

# A checklist of the parasitic helminths of cricetid and heteromyid rodents in Mexico

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We present an updated checklist of helminth species infecting cricetid and heteromyid rodents (Rodentia: Cricetidae and Heteromyidae) distributed in Mexico. For each helminth record, we include information on helminth taxonomy, location within the host, life stage, host associations, collection localities, citation, and museum collections, when available. We recorded more than 73 helminth species from 47 host species distributed across 21 states in Mexico. The present list represents the most up-to-date knowledge of helminth species infecting cricetid and heteromyid rodents in Mexico.

En el presente trabajo se da a conocer el registro actualizado de los helmintos parásitos que se encuentran en roedores cricétidos y heterómidos (Rodentia: Cricetidae y Heteromyidae) distribuidos en México. Para cada registro de helminto se incluye la información taxonómica, su localización en el huésped así como su estado de desarrollo y asociación con éste; además de proveer los datos del lugar de colecta, la citas bibliográficas donde han sido registrados y los datos de la colección donde se encuentran depositados, siempre y cuando los datos estén disponibles. Se enlistan más de 73 especies de helmintos que parasitan a 47 especies de huéspedes, distribuidos en 21 estados de la República Mexicana. El presente listado representa el conocimiento más actualizado de las especies de helmintos que infectan roedores cricétidos y heterómidos en México.

**Keywords:** checklist; Cricetidae; helminth; Heteromyidae; México; parasites.

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## Introduction

Rodentia is the most diverse order of mammals with 2,552 described species worldwide (Burgin *et al.* 2018). Only in Mexico, there are over 254 rodent species and nearly half of those are endemic (Sánchez-Cordero *et al.* 2014). The families Cricetidae and Heteromyidae are particularly well-represented in Mexico, with approximately 150 and 60 species, respectively (Fernández *et al.* 2014, Burgin *et al.* 2018). Studies of the parasitic helminths (nematodes, cestodes, trematodes, and acanthocephalans) of some of these rodents began in the early to mid 1900s (e. g., Ochoterena and Caballero y Caballero 1932, Chitwood 1938, Zerecero 1943). Since then, multiple studies have surveyed the parasitic fauna of rodents, although these studies are scattered across various journals, books, and museum records. Most recently, García-Prieto *et al.* (2012) compiled a checklist of helminths of mammals in Mexico, including at least 52 helminth species from 30 cricetid and heteromyid host species. However, the checklist by García-Prieto *et al.* (2012) lacks recent host-parasite records. Examination of additional checklists, publications, and specimens from new field collections is necessary to better understand the helminth fauna of Mexican cricetid and heteromyid species.

Similar to previous checklists, we consolidated records from published checklists and new records to provide an updated and extensive list of helminth species infecting cricetid and heteromyid host species in Mexico. Specifically, we searched for new host-parasite records using Web of

Science, using host genus AND "Mexic\*", AND "helminth\*", "parasit\*", "nematod\*", "cestod\*", or "trematod\*" as search terms, and combined these with records from previous checklists (e. g., García-Prieto *et al.* 2012, Falcón-Ordaz *et al.* 2015). Helminth records are grouped by phylum and arranged alphabetically at the order, family, genus, and species levels. For each helminth species, we included data on helminth taxonomy, location within the host, life stage, host associations, collection localities, citation (including both the original citation and subsequent checklists), and museum collections, when available. Specimens listed as collected during the present study were provided by Jesús A. Fernández who collected the hosts in august of 2017 and january of 2018. These registers represent previously unpublished data. Parasite species listed as "sp." from different localities, host species, or publications may represent different species. The host genera *Chaetodipus*, *Dipodomys*, *Heteromys*, and *Perognathus* belong to the family Heteromyidae; all other genera are representatives of Cricetidae. We follow the mammal taxonomy of Burgin *et al.* (2018); for heteromyids, the genus *Liomys* is now recognized as *Heteromys* and all "*Liomys*" host associations are recorded under the genus *Heteromys*.

Abbreviations for the museum records are as follows: CHE-UAEH = Colección de Helmintos, Universidad Autónoma del Estado de Hidalgo in Pachuca, Hidalgo, Mexico; CINZ = Colección de Invertebrados no Artrópodos, Universidad Autónoma de Zacatecas, Zacatecas, Mexico; CNHE = Col-

cción Nacional de Helminths at the Universidad Nacional Autónoma de México in Mexico City, Mexico; HWML = Harold W. Manter Laboratory of Parasitology, University of Nebraska-Lincoln in Lincoln, Nebraska, United States; MLP-He = Museo de la Plata, Colección Helminológica, La Plata, Buenos Aires Argentina; MNHN = Muséum National d'Histoire Naturelle in Paris, France; MZFC-M = Museo de Zoología "Alfonso L. Herrera," Universidad Nacional Autónoma de México in Mexico City, Mexico; UNAM = Universidad Nacional Autónoma de México in Mexico City, Mexico; USNPC = United States National Parasite Collection in Beltsville, Maryland, United States; WHO = World Health Organization Collaborating Centre for Filarioidea Reference Collection, Commonwealth Institute of Parasitology London School of Hygiene and Tropical Medicine, England.

Parasite-Host list

Platyhelminthes Gegenbaur, 1859

Trematoda Rudolphi, 1808

Digenea Carus, 1863

Diplostomida (Poche, 1926) Olson, Cribb, Tkach, Bray, and Littlewood, 2003

Brachylaimidae (Joyeux and Foley, 1930)

Brachylaimidae gen. sp.

Location within Host: Life Stage.

Intestine: Adult.

Estado de México: Cerro Gordo, Otumba: *Peromyscus difficilis* (García-Prieto et al. 2012). Specimens in collections: CNHE 7563.

*Brachylaima bravoae* Caballero-Deloya, 1970

Intestine: Adult.

Jalisco: Chamela: *Heteromys pictus* (Caballero-Deloya, 1970, García-Prieto et al. 2012). Specimens in collections: CNHE 715, 1495.

*Brachylaima chiapensis* Ubelaker and Dailey, 1966

Intestine: Adult.

Chiapas: Volcán del Tacaná: *Peromyscus guatemalensis* (Ubelaker and Dailey 1966, García-Prieto et al. 2012). Specimens in collections: USNPC 60493.

*Brachylaima* sp.

Intestine: Adult.

Hidalgo: San Miguel Allende, Tepeapulco: *Peromyscus difficilis* (Pulido-Flores et al. 2013, Falcón-Ordaz et al. 2015). No specimens in collections.

Diplostomidae Poirier, 1886

Diplostomidae gen. sp.

Intestine: Metacercaria.

Guanajuato: 3 km W of Mineral de Pozos, San Luis de la Paz: *Peromyscus* sp. (Present study). Specimens in collections: CNHE 10887.

Plagiorchiida La Rue, 1957

Dicrocoeliidae Looss, 1899

*Caballerolecythus ibunami* Lamothe-Argumedo, Falcón-Ordaz, García-Prieto, and Fernández 2005.

Liver: Adult.

Hidalgo: San Miguel Allende, Tepeapulco: *Peromyscus difficilis* (Pulido-Flores et al. 2013, Falcón-Ordaz et al. 2015). No specimens in collections. Puebla: 1.5 km S of Oriental: *Heteromys irroratus* (Falcón-Ordaz et al. 2012, García-Prieto et al. 2012). Specimens in collections: CNHE 7754. Tlaxcala: El Piñonal, El Carmen Tequexquitla: *Heteromys irroratus*, *Peromyscus difficilis* (Lamothe-Argumedo et al. 2005, García-Prieto et al. 2012). Specimens in collections: CNHE 5211, 5213, USNPC 095892.

*Dictyonograptus chamelensis* Lamothe-Argumedo, 1980

Bile Ducts: Adult.

Jalisco: Chamela: *Osgoodomys banderanus* (Lamothe-Argumedo 1980, García-Prieto et al. 2012). Specimens in collections: CNHE 777.

Cestoda Rudolphi, 1808

Cyclophyllidea van Beneden in Braun, 1900

Cyclophyllidea gen sp.

Stomach: Larva.

Oaxaca: Km. 134 Oaxaca-Tuxtepec Highway: *Peromyscus megalops* (Lynggaard-Islas 2013). Specimens in collections: CNHE 8653.

Anoplocephalidae Cholodkovsky, 1902

*Monoecocestus sigmodontis* (Chandler and Suttles, 1922)

Intestine: Adult.

Nuevo León: Casas Blancas, Apodaca; El Brasil, Apodaca; Granja La Perla, Apodaca: *Neotoma micropus*, *Peromyscus maniculatus*, *Sigmodon hispidus* (Gutiérrez-González 1980, García-Prieto et al. 2012). No specimens in collections.

*Paranoplocephala* sp.

Intestine: Adult.

Oaxaca: Km. 134 Oaxaca-Tuxtepec Highway: *Microtus oaxacensis*. El Punto, Santa Catarina Ixtepeji: *Peromyscus* sp. (Lynggaard-Islas 2013). Specimens in collections: CNHE 8474, 8475, 8651, 8652.

Catenotaeniidae Spasskii, 1950

Catenotaeniidae gen. sp.

Intestine.

Zacatecas: San Pedro Dam, Ciudad Cuauhtémoc: *Peromyscus* sp. (Martínez-Salazar et al. 2016). Specimens in collections: CINZ 137, 138.

*Catenotaenia peromysci* Smith, 1954

Intestine: Adult.

Hidalgo: Paso de León, Metztlán: *Peromyscus difficilis* (Carmona-Huerta 1994, García-Prieto et al. 2012, Falcón-Ordaz et al. 2015).

Specimens in collections: CNHE 489.

Xihuingo, Tepeapulco: *P. difficilis* (Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 9662.

*Catenotaenia* sp.

Intestine: Adult.

Guanajuato: 2 km & 7 km W of Mineral de Pozos, San Luis de la Paz: *Peromyscus* sp. (Present study). Specimens in collections: CNHE 10888.

Davaineidae Braun, 1900

*Raillietina baeri* Meggitt and Subramanian, 1927

Intestine: Adult.

Hidalgo: Huehuetla: *Heteromys irroratus* (Carmona-Huerta 1994, García-Prieto et al. 2012). Specimens in collections: CNHE 488.

Note: *Raillietina baeri* is likely misidentified, given that this species is distributed in Africa (Schmidt 1986, García-Prieto et al. 2012).

*Raillietina celebensis* (Janicki, 1902)

Intestine: Adult.

Oaxaca: Cuicatlán: *Oryzomys* sp. (Flores-Barroeta and Hidalgo-Escalante 1960, García-Prieto et al. 2012). No specimens in collections.

Note: *Oryzomys* sp. was recorded in the original literature but may represent *Handleyomys* sp.

Note: This specimen was originally recorded as *Inermicapsifer (Raillietina) formosana*, a synonym of *R. celebensis*. *Raillietina celebensis* is distributed in Asia, Australia, and South America, parasitizing *Rattus* and *Bandicota* (Schmidt 1986, García-Prieto et al. 2012).

*Raillietina* sp.

Intestine: Adult.

Durango: La Zarca: *Heteromys pictus* (García-Prieto et al. 2012).

Specimens in collections: CNHE 7561.

Puebla: 2 km W of Guadalupe Victoria: *Dipodomys phillipsii* (Falcón-Ordaz et al. 2012, García-Prieto et al. 2012). Specimens in collections: CNHE 7756. San Luis Potosí:

32-40 km W of Ciudad Valles: *Oryzomys couesi*, *Handleyomys melanotis* (recorded as *O. melanotis*) (Underwood et al. 1986, García-Prieto et al. 2012). No specimens in collections. Note: *H. melanotis* is not distributed in San Luis Potosí according to Téllez and Medellín (2014). Tlaxcala: Barranca Huehuetitla, Panotla: *Heteromys irroratus* (García-Prieto et al. 2012). Specimens in collections: CNHE 7562. Veracruz: 3 km S of El Frijol Colorado, Perote: *Dipodomys phillipsii* (Falcón-Ordaz et al. 2012, García-Prieto et al. 2012). Specimens in collections: CNHE 7755. Yucatán: Xkalakdzonot, Chankom: *Sigmodon toltecus* (Panti-May et al. 2018). Specimens in collections: MLP-He 7422, CNHE 10714. Zacatecas: Montemariana, Fresnillo: *Chaetodipus* sp. (Martínez-Salazar et al. 2016). Specimens in collections: CINZ 196, CNHE 8195.

Dilepididae Railliet and Henry, 1909

Dilepididae gen. sp.

Intestine: Adult.

Estado de México: Cerro Gordo, Otumba: *Peromyscus difficilis* (García-Prieto et al. 2012). Specimens in collections: CNHE 7710.

*Choanotaenia* sp.

Intestine: Adult.

Colima: La Yerbabuena, Comala: *Peromyscus levipes* (Lynggaard-Islas 2013). Specimens in collections: CNHE 8283. Note: *P. levipes* is not distributed in Colima according to Chávez-Tovar (2014).

Hymenolepididae Ariola, 1899

*Hymenolepis diminuta* (Rudolphi, 1819) Weiland, 1858

Intestine: Adult.

Colima: Comala: *Hodomyz alleni* (Miyazaki et al. 1980, García-Prieto et al. 2012). No specimens in collections. Hidalgo: Paso de León, Metztlán: *Peromyscus difficilis* (Carmona-Huerta 1994, García-Prieto et al. 2012, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 490.

*Hymenolepis horrida* (Von Linstow, 1901) Lühe, 1910

Intestine: Adult.

Hidalgo: Paso de León, Metztlán: *Peromyscus difficilis* (Carmona-Huerta 1994, Falcón-Ordaz et al. 2015). No specimens in collections.

*Hymenolepis* sp.

Intestine: Adult.

Durango: La Zarca, Hidalgo del Parral: *Peromyscus* sp. (Present study). Specimens in collections: CNHE 10889.

Morelos: Tepoztlán: *Baiomys musculus* (Ortiz 1999, García-Prieto et al. 2012). No specimens in collections. Puebla: 2 km W of Guadalupe Victoria: *Heteromys irroratus*, *Reithrodon-*

*tomys megalotis* (Falcón-Ordaz *et al.* 2012, García-Prieto *et al.* 2012). Specimens in collections: CNHE 7757, 7781. Querétaro: Highway junction, el Tejocote, Highway 200 Querétaro-Tequisquiapan: *Heteromys irroratus* (García-Prieto *et al.* 2012). Specimens in collections: CNHE 7560. Zacatecas: Rancho La Barranca, Pánuco: *Dipodomys merriami* (Martínez-Salazar *et al.* 2016). Specimens in collections: CINZ 130-131.

*Rodentolepis nana* (vonSiebold, 1952) Blanchard, 1891

Intestine: Adult.

Hidalgo: Paso de León: *Peromyscus difficilis* (Carmona-Huerta 1994, Falcón-Ordaz *et al.* 2015). No specimens in collections. Veracruz: Sierra de Santa Martha: *Peromyscus mexicanus* (Carmona-Huerta 1994, García-Prieto *et al.* 2012). Specimens in collections: CNHE 486. Note: These specimens were collected as *Vampirolepis nana*, which is a synonym of *Rodentolepis nana* (Czaplinski and Vaucher 1994, García-Prieto *et al.* 2012).

*Rodentolepis* sp.

Intestine: Adult.

Estado de México: Apaxco, Apaxco: *Peromyscus melanotis* (Present study).

Specimens in collections: CNHE 10890.

Hidalgo: Paso de León, Metztlán: *Peromyscus difficilis* (Carmona-Huerta 1994, García-Prieto *et al.* 2012, Falcón-Ordaz *et al.* 2015). Specimens in collections: CNHE 487. Note: These specimens were collected as *Vampirolepis* sp. and likely represent *Rodentolepis* sp. (García-Prieto *et al.* 2012). Veracruz: Estación de Biología Los Tuxtlas: *Peromyscus* sp. (García-Prieto *et al.* 2012). Specimens in collections: CNHE 7709.

Taeniidae Ludwig, 1886

*Hydatigera taeniaeformis* (Batsch, 1786) Lamarck, 1816

Liver: Cysticerci.

Nuevo León: Casas Blancas, Apodaca; El Brasil, Apodaca: *Sigmodon hispidus* (Gutiérrez-González 1980, García-Prieto *et al.* 2012). No specimens in collections. Yucatán: Xkalakdzonot, Chankom: *Sigmodon toltecus* (Panti-May *et al.* 2018). Specimens in collections: MLP-He 7425, 7361, 7362, CNHE 10701, 10702, 10707. Note: The specimens from Nuevo León were recorded as *Cysticercus fasciolaris* which refers to the larval stage of *Taenia taeniformis* (Martínez *et al.* 2013). Using phylogenies generated by nuclear and mitochondrial genes, Nakao *et al.* (2013) demonstrated that *T. taeniformis*, *T. krepkogorski* and *T. parva* are only distantly related to the other members of *Taenia*, and proposed the resurrection of genus *Hydatigera* Lamarck, 1816 for these species.

*Taenia multiceps* Leske, 1780

Dermis: Coenuri.

Hidalgo: Paso de León, Metztlán: *Peromyscus leucopus* (Carmona-Huerta 1994, García-Prieto *et al.* 2012, Falcón-Ordaz *et al.* 2015). Specimens in collections: CNHE 491. Note: Specimens were originally collected as *Multiceps multiceps*, a synonym of *T. multiceps* (Schmidt 1986, García-Prieto *et al.* 2012).

*Taenia pisiformes* (Bloch, 1780) Gmelin, 1790

Mesentary: Cysticerci.

Hidalgo: Paso de León, Metztlán: *Peromyscus difficilis* (Carmona-Huerta 1994, García-Prieto *et al.* 2012, Falcón-Ordaz *et al.* 2015). Specimens in collections: CNHE 485.

*Taenia* sp.

Liver, Dermis: Cysticerci.

Hidalgo: San Miguel Allende, Tepeapulco: *Peromyscus difficilis*, *Peromyscus* sp. (Pulido-Flores *et al.* 2013, Falcón-Ordaz *et al.* 2015). No specimens in collections. Rancho Santa Elena, Tulancingo: *P. maniculatus* (Pulido-Flores *et al.* 2005, García-Prieto *et al.* 2012, Falcón-Ordaz *et al.* 2015). Specimens in collections: CHE-UAEH F00012.

Acanthocephala (Rudolphi, 1808)

Archiacanthocephala Meyer, 1931

Moniliformida Schmidt, 1972

Moniliformidae Van Cleave, 1924

*Moniliformis* sp.

Intestine: Adult.

Jalisco: Puerto el Floripondio, San Gabriel: *Peromyscus* sp., *Peromyscus hylocetes*. (Lynggaard-Islas 2013). Specimens in collections: CNHE 8646-8650, 9472.

Nematoda (Rudolphi, 1808)

Enoplea

Trichinellida Hall, 1916

Trichuridae (Ransom, 1911) Railliet, 1915

*Calodium hepaticum* (Bancroft, 1893)

Liver: Adult.

Estado de México: Cerro Gordo, Otumba: *Peromyscus difficilis* (García-Prieto *et al.* 2012). Specimens in collections: CNHE 7567.

*Capillaria* sp.

Intestine: Adult.

Hidalgo: Xihuingo, Tepeapulco: *Peromyscus difficilis* (Falcón-Ordaz *et al.* 2015). No specimens in collections.

*Eucoleus gastricus* (Baylis, 1926)

Intestine: Adult.

Hidalgo: Rancho Santa Elena: *Peromyscus maniculatus* (Pulido-Flores *et al.* 2005, García-Prieto *et al.* 2012). Specimens in collections: CHE-UAEH F00009. Note: This specimen was collected as *Capillaria gastrica* (García-Prieto *et al.* 2012).

*Trichuris dipodomis* Read, 1956

Intestine.

Guanajuato: 3 km N of San Luis de La Paz: *Dipodomys merriami* (Iturbe-Morgado *et al.* 2017). Specimens in collections: CNHE: 9839. Note: *D. merriami* is not distributed in Guanajuato according to Castillo (2014). Veracruz: 3 km S of El Frijol Colorado, Perote: *Dipodomys phillipsii* (Falcón-Ordaz *et al.* 2012, García-Prieto *et al.* 2012). Specimens in collections: CNHE 7750. Zacatecas: Rancho La Barranca, Pánuco; Rancho El Godillo, Loreto: *Dipodomys merriami*. Tlalticoaloya, Susticacán; Villa de Cos, Villa de Cos: *Chaetodipus* sp. Montemariana, Fresnillo: *D. merriami*, *Peromyscus* sp. (Martínez-Salazar *et al.* 2016). Specimens in collections: CINZ: 134, 135, 175, 197, 200-202, CNHE 10003, 10004. Note: *T. dipodomis* is often spelled as *T. dipodomys* in the literature.

*Trichuris elatoris* Pfaffenberger and Best, 1989

Intestine: Adult.

San Luis Potosí: El Carranco: *Dipodomys ordii*. 15 km NE of Villa de Reyes: *Chaetodipus hispidus*, *D. merriami* (García-Prieto *et al.* 2012). Specimens in collections: CNHE 7706-7708.

*Trichuris fossor* Hall, 1916

Caecum: Adult.

Hidalgo: Huehuelta: *Peromyscus difficilis* (Falcón-Ordaz 1993, Lamothe-Argumedo *et al.* 1997, García-Prieto *et al.* 2012, Falcón-Ordaz *et al.* 2013, Falcón-Ordaz *et al.* 2015). Specimens in collections: CNHE 2283. Morelos: Reserva Estatal Sierra de Monte Negro: *Heteromys irroratus* (Eslava-Araujo 2005, García-Prieto *et al.* 2012). No specimens in collections.

*Trichuris muris* (Schrank, 1788)

Intestine, Caecum: Adult.

Morelos: Reserva Estatal Sierra de Monte Negro: *Heteromys irroratus* (Eslava-Araujo 2005, García-Prieto *et al.* 2012). No specimens in collections.

*Trichuris silviae* Panti-May and Robles, 2016

Caecum: Adult.

Yucatán: Rancho Hobonil, Municipality of Tzucacab: *Heteromys gaumeri* (Panti-May and Robles, 2016). Specimens in collections: MLP-He 7113-7115, CNHE 9987. Xkalakdzonot, Chankom: *H. gaumeri* (Panti-May *et al.* 2018). Specimens in collections: MLP-He 7428, CNHE 10704.

*Trichuris* sp.

Intestine, Caecum: Adult.

Chiapas: Mapastepec: *Heteromys pictus* (Caballero y Caballero 1958, García-Prieto *et al.* 2012). Specimens in collections: CNHE 2366. Chihuahua: Área de Protección de Flora y Fauna Cerro del Mohinora, Guadalupe y Calvo: *Microtus* sp., *Microtus mexicanus*, *Peromyscus melanotis* (Present study). Specimens in collections: CNHE: 10843, 10848, 10850. Hidalgo: Xihuingo, Tepeapulco: *Peromyscus difficilis* (Falcón-Ordaz *et al.* 2015). No specimens in collections. Morelos: Tepoztlán: *Heteromys pictus* (Ortiz 1999, García-Prieto *et al.* 2012). No specimens in collections. Note: *H. pictus* is not distributed in Morelos according to Ceballos (2014). Yucatán: Paraíso, Maxcanú: *Peromyscus yucatanicus* (Panti-May *et al.* 2018). Specimens in collections: MLP-He 7429.

*Trichuris* sp.

Feces: Eggs.

Chihuahua: Biosphere Reserve, Janos-Casas Grandes: *Dipodomys spectabilis* (Rendón-Franco *et al.* 2014). No specimens in collections.

Chromadorea

Rhabditida Chitwood, 1933

Gongylonematidae (Hall, 1916) Sobolev, 1949

*Gongylonema peromysci* Kruidenier and Peebles, 1958

Stomach: Adult.

Puebla: 2 km W of Guadalupe Victoria: *Reithrodontomys megalotis* (Falcón-Ordaz *et al.* 2012, García-Prieto *et al.* 2012). Specimens in collections: CNHE 7753.

*Gongylonema* sp.

Intestine: Adult.

Zacatecas: Rancho La Barranca, Pánuco: *Dipodomys merriami* (Martínez-Salazar *et al.* 2016). Specimens in collections: CINZ 132.

Heteroxynematidae Skrjabin and Shikhobalova, 1948

*Aspicularis americana* Erickson, 1938

Caecum: Adult.

Chihuahua: Área de Protección de Flora y Fauna Cerro del Mohinora, Guadalupe y Calvo: *Peromyscus boylii* (Present study). Specimens in collections: CNHE 10845, 10917, 10918.

*Aspicularis* sp.

Intestine, Caecum: Adult.

Morelos: Tepoztlán: *Neotoma mexicana* (Ortiz 1999, García-Prieto *et al.* 2012). No specimens in collections. Oaxaca: Km. 134 Oaxaca-Tuxtepec Highway: *Microtus oaxacensis* (Lynggaard-Islas 2013). Specimens in collections: CNHE 8658-8661.

*Aspiculuris* n. sp.

Rectum: Adult.

Hidalgo: San Miguel Allende, Tepeapulco: *Peromyscus difficilis*, *Peromyscus* sp. ([Pulido-Flores et al. 2013](#), [Falcón-Ordaz et al. 2015](#)). No specimens in collections.

*Lamotheoxyuris ackerti* (Kruidenier and Mehra, 1959)

Intestine: Adult.

Veracruz: 3 km S of El Frijol Colorado, Perote: *Neotoma nelsoni* ([Falcón-Ordaz et al. 2010](#), [García-Prieto et al. 2012](#)). Specimens in collections: CNHE 6839.

*Lamotheoxyuris* cf. *ackerti* Falcón-Ordaz, Fernández, and García-Prieto, 2010

Intestine: Adult.

Zacatecas: Rancho La Barranca, Pánuco: *Neotoma mexicana* ([Martínez-Salazar et al. 2016](#)). Specimens in collections: CINZ 136.

## Onchocercidae (Leiper, 1911)

*Dunnifilaria meningica* [Gutiérrez-Peña, 1987](#)

Cerebellum: Adult.

Nuevo León: Municipio Dr. Coss: *Neotoma micropus* ([Gutiérrez-Peña 1987](#), [García-Prieto et al. 2012](#)). Specimens in collections: CNHE 2563, 2564, WHO B-572, USNPC 080270.

*Litomosoides carinii* (Travassos, 1919)

Body cavity, heart, mesentery: Adult.

Nuevo León: Casas Blancas, Apodaca: *Sigmodon hispidus* ([Gutiérrez-González 1980](#), [García-Prieto et al. 2012](#)). No specimens in collections.

*Litomosoides sigmodontis* Chandler, 1931

Body cavity, heart, mesentery: Adult.

Jalisco: *Sigmodon hispidus* ([Ochoterena and Caballero y Caballero 1932](#), [García-Prieto et al. 2012](#)). No specimens in collections. Note: *S. hispidus* is not distributed in Jalisco according to [Ramírez et al. \(2014\)](#). Michoacán: *Sigmodon hispidus* ([Ochoterena and Caballero y Caballero 1932](#), [García-Prieto et al. 2012](#)). Specimens in collections: CNHE 2573-2579. *Sigmodon fulviventris* ([Zerecero 1943](#), [García-Prieto et al. 2012](#)). Specimens in collections: CNHE 3015. Note: *S. hispidus* is not distributed in Michoacán according to [Ramírez et al. \(2014\)](#). Note: These specimens were originally recorded as *Micropleura sigmodonti* ([García-Prieto et al. 2012](#)).

## Onchocercidae gen. sp. 1

Zacatecas: Estación Camacho, Mazapil: *Dipodomys merriami* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 9840.

## Onchocercidae gen. sp. 2

San Luis Potosí: La Tinaja, Soledad de Graciano Sánchez: *Chaetodipus hispidus* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 9841.

## Oxyuridae Cobbold, 1864

*Heteromyoxyuris longejector* Quentin, 1973

Intestine.

Durango: Cuencamé. La Zarca, Hidalgo: *Chaetodipus hispidus* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 9831, 9834. Guanajuato: Mineral de Pozos, San Luis de La Paz: *Chaetodipus hispidus* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 9832, 9833. San Luis Potosí: La Tinaja, Soledad de Graciano Sánchez: *Chaetodipus hispidus* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 9836. 15 km NE of Villa de Reyes: *C. hispidus* ([García-Prieto et al. 2008](#), [García-Prieto et al. 2012](#)). Specimens in collections: CNHE 5479, 5729. Sonora: Mazatán: *Perognathus amplus* ([García-Prieto et al. 2008](#), [García-Prieto et al. 2012](#)). Specimens in collections: CNHE 5262. Zacatecas: Rancho La Barranca, Pánuco: *Dipodomys merriami*, *Chaetodipus* sp. Rancho El Godillo, Loreto: *Chaetodipus* sp. Ojocaliente, Ojocaliente: *Peromyscus* sp. Villa de Cos, Villa de Cos: *Dipodomys merriami*, *Chaetodipus* sp. ([Martínez-Salazar et al. 2016](#)). Specimens in collections: CINZ 139, 145-147, 188-190, 192, CNHE 9996-9999. Estación Camacho, Mazapil: *Chaetodipus eremicus*, *Dipodomys merriami* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 9835, 9837.

*Heteromyoxyuris otomii* García-Prieto, Falcón-Ordaz, Lira-Guerrero, and Mendoza-Garfías, 2008

Caecum: Adult.

Guanajuato: Mineral de Pozos, San Luis de La Paz: *Perognathus flavus* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 9838. Hidalgo: Ignacio Zaragoza, Ajacuba: *Perognathus flavus* ([García-Prieto et al. 2008](#), [García-Prieto et al. 2012](#), [Falcón-Ordaz et al. 2015](#)). Specimens in collections: CNHE 5480-5482.

*Heteromyoxyuris* sp.

Guanajuato: 3 km N of San Luis de La Paz: *Dipodomys merriami* ([Iturbe-Morgado et al. 2017](#)). Specimens in collections: CNHE 5678. Note: *D. merriami* is not distributed in Guanajuato according to [Castillo \(2014\)](#).

*Syphacia (Seuratoxyuris) obvelata* (Rudolphi, 1802) Seurat, 1918

Caecum: Adult.

Yucatán: Chichen-Itzá: *Ototylomys phyllotis* ([Chitwood 1938](#), [García-Prieto et al. 2012](#)). Specimens in collections: CNHE 1950.

*Syphacia (Seuratoxyuris) peromysci* Harkema, 1936

Caecum, Large Intestine: Adult and Larva.

Chihuahua: Área de Protección de Flora y Fauna Cerro del Mohinora, Guadalupe y Calvo: *Peromyscus* sp., *Peromyscus boylii*, *P. maniculatus*, *P. melanotis* (Present study). Specimens in collections: CNHE 10847, 10915, 10916, 10980. Hidalgo: Rancho Santa Elena, Tulancingo: *Peromyscus maniculatus* (Pulido-Flores et al. 2005, García-Prieto et al. 2012, Falcón-Ordaz et al. 2015). Specimens in collections: CHE-UAEH F00011, CNHE 5317. Veracruz: 3 km S of El Frijol Colorado, Municipality of Perote: *Peromyscus difficilis* (Falcón-Ordaz et al. 2016). Specimens in collections: CNHE 5671. Yucatán: Paraíso, Maxcanú: *Peromyscus yucatanicus* (Panti-May et al. 2018). Specimens in collections: MLP-He 7436, CNHE 10709.

*Syphacia* sp.

Caecum, Intestine: Adult.

Chihuahua: Área de Protección de Flora y Fauna Cerro del Mohinora, Guadalupe y Calvo: *Microtus* sp., *Microtus mexicanus* (Present study). Specimens in collections: CNHE 10844, 10849. Guanajuato: Mineral de Pozos, San Luis de La Paz: *Reithrodontomys* sp. (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE 9845. Hidalgo: Camino a Zempoala; Xihuingo, Tepeapulco: *Peromyscus difficilis*. Huehuetla: *Peromyscus mexicanus* (Falcón-Ordaz et al. 2013, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 6888. Morelos: Reserva Estatal Sierra de Monte Negro: *Heteromys irroratus* (Eslava-Araujo 2005, García-Prieto et al. 2012). No specimens in collections. Oaxaca: La Hierba Buena: *Oryzomys* sp., *Peromyscus aztecus* (García-Prieto et al. 2012). Specimens in collections: CNHE 6888, 7701. Note: *Oryzomys* sp. was recorded in the original literature but may represent *Handleyomys* sp. San Luis Potosí: 32-40 km W of Ciudad Valles: *Oligoryzomys fulvescens*, *Handleyomys melanotis* (recorded as *Oryzomys melanotis*) (Underwood et al. 1986, García-Prieto et al. 2012). No specimens in collections. Note: *H. melanotis* is not distributed in San Luis Potosí according to Téllez and Medellín (2014). Veracruz: 3 km S of El Frijol Colorado, Perote: *Peromyscus difficilis* (Falcón-Ordaz et al. 2012, García-Prieto et al. 2012). Specimens in collections: CNHE 7752. Yucatán: Xkalakdzonot, Chankom: *Heteromys gaumeri* (Panti-May et al. 2018). Specimens in collections: MLP-He 7437, CNHE 10715.

*Syphacia* sp.

Feces: Eggs.

Chihuahua: Biosphere Reserve, Janos-Casas Grandes: *Perognathus flavus*. (Rendón-Franco et al. 2014). No specimens in collections.

## Physalopteridae (Railliet, 1893)

Physalopteridae gen. sp.

San Luis Potosí: La Tinaja, Soledad de Graciano Sánchez: *Onychomys arenicola* (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE 9904.

*Physaloptera* sp.

Stomach, Intestine: Larva, Adult.

Hidalgo: Chacaya, Eloxochitlán: *Peromyscus* sp. (Present study). Specimens in collections: CNHE 10919. Morelos: Tepoztlán: *Sigmodon hispidus* (Ortiz 1999, García-Prieto et al. 2012). No specimens in collections. Note: *S. hispidus* is not distributed in Morelos according to Ramírez et al. (2014).

*Turgida* sp.

Stomach: Adult.

Oaxaca: Teotitlán: *Oryzomys* sp. (Donated by H. Wagner, 1941, García-Prieto et al. 2012). Specimens in collections: CNHE 2589. Note: *Oryzomys* sp. was recorded in the original literature but may represent *Handleyomys* sp. Note: These specimens were originally recorded as *Turgida torresi* but due to the poor condition of specimens, specific identification was not possible (Lamothe-Argumedo et al. 1997, García-Prieto et al. 2012).

## Rictulariidae (Hall, 1915) Railliet, 1916

*Pterygodermatites baiomydis* Lynggaard, García-Prieto, Guzmán-Cornejo, and Osorio-Sarabia, 2014

Intestine: Adult.

Colima: La Yerbabuena: *Baiomys taylori* (Lynggaard et al. 2014). Specimens in collections: MZFC-M 11988, 12294.

*Pterygodermatites dipodomis* Tiner, 1948

Intestine: Adult.

Guanajuato: 3 km N of San Luis de La Paz: *Dipodomys merriami* (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE 9844. Note: *Dipodomys merriami* is not distributed in Guanajuato according to Castillo (2014). San Luis Potosí: 15 km NE of Villa de Reyes: *Dipodomys merriami* (Present study). Specimens in collections: CNHE 10893I. La Tinaja, Soledad de Graciano Sánchez: *Dipodomys merriami* (Iturbe-Morgado et al. 2017).

Specimens in collections: CNHE 9843. El Carranco: *Dipodomys ordii*. 15 km NE of Villa de Reyes: *Dipodomys merriami* (García-Prieto et al. 2012). Specimens in collections: CNHE 7702, 7703. Zacatecas: San Pedro Dam, Ciudad Cuauhtémoc: *Peromyscus* sp. Rancho La Barranca, Pánuco; Rancho El Godillo, Loreto: *Dipodomys merriami*. Villa de Cos, Villa de Cos: *Dipodomys merriami*, *Chaetodipus* sp. (Martínez-Salazar et al. 2016). Specimens in collections: CNHE 10000, 10001, CINZ 144, 191, 194, 199. Estación Camacho, Mazapil: *Dipodomys merriami*. (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE 9842.

*Pterygodermatites (Paucipectines) parkeri* Lichtenfels, 1970

Intestine: Adult.

Estado de México: Hueypoxtla, Hueypoxtla: *Peromyscus* sp. (Present study). Specimens in collections: CNHE 10912.

Puebla: 2 km W of Guadalupe Victoria: *Dipodomys phillipsii* (Falcón-Ordaz et al. 2012, García-Prieto et al. 2012). Specimens in collections: CNHE 7704.

and Sanabria-Espinosa 1995, García-Prieto et al. 2012, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 2291, 2292.

*Pterygodermatites (Paucipectines) peromysci* Lichtenfels, 1970

*Protospirura* sp.

Intestine: Adult.

Stomach: Adult and Larva.

Chihuahua: Granjas Universitarias, Chihuahua: *Peromyscus melanotis* (Present study). Specimens in collections: CNHE 10846. Hidalgo: Xihuingo, Tepeapulco: *Peromyscus difficilis* (Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 9072. Peñas Cargadas, Epazoyucan: *Peromyscus gratus*. (Present study). Specimens in collections: CNHE 10914. Veracruz: 3 km S of El Frijol Colorado, Perote: *Peromyscus maniculatus* (Falcón-Ordaz et al. 2012, García-Prieto et al. 2012). Specimens in collections: CNHE 7751.

Chihuahua: Granjas Universitarias, Chihuahua: *Chaetodipus* sp., *Sigmodon hispidus* (Present study). Specimens in collections: CNHE: 10894, 10923. Note: *S. hispidus* is not distributed in Chihuahua according to Ramírez et al. (2014). Durango: La Zarca: *Onychomys torridus* (García-Prieto et al. 2012). Specimens in collections: CNHE 7566. Note: *O. torridus* is not distributed in Durango according to Ceballos (2014). San Luis Potosí: 15 km NE of Villa de Reyes: *Dipodomys merriami* (García-Prieto et al. 2012). Specimens in collections: CNHE 7569.

*Pterygodermatites* sp.

Subuluridae Yorke and Maplestone, 1926

Intestine: Adult.

*Subulura* sp.

Hidalgo: Pachuca de Soto: *Peromyscus leucopus*. Xoxafi, Santiago de Anaya: *Heteromys irroratus* (Present study). Specimens in collections: CNHE 10862, 10913.

San Luis Potosí: La Tinaja, Soledad de Graciano Sánchez: *Onychomys arenicola* (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE 9903.

Spiruridae Oerlèy, 1885

Strongylida Diesing, 1851

*Mastophorus dipodomis* Read and Millemann, 1953

Heligmonellidae (Skrjabin and Schikhobalova, 1952)

Stomach.

*Carolinensis carolinensis* (Dickmans, 1935) Travassos, 1937

Durango: Cuencamé: *Chaetodipus* sp. (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE: 9942. Guanajuato: Mineral de Pozos, San Luis de La Paz: *Chaetodipus* sp. 3 km N of San Luis de La Paz: *Dipodomys merriami* (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE: 9943. Note: *Dipodomys merriami* is not distributed in Guanajuato according to Castillo (2014). Zacatecas: Estación Camacho, Mazapil: *Dipodomys merriami* (Iturbe-Morgado et al. 2017). Specimens in collections: CNHE: 9944. Rancho La Barranca, Pánuco: *Dipodomys merriami*, *Chaetodipus* sp. Rancho El Godillo, Loreto: *Dipodomys merriami*. Villa de Cos: *Chaetodipus* sp. (Martínez-Salazar et al. 2016). Specimens in collections: CINZ: 133, 140-143, 193, 198, CNHE 10002. Notes: *Mastophorus dipodomis* (Martínez-Salazar et al. 2016) is likely a synonym of *Protospirura dipodomis* (Iturbe-Morgado et al. 2017) (see Yamaguti 1961, King and Babero 1974).

Intestine: Adult.  
Hidalgo: Rancho Santa Elena, Tulancingo: *Peromyscus maniculatus* (Pulido-Flores et al. 2005, García-Prieto et al. 2012, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 5321, CHE-UAEH P-00010.

*Carolinensis huehuetlana* Falcón-Ordaz and Sanabria-Espinoza, 1996

Intestine: Adult.

Hidalgo: Huehuetla: *Peromyscus difficilis*, *Peromyscus mexicanus* (Falcón-Ordaz and Sanabria-Espinoza, 1996, García-Prieto et al. 2012, Falcón-Ordaz et al. 2013, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 2298, UNAM 199-194. San Miguel Allende; Xihuingo, Tecocomulco: *Peromyscus difficilis* (Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 6887.

*Mastophorus muris* (Gmelin, 1790)

*Carolinensis perezponcedeleoni* Jiménez, 2012

Intestine: Stomach.

San Luis Potosí: 15 km NE of Villa de Reyes: *Dipodomys merriami* (García-Prieto et al. 2012). Specimens in collections: CNHE 7705.

Intestine: Adult.

Veracruz: Adolfo López Mateos: *Nyctomys sumichrasti* (Jiménez, 2012). Specimens in collections: CNHE 7665-7667, HWML 67094-67097.

*Protospirura mexicana* Falcón-Ordaz & Sanabria-Espinoza, 1995

*Carolinensis peromysci* (Durette-Desset, 1974)

Intestine: Adult.

Intestine: Adult.

Hidalgo: Huehuetla: *Peromyscus difficilis* (Falcón-Ordaz



Yucatán: Paraíso, Maxcanú: *Peromyscus yucatanicus* (Panti-May et al. 2018). Specimens in collections: MLP-He 7440.

*Carolinensis petteri* (Denke, 1977)

Intestine: Adult.

Veracruz: Estación de Biología Los Tuxtlas: *Peromyscus mexicanus* (Denke 1977, García-Prieto et al. 2012). Specimens in collections: MNHN 1052. Note: This specimen was originally recorded as *Boreostrongylus*, a synonym of *Carolinensis* (Durette-Desset 1983, García-Prieto et al. 2012).

*Carolinensis* sp.

Intestine: Adult.

Oaxaca: *Peromyscus* sp. (García-Prieto et al. 2012). Specimens in collections: CNHE 7695, 7696.

*Hassalstrongylus aduncus* (Chandler, 1932)

Intestine: Adult.

Hidalgo: Huehuetla: *Sigmodon hispidus* (García-Prieto et al. 2012, Falcón-Ordaz et al. 2013, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 6887. Note: *Sigmodon hispidus* is not distributed in Hidalgo according to Ramírez et al. (2014). Jalisco: Viborillas, Encarnación de Díaz: *Sigmodon hispidus* (García-Prieto et al. 2012). Specimens in collections: CNHE 8064. Note: *S. hispidus* is not distributed in Jalisco according to Ceballos (2014). Yucatán: Xkalakdzonot, Chankom: *Sigmodon toltecus* (Panti-May et al. 2018). Specimens in collections: MLP-He 7431, 7442, CNHE 10713.

*Hassalstrongylus bocqueti* Denke 1977

Intestine: Adult.

San Luis Potosí: 32-40 km W of Ciudad Valles: *Oligoryzomys fulvescens*, *Oryzomys couesi*, *Handleyomys melanotis* (recorded as *Oryzomys melanotis*) (Underwood et al. 1986, García-Prieto et al. 2012). No specimens in collections. Note: *Handleyomys melanotis* is not distributed in San Luis Potosí according to Téllez and Medellín (2014). Veracruz: Estación de Biología Los Tuxtlas: *Handleyomys alfaroi* (recorded as *Oryzomys alfaroi*) (Denke 1977, García-Prieto et al. 2012). Specimens in collections: MNHN 1045.

*Hassalstrongylus musculi* (Dickmans, 1935)

Intestine: Adult.

San Luis Potosí: 32-40 km W of Ciudad Valles: *Oligoryzomys fulvescens*, *Oryzomys couesi*, *Handleyomys melanotis* (recorded as *Oryzomys melanotis*) (Underwood et al. 1986, García-Prieto et al. 2012). No specimens in collections. Note: *Handleyomys melanotis* is not distributed in San Luis Potosí according to Téllez and Medellín (2014).

*Hassalstrongylus* sp.

Intestine: Adult.

Oaxaca: La Hierba Buena: *Peromyscus aztecus* (García-Prieto et al. 2012). Specimens in collections: CNHE 7697.

*Paraheligmonella* sp.

Intestine: Adult.

Oaxaca: Km. 134 Oaxaca-Tuxtepec Highway: *Microtus oaxacensis*, *Peromyscus megalops* (Lynggaard-Islas 2013). Specimens in collections: CNHE 8654-8657.

*Stilestrongylus hidalguensis* Falcón-Ordaz and Sanabria-Espinoza, 1999

Intestine: Adult.

Hidalgo: Atlatilpan Huitzotlaco: *Peromyscus* sp. (Falcón-Ordaz and Sanabria-Espinoza, 1999, García-Prieto et al. 2012, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 2293-2295, 2297, 3293.

*Stilestrongylus peromysci* Falcón-Ordaz and Sanabria-Espinoza, 1999

Intestine: Adult.

Hidalgo: Huehuetla: *Peromyscus difficilis* (Falcón-Ordaz and Sanabria-Espinoza, 1999, García-Prieto et al. 2012, Falcón-Ordaz et al. 2015). Specimens in collections: CNHE 2296, 3263.

*Stilestrongylus* sp.

Intestine: Adult.

Oaxaca: La Hierba Buena: *Oryzomys* sp. (García-Prieto et al. 2012). Specimens in collections: CNHE 7698.

Note: *Oryzomys* sp. was recorded in the original literature but may represent *Handleyomys* sp. Yucatán: Paraíso, Maxcanú: *Peromyscus yucatanicus* (Panti-May et al. 2018). Specimens in collections: MLP-He 7439.

Heligmosomidae (Travassos 1914)

*Longistriata* sp.

Intestine: Adult.

Nuevo León: Casas Blancas, Apodaca; El Brasil, Apodaca; La Perla, Apodaca: *Neotoma micropus*, *Peromyscus maniculatus*, *Sigmodon hispidus* (Gutiérrez-González 1980, García-Prieto et al. 2012). No specimens in collections.

Ornithostrongylidae (Travassos, 1937)

*Vexillata armande* Gardner, Fong, Al-Banna, and Raymond, 1994

Intestine: Adult.

Estado de México: Atla, Axapusco: *Perognathus flavus* (Escalante et al. 2011, García-Prieto et al. 2012). Specimens

in collections: CNHE 5840. Note: These specimens were listed as *Vexillata* cf. *armande* (García-Prieto *et al.* 2012). Guanajuato: Mineral de Pozos, San Luis de La Paz: *Chaetodipus* sp. (Iturbe-Morgado *et al.* 2017). Specimens in collections: CNHE 5677.

*Vexillata dessetae* Denke 1977

Intestine: Adult.

Veracruz: Adolfo López Mateos: *Heteromys desmarestianus* (Escalante *et al.* 2011, García-Prieto *et al.* 2012). Specimens in collections: CNHE 5847. Estación de Biología Los Tuxtlas: *H. desmarestianus* (Denke 1977, García-Prieto *et al.* 2012). Specimens in collections: MNHN 1047, CNHE 4817.

*Vexillata legallae* Denke 1977

Intestine: Adult.

Veracruz: Adolfo López Mateos: *Heteromys desmarestianus* (Escalante *et al.* 2011, García-Prieto *et al.* 2012). Specimens in collections: CNHE 5846. Estación de Biología Los Tuxtlas: *Heteromys desmarestianus* (Denke 1977, García-Prieto *et al.* 2012). Specimens in collections: MNHN 1054, CNHE 4818.

*Vexillata liomyos* Falcón-Ordaz, Gardner, and Pérez-Ponce de León, 2001

Intestine: Adult.

Jalisco: Chamela: *Heteromys pictus* (Falcón-Ordaz, Gardner, and Pérez-Ponce de León, 2001, Escalante *et al.* 2011, García-Prieto *et al.* 2012). Specimens in collections: CNHE 3911-3914. Morelos: Reserva Estatal Sierra de Monte Negro: *Heteromys irroratus* (Ortíz-Villaseñor *et al.* 2011, García-Prieto *et al.* 2012). Specimens in collections: CNHE 5294. Nayarit: 1.4 km N of Tacote: *Heteromys pictus* (Escalante *et al.* 2011, García-Prieto *et al.* 2012). Specimens in collections: CNHE 5616. Tlaxcala: Barranca Huehuetitla, Panotla; 2 km E of San Andrés Cuajimalpa: *Heteromys irroratus* (Escalante *et al.* 2011, García-Prieto *et al.* 2012). Specimens in collections: CNHE 5294, 5296, 5845. Zacatecas: Estación Camacho, Mazapil: *Dipodomys merriami* (Iturbe-Morgado *et al.* 2017). Specimens in collections: CNHE 5676.

*Vexillata vexillata* (Hall, 1916) Durette-Desset, 1971

Intestine: Adult.

Chiapas: Mapastepec: *Heteromys pictus* (Caballero y Caballero 1958, Escalante *et al.* 2011, García-Prieto *et al.* 2012). Specimens in collections: CNHE 2355. Note: These specimens were originally collected as *Longistriata vexillata*. Hidalgo: Atlatilpan; Huehuetla: *Heteromys irroratus*, *Peromyscus difficilis* (Sanabria-Espinosa *et al.* 1996, Falcón-Ordaz and Sanabria-Espinosa 1997, Escalante *et al.* 2011, García-Prieto *et al.* 2012, Falcón-Ordaz *et al.* 2013, Falcón-Ordaz *et al.* 2015). Specimens in collections: CNHE 2282, 2290, 5295. Morelos: Tepoztlán: *Heteromys irroratus* (Ortiz 1999, García-

Prieto *et al.* 2012). No specimens in collections. Yucatán: Xkalakdzonot, Chankom: *Heteromys gaumeri* (Panti-May *et al.* 2018). Specimens in collections: MLP-He 7430, CNHE 10705.

Strongylidae Baird, 1853

Unknown genus

Feces: Eggs.

Chihuahua: Biosphere Reserve, Janos-Casas Grandes: *Onychomys leucogaster* (Rendón-Franco *et al.* 2014). No specimens in collections. Note: *Onychomys leucogaster* is not distributed in Chihuahua according to Tobón-García (2014).

## Discussion

In our updated checklist, we increase the number of known host-parasite records to at least 73 helminth species from 35 cricetid and 12 heteromyid species collected across 21 states in Mexico. The reported number of helminth species of these rodents is likely underestimating the total helminth diversity of cricetids and heteromyids in Mexico for two reasons. First, this checklist reports some parasite specimens identified only to genus. Specific identification of these specimens and descriptions of new species will likely result in additional species. Second, with only 47 of 190 cricetid and heteromyid rodent species in Mexico sampled, much of the parasite fauna of these host families is unknown. Sampling of additional host species not represented here will likely result in more helminth species.

While we report a checklist of helminths of cricetid and heteromyid rodents in Mexico, Light *et al.* (2019) similarly compiled a checklist of all ectoparasites (fleas, mites, ticks, and lice). Although these checklists represent the most up-to-date knowledge of the macroparasite fauna of cricetid and heteromyid rodents in Mexico, there are still large gaps in our knowledge. We therefore encourage "holistic" collections of rodents, where all available data, including ecto- and endoparasites, are recorded during specimen collections (Cook *et al.* 2016, 2017, Webster 2017, Cook and Light 2019). We also urge researchers to deposit parasites into appropriate natural history collections, as parasites are often underrepresented in these collections (Bell *et al.* 2018), to ensure their availability and continued contribution to future research.

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