belgium [51]	
Stomatodex galagoensis Fain, 1959	*Galago moholi* A. Smith, 1836 (Primates, Galagidae)	Rwanda loc. class. [274]	Valid
Stomatodex rousetti Fain, 1960	*Rousettus aegyptiacus* (Geoffroy, 1810) (Chiroptera, Pteropodidae)	Democratic Republic of the Congo loc. class. [51]	Valid

Hom.: homonym, loc. class.: locus classicus, nom. abort.: nomen abortium, nom. nud.: nomen nudum, s. loco: sine loco, syn.: synonymum.

Table 2. Body size (micrometers) for adults of *Demodex sciurinus*.

Character	♂(*n* = 8)	♀(*n* = 13)
Length of gnathosoma	15 (13–18), SD 2	17 (15–18), SD 1
Width of gnathosoma (at base)	18 (15–23), SD 2	18 (14–20), SD 2
Length of podosoma	49 (43–55), SD 5	54 (50–60), SD 3
Width of podosoma	31 (28–35), SD 3	33 (30–38), SD 2
Length of opisthosoma	72 (55–90), SD 11	97 (75–125), SD 16
Width of opisthosoma	31 (25–36), SD 4	33 (30–38), SD 2
Aedeagus	20 (16–23), SD 3	–
Vulva	–	6 (4–8), SD 1
Total length of body	135 (120–158), SD 14	168 (143–193), SD 17

Table 3. Synhospital (co-occurring) demodecid mites in the same host species.

Mammals Ordo	Mammals Species	Demodecid Mites
PRIMATES	*Galago moholi*	*Rhinodex baeri* *Stomatodex galagoensis*
	Homo sapiens	*Demodex brevis* *Demodex folliculorum*
RODENTIA	*Apodemus agrarius*	*Demodex agrarii* *Demodex apodemi* *Demodex gracilentus* *Demodex huttereri*
	Apodemus flavicollis	*Demodex corniculatus* *Demodex mollis* *Demodex rosus*
	Apodemus sylvaticus	*Demodex apodemi* *Demodex auricularis* *Demodex lacrimalis* *Demodex longior* *Ophthalmodex apodemi*
	Mus musculus	*Demodex conicus* *Demodex flagellurus* *Demodex fusiformis* *Demodex marculus* *Demodex musculi* *Demodex vibrissae* *Glossicodex musculi*
	Rattus norvegicus	*Demodex nanus* *Demodex norvegicus* *Demodex ponderosus* *Demodex ratti* *Demodex ratticola*
	Mesocricetus auratus	*Demodex aurati* *Demodex criceti*
	Myodes glareolus	*Demodex buccalis* *Demodex glareoli*
	Phodopus sungorus	*Demodex phodopi* *Demodex sungori*
SORICOMORPHA	*Neomys anomalus*	*Apodemodex cornutus* *Demodex neomydis*
	Sorex araneus	*Demodex soricinus* *Soricidex dimorphus*
CHIROPTERA	*Carollia perspicillata*	*Demodex carolliae* *Demodex longissimus* *Ophthalmodex carolliae* *Pterodex carolliae*
	Eonycteris spelaea	*Demodex neoopisthosomae* *Demodex spelaea*
	Macroglossus minimus	*Demodex bicaudatus* *Demodex macroglossi*
	Molossus molossus	*Demodex molossi* *Ophthalmodex molossi*
	Mystacina tuberculata	*Demodex mystacina* *Demodex novazelandica*

Table 3. *Cont.*

Mammals Ordo	Mammals Species	Demodecid Mites
	Plecotus auritus	*Demodex chiropteralis* *Demodex plecoti*
CARNIVORA	*Canis lupus familiaris*	*Demodex canis* *Demodex cornei* *Demodex cyonis* *Demodex injai*
	Felis catus	*Demodex cati* *Demodex gatoi*
PERISSODACTYLA	*Equus caballus*	*Demodex caballi* *Demodex equi*
ARTIODACTYLA	*Cervus elaphus*	*Demodex acutipes* *Demodex kutzeri*
	Cervus nippon	*Demodex kutzeri* *Demodex pseudaxis*
	Odocoileus hemionus	*Demodex kutzeri* *Demodex odocoilei*
	Odocoileus virginianus	*Demodex kutzeri* *Demodex odocoilei*
	Bos taurus	*Demodex bovis* *Demodex ghanensis* *Demodex tauri*
	Ovis aries	*Demodex aries* *Demodex ovis*

5. Conclusions

The Demodecidae have high veterinary and medical importance, and these aspects have directed the majority of research into the family. Despite the fact that such research stretches back to the 19th Century, appropriate zoological studies (taxonomy, fauna) are scarce and limited to species descriptions, typically based on singular records from one locality and a single host. More detailed biodiversity studies, based on the analysis of the occurrence of the parasite in different populations of individual host species, or the co-occurrence of different Demodecidae in one host species, have been published only in Poland. Even those studies have been limited by the availability of the host or the need to conduct comprehensive studies of its entire parasitofauna.

Unfortunately, no comparable data on Demodecidae are available from other regions; in addition, the group has never been included in holistic parasitofauna studies, or even studies of parasitic arthropods. The greatest obstacles to such studies are associated with parasite detection, particularly since most infestations are asymptomatic, and problems with species identification. This stands in contrast with the multitude of global medical and veterinary reports on demodecosis, or routine testing for this disease conducted at diagnostic laboratories.

There is a clear need to integrate zoological and parasitological research with medical and veterinary studies, or to perform further interdisciplinary studies. Only, such, broader approaches will provide a greater understanding of the key issues concerning Demodecidae parasitism, allow the development of efficient diagnostic methods and deepen our understanding of the causes and mechanisms of demodecosis.

Author Contributions: Conceptualization, J.N.I. and L.R.; Sampling, J.N.I. and L.R.; Microscopy Analysis, J.N.I. and L.R.; Data Analysis, J.N.I. and L.R.; Writing-Original Draft Preparation, J.N.I. and L.R.; Writing Review and Editing J.N.I. and L.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Izdebska, J.N.; Rolbiecki, L.; Fryderyk, S.; Mierzyński, Ł. Adult and immature stages of the new species of the genus *Demodex* (Acariformes: Demodecidae) with data on parasitism, topography, and topical specificity of demodecid mites in the yellow-necked mouse, *Apodemus flavicollis* (Rodentia: Muridae). *J. Parasitol.* **2017**, *103*, 320–329. [CrossRef]
2. Izdebska, J.N.; Rolbiecki, L. The status of *Demodex cornei*: Description of the species and developmental stages, and data on demodecid mites in the domestic dog *Canis lupus familiaris*. *Med. Vet. Entomol.* **2018**, *32*, 346–357. [CrossRef] [PubMed]
3. Izdebska, J.N.; Rolbiecki, L. *Demodex lutrae* n. sp. (Acari) in European otter *Lutra lutra* (Carnivora: Mustelidae) with data from other demodecid mites in carnivores. *J. Parasitol.* **2014**, *100*, 784–789. [CrossRef] [PubMed]
4. Izdebska, J.N.; Cierocka, K.; Rolbiecki, L.; Kozina, P.; Kołodziej-Sobocińska, M. *Demodex melesinus* (Acariformes: Demodecidae)—The forgotten European badger parasite, rediscovered after 100 years. *Acta Parasitol.* **2018**, *63*, 665–668. [CrossRef] [PubMed]
5. Izdebska, J.N.; Rolbiecki, L.; Cierocka, K.; Pawliczka, I. *Demodex phocidi* (Acariformes: Demodecidae) from *Phoca vitulina* (Carnivora: Phocidae)—The second observation in the world and a supplement to the species description. *Oceanol. Hydrobiol. Stud.* **2020**, *49*, 49–55. [CrossRef]
6. Izdebska, J.N. New data of demodecosis hominis—Ethiology, pathogenesis and diagnosis. In *Arthropods. Ecological and Pathological Aspects of Parasite-Host Relationships*; Buczek, A., Błaszak, C., Eds.; Akapit: Lublin, Poland, 2010; pp. 137–145.
7. Nashat, M.A.; Luchins, K.R.; Riedel, E.R.; Izdebska, J.N.; Lepherd, M.L.; Lipman, N.S. Characterization of *Demodex musculi* infestation, associated co-morbidities, and its topographical distribution in a mouse strain with defective adaptive immunity. *Comp. Med.* **2017**, *67*, 315–329.
8. Izdebska, J.N. *Demodex* spp. (Acari, Demodecidae) and demodecosis in dogs: Characteristics, symptoms, occurrence. *Bull. Vet. Inst. Puławy* **2010**, *54*, 335–338.
9. Izdebska, J.N. Adaptation to Parasitism in Skin Mites From The Demodecidae Family (Acari, Prostigmata). In *Arthropods. Epidemiological Importance*; Buczek, A., Błaszak, C., Eds.; Koliber: Lublin, Poland, 2006; pp. 31–36.
10. Izdebska, J.N.; Rolbiecki, L.; Mierzyński, Ł.; Bidziński, K. Morphological and ontogenetic characteristics of *Demodex plecoti* sp. nov. (Acariformes: Demodecidae) from the brown long-eared bat *Plecotus auritus* (Chiroptera: Vespertilionidae), with comments on parasitism. *Syst. Appl. Acarol.* **2019**, *24*, 377–388. [CrossRef]
11. Izdebska, J.N.; Rolbiecki, L. A new genus and species of demodecid mites from the tongue of a house mouse *Mus musculus*: Description of adult and immature stages with data on parasitism. *Med. Vet. Entomol.* **2016**, *30*, 135–143. [CrossRef]
12. Izdebska, J.N.; Rolbiecki, L.; Mierzyński, Ł.; Bidziński, K. Demodecid mites (Acariformes, Demodecidae) in brown long-eared bat *Plecotus auritus* (Chiroptera, Vespertilionidae)—Second record in the world and systematic status of *Demodex chiropteralis* Hirst, 1921. *Ann. Parasitol.* **2018**, *64*, 109–113. [PubMed]
13. Bochkov, A.V. A review of mites of the Parvorder Eleutherengona (Acariformes: Prostigmata)—Permanent parasites of mammals. *Acarina* **2009**, *1*, 1–149.
14. Rather, P.A.; Hassan, I. Human *Demodex* mite: The versatile mite of dermatological importance. *Indian J. Dermatol.* **2014**, *59*, 60–66. [CrossRef]
15. Hirst, S. *Studies on Acari. No. 1. the Genus Demodex, Owen*; British Museum (Natural History): London, UK, 1919; pp. 1–44.
16. Izdebska, J.N. A new Demodecidae species (Acari) from the yellow-necked mouse *Apodemus flavicollis* (Rodentia, Muridae)—Description with data on parasitism. *J. Parasitol.* **2012**, *98*, 1101–1104. [CrossRef]
17. Izdebska, J.N.; Rolbiecki, L.; Morand, S.; Ribas, A. A new species and new host record of Demodecidae (Acariformes: Prostigmata) associated with the bandicoot rat (Rodentia: Muridae) from Lao PDR with data on parasitism and a checklist of the demodecid mites of rodents. *Syst. Appl. Acarol.* **2017**, *22*, 1910–1923. [CrossRef]

18. Cierocka, K.; Izdebska, J.N.; Rolbiecki, L. *Demodex foveolator* (Acariformes: Demodecidae) from *Crocidura suaveolens* (Soricomorpha: Soricidae)—The second observation worldwide, and a checklist of the demodecid mites of soricomorphs. *Ann. Parasitol.* **2019**, *65*, 329–332.
19. Izdebska, J.N. *Demodex* spp. (Acari: Demodecidae) in brown rat (Rodentia: Muridae) in Poland. *Wiad. Parazytol.* **2004**, *50*, 333–335.
20. Wilson, D.E.; Reeder, D.M. *Mammals Species of the World: A Taxonomic and Geographic Reference*, 3rd ed.; The Johns Hopkins University Press: Baltimore, MD, USA, 2005; pp. 1–2142.
21. Taxonomic Information System (ITIS). Available online: http://www.itis.gov (accessed on 25 April 2020).
22. Carpenter, J.W.; Freeny, J.C.; Patton, C.S. Occurrence of *Demodex* Owen 1843 on a white-tailed deer from Oklahoma. *J. Wildl. Dis.* **1972**, *8*, 112–114. [CrossRef]
23. Hamir, A.N.; Snyder, D.E.; Hanlon, C.A.; Rupprecht, C.E. First Report of a *Demodex* sp. in raccoons (*Procyon lotor*). *J. Wildl. Dis.* **1993**, *29*, 139–141. [CrossRef]
24. Waggie, K.S.; Marion, P.L. *Demodex* sp. in California ground squirrels. *J. Wildl. Dis.* **1997**, *33*, 368–370. [CrossRef] [PubMed]
25. Vestweber, J.G.; Ridley, R.K.; Nietfeld, J.C.; Wilkerson, M.J. Demodicosis in an American bison. *Can. Vet. J.* **1999**, *40*, 417–418. [PubMed]
26. Vogelnest, L.J.; Vogelnest, L.; Mueller, R.S. An undescribed *Demodex* sp. and demodicosis in a captive koala (*Phascolarctos cinereus*). *J. Zoo Wildl. Med.* **2000**, *31*, 100–106.
27. Gentes, M.L.; Proctor, H.; Wobeser, G. Demodicosis in a mule deer (*Odocoileus hemionus hemionus*) from Saskatchewan, Canada. *J. Wildl. Dis.* **2007**, *43*, 758–761. [CrossRef] [PubMed]
28. Bornstein, S. Important ectoparasites of alpaca (*Vicugna pacos*). *Acta Vet. Scand.* **2010**, *52* (Suppl. 1), S17. [CrossRef]
29. Jimenez, I.A.; Odom, M.R.; Childs-Sanford, S.E.; Lucio-Forster, A.; Bowman, D.D. *Lynxacarus* and *Demodex* infestation in a captive jaguar (*Panthera onca*) in La Democracia, Belize. *Vet. Rec. Case Rep.* **2020**, *8*, e001037. [CrossRef]
30. Zhao, Y.E.; Peng, Y.; Wang, X.I.; Wu, L.P.; Wang, M.; Yan, H.I.; Xiao, S.X. Facial dermatosis associated with *Demodex*: A case-control study. *J. Zhejiang Univ. Sci. B* **2011**, *12*, 1008–1015. [CrossRef] [PubMed]
31. Fourie, J.J.; Liebenberg, J.E.; Horak, I.G.; Taenzler, J.; Heckeroth, A.R.; Frénais, R. Efficacy of orally administered fluralaner (BravectoTM) or topically applied imidacloprid/moxidectin (Advocate®) against generalized demodicosis in dogs. *Parasit. Vectors* **2015**, *8*, 1–7. [CrossRef] [PubMed]
32. Yasine, A.; Kumsa, B.; Hailu, Y.; Ayana, D. Mites of sheep and goats in Oromia Zone of Amhara Region, North Eastern Ethiopia: Species, prevalence and farmers awareness. *BMC Vet. Res.* **2015**, *11*, 1–6. [CrossRef]
33. Six, R.H.; Becskei, C.; Mazaleski, M.M.; Fourie, J.J.; Mahabir, S.P.; Myers, M.R.; Slootmans, N. Efficacy of sarolaner, a novel oral isoxazoline, against two common mite infestations in dogs: *Demodex* spp. and *Otodectes cynotis*. *Vet. Parasitol.* **2016**, *222*, 62–66. [CrossRef]
34. Yun, C.H.; Yun, J.H.; Baek, J.O.; Roh, J.Y.; Lee, J.R. *Demodex* mite density determinations by standardized skin surface biopsy and direct microscopic examination and their relations with clinical types and distribution patterns. *Ann. Dermatol.* **2017**, *29*, 137–142. [CrossRef]
35. Salem, N.Y.; Abdel-Saeed, H.; Farag, H.S.; Ghandour, R.A. Canine demodicosis: Hematological and biochemical alterations. *Vet. World EISSN* **2020**, *13*, 68–72. [CrossRef]
36. Wilkerson, J.D.; Berger, D.M.P. Parasites of Gerbils. In *Flynn's Parasites of Laboratory Animals*; Baker, D.G., Ed.; Blackwell Publishing: Ames, IA, USA, 2007; pp. 413–420.
37. Fehr, M.; Koestlinger, S. Ectoparasites in small exotic mammals. *Vet. Clin. Exot. Anim.* **2013**, *16*, 611–657. [CrossRef]
38. Izdebska, J.N.; Fryderyk, S. Diversity of three species of the genus *Demodex* (Acari, Demodecidae) parasitizing dogs in Poland. *Pol. J. Environ. Stud.* **2011**, *20*, 565–569.
39. Nutting, W.B. Demodicidae—Status and prognostics. *Acarologia* **1964**, *6*, 441–454.
40. Silbermayr, K.; Horvath-Ungerboeck, C.; Eigner, B.; Joachim, A.; Ferrer, L. Phylogenetic relationships and new genetic tools for the detection and discrimination of the three feline *Demodex* mites. *Parasitol. Res.* **2015**, *114*, 747–752. [CrossRef] [PubMed]
41. Ferreira, D.; Sastre, N.; Ravera, I.; Altet, L.; Francino, O.; Bardagí, M.; Ferrer., L. Identification of a third feline *Demodex* species through partial sequencing of the 16S rDNA and frequency of *Demodex* species in 74 cats using a PCR assay. *Vet. Dermatol.* **2015**, *26*, 239–246. [CrossRef]

42. Taffin, E.R.; Casaert, S.; Claerebout, E.; Vandekerkhof, T.J.; Vandenabeele, S. Morphological variability of *Demodex cati* in a feline immunodeficiency virus-positive cat. *J. Am. Vet. Med. Assoc.* **2016**, *249*, 1308–1312. [CrossRef]
43. Jańczak, D.; Ruszczak, A.; Kaszak, I.; Gołąb, E.; Barszcz, K. Clinical aspects of demodicosis in veterinary and human medicine. *Med. Weter.* **2017**, *73*, 265–271.
44. Jańczak, D.; Gołąb, E.; Borkowska-Bąkała, D.; Barszcz, K. Inwazja *Demodex gatoi* u kota rasy brytyjskiej krótkowłosej leczonego przewlekle lekami immunosupresyjnymi. *Med. Weter.* **2017**, *73*, 248–251.
45. Hirst, S. On some new or little-known species of Acari. *Proc. Zool. Soc. Lond.* **1923**, *2*, 971–1000. [CrossRef]
46. Izdebska, J.N.; Rolbiecki, L. A new species of *Demodex* (Acari, Demodecidae) with data on topical specificity and topography of demodectic mites in the striped field mouse *Apodemus agrarius* (Rodentia, Muridae). *J. Med. Entomol.* **2013**, *50*, 1202–1207. [CrossRef]
47. Izdebska, J.N.; Rolbiecki, L.; Fryderyk, S. A new species of *Demodex* (Acari: Demodecidae) from the skin of the vibrissal area of the house mouse *Mus musculus* (Rodentia: Muridae), with data on parasitism. *Syst. Appl. Acarol.* **2016**, *21*, 1031–1039. [CrossRef]
48. Bukva, V. *Apodemodex cornutus* gen. n. et sp. n. (Acari: Demodecidae): New genus and new species of the hair follicle mite from the Mediterranean water shrew, *Neomys anomalus* (Insectivora: Soricidae). *Folia Parasitol.* **1996**, *43*, 312–316.
49. Bukva, V.; Preisler, J. Observations on the morphology of the hair follicle mites (Acari: Demodicidae) from *Cervus elaphus* L. 1758 including description of *Demodex acutipes* sp. n. *Folia Parasitol.* **1988**, *35*, 67–75.
50. Izdebska, J.N.; Fryderyk, S. *Demodex acutipes* Bukva et Preisler, 1988 (Acari, Demodecidae)—A rare parasite of red deer (*Cervus elaphus* L.). *Ann. Parasitol.* **2012**, *58*, 161–166.
51. Fain, A. Les acarines psoriques parasites des chauves-souris. XIII. La famille Demodecidae Nicolet. *Acarologia* **1960**, *2*, 80–87.
52. Izdebska, J.N.; Cydzik, K. Occurrence of *Demodex* spp. (Acari, Demodecidae) in the striped field mouse *Apodemus agrarius* (Rodentia, Muridae) in Poland. *Wiad. Parazytol.* **2010**, *56*, 59–61.
53. Bukva, V. *Demodex agrarii* sp. n. (Acari: Demodecidae) from cerumen and the sebaceous glands in the ears of the striped field mouse, Apodemus agrarius (Rodentia). *Folia Parasitol.* **1994**, *41*, 305–311.
54. Xu, Y.; Xie, H.; Liu, S.; Zhou, Z.; Shi, X. A new species of the genus *Demodex* (Acariformes: Demodicidae). *Acta Zool. Sin.* **1986**, *32*, 163–167.
55. Nutting, W.B.; Sweatman, G.K. *Demodex antechini* sp.nov. (Acari, Demodicidae) parasitic on *Antechinus stuartii* (Marsupialia). *Parasitology* **1970**, *60*, 425–429. [CrossRef]
56. Bregetova, N.G.; Bulanova-Zahvatkina, E.M.; Volgin, V.I.; Dubinin, V.B.; Zahvatkin, A.A.; Zemskaâ, A.A.; Lange, A.B.; Pavlovskij, E.N.; Serdûkova, G.V.; Šluger, E.G. *Kleŝi Gryzunov Fauny SSSR*; Izdatel'stvo Akademii Nauk SSSR: Moskva/Leningrad, Russia, 1955; pp. 1–459.
57. Hirst, S. XI.—On four new species of the genus *Demodex*, Owen. *Ann. Mag. Nat. Hist. Ser. 9* **1918**, *2*, 145–146. [CrossRef]
58. Izdebska, J.N.; Rolbiecki, L.; Fryderyk, S. *Demodex auricularis* sp. nov. (Acari: Demodecidae) from the ear canal of the European wood mouse *Apodemus sylvaticus* (Rodentia: Muridae). *Int. J. Acarol.* **2014**, *40*, 214–219. [CrossRef]
59. Nutting, W.B. Studies on the Genus *Demodex* Owen (Acari, Demodicoidea, Demodicidae). Ph.D. Thesis, Cornell University, Ithaca, NY, USA, 1950.
60. Desch, C.E. *Demodex aries* sp. nov., a sebaceous gland inhabitant of the sheep, *Ovis aries*, and a redescription of *Demodex ovis* Hirst, 1919. *N. Z. J. Zool.* **1986**, *13*, 367–375. [CrossRef]
61. Bukva, V. Three species of the hair follicle mites (Acai: Demodecidae) parasitizing the sheep, *Ovis aries* L. *Folia Parasitol.* **1990**, *37*, 81–91.
62. Vargas, M.; Bassols, I.B.; Desch, C.E.; Quintero, M.T.; Polaco, O.J. Description of two new species of the genus *Demodex* Owen, 1843 (Acari: Demodecidae) associated with Mexican bats. *Int. J. Acarol.* **1995**, *21*, 75–82. [CrossRef]
63. Nutting, W.B. *Demodex aurati* sp. nov. and *D. criceti*, ectoparasites of the golden hamster (*Mesocricetus auratus*). *Parasitology* **1961**, *51*, 515–522. [CrossRef] [PubMed]
64. Nutting, W.B.; Rauch, H. Distribution of *Demodex aurati* in the host (*Mesocricetus auratus*) skin complex. *J. Parasitol.* **1963**, *49*, 323–329. [CrossRef]

65. Owen, D.; Young, C. The occurrence of *Demodex aurati* and *Demodex criceti* in the Syrian hamster (*Mesocricetus auratus*) in the United Kingdom. *Vet. Rec.* **1973**, *17*, 282–284. [CrossRef]
66. Retnasabapathy, A.; Lourdusamy, D. *Demodex aurati* and *Demodex criceti* in the golden hamster (*Mesocricetus auratus*). *Southeast. Asian J. Trop. Med. Public Health.* **1974**, *5*, 460. [CrossRef]
67. Cardoso, M.J.L.; Franco, S.R.V.S. Demodicosis in golden hamster (*Mesocricetus auratus*)—Case in Brasil. *Ars Vet.* **2003**, *19*, 126–128.
68. Karaer, Z.; Kurtdede, A.; Ural, K.; Sari, B.; Cingi, C.C.; Karakurum, M.C.; Haydardedeoğlu, A.E. Demodicosis in a golden (Syrian) hamster (*Mesocricetus auratus*). *Ankara Univ. Vet. Fak. Derg.* **2009**, *56*, 227–229.
69. Brosseau, G. Oral fluralaner as a treatment for *Demodex aurati* and *Demodex criceti* in a golden (Syrian) hamster (*Mesocricetus auratus*). *Can. Vet. J.* **2020**, *61*, 135–137. [PubMed]
70. Firda, K.E.; Nutting, W.B.; Sweatman, G.K. *Demodex bantengi* n. sp. from *Bos javanicus* (D'alton) with notes on gross pathology (Acari: Demodicidae). *Int. J. Acarol.* **1987**, *13*, 227–231. [CrossRef]
71. Kniest, F.M.; Lukoschus, F.S. Parasites of Western Australia. XIII. A new species of demodicid mite from the meibomian glands of the bat *Macroglossus minimus*. *Rec. West. Aust. Mus.* **1981**, *9*, 111–118.
72. Kadulski, S.; Izdebska, J.N. *Demodex bisonianus* sp. nov. (Acari, Demodicidae) a new parasite of the bison (*Bison bonasus* L.). *Wiad. Parazytol.* **1996**, *42*, 103–110. [PubMed]
73. Izdebska, J.N. Zmienność Adulti i Form Juwenilnych *Demodex bisonianus* (Acari, Demodecidae). In *Stawonogi Pasożytnicze i Alergogenne*; Buczek, A., Błaszak, C., Eds.; KGM: Lublin, Poland, 2000; pp. 47–56.
74. Izdebska, J.N. The occurrence of parasitic arthropods in two groups of European bison in the Białowieża Primeval Forest. *Wiad. Parazytol.* **2001**, *47*, 801–804. [PubMed]
75. Izdebska, J.N. Stawonogi pasożytnicze żubrów z Bieszczad. *Sci. Messenger Lviv State Acad. Vet. Med. S.Z. Gzhytskyj* **2001**, *3*, 208–211.
76. Izdebska, J.N. European bison arthropod parasites from closed Polish breeding facilities. *Acta Parasitol.* **2001**, *46*, 135–137.
77. Izdebska, J.N. Skin mites (Acari: Demodecidae, Psoroptidae and Sarcoptidae) of the European bison, *Bison bonasus*. *Biol. Lett.* **2006**, *43*, 169–174.
78. Izdebska, J.N. Roztocze skórne (Acari: Demodecidae, Psoroptidae, Sarcoptidae) żubra na tle akarofauny ssaków kopytnych—Problemy specyficzności żywicielskiej i topicznej. In *Rola Hodowli Ex Situ w Procesie Restytucji Zubra*; Olech, W., Ed.; O.K.L.: Gołuchów, Poland, 2007; pp. 22–27.
79. Stiles, C. On *Demodex folliculorum* var. *bovis* in American cattle. *Can. Entomol.* **1892**, *24*, 286–290. [CrossRef]
80. Salib, F.A. First report of bovine demodicosis in native Egyptian cow. *Biomed. J. Sci. Tech. Res.* **2018**, *11*, 8424–8426. [CrossRef]
81. Chanie, M.; Tadesse, S.; Bogale, B. Prevalence of bovine Demodicosisin Gondar Zuria District, Amhara Region, Northwest Ethiopia. *Glob. Vet.* **2013**, *11*, 30–35.
82. Slingenbergh, J.; Mohammed, A.N.; Bida, S.A. Studies on bovine demodecosis in northern Nigeria. Specification and host parasite relationships. *Vet. Q.* **1980**, *2*, 90–94. [CrossRef]
83. Abu-Samra, M.T.; Shuaib, Y.A. Pathology and pathogenesis of bovine skin and meibomian gland demodicosis. *Rev. Elev. Med. Vet. Pays Trop.* **2014**, *67*, 77–85. [CrossRef]
84. Abu-Samra, M.T.; Shuaib, Y.A. Bovine demodicosis: Leather from the raw material to the finished product. *J. Soc. Leather Techol. Chem.* **2015**, *99*, 80–90.
85. Abu-Samra, M.T.; Shuaib, Y.A. Morphometric and morphologic characteristics of *Demodex bovis* and *Demodex ghanensis* (Acarina: Trombidiformes: Demodicidae) isolated from cattle in the Sudan. *J. Anim. Vet. Sci.* **2017**, *3*, 25–33.
86. Kennedy, M.J. Mange in cattle: Demodectic mange. *Agri Facts* **2001**, *4*, 1–2.
87. Desch, D.E.; Nutting, W.B. Demodicids (Trombidiformes: Demodicidae) of medical and veterinary importance. In Proceedings of the 3d International Congress of Acarology, Prague, Czech Republic, 31 August–6 September 1971; pp. 499–505.
88. Trucco, T.; Ahibe, H.; Arribillaga, M. Sarna demodécica (*Demodex bovis*) en terneros en la provincia de Entre Ríos. Descripción de un cuadro clínico. *Vet. Arg.* **2019**, *36*, 1–8.
89. Cardona, J.; Vargas, M.; Perdomo, S. Descripción clínica de la demodicosis bovina (*Demodex bovis*) en Córdoba, Colombia. *Rev. Investig. Vet. Perú* **2013**, *24*, 125–129. [CrossRef]
90. Reddy, B.S.; Sivajothi, S. Clinical management of demodicosis in Ongole cattle. *J. Parasit. Dis.* **2016**, *40*, 1311–1312. [CrossRef]

91. Matthes, H.F.; Bukva, V. Features of bovine demodecosis (*Demodex bovis* Stiles, 1892) in Mongolia: Preliminary observations. *Folia Parasitol.* **1993**, *40*, 154–155.
92. Helson, G.A.H. Some arthropods affecting man and livestock in New Zealand. *N. Z. Vet. J.* **1956**, *4*, 11–18. [CrossRef]
93. Nutting, W.B.; Kettle, P.R.; Tenquist, J.D.; Whitten, L.K. Hair follicle mites (*Demodex* spp.) in New Zealand. *N. Z. J. Zool.* **1975**, *2*, 219–222. [CrossRef]
94. Bukva, V.; Vítovec, J.; Schandl, V. První nálezy demodikózy skotu v Československu. *Vet. Med. Praha* **1985**, *30*, 515–520. [PubMed]
95. Hoffmann, G. Grössenunterschiede bei *Demodex bovis* (Acari). *Angew. Parasitol.* **1989**, *30*, 141–143.
96. Nemeséri, L.; Széky, A. Die Rinderdemodikose. *Berl. Munch. Tierarztl. Wochenschr.* **1962**, *16*, 304–307.
97. Villa, L.; Gazzonis, A.L.; Perlotti, C.; Zanzani, S.A.; Sironi, G.; Manfredi, M.T. First report of *Demodex bovis* infestation in bovine besnoitiosis co-infected dairy cattle in Italy. *Parasitol. Int.* **2020**, *79*. in press. [CrossRef]
98. Grzywiński, L.; Kliszewski, E.; Piotrowski, R. Demodekoza bydła i jej zwalczanie. *Wiad. Parazytol.* **1986**, *32*, 585–590.
99. de Araújo Wanderley, J.N.; Athayde, A.C.R.; de Moura, J.F.P.; Bezerra, L.R.; de Melo Vaz, A.F.; de Lima, E.Q.; de Oliveira, J.P.F.; Silva, W.W. Factors affecting occurrence of demodecosis by *Demodex bovis* in Sindhi cattle (*Bos indicus*). *Trop. Anim. Health Prod.* **2020**, in press.
100. Desch, C.; Nutting, W.B. *Demodex folliculorum* (Simon) and *D. brevis* Akbulatova of man: Redescription and reevaluation. *J. Parasitol.* **1972**, *58*, 169–177. [CrossRef]
101. Sengbusch, H.G.; Hauswirth, J.W. Prevalence of hair follicle mites, *Demodex folliculorum* and *D. brevis* (Acari: Demodicidae), in a selected human population in Western New York, USA. *J. Med. Entomol.* **1986**, *23*, 384–388. [CrossRef]
102. Gao, Y.Y.; Di Pascuale, M.A.; Li, W.; Liu, D.T.; Baradaran-Rafii, A.; Elizondo, A.; Kawakita, T.; Raju, V.K.; Tseng, S.C. High prevalence of *Demodex* in eyelashes with cylindrical dandruff. *Investig. Ophthalmol. Vis. Sci.* **2005**, *46*, 3089–3094. [CrossRef]
103. Zhao, Y.E.; Guo, N.; Wu, L.P. The effect of temperature on the viability of *Demodex folliculorum* and *Demodex brevis*. *Parasitol. Res.* **2009**, *105*, 1623–1628. [CrossRef] [PubMed]
104. Liang, L.; Ding, X.; Tseng, S.C.G. High prevalence of *Demodex brevis* infestation in Chalazia. *Am. J. Ophthalmol.* **2014**, *157*, 342–348. [CrossRef] [PubMed]
105. Nutting, W.B.; Green, A.C. Pathogenesis associated with hair follicle mites (*Demodex* spp.) in Australian Aborigines. *Br. J. Dermatol.* **1976**, *94*, 307–312. [CrossRef] [PubMed]
106. Izdebska, J.N.; Jankowski, Z. Demodex brevis and *D. folliculorum* (Actinedida, Demodecidae): Specific human parasites. A comparative study of the effectiveness of diagnostic methods involving autopsy. In *Advances in Polish Acarology*; Gabryś, G., Ignatowicz, S., Eds.; SGGW: Warszawa, Poland, 2006; pp. 128–136.
107. Akbulatova, L.H. Demodekoza čeloveka. *Vestnik Dermat. Venerol.* **1963**, *38*, 34–42.
108. Kaya, S.; Selimoglu, M.A.; Kaya, O.A.; Ozgen, U. Prevalence of *Demodex folliculorum* and *Demodex brevis* in childhood malnutrition and malignancy. *Pediatr. Int.* **2013**, *55*, 85–89. [CrossRef]
109. Sari, Y.; Zeytun, E.; Doğan, S.; Karakurt, Y. Oküler dandrufflu hastalarda *Demodex folliculorum* ve *D. brevis* (Acari: Demodicidae) yaygınlığı ve yoğunluğu. *Acarol. Stud.* **2019**, *1*, 23–43.
110. Zeytun, E.; Karakurt, Y. Prevalence and load of *Demodex folliculorum* and *Demodex brevis* (Acari: Demodicidae) in patients with chronic blepharitis in the province of Erzincan, Turkey. *J. Med. Entomol.* **2019**, *8*, 2–9. [CrossRef]
111. Bukva, V.; Vítovec, J.; Vlček, M. *Demodex rosus* sp. n. and *D. buccalis* sp. n. (Acari: Demodicidae) parasitizing the upper digestive tract of rodents. *Folia Parasitol.* **1985**, *32*, 151–162.
112. Izdebska, J.N.; Kozina, P.; Gólcz, A. The occurrence of *Demodex* spp. (Acari, Demodecidae) in bank vole *Myodes glareolus* (Rodentia, Cricetidae) with data on its topographical preferences. *Ann. Parasitol.* **2013**, *59*, 129–133.
113. Railliet, A. *Traité de Zoologie Médicale et Agricole*; Asselin et Houzeau: Paris, France, 1895; pp. 1–1303.
114. Desch, C.E.; Nutting, W.B. Redescription of *Demodex caballi* (= *D. folliculorum* var. *equi* Railliet, 1895) from the horse, *Equus caballus*. *Acarologia* **1978**, *20*, 235–240.
115. Mathes, R.L.; Paige Carmichael, K.; Peroni, J.; Anthony Moore, P. Primary lacrimal gland adenocarcinoma of the third eyelid in a horse. *Vet. Ophthalmol.* **2011**, *14*, 48–54. [CrossRef] [PubMed]
116. Tenquist, J.D.; Charleston, W.A.G. An annotated checklist of ectoparasites of terrestrial mammals in New Zealand. *J. R. Soc. N. Z.* **2001**, *31*, 481–542. [CrossRef]

117. Dräger, N.; Paine, G.D. Demodicosis in African buffalo (*Syncerus caffer caffer*) in Botswana. *J. Wildl. Dis.* **1980**, *16*, 521–524. [CrossRef]
118. Nutting, W.B.; Guilfoy, F.M. *Demodex cafferi* n. sp. from the African buffalo, *Syncerus cafer*. *Int. J. Acarol.* **1979**, *5*, 9–14. [CrossRef]
119. Wolhuter, J.; Bengis, R.G.; Reilly, B.K.; Cross, P.C. Clinical demodicosis in African buffalo (*Syncerus caffer*) in the Kruger National Park. *J. Wildl. Dis.* **2009**, *45*, 502–504. [CrossRef]
120. Leydig, F. Ueber Haarsackmilben und Krätzmilben. *Arch. Naturgesch.* **1859**, *25*, 338–354.
121. Nutting, W.B.; Desch, C.E. *Demodex canis*: Redescription and reevaluation. *Cornell Vet.* **1978**, *68*, 139–149. [PubMed]
122. Arroyo-Munive, Y.J.; Hincapié-Gutiérrez, L.C. Demodicosis generalizada canina tratada con Fluralaner: Reporte de un caso. *Vet. Zoot.* **2018**, *12*, 62–71.
123. Guerra, Y.; Mencho, J.D.; Rodríguez Diego, J.G.; Marín, E.; Olivares, J.L. *Demodex* spp. en perros con demodicosis, en una región de Cuba. *Rev. Salud Anim.* **2010**, *32*, 37–41.
124. Sivajothi, S.; Sudhakara Reddy, B.; Kumari, K.N.; Rayulu, V.C. Morphometry of *Demodex canis* and *Demodex cornei* in dogs with demodicosis in India. *Int. J. Vet. Health Sci. Res.* **2013**, *1*, 1–4.
125. Sivajothi, S.; Sudhakara Reddy, B.; Rayulu, V.C. Demodicosis caused by *Demodex canis* and *Demodex cornei* in dogs. *J. Parasit. Dis.* **2015**, *39*, 673–676. [CrossRef]
126. Veena, M.; Dhanalakshmi, H.; Kavitha, K.; Souza, P.E.D.; Puttalaksmamma, G.C. Morphological characterization of *Demodex* mites and its therapeutic management with neem leaves in canine demodicosis. *J. Entomol. Zool. Stud.* **2017**, *5*, 661–664.
127. Sharma, S.; Pokharel, S. Diagnosis and therapeutic management of mixed *Demodex* and *Sarcoptes* mite infestation in dog. *Acta Sci. Agric.* **2019**, *3*, 163–166.
128. Ashfaq, K.; Aqib, A.I.; Fakhar-e-Alam Kulyar, M.; Naeem, R.F.; Shoaib, M.; Bhutta, Z.A.; Tanveer, Q.; Asif, M. Alternative therapeutic approach to treat canine demodicosis. *EC Vet. Sci.* **2019**, *4*, 251–256.
129. Sakulploy, R.; Sangvaranond, A. Canine demodicosis caused by *Demodex canis* and short opisthosomal *Demodex cornei* in Shi Tzu dog from Bangkok Metropolitan Thailand. *Kasetsart Vet.* **2010**, *20*, 27–35.
130. Thomson, G.M. *The Naturalisation of Animals and Plants in New Zealand*; Cambridge University Press: Cambridge, UK, 1922; pp. 1–607.
131. Ali, M.H.; Begum, N.; Azam, M.G.; Roy, B.C. Prevalence and pathology of mite infestation in street dogs at Dinajpur municipality area. *J. Bangladesh Agril. Univ.* **2011**, *9*, 111–119. [CrossRef]
132. Izdebska, J.N. Demodecid mites (Acari, Actinedida) in carnivorous mammals (Mammalia, Carnivora) in Poland. In *Arthropods. A Variety of Forms and Interactions*; Buczek, A., Błaszak, C., Eds.; Koliber: Lublin, Poland, 2005; pp. 121–125.
133. Pawełczyk, O.; Pająk, C.; Solarz, K. The risk of exposure to parasitic mites and insects occurring on pets in Southern Poland. *Ann. Parasitol.* **2016**, *62*, 337–344.
134. Moskvina, T.V. Two morphologically distinct forms of *Demodex* mites found in dogs with canine demodicosis from Vladivostok, Russia. *Acta Vet. Beogr.* **2017**, *67*, 82–91. [CrossRef]
135. Pekmezci, G.Z.; Pekmezci, D.; Bolukbas, C.S. Molecular characterization of *Demodex canis* (Acarina: Demodicidae) in domestic dogs (*Canis familiaris*). *Kocatepe Vet. J.* **2018**, *11*, 430–433. [CrossRef]
136. Mulugeta, Y.; Yacob, H.T.; Ashenafi, H. Ectoparasites of small ruminants in three selected agro-ecological sites of Tigray Region, Ethiopia. *Trop. Anim. Health Prod.* **2010**, *42*, 1219–1224. [CrossRef] [PubMed]
137. Zhao, Y.E.; Cheng, J.; Hu, L.; Ma, J.X. Molecular identification and phylogenetic study of *Demodex caprae*. *Parasitol. Res.* **2014**, *113*, 3601–3608. [CrossRef] [PubMed]
138. Fleischer, P.; Lukešová, D.; Skřivánek, M.; Hofírek, B.; Štursa, I. První nálezy demodikózy koz v České Republice. *Vet. Med. (Praha)* **1996**, *41*, 289–293.
139. Kaba, J.; Fagasiński, A.; Krawiec, M. Nużyca u kóz. *Życie Wet.* **1999**, *74*, 24–28.
140. Strabel, D.; Schweizer, G.; Gansohr, B.; Braun, U. Der einsatz von avermectinen bei zwei ziegen mit demodikose. *Schweiz. Arch. Tierheilkd.* **2003**, *145*, 585–587. [CrossRef]
141. Desch, C.; Lebel, R.R.; Nutting, W.B.; Lukoschus, F. Parasitic mites of Surinam: I. *Demodex carolliae* sp. nov. (Acari: Demodicidae) from the fruit bat *Carollia perspicillata*. *Parasitology* **1971**, *62*, 303–308. [CrossRef]
142. Izdebska, J.N.; Fryderyk, S.; Rolbiecki, L. *Demodex castoris* sp. nov. (Acari: Demodecidae) parasitizing *Castor fiber* (Rodentia), and other parasitic arthropods associated with *Castor* spp. *Dis. Aquat. Org.* **2016**, *118*, 1–10. [CrossRef] [PubMed]

143. Megnin, P. Memoire sur le *Demodex folliculorum* Owen. *J. Aanat. Physiol.* **1877**, *13*, 97–122.
144. Desch, C.; Nutting, W.B. *Demodex cati* Hirst 1919: A redescription. *Cornell Vet.* **1979**, *69*, 280–285.
145. Bizikova, P. Localized demodicosis due to *Demodex cati* on the muzzle of two cats treated with inhalant glucocorticoids. *Vet. Dermatol.* **2014**, *25*, 222–225. [CrossRef]
146. Valandro, M.A.; da Exaltação Pascon, J.P.; de Arruda Mistieri, M.L.; Gallina, T. Demodiciose felina por *Demodex cati*. *Acta Sci. Vet.* **2016**, *44* (Suppl. 1), 1–4.
147. Iliev, P.T.; Zhelev, G.; Ivanov, A.; Prelezov, P. *Demodex cati* and feline immunodeficiency virus co-infection in a cat. *Bulg. J. Vet. Med.* **2019**, *22*, 237–242. [CrossRef]
148. Löwenstein, C.; Beck, W.; Bessmann, K.; Mueller, R.S. Feline demodicosis caused by concurrent infestation with *Demodex cati* and an unnamed species of mite. *Vet. Rec.* **2005**, *157*, 290–292. [CrossRef] [PubMed]
149. Matricoti, I.; Maina, E. The use of oral fluralaner for the treatment of feline generalized demodicosis: A case report. *J. Small Anim. Pract.* **2017**, *58*, 476–479. [CrossRef] [PubMed]
150. Ortúñez, A.; Verde, M.T.; Navarro, L.; Real, L.; Vilela, C. Demodicosis felina: A propósito de tres casos clínicos. *Clin. Vet. Peq. Anim.* **2009**, *29*, 165–171.
151. Bacigalupo, J.; Roveda, R.J. *Demodex caviae* n. sp. *Rev. Med. Vet.* **1954**, *36*, 149–153.
152. Ballweber, L.R.; Harkness, J.E. Parasites of guinea pigs. In *Flynn's Parasites of Laboratory Animals*; Baker, D.G., Ed.; Blackwell Publishing: Ames, IA, USA, 2007; pp. 421–449.
153. Schönfelder, J.; Henneveld, K.; Schönfelder, A.; Hein, J.; Müller, R. Concurrent infestation of *Demodex caviae* and *Chirodiscoides caviae* in a guinea pig. A case report. *Tierarztl. Prax. Kleintiere* **2010**, *38*, 28–30.
154. Bukva, V. *Demodex kutzeri* sp. n. (Acari: Demodicidae), an identical parasite of two species of deer, *Cervus elaphus* and *C. nippon pseudaxis*. *Folia Parasitol.* **1987**, *34*, 173–181.
155. Hirst, S. On some new or little-known species of Acari, mostly parasitic in habit. *Proc. Zool. Soc. Lond.* **1921**, *1*, 357–378.
156. Izdebska, J.N.; Rolbiecki, L. A new species of the genus *Demodex* Owen, 1843 (Acari: Demodecidae) from the ear canals of the house mouse *Mus musculus* L. (Rodentia: Muridae). *Syst. Parasitol.* **2015**, *91*, 167–173. [CrossRef]
157. Nutting, W.B.; Rauch, H. *Demodex criceti* n. sp. (Acarina: Demodicidae) with notes on its biology. *J. Parasitol.* **1958**, *44*, 328–333. [CrossRef] [PubMed]
158. Hurley, R.J.; Desch, C.E. *Demodex cricetuli*: New species of hair follicle mite (Acari: Demodecidae) from the Armenian hamster, *Cricetulus migratorius* (Rodentia: Cricetidae). *J. Med. Entomol.* **1994**, *31*, 529–533. [CrossRef]
159. Harvey, R.G. *Demodex cuniculi* in dwarf rabbits (*Oryctolagus cuniculus*). *J. Small Anim. Pract.* **1990**, *31*, 204–207. [CrossRef]
160. Morita, T.; Ohmi, A.; Kiwaki, A.; Ike, K.; Nagata, K. A new stubby species of Demodectic mite (Acari: Demodicidae) from the domestic dog (Canidae). *J. Med. Entomol.* **2018**, *55*, 323–328. [CrossRef] [PubMed]
161. Desch, C.E.; Stewart, B. First description of a hair follicle mite from the host order Xenarthra: *Demodex dasypodi* n. sp. (Acari: Demodecidae) from the nine-banded armadillo, *Dasypus novemcinctus* Linnaeus, 1758 (Dasypodidae). *Int. J. Acarol.* **2002**, *28*, 169–174. [CrossRef]
162. Desch, C.E. A new species of *Demodex* Owen, 1843 (Acari: Demodecidae) from the meibomian glands of the vampire bat *Desmodus rotundus* (E. Geoffroy, 1810) (Chiroptera: Phyllostomidae: Desmodontinae) from Surinam. *Int. J. Acarol.* **1994**, *20*, 39–43. [CrossRef]
163. Hirst, S. LII.—On three new parasitic Acari. *Ann. Mag. Nat. Hist. Ser. 8* **1917**, *20*, 431–434. [CrossRef]
164. Besch, E.D.; Griffiths, H.J. Demonstration of *Demodex equi* (Railliet, 1895) from a horse from Minnesota. *J. Am. Vet. Med. Assoc.* **1956**, *128*, 82–83.
165. Izdebska, J.N. Symptomless Skin Mite Infestation of Horses in Northern Poland. In *Advances in Polish Acarology*; Gabryś, G., Ignatowicz, S., Eds.; SGGW: Warszawa, Poland, 2006; pp. 123–127.
166. Bukva, V. *Demodex flagellurus* sp. n. (Acari: Demodicidae) from the preputial and clitoral glands of the house mouse, *Mus musculus* L. *Folia Parasitol.* **1985**, *32*, 73–81.
167. Izdebska, J.N. Nowe gatunki *Demodex* spp. (Acari, Demodecidae) u *Mus musculus* w Polsce. *Wiad. Parazytol.* **2000**, *46*, 277–280.
168. Izdebska, J.N.; Rolbiecki, L. Correlation between the occurrence of mites (*Demodex* spp.) and nematodes in the house mice (*Mus musculus* Linnaeus, 1758) in the Gdańsk urban agglomeration. *Biol. Lett.* **2006**, *43*, 175–178.

169. Izdebska, J.N.; Rolbiecki, L. Two new species of *Demodex* (Acari: Demodecidae) with a redescription of *Demodex musculi* and data on parasitism in *Mus musculus* (Rodentia: Muridae). *J. Med. Entomol.* **2015**, *52*, 604–613. [CrossRef] [PubMed]
170. Yassine, M.; Thorraya, L.; Haiet, A.H. *Demodex follicullorum* mimicking fungal infection: A case report. *J. Dermat.* **2018**, *3*, 1–2. [CrossRef]
171. Salem, D.A.; El-Shazly, A.; Nabih, N.; El-Bayoumy, Y.; Saleh, S. Evaluation of the efficacy of oral ivermectin in comparison with ivermectin–metronidazole combined therapy in the treatment of ocular and skin lesions of *Demodex folliculorum*. *Int. J. Infect. Dis.* **2013**, *17*, e343–e347. [CrossRef] [PubMed]
172. Tandon, N.; Hati, A.K.; Thammayya, A. *Demodex folliculorum* in man. *Rec. Zool. Surv. India* **1980**, *76*, 139–142.
173. Hallur, V.; Singh, G.; Rudramurthy, S.M.; Kapoor, R.; Chakrabarti, A. *Demodex* mite infestation of unknown significance in a patient with rhinocerebral mucormycosis due to *Apophysomyces elegans* species complex. *J. Med. Microbiol.* **2013**, *62*, 926–928. [CrossRef]
174. Forton, F.; Seys, B. Density of *Demodex folliculorum* in rosacea: A case-control study using standardized skin-surface biopsy. *Br. J. Dermatol.* **1993**, *128*, 650–659. [CrossRef]
175. Basta-Juzbašić, A.; Šubić, J.Š.; Ljubojević, S. *Demodex folliculorum* in development of dermatitis rosaceiformis steroidica and rosacea-related diseases. *Clin. Dermatol.* **2002**, *20*, 135–140. [CrossRef]
176. Simon, G. Ueber eine in den kranken und normalen Haarsäcken des Menschen lebende Milbe. *Arch. Anat. Physiol. Wissensch. Med.* **1842**, *11*, 218–237.
177. Spickett, S.G. Studies on *Demodex folliculorum* Simon (1842). I. Life history. *Parasitology* **1961**, *51*, 181–192. [CrossRef]
178. Larios, G.; Alevizos, A.; Perimeni, D.; Rigopoulos, D.; Katsambas, A. Rosacea-like demodicidosis. *Lancet Infect. Dis.* **2008**, *8*, 804. [CrossRef]
179. Gunnarsdottir, S.; Kristmundsson, A.; Freeman, M.A.; Bjornsson, O.M.; Zoega, G.M. *Demodex folliculorum* (hair follicle mite), a hidden cause of blepharitis. *Laeknabladid* **2016**, *102*, 231–235. [PubMed]
180. Murphy, O.; O'Dwyer, V.; Lloyd-McKernan, A. The efficacy of tea tree face wash, 1, 2-Octanediol and microblepharoexfoliation in treating *Demodex folliculorum* blepharitis. *Contact Lens Anterior Eye* **2018**, *41*, 77–82. [CrossRef] [PubMed]
181. Eser, A.; Erpolat, S.; Kaygusuz, I.; Balci, H.; Kosus, A. Investigation of *Demodex folliculorum* frequency in patients with polycystic ovary syndrome. *An. Bras. Dermatol.* **2017**, *92*, 807–810. [CrossRef] [PubMed]
182. Doğan, S.; Doğan, S. An accidental finding of a demodectic mite on a slide: *Demodex folliculorum* (Simon) (Acari: Demodecidae). *Syst. Appl. Acarol.* **2019**, *24*, 962–964. [CrossRef]
183. Xie, H.X.; Liu, S.L.; Hsu, Y.H.; Hsu, Y.C. Taxonomy of the family Demodicidae and a new subspecies (Acarina: Demodicidae). *Acta Zootaxon. Sin.* **1982**, *7*, 265–269.
184. Bukva, V. *Demodex foveolator* sp. n. (Acari: Demodicidae), a new epidermis-dwelling parasite of *Crocidura suaveolens* (Pallas, 1821). *Folia Parasitol.* **1984**, *31*, 42–52.
185. Nutting, W.B.; Emejuaiwe, S.O.; Tisdel, M.O. *Demodex gapperi* sp. n. (Acari: Demodicidae) from the red-backed vole, *Clethrionomys gapperi*. *J. Parsitol.* **1971**, *57*, 660–665. [CrossRef]
186. Desch, C.E.; Stewart, T.B. *Demodex gatoi*: New species of hair follicle mite (Acari: Demodecidae) from the domestic cat (Carnivora: Felidae). *J. Med. Entomol.* **1999**, *36*, 167–170. [CrossRef]
187. Short, J.; Gram, D. Successful treatment of *Demodex gatoi* with 10% Imidacloprid/1% Moxidectin. *J. Am. Anim. Hosp. Assoc.* **2016**, *52*, 68–72. [CrossRef]
188. Silbermayr, K.; Joachim, A.; Litschauer, B.; Panakova, L.; Sastre, N.; Ferrer, L.; Horvath-Ungerboeck, C. The first case of *Demodex gatoi* in Austria, detected with fecal flotation. *Parasitol. Res.* **2013**, *112*, 2805–2810. [CrossRef] [PubMed]
189. Saari, S.A.M.; Juuti, K.H.; Palojärvi, J.H.; Väisänen, K.M.; Rajaniemi, R.L.; Saijonmaa-Koulumies, L.E. *Demodex gatoi*–associated contagious pruritic dermatosis in cats—A report from six households in Finland. *Acta Vet. Scand.* **2009**, *51*, 1–8. [CrossRef]
190. Oppong, E.N.W.; Lee, R.P.; Yasin, S.A. *Demodex ghanensis* sp. nov. (Acari, Demodicidae) parasitic on West African cattle. *Ghana J. Sci.* **1975**, *15*, 39–43.
191. Mertens, L.A.J.M.; Lukoschus, F.S.; Nutting, W.B. *Demodex huttereri* spec. nov. (Acarina: Prostigmata: Demodicidae) from the meibomian glands of *Apodemus agrarius* (Rodentia: Muridae). *Bonn. Zool. Beitr.* **1983**, *34*, 489–498.

192. Izdebska, J.N.; Rolbiecki, L.; Fryderyk, S. New data on distribution of *Demodex huttereri* Mertens, Lukoschus et Nutting, 1983 and topical specificity and topography of demodectic mites in striped field mouse *Apodemus agrarius*. *Wiad. Parazytol.* **2011**, *57*, 261–264.
193. Desch, C.E.; Hillier, A. *Demodex injai*: A new species of hair follicle mite (Acari: Demodecidae) from the domestic dog (Canidae). *J. Med. Entomol.* **2003**, *40*, 146–149. [CrossRef] [PubMed]
194. Amaral Silva Sgarbossa, R.S.; Vieira Sechi, G.; Duarte Pacheco, B.; Buba Lucina, S.; Roberto Paulo, M.; dos Santos Monti, F.; Rodriges de Farias, M. The epidemiological and clinical aspects of *Demodex injai* demodicosis in dogs: A report of eight cases. *Semin Cienc. Agrar.* **2017**, *38*, 3387–3394. [CrossRef]
195. Ordeix, L.; Bardagi, M.; Scarampella, F.; Ferrer, L.; Fondati, A. *Demodex injai* infestation and dorsal greasy skin and hair in eight wirehaired fox terrier dogs. *Vet. Dermatol.* **2009**, *20*, 267–272. [CrossRef]
196. Lukoschus, F.S.; Mertens, L.J.A.M.; Nutting, W.B.; Nadchatram, M. *Demodex intermedius* sp. nov. (Acarina: Prostigmata: Demodicidae) from the meibomian glands of the tree-shrew *Tupaia glis* (Mammalia: Scandentia). *Malay. Nat. J.* **1984**, *36*, 233–245.
197. Kadulski, S. Dalsze badania nad stawonogami pasożytniczymi łosia *Alces alces* w Polsce. *Wiad. Parazytol.* **1996**, *42*, 349–355.
198. Kadulski, S. Ectoparasites of Cervidae in north-east Poland. *Acta Parasitol.* **1996**, *41*, 204–210.
199. Izdebska, J.N.; Fryderyk, S. *Demodex* spp. (Acari, Demodecidae) in wild Artiodactyla in Poland. *Acta Parasitol.* **2000**, *45*, 163–164.
200. Kutzer, E.; Grünberg, W. Demodikose beim Rothirsch (*Cervus elaphus*). *Z. Parasitenkd.* **1972**, *40*, 9–17. [CrossRef] [PubMed]
201. Izdebska, J.N.; Kozina, P.; Fryderyk, S. The occurrence of *Demodex kutzeri* Bukva, 1987 (Acari, Demodecidae) in red deer (*Cervus elaphus* L.) in Poland. *Ann. Parasitol.* **2013**, *59*, 85–88. [PubMed]
202. Desch, C.E.; Andrews, J.J.; Baeten, L.A.; Holder, Z.; Powers, J.G.; Weber, D.; Ballweber, L.R. New records of hair follicle mites (Demodecidae) from North American Cervidae. *J. Wildl. Dis.* **2010**, *46*, 585–590. [CrossRef] [PubMed]
203. Palopoli, M.F.; Tra, V.; Matoin, K.; Mac, P.D. Evolution of host range in the follicle mite *Demodex kutzeri*. *Parasitology* **2017**, *144*, 594–600. [CrossRef] [PubMed]
204. Kadulski, S.; Szczurek, B. Ectoparasites on fallow deer, *Dama dama* (L.) in Pomerania, Poland. *Acta Parasitol.* **2004**, *49*, 80–86.
205. Lukoschus, F.S.; Jongman, R.G.H. *Demodex lacrimalis* spec. nov. (Demodicidae: Trombidiformes) from the Meibomian glands of the European wood mouse *Apodemus sylvaticus*. *Acarologia* **1974**, *16*, 274–281.
206. Izdebska, J.N.; Fryderyk, S. New data on the occurrence of *Demodex lacrimalis* (Acari, Demodecidae) of the wood mouse *Apodemus sylvaticus* (Rodentia, Muridae). *Ann. UMCS Biol.* **2012**, *67*, 7–11. [CrossRef]
207. Hughes, S.E.; Nutting, W.B. *Demodex leucogasteri* n. sp. from *Onychomys leucogaster*—With notes on its biology and host pathogenesis. *Acarologia* **1981**, *22*, 181–186.
208. Desch, C.; Nutting, W.B.; Lukoschus, F.S. Parasitic mites of Surinam VII: *Demodex longissimus* n. sp. from *Carollia perspicillata* and *D. molossi* n. sp. from *Molossus molossus* (Demodicidae: Trombidiformes); meibomian complex inhabitants of Neotropical bats (Chiroptera). *Acarologia* **1972**, *14*, 35–53.
209. Karjala, Z.; Desch, C.E.; Starost, M.F. First description of a new species of *Demodex* (Acari: Demodecidae) from rhesus monkey. *J. Med. Entomol.* **2005**, *42*, 948–952. [CrossRef]
210. Desch, C.E. A new species of demodicid mite (Acari: Prostigmata) from Western Australia parasitic on *Macroglossus minimus* (Chiroptera: Pteropodidae). *Rec. West. Aust. Mus.* **1981**, *9*, 41–47.
211. Nutting, W.B.; Lukoschus, F.S.; Desch, C.E. Parasitic mites of Surinam. XXXVII. *Demodex marsupiali* sp. nov. from *Didelphis marsupialis*: Adaptation to glandular habitat. *Zool. Meded. Leiden* **1980**, *56*, 83–92.
212. Lukoschus, F.S.; Jongman, R.H.G.; Nutting, W.B. Parasitic mites of Surinam. XII. *Demodex melanopteri* sp. n. (Demodicidae: Trombidiformes) from the meibomian glands of the Neotropical bat *Eptesicus melanopterus*. *Acarologia* **1972**, *14*, 54–58.
213. Hirst, S. On three new parasitic mites (*Leptus*, *Schongastia*, and *Demodex*). *Ann. Mag. Nat. Hist.* **1921**, *7*, 37–39. [CrossRef]
214. Izdebska, J.N.; Rolbiecki, L. *Demodex microti* n. sp. (Acari: Demodecidae) in *Microtus arvalis* (Pallas) (Rodentia, Cricetidae) with a checklist of the demodecid mites of cricetids. *Syst. Parasitol.* **2013**, *86*, 187–196. [CrossRef]
215. Oudemans, A.C. List of Dutch Acari. 7th part: Acaridiidae Latr. 1806, and Phytoptidae Pagenst. 1861, with synonymical remarks end description of new species etc. *Tijdschr. Entomol.* **1897**, *40*, 250–269.

216. Ventura, J.; Feliu, C.; Foronda, P.; Francino, O.; Sastre, N. First record of the presence of skin mites *(Demodex musculi)* in wild house mice from the Canary Islands (Spain). *Int. J. Acarol.* **2020**, *46*. in press.
217. Smith, P.C.; Zeiss, C.J.; Beck, A.P.; Scholz, J.A. *Demodex musculi* infestation in genetically immunomodulated mice. *Comp. Med.* **2016**, *66*, 278–285.
218. Nashat, M.A.; Ricart Arbona, R.J.; Lepherd, M.L.; Santagostino, S.F.; Livingston, R.S.; Riedel, E.R.; Lipman, N.S. Ivermectin-compounded feed compared with topical moxidectin–imidacloprid for eradication of *Demodex musculi* in laboratory mice. *J. Am. Assoc. Lab. Anim. Sci.* **2018**, *57*, 483–497. [CrossRef] [PubMed]
219. Di Benedetto, S.A. The Biology of *Demodex myotidis* sp.nov. (Acarina: Demodicidae) from Three Species of Bats. Master's Thesis, University of Massachusetts Amherst, Aherst, MA, USA, 1961.
220. Desch, C.E. Two new species of Demodex (Acari: Demodicidae) from the New Zealand shorttailed bat, *Mystacina tuberculata* Gray, 1843 (Chiroptera: Mystacinidae). *N. Z. J. Zool.* **1989**, *16*, 221–230. [CrossRef]
221. Izdebska, J.N.; Rolbiecki, L. Występowanie *Demodex* spp. w Korelacji z Poziomem Zarażenia Helmintami Szczura Wędrownego *Rattus norvegicus* (Berk.) z Aglomeracji Miejskiej Trójmiasta. In *Fauna Miast Europy Środkowej 21. Wieku*; Indykiewiecz, P., Barczak, T., Eds.; LOGO: Bydgoszcz, Poland, 2004; pp. 581–584.
222. Izdebska, J.N.; Rolbiecki, L. New species of *Demodex* (Acari: Demodecidae) with data on parasitism and occurrence of other demodecids of *Rattus norvegicus* (Rodentia, Muridae). *Ann. Entomol. Soc. Am.* **2014**, *107*, 740–747. [CrossRef]
223. Desch, C.E. Redescription of *Demodex nanus* (Acari: Demodicidae) from *Rattus norvegicus* and *R. rattus* (Rodentia). *J. Med. Entomol.* **1987**, *24*, 19–23. [CrossRef] [PubMed]
224. Bukva, V. *Demodex neomydis* sp. n. (Acari: Demodecidae) from the hair follicles of the Mediterranean water shrew, *Neomys anomalus* (Insectivora: Soricidae). *Folia Parasitol.* **1995**, *42*, 299–306. [PubMed]
225. Desch, C.E.; Lukoschus, F.S.; Nadchatram, M. Two new species of *Demodex* (Acari: Demodicidae) from the meibomian glands of the tropical Old Word bat, *Eonycteris spelaea* (Chiroptera). *Int. J. Acarol.* **1986**, *12*, 13–25. [CrossRef]
226. Bukva, V. *Demodex* species (Acari: Demodecidae) parasitizing the brown rat, *Rattus norvegicus* (Rodentia): Redescription of *Demodex ratti* and description of *D. norvegicus* sp. n. and *D. ratticola* sp. n. *Folia Parasitol.* **1995**, *42*, 149–160.
227. Desch, C.E. *Demodex nycticeii*: A new species of hair follicle mite (Acari: Demodecidae) from the evening bat, *Nycticeius humeralis* (Chiroptera: Vespertilionidae). *Int. J. Acarol.* **1996**, *22*, 187–191. [CrossRef]
228. Desch, C.E.; Nutting, W.B. *Demodex odocoilei* sp. nov. from the white-tailed deer, *Odocoileus virginianus*. *Can. J. Zool.* **1974**, *52*, 785–789. [CrossRef]
229. Bildfell, R.J.; Mertins, J.W.; Mortenson, J.A.; Cottam, D.F. Hair-loss syndrome in black-tailed deer of the Pacific Northwest. *J. Wildl. Dis.* **2004**, *40*, 670–681. [CrossRef]
230. Yeruham, I.; Rosen, S.; Hadani, A. Sheep demodecosis (*Demodex ovis*, Railliet, 1895) in Israel. *Rev. Elev. Méd. Vét. Pays Trop.* **1986**, *39*, 363–365.
231. Kamyszek, F.; Wertejuk, M. Badania porównawcze ekstensywności zarażenia ektopasożytami owiec w regionach: Wielkopolskie i szczecińskie w latach 1971–1980. *Wiad. Parazytol.* **1983**, *29*, 335–341. [PubMed]
232. Lombert, H.A.P.M.; Lukoschus, F.S.; Whitaker, J.O. *Demodex peromysci*, n. sp. (Acari: Prostigmata: Demodicidae), from the meibomian glands of *Peromyscus leucopus* (Rodentia: Cricetidae). *J. Med. Entomol.* **1983**, *20*, 377–382. [CrossRef]
233. Desch, C.E.; Dailey, M.D.; Tuomi, P. Description of a hair follicle mite (Acari: Demodecidae) parasitic in the earless seal family Phocidae (Mammalia: Carnivora) from the harbor seal *Phoca vitulina* Linnaeus, 1758. *Int. J. Acarol.* **2003**, *29*, 231–235. [CrossRef]
234. Desch, C.E.; Davis, S.L.; Klompen, H. Two new species of *Demodex* Owen, 1843, the hair follicle mites (Demodecidae), from the dzungarian hamster, *Phodopus sungorus* (Pallas, 1773) (Rodentia: Muridae). *Int. J. Acarol.* **2006**, *32*, 75–80. [CrossRef]
235. Kadulski, S. Ectoparasites of the boar *Sus scrofa* L. in Poland. In Proceedings of the Fourth International Congress of Parasitology, A Conference of the World Federation of Parasitologists, Warszawa, Poland, 19–26 August 1978; pp. 211–212.
236. Fryderyk, S. Pasożytnicze Acari dzika (*Sus scrofa* L.) z Pojezierza Pomorskiego. *Wiad. Parazytol.* **2000**, *46*, 163–168.
237. Fryderyk, S.; Izdebska, J.N. *Demodex phylloides* (Acari, Demodecidae) as a specific parasite of *Sus scrofa* (Mammalia, Artiodactyla). *Wiad. Parazytol.* **2001**, *47*, 797–800.

238. Izdebska, J.N.; Fryderyk, S. Zmienność morfologiczna *Demodex phylloides* (Acari, Demodecidae) u dzika (*Sus scrofa*). In *Stawonogi w Medycynie*; Buczek, A., Błaszak, C., Eds.; Liber: Lublin, Poland, 2002; pp. 25–34.
239. Kabululu, M.L.; Ngowi, H.A.; Kimera, S.I.; Lekule, F.P.; Kimbi, E.C.; Johansen, M.V. Risk factors for prevalence of pig parasitoses in Mbeya Region, Tanzania. *Vet. Parasitol.* **2015**, *15*, 460–464. [CrossRef]
240. Ramsay, W.R. On *Demodex phylloides*, (Csokor), in the skin of Canadian swine. *Proc. Can. Inst.* **1883**, *1*, 275–281.
241. Silveira, R.L.; Ribeiro, R.B.; Cruz, A.C.M.; Almeida, L.G.; Carvalho, E.C.Q. Demodicose suínano norte do estado do Riode Janeiro: Relato de caso. *Arq. Bras. Med. Vet. Zootec.* **2012**, *64*, 555–558. [CrossRef]
242. Bersano, J.G.; Mendes, M.C.; Duarte, F.C.; Del Fava, C.; de Oliveira, S.M.; Filha, E.S.; Pinheiro, E.S.; de Castro Nassar, A.F.; de Vasconcellos Bilynskyj, M.C.; Ogata, R.A.; et al. *Demodex phylloides* infection in swine reared in a periurban family farm located on the outskirts of the Metropolitan Region of São Paulo, Brazil. *Vet. Parasitol.* **2016**, *230*, 67–73. [CrossRef]
243. Csokor, J. Ueber Haarsaekmilben und eine neue Varietät derselben bei Sehweinen, *Demodex phylloides*. *Verh. Zool. Bot. Ges. Österr.* **1879**, *29*, 419–450.
244. Puccini, V.; Colella, G. Prima segnalazione per l'Italia sud-orientale di *Demodex phylloides* Csokor 1879 nel suino. *Acta Med. Vet.* **1975**, *21*, 65–72.
245. Špringol'c Šmidt, A.I. Éktoparazity nekotoryh vidov dal'novostočnyh olenej. *Vestn. Dal'nevostočnyj Fil. Akad. Nauk SSSR* **1937**, *26*, 133–140.
246. Hirst, S. Remarks on certain species of the genus *Demodex*, Owen (the *Demodex* of man, the horse, dog, rat, and mouse). *Ann. Mag. Nat. Hist. Ser. 8* **1917**, *20*, 232–235. [CrossRef]
247. Izdebska, J.N.; Rolbiecki, L. Demodectic mites of the brown rat *Rattus norvegicus* (Berkenhout, 1769) (Rodentia, Muridae) with a new finding of *Demodex ratticola* Bukva, 1995 (Acari, Demodecidae). *Ann. Parasitol.* **2012**, *58*, 71–74. [PubMed]
248. Izdebska, J.N.; Rolbiecki, L. Topical structure and topography of *Demodex* spp. (Acari Demodecidae), in brown rat *Rattus norvegicus* (Rodentia, Muridae). In *Arthropods. The Medical and Economic Importance*; Buczek, A., Błaszak, C., Eds.; Akapit: Lublin, Poland, 2012; pp. 133–141.
249. Izdebska, J.N.; Fryderyk, S. Recent data on *Demodex rosus* Bukva, Vitovec et Vlcek, 1985 (Acari, Demodecidae) from oral cavity of yellow-necked field mouse, *Apodemus flavicollis* (Rodentia, Muridae). *Wiad. Parazytol.* **2011**, *57*, 257–260.
250. Desch, C.E.; Lukoschus, F.S.; Nadchatram, M. A new demodicid (Acari: Demodicidae) from the meibomian glands of Southeast Asian rats (Rodentia: Muridae). *Trop. Biomed.* **1984**, *1*, 55–62.
251. Lebel, R.R.; Nutting, W.B. Demodectic mites of subhuman Primates I: *Demodex saimiri* sp. n. (Acari: Demodicidae) from the squirrel monkey, *Saimiri sciureus*. *J. Parasitol.* **1973**, *59*, 719–722. [CrossRef]
252. Lebel, R.R. *Demodex saimiri* sp. nov. and *Demodex sciurei* sp. nov. ectoparasites of the squirrel monkey, *Saimiri sciureus*, with notes on demodicids from other subhuman primates. Master's Thesis, University of Massachusetts, Amherst, MA, USA, 1970.
253. Desch, C.E.; Hurley, R.J. *Demodex sinocricetuli*: New species of hair follicle mite (Acari: Demodecidae) from the Chinese form of the striped hamster, *Cricetulus barabensis* (Rodentia: Muridae). *J. Med. Entomol.* **1997**, *34*, 317–320. [CrossRef]
254. Bukva, V. Redescription of *Demodex soricinus* (Acari: Demodecidae) from the sebaceous glands of *Sorex araneus* (Insectivora). *Folia Parasitol.* **1993**, *40*, 243–248.
255. Izdebska, J.N. Species of Demodecidae (Acari, Actinedida), new for the fauna of Poland, in common shrew (*Sorex araneus* L.). *Zool. Pol.* **2004**, *49*, 47–51.
256. Kaufmann, J. *Parasitic Infections of Domestic Animals: A Diagnostic Manual*; Birkhäuser Verlag: Basel, Switzerland, 1996; pp. 1–423.
257. Mehlhorn, M. (Ed.) *Encyclopedic Reference of Parasitology*, 4th ed.; Springer Verlag: Berlin/Heidelberg, Germany, 2016; pp. 1–3084.
258. Kadlec, V. *Demodex suis*. *Vet. Med.* **1975**, *20*, 441–443.
259. Maravelas, G.K. Studies of *Demodex sylvilagi* n. sp. (Acarina: Demodicidae) from the New England Cottontail *Sylvilagus transitionalis* Bangs with a Description of *Demodex transitionalis* n. sp. Master's Thesis, University of Massachusetts Amherst, Amherst, MA, USA, 1962.
260. Izdebska, J.N.; Rolbiecki, L. New data on parasites of mole *Talpa europaea* (Mammalia, Insectivora) in northern Poland. *Wiad. Parazytol.* **2003**, *49*, 97–98.

261. Bukva, V. *Demodex tauri* sp. n. (Acari: Demodicidae), a new parasite of cattle. *Folia Parasitol.* **1986**, *33*, 363–369.
262. Shi, X.; Xie, H.; Hsu, Y. A new species of the genus *Demodex* (Acariformes: Demodicidae). *Acta Zool. Sin.* **1985**, *10*, 385–387.
263. Desch, C.E.; Holz, P.H. *Demodex tortellinioides* n. sp. (Acari: Demodecidae) from the agile antechinus, *Antechinus agilis* Dickman, Parnaby, Crowther and King, 1998 (Marsupialia: Dasyuridae) in Australia. *Int. J. Acarol.* **2006**, *32*, 81–84. [CrossRef]
264. Desch, C.E. A new species of hair follicle mite (Acari: Demodecidae) from the snow leopard, *Panthera uncia* (Schreber, 1775) (Felidae). *Int. J. Acarol.* **1993**, *19*, 63–67. [CrossRef]
265. Desch, C.E. A new species of Demodex (Acari: Demodecidae) from the black bear of North America, *Ursus americanus* Pallas, 1780 (Ursidae). *Int. J. Acarol.* **1995**, *21*, 23–26. [CrossRef]
266. Foster, G.W.; Cames, T.A.; Forrester, D.J. Geographical distribution of *Demodex ursi* in black bears from Florida. *J. Wildl. Dis.* **1998**, *34*, 161–164. [CrossRef]
267. Dailey, M.D.; Nutting, W.B. *Demodex zalophi* sp. nov. (Acari: Demodicidae) from *Zalophus californianus*, the California sea lion. *Acarologia* **1979**, *21*, 423–428.
268. Bukva, V.; Nutting, W.B.; Desch, C.E. Description of *Ophthalmodex apodemi* sp.n. (Acari: Demodecidae) from the ocular area of *Apodemus sylvaticus* (Rodentia: Muridae) with notes on pathogenicity. *Int. J. Acarol.* **1992**, *18*, 269–276. [CrossRef]
269. Lukoschus, F.S.; Nutting, W.B. Parasitic mites of Surinam. XIII. *Ophthalmodex artibei* gen. nov., spec. nov. (Prostigmata: Demodicidae) from *Artibeus lituratus* with notes on pathogenesis. *Int. J. Acarol.* **1979**, *5*, 299–304. [CrossRef]
270. Woeltjes, A.G.W.; Lukoschus, F.S. Parasites of Western Australia. XIV. Two new species of *Ophthalmodex* Lukoschus and Nutting (Acarina: Prostigmata: Demodicidae) from the eyes of bats. *Rec. West. Aust. Mus.* **1981**, *9*, 307–313.
271. Lukoschus, F.S.; Woeltjes, A.G.; Desch, C.E.; Nutting, W.B. Parasitic mites of Surinam XXXV: Two new *Ophthalmodex* spp. (*O. carolliae*, *O. molossi*: Demodicidae) from the bats *Carollia perspicillata* and *Molossus molossus*. *Int. J. Acarol.* **1980**, *6*, 45–50. [CrossRef]
272. Veal, R.A.; Giesen, K.M.T.; Whitaker, J.O. A new species of the genus *Ophthalmodex* Lukoschus & Nutting 1979 (Prostigmata: Demodicidae) from *Myotis lucifugus* (Chiroptera: Vespertilionidae). *Acarologia* **1984**, *25*, 347–350.
273. Lukoschus, F.S.; Woeltjes, A.G.W.; Desch, C.E.; Nutting, W.B. Parasitic mites of Surinam XX: *Pterodex carolliae* gen. nov., spec. nov. (Demodicidae) from the fruit bat, *Carollia perspicillata*. *Int. J. Acarol.* **1980**, *6*, 9–14. [CrossRef]
274. Fain, A. Deux nouveaux genres d'Acariens vivant dans l'épaisseur des muqueuses nasale et buccale chez un Lémurien. *Bull. Ann. Soc. R. Belg. Entomol.* **1959**, *95*, 263–273.
275. Bukva, V. *Soricidex dimorphus* g. n., sp. n. (Acari, Demodicidae) from the common shrew, *Sorex araneus*. *Folia Parasitol.* **1982**, *40*, 343–349.
276. Bukva, V. Sexual dimorphism in the hair follicle mites (Acari: Demodecidae): Scanning electron microscopy of *Soricidex dimorphus*. *Folia Parasitol.* **1993**, *40*, 71–79.
277. Desch, C.E. A new Australian species of *Stomatodex* Fain (Acari: Demodecidae) from the oesophagus of *Cercartetus nanus* (Desmarest) (Marsupialia). *J. Aust. Entomol. Soc.* **1991**, *30*, 239–241. [CrossRef]
278. Baker, A.S.; Craven, J.C. Checklist of the mites (Arachnida: Acari) associated with bats (Mammalia: Chiroptera) in the British Isles. *Syst. Appl. Acarol.* **2003**, *14*, 1–20. [CrossRef]