

A checklist of nematodes (Nematoda) from Shanxi Province, North China

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Summary. A checklist of nematode species recorded from Shanxi province before 1 January 2021 is presented. This list is comprised of 202 species (177 identified species and 25 taxa identified at generic level), representing seven orders, 40 families and 80 genera. Information about their hosts, localities and related references is provided.

Key words: Dorylaimida, Enoplida, Rhabditida, Spirurida, Strongylida, Trichinellida, Triplonchida.

Nematodes are the most abundant animals on Earth and account for an estimated four-fifths of all animals on land (Platt, 1994; Bardgett & van der Putten, 2014). Shanxi Province in North China has a typical temperate continental monsoon climate. It is located to the west of Taihang Mountain, lies in the middle reaches of the Yellow River and on the eastern edge of the Loess Plateau with geographical coordinates of 34°34'N to 40°44'N, 110°14'E to 114°33'E (Fig. 1). The province has a length of 682 km from south to north and a width of 385 km from east to west, with a total area of 156,700 km². Theoretically, an abundant diversity of nematode fauna would be expected under such environmental conditions. However, the systematic research on parasitic nematodes of animals, insects, humans, plants, and free-living nematodes in Shanxi Province has been scattered sporadically in different local scientific references. Furthermore, the fauna of aquatic nematodes, as well as parasitic nematodes of fish and birds have not been studied yet in Shanxi Province.

Based on literature search, the first record of nematodes in Shanxi Province was an animal parasite, *Dirofilaria immitis* (Leidy, 1856) Railliet & Henry, 1911, on *Canis lupus familiaris* Linnaeus (dog) in Fenyang City in 1937 (Faust, 1937). Since then, however, it had no record on nematodes for about 50 years in Shanxi Province until the 1980s. The first free-living nematode *Turbatrix aceti* (Müller, 1783) Peters, 1927 was reported in 1981 (Shen & Xie, 1981) and subsequently the first plant-parasitic nematode *Heterodera glycines* Ichinohe, 1952 was reported in 1984 (Wang & Li,

1984). In 2014, a checklist of species and distribution of plant parasitic nematode in Shanxi Province was published by Xu *et al.* (2014); however, the list was limited on nematodes associated with plants and it lacks information on many other nematodes that were recorded in Shanxi Province. Therefore, the purpose of this paper is to update the checklist of nematode species published by Xu *et al.* (2014), and zooparasitic, entomopathogenic and free-living nematodes in Shanxi were also incorporated.

MATERIAL AND METHODS

A total of 139 references were used for the present review. The relevant publications were obtained from: Baidu Scholar (<http://xueshu.baidu.com/>), CABI Databases (<http://www.cabi.org/>), China National Knowledge Internet (<http://www.cnki.net/>), China Science and Technology Journal Database (CSTJ) (<http://en.cqvip.com/>), National Index to Chinese Newspapers & Periodicals (<http://www.cnbkys.com/>), National Science and Technology Library (<https://km.nstl.gov.cn/>), ProQuest (<http://www.proquest.com/>), Wanfang data (<http://www.wanfangdata.com.cn/>) and Web of Science (<http://www.webofknowledge.com/>). The publications including journal articles, book chapters, books and Internet resources available before 1 January 2021 were examined. The university theses and dissertations have not been included.

The nematode species lists are presented in alphabetical order under order, family, genus and species, with records of their hosts, distribution and



Fig. 1. Map of Shanxi Province (Map from <http://bzdt.ch.mnr.gov.cn/>).

data sources. The nematode taxonomic classification scheme proposed by De Ley & Blaxter (2002) was followed at the family level and above. Taking into account the research fields, Siddiqi (2000) was followed for tylenchids; Anderson (2000) and Hodda (2011) were followed for zooparasitic nematodes and Hunt (1993, 2008) were followed for aphelenchids, longidorids and trichodorids. Nematode scientific names and authorships were checked and updated using the WoRMS (Bezerra *et al.*, 2021), GBIF (Global Biodiversity Information Facility) and IRMNG (Interim Register of Marine and Nonmarine Genera) database (Rees, 2021). The nematode species identified to the generic level in the references was treated as unknown species in the study. The Latin names of the nematode's host plants were checked according to the Plant List (<http://www.theplantlist.org/>) and English names were checked from the Institute of Botany, Chinese Academy of Sciences database (<http://pe.ibcas.ac.cn/>).

RESULTS

In total, 202 nematode species belonging to seven orders, 40 families, 80 genera were reported from Shanxi Province. Of the 202, 39 species and nine unknown species were plant-parasitic nematodes in three orders, 12 families and 19 genera (according to Yeates *et al.*, 1993; Sánchez-Monge *et al.*, 2015); 99 species and 14 unknown species were zooparasitic species in four orders, 24 families and 51 genera; five entomopathogenic species in one order, two families and two genera; and 34 species and two unknown species were free-living species in two orders, five families and nine genera. Among the 202 species, only six nematode species have been described from Shanxi Province.

Phylum Nematoda Rudolphi, 1808

1. Order Dorylaimida Pearse, 1942

1 family, 2 genera, 9 species and
1 unknown species

1.1. Family Longidoridae Thorne, 1935 (2 genus, 9 species, 1 unknown species)

1.1.1. Genus *Longidorus* Micoletzky, 1922

1) *Longidorus cheni* Barsalote, Pham, Lazarova, Peneva & Zheng, 2018

Host/Habitat. Soil collected from the rhizosphere of *Larix gmelinii* var.

principis-rupprechtii (Mayr) Pilg. (Prince Rupprecht larch) (Barsalote *et al.*, 2018).

Distribution. Shanxi (Barsalote *et al.*, 2018).

Remarks. This species was described from Shanxi and named after Prof. Pinsan Chen, one of the pioneer plant nematologists in China by Barsalote *et al.* (2018).

2) *Longidorus fursti* Heyns, Coomans, Hutsebaut & Swart, 1987

Host/Habitat. Soil from the rhizosphere of *Populus simonii* Carrière (poplar) (Guo *et al.*, 2011).

Distribution. Taigu (Guo *et al.*, 2011).

3) *Longidorus henanus* Xu & Cheng, 1992

Host/Habitat. Soil from the rhizosphere of *Juglans regia* L. (walnut) and *Populus simonii* Carrière (poplar) (Zheng *et al.*, 2001; Guo *et al.*, 2011).

Distribution. Fenyang (Guo *et al.*, 2011); Yuanqu (Zheng *et al.*, 2001).

4) *Longidorus jonesi* Siddiqi, 1962

Host/Habitat. Soil from the rhizosphere of *Salix babylonica* L. (weeping willow) (Guo *et al.*, 2011).

Distribution. Yuanping (Guo *et al.*, 2011).

5) *Longidorus juglans* Xu, Guo, Ye, Wang, Zheng & Zhao, 2017

Host/Habitat. Soil and litter mixtures from the rhizosphere of *Juglans regia* L. (walnut) (Xu *et al.*, 2017).

Distribution. Yongji (Xu *et al.*, 2017).

Remarks. This species was described from Shanxi and named after the host genus by Xu *et al.* (2017).

6) *Longidorus pinus* Xu, Ye, Wang & Zhao, 2018

Host/Habitat. Soil and litter mixtures from the rhizosphere of *Fraxinus chinensis* Roxb. (Chinese ash), *Pinus bungeana* Zucc. ex Endl. (lacebark pine), *Populus simonii* Carrière (poplar), *Styphnolobium japonicum* (L.) Schott (Japanese pagodatree), *Zea mays* L. (maize) and *Ziziphus jujuba* Mill. (common jujube) (Xu *et al.*, 2018; Fan *et al.*, 2019).

Distribution. Datong, Fenyang, Taigu, Yangqu (Xu *et al.*, 2018); Jiexiu (Fan *et al.*, 2019).

Remarks. This species was described from Shanxi and named after the host plant genus *Pinus bungeana* genus by Xu *et al.* (2018).

7) *Longidorus pisi* Edward, Misra & Singh, 1964

Host/Habitat. Soil from the rhizosphere of *Pyrus bretschneideri* Rehder (bretschneider pear), *Ziziphus jujuba* Mill. (common jujube) (Guo *et al.*, 2011).

Distribution. Fenyang (Guo *et al.*, 2011).

1.1.2. Genus *Xiphinema* Cobb, 1913

8) *Xiphinema brevicolle* Lordello & Da Costa, 1961

Host/Habitat. Soil from the rhizosphere of *Pinus tabuliformis* Carrière (pine tree) (Huo *et al.*, 2015).

Distribution. Taigu (Huo *et al.*, 2015).

Remarks. The species was originally named as *Xiphinema brevicolle* Lordello & Da Costa, 1961. *Xiphinema brevicollum* was proposed by Luc *et al.* (1998) and used in many works. Monteiro (2010) claimed that the correct species name is *Xiphinema brevicolle* Lordello & Da Costa, 1961, because *colle* may be used as an adjective epithete in species name and stand for neuter gender. Huo *et al.* (2015) recorded this species as *Xiphinema brevicollum* [sic].

9) *Xiphinema insigne* Loos, 1949

Host/Habitat. Soil from the rhizosphere of *Cedrus deodara* (Roxb. ex D. Don) G. Don (deodar cedar), *Salix babylonica* L. (weeping willow), *Syringa oblata* Lindl. (early lilac), *Ulmus pumila* L. (siberian elm) (Wu *et al.*, 2007).

Distribution. Linfen, Taigu (Wu *et al.*, 2007).

Remarks. The species was originally named as *Xiphinema insignis* Loos, 1949. Lordello (1953) revised it as *Xiphinema insigne* according to the genus name and species name must be in gender agreement with the International Code of Zoological Nomenclature (ICZN, Art. 31.2).

10) *Xiphinema* sp.

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005).

2. Order Enoplida Filipjev, 1929

1 family, 2 genera, 4 species

2.1. Family Trischistomatidae Andr assy, 2007 (Zhao, 2011) (2 genera, 4 species)

2.1.1. Genus *Tripylina* Brzeski, 1963

11) *Tripylina puxianensis* Xu, Zhao, Wang & Zheng, 2013

Host/Habitat. Soil from the rhizosphere of *Populus tremula* L. (poplar tree) (Xu *et al.*, 2013).

Distribution. Puxian (Xu *et al.*, 2013).

Remarks. This species was described from Puxian county Shanxi and named after the type locality by Xu *et al.* (2013).

12) *Tripylina zhejiangensis* Pham, Wang, Zhao & Zheng, 2013

Host/Habitat. Soil from the rhizosphere of *Hibiscus syriacus* L. (hibiscus), *Malus pumila* Mill. (apple tree) and *Poa pratensis* L. (kentucky bluegrass) (Xu *et al.*, 2014).

Distribution. Taigu (Xu *et al.*, 2014).

2.1.2. Genus *Trischistoma* Cobb, 1913

13) *Trischistoma pellucidum* Cobb, 1913

Host/Habitat. Soil and litter mixtures from the rhizosphere of *Platycladus orientalis* (L.) Franco (cypress tree), *Pinus tabuliformis* Carrière (pine tree) (Xu *et al.*, 2015).

Distribution. Jiaocheng, Yangcheng (Xu *et al.*, 2015).

14) *Trischistoma taiguensis* Xu, Zhao & Wang, 2015

Host/Habitat. Soil and litter mixtures from the rhizosphere of *Pyrus* sp. (pear tree) (Xu *et al.*, 2015).

Distribution. Taigu (Xu *et al.*, 2015).

Remarks. This species was described from Taigu county Shanxi and named after the type locality by Xu *et al.* (2015).

3. Order Rhabditida Chitwood, 1933

15 families, 26 genera, 68 species and

9 unknown species

3.1. Family Anguinidae Nicoll, 1935 (3 genera, 4 species, 2 unknown species)

3.1.1. Genus *Anguina* Scopoli, 1777

15) *Anguina tritici* (Steinbuch, 1799) Filipjev, 1936

Host/Habitat. *Triticum aestivum* L. (wheat) (Zhao & Yang, 2006).

Distribution. Shanxi (Zhao & Yang, 2006).

3.1.2. Genus *Ditylenchus* Filipjev, 1936

16) *Ditylenchus equalis* Heyns, 1964

Host/Habitat. Unknown.

Distribution. Xiyang (Liu, 2004; Liu & Liu, 2004).

17) *Ditylenchus myceliophagus* Goodey, 1958

Host/Habitat. Unknown.

Distribution. Xiyang (Liu & Liu, 2003; Liu, 2004); Shanxi (Zhao & Yang, 2006).

18) *Ditylenchus triformis* Hirschmann & Sasser, 1955

Host/Habitat. Unknown.

Distribution. Xiyang (Liu & Liu, 2002; Liu, 2004); Shanxi (Zhao & Yang, 2006).

19) *Ditylenchus* sp.

Host/Habitat. Soil from the rhizosphere of *Gossypium herbaceum* L. (levant cotton) and *Malus pumila* Mill. (apple tree) (Gu & Wang, 1988; Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005); Yuncheng (Gu & Wang, 1988).

3.1.3. Genus *Nothotylenchus* Thorne, 1941

20) *Nothotylenchus* sp.

Host/Habitat. Soil from the rhizosphere of *Gossypium herbaceum* L. (levant cotton) (Gu & Wang, 1988).

Distribution. Linfen (Gu & Wang, 1988).

- 3.2. Family Aphelenchidae Fuchs, 1937 (1 genus, 4 species)
- 3.2.1. Genus *Aphelenchus* Bastian, 1865
- 21) *Aphelenchus avenae* Bastian, 1865
Host/Habitat. Soil from the rhizosphere of *Brassica oleracea* L. (cabbage), *Brassica rapa* L. (Chinese cabbage), *Hemerocallis minor* Mill. (day lily) and *Zea mays* L. (maize) (Li *et al.*, 2009; Zhang *et al.*, 2009).
Distribution. Taigu (Li *et al.*, 2009; Zhang *et al.*, 2009).
- 22) *Aphelenchus eremitus* Thorne, 1961
Host/Habitat. Unknown.
Distribution. Shanxi (Liu, 2004).
- 23) *Aphelenchus isomerus* Anderson & Hooper, 1980 (Ebsary, 1991)
Host/Habitat. Unknown.
Distribution. Shanxi (Liu, 2004).
- 24) *Aphelenchus sparsus* Thorne & Malek, 1968
Host/Habitat. Soil from the rhizosphere of *Zea mays* L. (maize) (Zhang *et al.*, 2009).
Distribution. Taigu (Zhang *et al.*, 2009); Shanxi (Liu, 2004).
- 3.3. Family Aphelenchoididae Skarbilovich, 1947 (3 genera, 26 species)
- 3.3.1. Genus *Aphelenchoides* Fischer, 1894
- 25) *Aphelenchoides agarici* Seth & Sharma, 1986
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 26) *Aphelenchoides besseyi* Christie, 1942
Host/Habitat. Seed samples of *Setaria italica* (L.) P. Beauv. (millet) (Song *et al.*, 2019).
Distribution. Pingyao, Shilou, Xingxian (Song *et al.*, 2019); Shanxi (CABI & EPPO, 2000; Zhao & Yang, 2006; EPPO, 2020).
- 27) *Aphelenchoides bicaudatus* (Imamura, 1931) Filipjev & Schuurmans Stekhoven, 1941
Host/Habitat. Unknown.
Distribution. Shanxi (Zhao & Yang, 2006).
- 28) *Aphelenchoides confusus* Thorne & Malek, 1968
Host/Habitat. Soil from the rhizosphere of *Lactuca sativa* L. (garden lettuce), *Spinacia oleracea* L. (spinach) (Li *et al.*, 2009).
Distribution. Taigu (Li *et al.*, 2009).
Remarks. This species was recorded as *Aphelenchoides confuses* [sic] by Li *et al.* (2009).
- 29) *Aphelenchoides cyrtus* Paesler, 1959
Host/Habitat. Unknown.
Distribution. Xiyang (Liu, 2004).
- 30) *Aphelenchoides delhiensis* Chawla, Bhamburkar, Khan & Prasad, 1968
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 31) *Aphelenchoides fragariae* (Ritzema Bos, 1890) Christie, 1932
Host/Habitat. Unknown.
Distribution. Shanxi (Liu, 2004).
- 32) *Aphelenchoides graminis* Baranovskaya & Haque, 1968
Host/Habitat. Unknown.
Distribution. Shanxi (Liu, 2004).
- 33) *Aphelenchoides haguei* Maslen, 1979
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 34) *Aphelenchoides indicus* Chawla, Bhamburkar, Khan & Prasad, 1968
Host/Habitat. Unknown.
Distribution. Shanxi (Liu, 2004).
- 35) *Aphelenchoides involutus* Minagawa, 1992
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 36) *Aphelenchoides limberi* Steiner, 1936
Host/Habitat. Unknown.
Distribution. Hongtong, Xiyang (Liu, 2004).
- 37) *Aphelenchoides macronucleatus* Baranovskaya, 1963
Host/Habitat. Unknown.
Distribution. Shanxi (Liu, 2004).
- 38) *Aphelenchoides obtusus* Thorne & Malek, 1968
Host/Habitat. Soil from the rhizosphere of *Cirsium arvense* (L.) Scop. (Western thistle) (Liu, 2004).
Distribution. Shanxi (Liu, 2004).
- 39) *Aphelenchoides parabicaudatus* Shavrov, 1967
Host/Habitat. Unknown.
Distribution. Shanxi (Liu, 2004).
- 40) *Aphelenchoides parasaprophilus* Sanwal, 1965
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 41) *Aphelenchoides rutgersi* Hooper & Myers, 1971
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 42) *Aphelenchoides sacchari* Hooper, 1958
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 43) *Aphelenchoides saprophilus* Franklin, 1957
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 44) *Aphelenchoides submersus* Truskova, 1973
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).
- 45) *Aphelenchoides swarupi* Seth & Sharma, 1986
Host/Habitat. Unknown.
Distribution. Hongtong (Liu, 2004).

46) *Aphelenchoides trivialis* Franklin & Siddiqi, 1963

Host/Habitat. Unknown.

Distribution. Shanxi (Liu, 2004).

47) *Aphelenchoides tuzeti* B'Chir, 1979

Host/Habitat. Unknown.

Distribution. Hongtong (Liu, 2004).

48) *Aphelenchoides vaughani* Maslen, 1979

Host/Habitat. Soil from the rhizosphere of *Portulaca oleracea* L. (purslane) (Liu, 2004).

Distribution. Hongtong (Liu, 2004).

3.3.2. Genus *Bursaphelenchus* Fuchs, 1937

49) *Bursaphelenchus mucronatus* Mamiya & Enda, 1979

Host/Habitat. Bark from *Pinus tabulaeformis* Carrière (Chinese pine) (Qiao *et al.*, 2012).

Distribution. Pinglu (Qiao *et al.*, 2012).

Remarks. The host name was recorded as *Pimus [sic] tabulaeformis* by Qiao *et al.* (2012).

3.3.3. Genus *Seinura* Fuchs, 1931

50) *Seinura citri* (Andrássy, 1957) J.B. Goodey, 1960

Host/Habitat. Unknown.

Distribution. Shanxi (Liu, 2004).

3.4. Family Criconematidae Taylor, 1936 (1914) (Thorne, 1949) (2 genera, 2 species, 1 unknown species)

3.4.1. Genus *Criconemoides* Taylor, 1936

51) *Criconemoides informis* (Micoletzky, 1922) Taylor, 1936

Host/Habitat. Soil from the rhizosphere of *Pyrus bretschneideri* Rehder (bretschneider pear) (Chen *et al.*, 2001).

Distribution. Taigu (Liu, 2004); Yuxian (Chen *et al.*, 2001; Liu, 2004); Shanxi (Zhao & Yang, 2006).

Remarks. Chen *et al.* (2001) and Liu (2004) reported this species as *Criconemella informis*, which is now a synonym of *Criconemoides informis* (Loof & De Grisse, 1989). Liu (2004) recorded the authority as (Micoletzky, 1922) Luc & Raski, 1981.

52) *Criconemoides* sp.

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005).

3.4.2. Genus *Hemicriconemoides* Chitwood & Birchfield, 1957

53) *Hemicriconemoides chitwoodi* Esser, 1960

Host/Habitat. Unknown.

Distribution. Hongtong (Liu, 2004); Shanxi (Zhao & Yang, 2006).

3.5. Family Dolichodoridae Chitwood *in* Chitwood & Chitwood, 1950 (1 genus, 2 species, 1 unknown species)

3.5.1. Genus *Tylenchorhynchus* Cobb, 1913

54) *Tylenchorhynchus brassicae* Siddiqi, 1961

Host/Habitat. Soil from the rhizosphere of *Brassica oleracea* L. (cabbage), *Brassica rapa* L. (turnip), *Cucumis sativus* L. (cucumber) and *Lactuca sativa* L. (garden lettuce) (Li *et al.*, 2009).

Distribution. Taigu (Li *et al.*, 2009).

55) *Tylenchorhynchus mashhoodi* Siddiqi & Basir, 1959

Host/Habitat. Soil from the rhizosphere of *Brassica oleracea* L. (cabbage), *Cucumis sativus* L. (cucumber), *Lycopersicon esculentum* Mill. (tomato) and *Zea mays* L. (maize) (Li *et al.*, 2009; Zhang *et al.*, 2009).

Distribution. Taigu (Li *et al.*, 2009; Zhang *et al.*, 2009).

56) *Tylenchorhynchus* sp.

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005).

3.6. Family Heteroderidae Filipjev & Schuurmans Stekhoven, 1941 (Skarbilovich, 1947) (1 genus, 2 species)

3.6.1. Genus *Heterodera* Schmidt, 1871

57) *Heterodera avenae* Wollenweber, 1924

Host/Habitat. Soil and root samples from *Triticum aestivum* L. (wheat) (Chen *et al.*, 1992; Zheng *et al.*, 1997; Liu *et al.*, 2010, 2011, 2012a, b; Zhang, 2012; Li *et al.*, 2018).

Distribution. Changzhi, Jincheng, Jinzhong, Taiyuan, Yuncheng (Li *et al.*, 2018); Hongtong, Xiangfen (Liu *et al.*, 2010, 2012b; Zhang, 2012); Houma, Huozhou, Xiaxian, Yanhu, Yangcheng, Yaodu (Zhang, 2012); Jiangxian, Xinjiang, Yicheng (Liu *et al.*, 2010, 2012b); Linfen (Liu *et al.*, 2010; Li *et al.*, 2018); Qixian (Liu *et al.*, 2010); Taigu (Zheng *et al.*, 1997; Liu *et al.*, 2010); Wenxi (Liu *et al.*, 2010, 2011, 2012b; Zhang, 2012); Shanxi (Chen *et al.*, 1992; Liu, 2004; Zhao & Yang, 2006; Liu *et al.*, 2012a).

58) *Heterodera glycines* Ichinohe, 1952

Host/Habitat. Soil and root samples from *Glycine max* (L.) Merr. (soybean) (Wang & Li, 1984; Liu *et al.*, 1985; Liu *et al.*, 1987; Shanxi Cooperation Group of Investigation on Cyst Nematodiasis of Soybean (SCGI-CNS), 1987; Wang *et al.*, 1988; Liu & Liu, 1989; Liu *et al.*, 1994, 1995; Liu *et al.*, 1997; Wang & Liu, 2001; Lu *et al.*, 2006; Song *et al.*, 2016; Lian *et al.*, 2016, 2017, 2021; Feng *et al.*, 2018).

Distribution. Changzhi (Wang & Li, 1984; SCGI-CNS, 1987); Datong, Jincheng, Lvliang, Xinzhou, Yanbei prefecture, Yangquan, Yuncheng (SCGI-CNS, 1987); Fenyang (Lu *et al.*, 2006; Song *et al.*, 2016); Gujiao (Lian *et al.*, 2021); Jinzhong (SCGI-CNS, 1987); Lanxian, Lishi, Qinxian,

Wuxiang, Yuci, Yushe, Zuoquan (Wang & Li, 1984); Linfen (SCGI-CNS, 1987; Lu *et al.*, 2006); Taigu (Wang & Li 1984; Liu *et al.*, 1985; Liu *et al.*, 1987; Feng *et al.*, 2018); Taiyuan (Wang & Li, 1984; SCGI-CNS, 1987; Liu & Liu, 1989; Liu *et al.*, 1994; Lu *et al.*, 2006); Xiangfen (Wang & Liu, 2001); Shanxi (Wang *et al.*, 1988; Liu *et al.*, 1995; Liu *et al.*, 1997; Liu, 2004; Zhao & Yang, 2006; CABI & EPPO, 2011; Lian *et al.*, 2016, 2017; EPPO, 2020).

Remarks. Wang & Liu (2001) incorrectly recorded Shanxi province as Shaanxi [*sic*] province in the English title.

3.7. Family Hoplolaimidae Filipjev, 1934 (3 genera, 6 species, 1 unknown species)

3.7.1. Genus *Helicotylenchus* Steiner, 1945

59) *Helicotylenchus crenacauda* Sher, 1966

Host/Habitat. Soil from the rhizosphere of *Ulmus pumila* L. (Siberian elm) (Mei *et al.*, 2008; Zhao *et al.*, 2010).

Distribution. Linfen (Mei *et al.*, 2008; Zhao *et al.*, 2010).

Remarks. Mei *et al.* (2008) and Zhao *et al.* (2010) recorded this species as *Helicotylenchus pteracerus* [*sic*] which is now a synonym of *Helicotylenchus crenacauda* (Baqri & Ahmad 1983).

60) *Helicotylenchus dihystra* (Cobb, 1893) Sher, 1961

Host/Habitat. Soil and root samples from *Brassica oleracea* L. (cabbage), *Capsicum annuum* L. (bush redpepper), *Lycopersicon esculentum* Mill. (tomato), *Raphanus raphanistrum* subsp. *sativus* (L.) Domin (radish) (Li *et al.*, 2009).

Distribution. Taigu (Li *et al.*, 2009).

61) *Helicotylenchus indicus* Siddiqi, 1963

Host/Habitat. Soil from the rhizosphere of *Poa pratensis* L. (Kentucky bluegrass) (Xu *et al.*, 2013).

Distribution. Lingshi (Xu *et al.*, 2013).

62) *Helicotylenchus microcephalus* Sher, 1966

Host/Habitat. Soil from the rhizosphere of *Calathea makoyana* E.Morren (makoy calathea) (Zhou *et al.*, 2005).

Distribution. Taiyuan (Zhou *et al.*, 2005).

3.7.2. Genus *Rotylenchus* Filipjev, 1936

63) *Rotylenchus pini* Mamiya, 1968

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Zhao *et al.*, 1996).

Distribution. Xiangfen (Zhao *et al.*, 1996); Shanxi (Liu, 2004; Zhao & Yang, 2006).

Remarks. Zhao *et al.* (1996) recorded the species as *Pararotylenchus pini*.

3.7.3. Genus *Scutellonema* Andr ssy, 1958

64) *Scutellonema brachyurum* (Steiner, 1938) Andr ssy, 1958

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Zhao *et al.*, 1996).

Distribution. Xiangfen (Zhao *et al.*, 1996); Shanxi (Liu, 2004; Zhao & Yang, 2006).

Remarks. The species name was recorded as *Scutellonema brachyurum* [*sic*] by Liu (2004) and Zhao *et al.* (1996). *Scutellonema brachyurum* has been applied to this species in some recent literature. According to the ICZN Art. 31.2, the genus name and species name must be in gender agreement. Since the genus *Scutellonema* name ending is gender neuter (ICNZ, Art. 30.1.2), the correct species name is *brachyurum* as used by Andr ssy (1958).

65) *Scutellonema* sp.

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005).

3.8. Family Meloidogynidae Skarbilovich, 1959 (1 genus, 4 species, 1 unknown species)

3.8.1. Genus *Meloidogyne* Goeldi, 1887

66) *Meloidogyne arenaria* (Neal, 1889) Chitwood, 1949

Host/Habitat. Unknown.

Distribution. Shanxi (CABI & EPPO, 2003).

67) *Meloidogyne fanzhiensis* Chen, Peng & Zheng, 1990

Host/Habitat. Soil and root samples from *Solanum tuberosum* L. (potato) in the open field (Chen *et al.*, 1990; Liu, 2004; Zhao & Yang, 2006).

Distribution. Fanshi (Chen *et al.*, 1990); Shanxi (Liu, 2004; Zhao & Yang, 2006).

Remarks. This species was described from Shanxi and named for the type locality by Chen *et al.* (1990).

68) *Meloidogyne hapla* Chitwood, 1949

Host/Habitat. Unknown.

Distribution. Shanxi (CABI & EPPO, 2002; Liu, 2004).

69) *Meloidogyne incognita* (Kofoid & White, 1919) Chitwood, 1949

Host/Habitat. Root samples from *Apium graveolens* L. (celery), soil and root samples in *Cucumis sativus* L. (cucumber), *Lycopersicon esculentum* Mill. (tomato) in the greenhouse (Dong *et al.*, 1990; Li *et al.*, 2009; Xu & Zhou, 2011; Gao, 2012; Chai, 2013).

Distribution. Datong (Dong *et al.*, 1990); Taigu (Li *et al.*, 2009); Xiaxian (Xu & Zhou, 2011; Gao, 2012); Xiangfen (Chai, 2013); Yuci (Jiang, 2012); Shanxi (Zhao & Yang, 2006).

70) *Meloidogyne* sp.

Host/Habitat. Roots of *Apium graveolens* L. (celery), *Brassica rapa* L. (bird rape), *Cucumis melo* L. (muskmelon), *Cucumis sativus* L. (cucumber), *Cucurbita pepo* L. (pumpkin), *Lactuca sativa* L. (garden lettuce), *Lycopersicon esculentum* Mill. (tomato), *Pisum sativum* L. (garden pea) in the

greenhouse (Qin, 2006; He & Lv, 2008; Li, 2011; Wang, 2015; Zhang, 2015).

Distribution. Qixian (Li, 2011); Qingxu, Xinjiang, Yuci (Wang, 2015); Taiyuan (He & Lv, 2008; Zhang, 2015); Yuncheng (Qin, 2006; He & Lv, 2008).

3.9. Family Pratylenchidae Thorne, 1949 (2 genera, 5 species, 1 unknown species)

3.9.1. Genus *Pratylenchoides* Winslow, 1958
71) *Pratylenchoides leiocauda* Sher, 1970

Host/Habitat. Unknown.

Distribution. Shanxi (Liu, 2004).

3.9.2. Genus *Pratylenchus* Filipjev, 1936

72) *Pratylenchus hexincisus* Taylor & Jenkins, 1957

Host/Habitat. Unknown.

Distribution. Shanxi (Liu, 2004).

73) *Pratylenchus neglectus* (Rensch, 1924) Filipjev & Schuurmans Stekhoven, 1941

Host/Habitat. Soil and root samples from *Apium graveolens* L. (celery), *Brassica oleracea* L. (cabbage), *Cucumis sativus* L. (cucumber), *Cucurbita pepo* L. (pumpkin), *Lactuca sativa* L. (garden lettuce), *Lycopersicon esculentum* Mill. (tomato), *Solanum melongena* L. (eggplant), *Triticum aestivum* L. (wheat) (Li *et al.*, 2009; Qin *et al.*, 2020).

Distribution. Jishan (Qin *et al.*, 2020); Taigu (Li *et al.*, 2009).

Remarks. Li *et al.* (2009) recorded this species as *Pratylenchus neglectus* [sic].

74) *Pratylenchus scribneri* Steiner in Sherbakoff & Stanley, 1943

Host/Habitat. Soil and root samples from *Brassica oleracea* L. (cabbage), *Capsicum annuum* L. (pepper), *Lycopersicon esculentum* Mill. (tomato), *Raphanus raphanistrum* subsp. *sativus* (L.) Domin (radish), *Zea mays* L. (maize) (Gao *et al.*, 1992; Li *et al.*, 2009).

Distribution. Linfen, Taiyuan, Yuncheng (Gao *et al.*, 1992); Taigu (Li *et al.*, 2009); Shanxi (Zhao & Yang, 2006).

75) *Pratylenchus wescolagricus* Corbett, 1984

Host/Habitat. *Prunus persica* (L.) Batsch (peach tree) (Liu, 2004).

Distribution. Xiangfen (Liu, 2004).

76) *Pratylenchus* sp.

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005).

3.10. Family Panagrolaimidae Thorne, 1937 (1 genus, 1 species)

3.10.1. Genus *Turbatrix* Peters, 1927

77) *Turbatrix aceti* (Müller, 1783) Peters, 1927

Host/Habitat. Rice vinegar (Shen & Xie, 1981).

Distribution. Houma (Shen & Xie, 1981).

3.11. Family Rhabditidae Örley, 1880 (2 genera, 2 species)

3.11.1. Genus *Heterorhabditis* Poinar, 1976

78) *Heterorhabditis bacteriophora* Poinar, 1976

Host/Habitat. Unknown.

Distribution. Shanxi (Ma *et al.*, 2010).

3.11.2. Genus *Rhabditis* Dujardin, 1845

79) *Rhabditella axei* (Cobbald, 1884) Chitwood, 1933

Host/Habitat. *Homo sapiens* Linnaeus (human) (Yu *et al.*, 2019).

Distribution. Shanxi (Yu *et al.*, 2019).

3.12. Family Steinernematidae Filipjev, 1934 (1 genus, 4 species)

3.12.1. Genus *Steinernema* Travassos, 1927

80) *Steinernema ceratophorum* Jian, Reid & Hunt, 1997

Host/Habitat. Unknown.

Distribution. Shanxi (Ma *et al.*, 2010).

81) *Steinernema feltiae* (Filipjev, 1934) Wouts, Mráček, Gerdin & Bedding, 1982

Host/Habitat. Unknown.

Distribution. Shanxi (Ma *et al.*, 2010).

82) *Steinernema hebeiense* Chen, Li, Yan, Spiridonov & Moens, 2006

Host/Habitat. Unknown.

Distribution. Shanxi (Ma *et al.*, 2010).

83) *Steinernema litorale* Yoshida, 2004

Host/Habitat. Unknown.

Distribution. Shanxi (Ma *et al.*, 2010).

3.13. Family Strongyloididae Chitwood & McIntosh, 1934 (1 genus, 2 species)

3.13.1. Genus *Strongyloides* Grassi, 1879

84) *Strongyloides papillosus* (Wedl, 1856) Ransom, 1911

Host/Habitat. Small intestinal mucosa of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep); *Oryctolagus cuniculus* Linnaeus (rabbit) (Zhao & Yang, 1989; Zhang *et al.*, 1991).

Distribution. Jinzhong (Zhao & Yang, 1989); Shanxi (Zhang *et al.*, 1991).

85) *Strongyloides stercoralis* (Bavay, 1876) Stiles & Hassall, 1902

Host/Habitat. Intestine of *Homo sapiens* Linnaeus (human) (Cui *et al.*, 1989; Li *et al.*, 1993, 1994).

Distribution. Linyi, Taiyuan (Cui *et al.*, 1989); Shanxi (Li *et al.*, 1993, 1994).

3.14. Family Tylenchidae Örley, 1880 (3 genera, 1 species, 2 unknown species)

3.14.1. Genus *Filenchus* Andrassy, 1954

86) *Filenchus vulgaris* (Brzeski, 1963) Lownsbery & Lownsbery, 1985

Host/Habitat. Soil around the roots of *Brassica oleracea* L. (cabbage), *Capsicum annuum* L. (bush

redpepper), *Lactuca sativa* L. (garden lettuce), *Luffa cylindrica* (L.) M.Roem (suakwa vegetablesponge), *Lycopersicon esculentum* Mill. (tomato), *Solanum melongena* L. (eggplant) and *Zea mays* L. (maize) (Li *et al.*, 2009; Zhang *et al.*, 2009).

Distribution. Taigu (Li *et al.*, 2009; Zhang *et al.*, 2009).

3.14.2. Genus *Miculenchus* Andr assy, 1959

87) *Miculenchus* sp.

Host/Habitat. Soil from the rhizosphere of *Capsicum annuum* L. (bush redpepper), *Cucumis sativus* L. (cucumber), *Luffa cylindrica* (L.) M.Roem (suakwa vegetablesponge), *Lycopersicon esculentum* Mill. (tomato), *Solanum melongena* L. (eggplant) and *Zea mays* L. (maize) (Li *et al.*, 2009; Zhang *et al.*, 2009).

Distribution. Taigu (Li *et al.*, 2009; Zhang *et al.*, 2009).

3.14.3. Genus *Tylenchus* Bastian, 1865

88) *Tylenchus* sp.

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005).

3.15. Family Tylenchulidae Skarbilovich, 1947 (1 genus, 3 species)

3.15.1. Genus *Paratylenchus* Micoletzky, 1922

89) *Paratylenchus minutus* Linford in Linford, Oliveira & Ishii, 1949

Host/Habitat. *Paeonia* × *suffruticosa* Andrews (subshrubby peony) (Zhao & Yang, 2006).

Distribution. Shanxi (Zhao & Yang, 2006).

90) *Paratylenchus projectus* Jenkins, 1956

Host/Habitat. Unknown.

Distribution. Yuxian (Liu, 2004); Shanxi (Zhao & Yang, 2006).

91) *Paratylenchus prunii* Sharma, Sharma & Khan, 1986

Host/Habitat. Soil from the rhizosphere of *Populus simonii* Carri re (poplar) (Chen *et al.*, 2002).

Distribution. Hongtong (Chen *et al.*, 2002).

4. Order Spirurida Railliet, 1914

11 families, 19 genera, 27 species and
1 unknown species

4.1. Family Acuariidae Railliet, Henry & Sisoff, 1912 (1 genus, 2 species)

4.1.1. Genus *Acuaria* Bremser, 1811

92) *Acuaria hamulosa* (Diesing, 1851)

Host/Habitat. Cuticula gastrica of *Gallus domesticus* Linnaeus (chicken) (Kong & Zheng, 1993; Pan *et al.*, 2004).

Distribution. Yuncheng (Kong & Zheng, 1993); Shanxi (Pan *et al.*, 2004).

93) *Acuaria spiralis* Molin, 1858

Host/Habitat. Ventriculus glandularis of *Gallus domesticus* Linnaeus (chicken) (Pan *et al.*, 2004).

Distribution. Shanxi (Pan *et al.*, 2004).

4.2. Family Ascaridiidae Travassos, 1919 (4 genera, 6 species)

4.2.1. Genus *Ascaridia* Dujardin, 1845

94) *Ascaridia galli* (Schr ank, 1788)

Host/Habitat. Small intestine of *Gallus domesticus* Linnaeus (chicken) (Zhang *et al.*, 1991; Pan *et al.*, 2004; Lang *et al.*, 2005).

Distribution. Shanxi (Zhang *et al.*, 1991; Pan *et al.*, 2004; Lang *et al.*, 2005).

4.2.2. Genus *Ascaris* Linnaeus, 1758

95) *Ascaris lumbricoides* Linnaeus, 1758

Host/Habitat. Intestine of *Homo sapiens* Linnaeus (human) (Ye *et al.*, 1960; Zhou & Wu, 1960; Zhao *et al.*, 1984; Cui *et al.*, 1989; Li *et al.*, 1990, 1993, 1994; Feng *et al.*, 1991a, b; Lian *et al.*, 1991; Qi *et al.*, 1991; Wu & Li, 1991; Jin *et al.*, 1993; Yan & Li, 1994; Xi & Yang, 1995; Zhao *et al.*, 2004; Li *et al.*, 2006; Liu *et al.*, 2007; Zhang *et al.*, 2013, 2019; Jing, 2015).

Distribution. Datong (Ye *et al.*, 1960; Zhou & Wu, 1960; Liu *et al.*, 2007); Lishi, Qinshui (Liu *et al.*, 2007); Jinzhong (Jin *et al.*, 1993); Linyi (Cui *et al.*, 1989; Li *et al.*, 2006; Liu *et al.*, 2007); Pianguan, Wanrong, Yanggao (Zhang *et al.*, 2013); Pingyao, Xiyang, Zuoquan (Feng *et al.*, 1991b); Puxian (Feng *et al.*, 1991a); Qinxian (Yan & Li, 1994); Ruicheng (Wu & Li, 1991); South-Shanxi (Zhao *et al.*, 2004); Taiyuan (Zhao *et al.*, 1984; Cui *et al.*, 1989); Xiangyuan (Lian *et al.*, 1991); Xinzhou (Qi *et al.*, 1991); Yangquan (Liu *et al.*, 2007; Jing, 2015); Yuci (Li *et al.*, 1990; Feng *et al.*, 1991b); Yuncheng (Xi & Yang, 1995); Shanxi (Li *et al.*, 1993, 1994; Zhang *et al.*, 2019).

96) *Ascaris ovis* Rudolphi, 1819

Host/Habitat. Digestive tract of *Ovis aries* Linnaeus (sheep) (Lang *et al.*, 2005; Wang *et al.*, 2010).

Distribution. Shanxi (Lang *et al.*, 2005; Wang *et al.*, 2010).

97) *Ascaris suum* Goeze, 1782

Host/Habitat. Small intestine of *Sus scrofa domesticus* Linnaeus (pig) (Shanxi Institute of Animal Husbandry and Veterinary Science (SIAHVS), 1977; Zhang *et al.*, 1991; Lang *et al.*, 2005; Dong *et al.*, 2018).

Distribution. Datong, Gaoping, Jiaocheng, Linfen, Lingqiu, Qingxu, Taigu, Taiyuan, Tianzhen, Xiangfen, Yanggao, Yangquan, Yongji, Yuanping, Yuncheng (SIAHVS, 1977); Yuci (Dong *et al.*, 2018); Shanxi (Zhang *et al.*, 1991; Lang *et al.*, 2005).

Remarks. SIAHVS (1977) incorrectly recorded this species as *Ascari* [sic] *suum*.

4.2.3. Genus *Parascaris* Yorke & Maplestone, 1926

98) *Parascaris equorum* (Goeze, 1782)

Host/Habitat. *Equus caballus* Linnaeus (horse) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

Remarks. Zhang *et al.* (1991) incorrectly recorded this species as *Porascaris* [*sic*] *equorum*.

4.2.4. Genus *Toxocara* Stiles, 1905

99) *Toxocara canis* (Werner, 1782) Stiles, 1905

Host/Habitat. Small intestine of *Canis lupus familiaris* Linnaeus (dog) (Xing *et al.*, 1991).

Distribution. Fenyang, Jiaokou, Liulin, Qixian, Shouyang, Taigu, Taiyuan, Wuxiang, Xiaoyi, Xinzhou (Xing *et al.*, 1991).

4.3. Family Filariidae (Cobbold, 1864) Claus, 1885 (1 genus, 2 species)

4.3.1. Genus *Setaria* Viborg, 1795

100) *Setaria equina* (Abildgaard, 1789)

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

101) *Setaria labiatopapillosa* (Alessandrini, 1838)

Host/Habitat. Abdominal cavity of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Southeast Shanxi (Zhao & Yang, 1989; Yin *et al.*, 1996).

4.4. Family Gongylonematidae Sobolev, 1949 (1 genus, 2 species)

4.4.1. Genus *Gongylonema* Molin, 1857

102) *Gongylonema ingluvicola* Ransom, 1904

Host/Habitat. Inguvies mucosa of *Gallus domesticus* Linnaeus (chicken) (Pan *et al.*, 2004; Lang *et al.*, 2005).

Distribution. Shanxi (Pan *et al.*, 2004; Lang *et al.*, 2005).

103) *Gongylonema pulchrum* Molin, 1857

Host/Habitat. *Bos taurus* Linnaeus (cattle), *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep), *Sus scrofa domesticus* Linnaeus (pig), oesophageal epithelium of *Homo sapiens* Linnaeus (human) (Guo & Huang, 1975; Yangcheng County People's Hospital, 1975; SIAHVS, 1977; Huang *et al.*, 1982, 1983; Guo & Liu, 1987; Lu & Zhang, 1989; Zhao & Yang, 1989; Du & Li, 1991; Zhang *et al.*, 1991; Chang, 1994; Liu & Wang, 1994; Yin *et al.*, 1996; Bao *et al.*, 1997; Lang *et al.*, 2005; Zhang & Hao, 2009).

Distribution. Dingxiang (Liu & Wang, 1994); Gaoping (Guo & Liu, 1987); Jiexiu (Lu & Zhang, 1989); Jinzhong, Linfen, Lvliang, Southeast Shanxi, Xinzhou, Yanbei prefecture, Yuncheng (Yin *et al.*,

1996); Licheng (Guo & Huang, 1975); Lingqiu, Tianzhen (SIAHVS, 1977); Taigu (SIAHVS, 1977); Chang, 1994); Taiyuan (Zhang & Hao, 2009); Wanrong (Huang *et al.*, 1982, 1983); Wenxi, Xiaxian (Bao *et al.*, 1997); Xiyang (Du & Li, 1991); Yangcheng (Yangcheng County People's Hospital, 1975); Shanxi (Zhao & Yang, 1989; Zhang *et al.*, 1991; Lang *et al.*, 2005).

Remarks. Guo & Huang (1975) incorrectly recorded this species as *Gongylonema pulchrum* [*sic*].

4.5. Family Habronematidae Chitwood & Wehr, 1932 (1 genus, 1 species)

4.5.1. Genus *Parabronema* Baylis, 1921

104) *Parabronema skrjabini* Raskowska, 1924

Host/Habitat. Abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen, Yanbei prefecture (Zhao & Yang, 1989; Yin *et al.*, 1996).

4.6. Family Heterakidae Railliet & Henry, 1912 (1 genus, 3 species)

4.6.1. Genus *Heterakis* Dujardin, 1845

105) *Heterakis gallinarum* (Schränk, 1788) Madsen, 1949

Host/Habitat. Rectum, small intestine and cecum of *Crossoptilon mantchuricum* Swinhoe (brown eared pheasant); Cecum of *Gallus domesticus* Linnaeus (chicken) and *Phasianus colchicus* Linnaeus (ring-necked pheasant) (Wen *et al.*, 1990; Zhang *et al.*, 1991; Zhang *et al.*, 2000; Pan *et al.*, 2004; Lang *et al.*, 2005; Shi *et al.*, 2010).

Distribution. Jiaocheng (Wen *et al.*, 1990; Zhang *et al.*, 2000); Yuci (Shi *et al.*, 2010); Shanxi (Zhang *et al.*, 1991; Pan *et al.*, 2004; Lang *et al.*, 2005).

Remarks. Pan *et al.* (2004) and Zhang *et al.* (1991) incorrectly recorded this species as *Heterakis gallinae* [*sic*].

106) *Heterakis isolonche* von Linstow, 1906

Host/Habitat. Cecum of *Chrysolophus pictus* Linnaeus (golden pheasant) and *Crossoptilon mantchuricum* Swinhoe (brown eared pheasant) (Xing, 1991; Shi *et al.*, 2010).

Distribution. Ningwu (Xing, 1991); Shanxi (Shi *et al.*, 2010).

Remarks. Xing (1991) recorded this species as *Ganguleterakis isolonche*, which is now a synonym of *Heterakis isolonche* (Inglis, 1967).

107) *Heterakis pedioecetes* Mawson, 1956

Host/Habitat. Cecum of *Crossoptilon mantchuricum* Swinhoe (brown eared pheasant) (Shi *et al.*, 2010).

Distribution. Shanxi (Shi *et al.*, 2010).

4.7. Family Onchocercidae Leiper, 1911 (1 genus, 1 species)

4.7.1. Genus *Dirofilaria* Railliet & Henry, 1911

108) *Dirofilaria immitis* (Leidy, 1856) Railliet & Henry, 1911

Host/Habitat. *Canis lupus familiaris* Linnaeus (dog) (Faust, 1937).

Distribution. Fenyang (Faust, 1937).

4.8. Family Oxyuridae Cobbold, 1864 (3 genera, 3 species)

4.8.1. Genus *Enterobius* Leach, 1853

109) *Enterobius vermicularis* (Linnaeus, 1758) Leach, 1853

Host/Habitat. Intestine of *Homo sapiens* Linnaeus (human) (Wang *et al.*, 1958; Ye *et al.*, 1960; Zhou & Wu, 1960; Zhao *et al.*, 1984; Cui *et al.*, 1989; Li *et al.*, 1990, 1993, 1994; Feng *et al.*, 1991a, b; Lian *et al.*, 1991; Qi *et al.*, 1991; Wu & Li, 1991; Jin *et al.*, 1993; Liang *et al.*, 1994; Yan & Li, 1994; Xi & Yang, 1995; Zhao *et al.*, 2004; Li *et al.*, 2006; Liu *et al.*, 2007; Li *et al.*, 2010; Zhang *et al.*, 2013, 2019; Jing, 2015).

Distribution. Datong (Ye *et al.*, 1960; Zhou & Wu, 1960; Liu *et al.*, 2007); Lishi, Qinshui, (Liu *et al.*, 2007); Hejin, Lingshi, Shouyang, Shuozhou, Yingxian (Li *et al.*, 2010); Jinzhong (Jin *et al.*, 1993); Linyi (Cui *et al.*, 1989; Li *et al.*, 2006; Liu *et al.*, 2007); Pingyao, Xiyang, Zuoquan (Feng *et al.*, 1991b); Puxian (Feng *et al.*, 1991a); Qinxian (Yan & Li, 1994); Ruicheng (Wu & Li, 1991); South-Shanxi (Zhao *et al.*, 2004); Taiyuan (Wang *et al.*, 1958; Zhao *et al.*, 1984; Cui *et al.*, 1989); Wanrong (Zhang *et al.*, 2013); Wuxiang (Liang *et al.*, 1994); Xiangyuan (Lian *et al.*, 1991); Xinzhou (Qi *et al.*, 1991); Yangquan (Liu *et al.*, 2007; Jing, 2015); Yuci (Li *et al.*, 1990; Feng *et al.*, 1991b); Yuncheng (Xi & Yang, 1995); Shanxi (Li *et al.*, 1993, 1994; Zhang *et al.*, 2019).

4.8.2. Genus *Oxyuris* Rudolphi, 1803

110) *Oxyuris equi* (Schränk, 1788) Rudolphi, 1803

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

4.8.3. Genus *Skrjabinema* Verestchagin, 1926

111) *Skrjabinema ovis* (Skrjabin, 1915) Verestchagin, 1926

Host/Habitat. Large intestine and cecum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996).

Distribution. Jinzhong (Yin *et al.*, 1996); Lvliang, Xinzhou, Yanbei prefecture, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Shanxi (Zhang *et al.*, 1991).

Remarks. Zhang *et al.* (1991) incorrectly recorded this species as *Skrjabiaema* [*sic*] *ovis*.

4.9. Family Spiruridae Örley, 1885 (2 genera, 3 species)

4.9.1. Genus *Draschia* Chitwood & Wehr, 1934

112) *Draschia megastoma* (Rudolphi, 1819)

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

Remarks. Zhang *et al.* (1991) incorrectly recorded this species as *Draschia* [*sic*] *megastoma*.

4.9.2. Genus *Habronema* Diesing, 1861

113) *Habronema microstoma* (Schneider, 1866)

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

114) *Habronema muscae* (Carter, 1861) Diesing, 1861

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

4.10. Family Tetrameridae Travassos, 1914 (1 genus, 1 species, 1 unknown species)

4.10.1. Genus *Tetrameres* Creplin, 1846

115) *Tetrameres americana* Cram, 1927

Host/Habitat. Ventriculus glandularis of *Gallus domesticus* Linnaeus (chicken) (Pan *et al.*, 2004).

Distribution. Shanxi (Pan *et al.*, 2004).

116) *Tetrameres* sp.

Host/Habitat. *Gallus domesticus* Linnaeus (chicken) (Lang *et al.*, 2005).

Distribution. Shanxi (Lang *et al.*, 2005).

4.11. Family Thelaziidae Skrjabin, 1915 (3 genera, 3 species)

4.11.1. Genus *Ascarops* van Beneden, 1873

117) *Ascarops strongylina* (Rudolphi, 1819) Alicata & McIntosh, 1933

Host/Habitat. *Sus scrofa domesticus* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991).

Distribution. Datong, Gaoping, Lingqiu, Taigu, Xiangfen, Yanggao, Yuanping (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991).

4.11.2. Genus *Physocephalus* Diesing, 1861

118) *Physocephalus sexalatus* (Molin, 1860)

Host/Habitat. *Sus scrofa domesticus* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991).

Distribution. Gaoping, Linfen, Xiangfen, Yanggao (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991).

4.11.3. Genus *Thelazia* Bosc, 1819

119) *Thelazia callipaeda* Railliet & Henry, 1910

Host/Habitat. Eyes of *Canis lupus familiaris* Linnaeus (dog) and *Homo sapiens* Linnaeus (human) (Wang *et al.*, 1989; Wei *et al.*, 2009; Li, 2012).

Distribution. Changzhi (Li, 2012); Datong (Wei *et al.*, 2009); Yuci (Wang *et al.*, 1989).

5. Order Strongylida Molin, 1861

8 families, 26 genera, 57 species and
11 unknown species

5.1. Family Ancylostomatidae (Looss, 1905) Lane, 1917 (2 genera, 4 species, 1 unknown species)

5.1.1. Genus *Ancylostoma* (Dubini, 1843) Creplin, 1845
120) *Ancylostoma caninum* (Ercolani, 1859) Hall, 1913

Host/Habitat. Large and small intestine of *Canis lupus familiaris* Linnaeus (dog) (Xing *et al.*, 1991).

Distribution. Fenyang, Jiaokou, Liulin, Pingyao, Qixian, Shouyang, Taigu, Wuxiang, Xiaoyi, Xinzhou (Xing *et al.*, 1991).

121) *Ancylostoma duodenale* (Dubini, 1843) Creplin, 1845

Host/Habitat. Intestine of *Homo sapiens* Linnaeus (human) (Li *et al.*, 1993, 1994; Zhang *et al.*, 2019).

Distribution. Shanxi (Li *et al.*, 1993, 1994; Zhang *et al.*, 2019).

122) *Ancylostoma* sp.

Host/Habitat. *Homo sapiens* Linnaeus (human) (Ye *et al.*, 1960; Zhou & Wu, 1960; Zhao *et al.*, 1984; Qiao & Lu, 1988; Cui *et al.*, 1989; Feng *et al.*, 1991b; Wu & Li, 1991; Xi & Yang, 1995; Jing, 2015).

Distribution. Datong (Ye *et al.*, 1960; Zhou & Wu, 1960); Linyi (Cui *et al.*, 1989); Ruicheng (Wu & Li, 1991); Taiyuan (Zhao *et al.*, 1984; Cui *et al.*, 1989); Yangquan (Jing, 2015); Yongji (Qiao & Lu, 1988); Yuci (Feng *et al.*, 1991b); Yuncheng (Xi & Yang, 1995).

5.1.2. Genus *Bunostomum* Railliet, 1902

123) *Bunostomum phlebotomum* (Railliet, 1900)

Host/Habitat. *Bos taurus* Linnaeus (cattle) (Zhang *et al.*, 1991; Lang *et al.*, 2005).

Distribution. Shanxi (Zhang *et al.*, 1991; Lang *et al.*, 2005).

Remarks. The species was recorded as *Bunostoma* [*sic*] *phlebotomum* by Zhang *et al.* (1991).

124) *Bunostomum trigonocephalum* (Rudolphi, 1808)

Host/Habitat. Intestine and small intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996; Wang *et al.*, 2004; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010; Luo *et al.*, 2020).

Distribution. Jinzhong, Linfen, Lvliang,

Southeast Shanxi¹, Xinzhou, Yanbei prefecture², Yuncheng (Yin *et al.*, 1996); Qinyuan (Wang *et al.*, 2004); Yuci (Luo *et al.*, 2020); Shanxi (Zhao & Yang, 1989; Zhang *et al.*, 1991; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010).

Remarks. The genus name was recorded as *Bunostoma* [*sic*] by Zhang *et al.* (1991).

5.2. Family Chabertiidae Lichtenfels, 1980 (2 genera, 10 species, 2 unknown species)

5.2.1. Genus *Chabertia* Railliet & Henry, 1909

125) *Chabertia erschowi* Hsiung & Kung, 1955

Host/Habitat. Large intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996).

Distribution. Jinzhong, Lvliang, Southeast Shanxi, Xinzhou, Yanbei prefecture, Yuncheng (Zhao & Yang 1989; Yin *et al.*, 1996); Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded this species as *Chabertia erschovi* [*sic*], Zhang & K'ung (2014) and Zhao & Yang (1989) incorrectly recorded the publishing year as 1956.

126) *Chabertia ovina* (Fabricius, 1788) Railliet & Henry, 1909

Host/Habitat. Intestine and large intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996; Lang *et al.*, 2005; Luo *et al.*, 2020).

Distribution. Linfen, Xinzhou, Yanbei prefecture, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Southeast Shanxi (Yin *et al.*, 1996); Yuci (Luo *et al.*, 2020); Shanxi (Zhang *et al.*, 1991; Lang *et al.*, 2005; Zhang & K'ung, 2014).

127) *Chabertia* sp.

Host/Habitat. *Bos taurus* Linnaeus (cattle) (Lang *et al.*, 2005).

Distribution. Shanxi (Lang *et al.*, 2005).

5.2.2. Genus *Oesophagostomum* Molin, 1861

128) *Oesophagostomum asperum* Railliet & Henry, 1913

Host/Habitat. Large intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996).

Distribution. Jinzhong, Linfen, Lvliang, Southeast Shanxi, Xinzhou, Yanbei prefecture, Yuncheng (Yin *et al.*, 1996); Shanxi (Zhao & Yang, 1989; Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhao & Yang (1989) recorded this species as *Oesophagostomum aspernm* [*sic*].

¹ Including Changzhi City and Jincheng City.

² Including Datong City and Shuozhou City.

129) *Oesophagostomum brevicaudum* Schwartz & Alicata, 1930

Host/Habitat. *Sus scrofa domestica* Linnaeus (pig) (Zhang & K'ung, 2014).

Distribution. Shanxi (Zhang & K'ung, 2014).

130) *Oesophagostomum columbianum* (Curtice, 1890) Stossich, 1899

Host/Habitat. Large intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996; Luo *et al.*, 2020).

Distribution. Jinzhong, Linfen, Lvliang, Southeast Shanxi, Xinzhou, Yanbei prefecture, Yuncheng (Yin *et al.*, 1996); Yuci (Luo *et al.*, 2020); Shanxi (Zhao & Yang, 1989; Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang & K'ung (2014) recorded this species as *Oesophagostomum columbianum* [sic].

131) *Oesophagostomum dentatum* (Rudolphi, 1803) Molin, 1861

Host/Habitat. *Sus scrofa domestica* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991).

Distribution. Lingqiu, Xiangfen, Yuanping (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

132) *Oesophagostomum kansuensis* Hsiung & Kung, 1955

Host/Habitat. Large intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996).

Distribution. Jinzhong, Linfen, Yanbei prefecture, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

133) *Oesophagostomum longicaudum* Goodey, 1925

Host/Habitat. *Sus scrofa domestica* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991).

Distribution. Lingqiu, Xiangfen, Yuanping (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991).

Remarks. SIAHVS (1977) incorrectly recorded the publishing year as 1825.

134) *Oesophagostomum quadrispinulatum* Marcone, 1901

Host/Habitat. *Sus scrofa domestica* Linnaeus (pig) (Zhang & K'ung, 2014).

Distribution. Shanxi (Zhang & K'ung, 2014).

135) *Oesophagostomum venulosum* (Rudolphi, 1809)

Host/Habitat. Large intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Lvliang (Zhao & Yang, 1989); Yanbei prefecture (Zhao & Yang, 1989; Yin *et al.*, 1996); Shanxi (Zhang & K'ung, 2014).

Remarks. Zhang & K'ung (2014) recorded the authority and publishing year as Rudolphi, 1808.

136) *Oesophagostomum* sp.

Host/Habitat. Intestine of *Bos taurus* Linnaeus (cattle) and *Ovis aries* Linnaeus (sheep); *Sus scrofa domestica* Linnaeus (pig) (Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011).

Distribution. Shanxi (Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011).

5.3. Family Dictyocaulidae Skrjabin, 1933 (1 genus, 2 species)

5.3.1. Genus *Dictyocaulus* Railliet & Henry, 1907

137) *Dictyocaulus filaria* (Rudolphi, 1809) Railliet & Henry, 1907

Host/Habitat. Bronchus and trachea of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996; Gao, 2009).

Distribution. Jinzhong, Southeast Shanxi, Xinzhou, Yanbei prefecture (Yin *et al.*, 1996); Pianguan (Gao, 2009); Shanxi (Zhao & Yang, 1989; Zhang *et al.*, 1991; Wu, 2001).

138) *Dictyocaulus viviparus* (Bloch, 1782) Railliet & Henry, 1907

Host/Habitat. *Bos taurus* Linnaeus (cattle), *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

5.4. Family Metastrongylidae Leiper, 1908 (1 genus, 2 species)

5.4.1. Genus *Metastrongylus* Molin, 1861

139) *Metastrongylus apri* (Gmelin, 1790) Vostokov, 1905

Host/Habitat. *Sus scrofa domestica* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991).

Distribution. Gaoping, Xiangfen, Yuanping (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991).

Remarks. SIAHVS (1977) and Zhang *et al.* (1991) recorded this species as *Metastrongylus elongatus*, which is now a synonym of *Metastrongylus apri* (Christie *et al.*, 1944); SIAHVS (1977) recorded the authority and publishing year as (Dujardin, 1816) Railliet & Henry, 1911.

140) *Metastrongylus pudendotectus* Wostokow, 1905

Host/Habitat. *Sus scrofa domestica* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991).

Distribution. Gaoping, Lingqiu, Xiangfen, Yuanping (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991).

Remarks. SIAHVS (1977) incorrectly recorded this species as *Metastrongylus* [sic] *pudendotectus*.

5.5. Family Protostrongylidae Leiper, 1926 (2 genera, 3 species, 2 unknown species)

5.5.1. Genus *Muellerius* Cameron, 1927
141) *Muellerius* sp.

Host/Habitat. Lung of *Ovis aries* Linnaeus (sheep) (Meng *et al.*, 2017).

Distribution. Wuxiang (Meng *et al.*, 2017).

5.5.2. Genus *Protostrongylus* Kamensky, 1905
142) *Protostrongylus hobmaieri* Schulz, Orlov & Kutass, 1933

Host/Habitat. Bronchus and bronchioles of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Lvliang, Southeast Shanxi, Xinzhou, Yanbei prefecture (Zhao & Yang, 1989; Yin *et al.*, 1996).

143) *Protostrongylus rufescens* (Leuckart, 1865)

Host/Habitat. Bronchus and bronchioles of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996).

144) *Protostrongylus raillieti* (Schulz, Orloff & Kutass, 1933) Cameron, 1934

Host/Habitat. Bronchus and bronchioles of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Yanbei prefecture (Zhao & Yang, 1989; Yin *et al.*, 1996).

145) *Protostrongylus* sp.

Host/Habitat. *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

5.6. Family Strongylidae Baird, 1853 (7 genera, 18 species)

5.6.1. Genus *Coronocyclus* Hartwich, 1986

146) *Coronocyclus labiatus* (Looss, 1902) Hartwich, 1986

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded two species, *Cyathostomum labiatum* and *Cyathostomum labiatum* var. *digitatum*, which are now synonyms of *Coronocyclus labiatus* (Hartwich, 1986, Lichtenfels, 1975, 2008); Zhang & K'ung (2014) recorded the authority and publishing year as Looss, 1900.

147) *Coronocyclus labratus* (Looss, 1900) Hartwich, 1986

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) reported this species as *Cyathostomum labratum*, which is now a synonym of *Coronocyclus labratus* (Hartwich, 1986).

5.6.2. Genus *Cyathostomum* Molin, 1861

148) *Cyathostomum catinatum* Looss, 1900

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded this species as *Cyathostomum catinatum* var. *pseudocatinatum* Yorke & Macfie, 1919, which was regarded as a new combination by K'ung (1964).

149) *Cyathostomum pateratum* (Yorke & Macfie, 1919) Cram, 1924

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

5.6.3. Genus *Cylicocyclus* Ihle, 1922

150) *Cylicocyclus auriculatus* (Looss, 1900) Chaves, 1930

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

Remarks. Zhang *et al.* (1991) recorded this species as *Cylicocyclus auriculatus* [sic].

151) *Cylicocyclus leptostomus* Kotlán, 1920

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded this species as *Schulzitrichonema leptotomum*, which is now a synonym of *Cylicocyclus leptostomus* (Lichtenfels, 1975).

152) *Cylicocyclus nassatus* (Looss, 1900) Chaves, 1930

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded this species as *Cylicocyclus nassatus* [sic].

153) *Cylicocyclus radiatus* (Looss, 1900) Chaves, 1930

Host/Habitat. *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded this species as *Cylicocyclus radiatum* [sic].

5.6.4. Genus *Cylicodontophorus* Ihle, 1922
154) *Cylicodontophorus bicoronatus* (Looss, 1900) Cram, 1924

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) reported this species as *Cyathostomum bicoronatum* which is now synonym of *Cylicodontophorus bicoronatus* (Ershov, 1943).

5.6.5. Genus *Cylicostephanus* Ihle, 1922
155) *Cylicostephanus calicatus* (Looss, 1900) Cram, 1924

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) reported this species as *Trichonema tsengi* K'ung & Yang, 1963 that is now a synonym of *Cylicostephanus calicatus* (Lichtenfels *et al.*, 2008).

156) *Cylicostephanus goldi* (Boulenger, 1917) Lichtenfels, 1975

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) reported this species as *Cylicotetrapedon goldi* which is now a synonym of *Cylicostephanus goldi* (Lichtenfels, 1975).

157) *Cylicostephanus longibursatus* (Yorke & Macfie, 1918) Cram, 1924

Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) reported this species as *Trichonema longibursatum* [sic] (Yorke & Macfie, 1918) Le Roux, 1924 that is now a synonym of *Cylicostephanus longibursatus* (Lichtenfels, 1975).

158) *Cylicostephanus minutus* (Yorke & Macfie, 1918) Cram, 1924

Host/Habitat. Unknown.

Distribution. Shanxi (Zhang & K'ung, 2014).

5.6.6. Genus *Strongylus* Müller, 1780

159) *Strongylus edentatus* (Looss, 1900) Railliet & Henry, 1909

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) reported this species as *Alfortia edentatus* (Looss, 1900) Skrjabin, 1933 which is now a synonym of *Strongylus edentatus* (Lichtenfels, 1975, 1980).

160) *Strongylus equinus* Müller, 1780

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang & K'ung (2014) incorrectly recorded the authority as Müller.

161) *Strongylus vulgaris* (Looss, 1900) Railliet & Henry, 1909

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded this species as *Delafondia vulgaris* (Looss, 1900) Skrjabin, 1933, which is now a synonym of *Strongylus vulgaris* (Lichtenfels, 1975, 1980).

5.6.7. Genus *Triodontophorus* Looss, 1902

162) *Triodontophorus minor* (Looss, 1900) Looss, 1902

Host/Habitat. *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), *Equus mulus* Linnaeus (mule) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

163) *Triodontophorus nipponicus* Yamaguti, 1943
Host/Habitat. *Equus asinus* Linnaeus (donkey) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991; Zhang & K'ung, 2014).

Remarks. Zhang *et al.* (1991) recorded this species as *Triodontophorus hsiungi* K'ung, 1958 that is now a synonym of *Triodontophorus nipponicus* (Diaz-Ungria, 1963).

5.7. Family Syngamidae Leiper, 1912 (2 genera, 1 species, 1 unknown species)

5.7.1. Genus *Stephanurus* Diesing, 1839

164) *Stephanurus dentatus* Diesing, 1839

Host/Habitat. *Sus scrofa domesticus* Linnaeus (pig) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

5.7.2. Genus *Syngamus* Siebold, 1836

165) *Syngamus* sp.

Host/Habitat. Bronchus of *Gallus domesticus* Linnaeus (chicken) (Pan *et al.*, 2004).

Distribution. Shanxi (Pan *et al.*, 2004).

5.8. Family Trichostrongylidae Leiper, 1912 (9 genera, 17 species, 5 unknown species)

5.8.1. Genus *Cervicaprastrongylus* Gibbons & Khalil, 1982

166) *Cervicaprastrongylus malviyai* (Chaturvedi & Kansal, 1977)

Host/Habitat. Small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996).

Remarks. The species was reported as *Ostertagia skrjabini* Singh & Pande, 1963 (Yin *et al.*, 1996; Zhao & Yang, 1989), which is now synonym of *Cervicaprastrongylus malviyai* (Gibbons & Khalil, 1982).

5.8.2. Genus *Cooperia* Ransom, 1907

167) *Cooperia* sp.

Host/Habitat. Intestine and small intestine of *Bos taurus* Linnaeus (cattle), *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Wang *et al.*, 2011).

Distribution. Jinzhong, Linfen (Zhao & Yang, 1989); Shanxi (Wang *et al.*, 2011).

5.8.3. Genus *Haemonchus* Cobbold, 1898

168) *Haemonchus contortus* (Rudolphi, 1803) Cobb, 1898

Host/Habitat. Intestine of *Bos taurus* Linnaeus (cattle); abomasum and intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010; Luo *et al.*, 2020).

Distribution. Jinzhong, Linfen, Lvliang, Southeast Shanxi, Xinzhou, Yanbei prefecture, Yuncheng (Yin *et al.*, 1996); Yuci (Luo *et al.*, 2020); Shanxi (Zhao & Yang, 1989; Zhang *et al.*, 1991; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010).

Remarks. Wang *et al.* (2010) incorrectly recorded *Hemonchus* [*sic*] *contortus*.

5.8.4. Genus *Marshallagia* Orloff, 1933

169) *Marshallagia mongolica* Schumakovitch, 1938

Host/Habitat. Abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen (Zhao & Yang, 1989); Southeast Shanxi (Yin *et al.*, 1996); Xinzhou (Zhao & Yang, 1989; Yin *et al.*, 1996).

170) *Marshallagia* sp.

Host/Habitat. *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Zhang *et al.*, 1991).

Distribution. Shanxi (Zhang *et al.*, 1991).

5.8.5. Genus *Mecistocirrus* Railliet & Henry, 1912

171) *Mecistocirrus digitatus* (von Linstow, 1906) Railliet & Henry, 1912

Host/Habitat. Abomasum of *Capra hircus*

Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Yanbei prefecture (Zhao & Yang, 1989; Yin *et al.*, 1996).

5.8.6. Genus *Nematodirella* Yorke & Maplestone, 1926

172) *Nematodirella longispiculata* Yorke & Maplestone, 1926

Host/Habitat. Small intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996; Luo *et al.*, 2020).

Distribution. Xinzhou (Zhao & Yang, 1989; Yin *et al.*, 1996); Yuci (Luo *et al.*, 2020).

Remarks. Zhao & Yang (1989) recorded the authority and publishing year as (Romanovitch, 1915) Skrjabin & Schikhobalova, 1952.

5.8.7. Genus *Nematodirus* Ransom, 1907

173) *Nematodirus abnormalis* May, 1920

Host/Habitat. Small intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Lvliang (Zhao & Yang, 1989; Yin *et al.*, 1996).

174) *Nematodirus filicollis* (Rudolphi, 1802) Ransom, 1907

Host/Habitat. *Ovis aries* Linnaeus (sheep) (Yin *et al.*, 1996).

Distribution. Jinzhong (Yin *et al.*, 1996).

175) *Nematodirus hsui* Liang, Ma & Lin, 1958

Host/Habitat. *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Yin *et al.*, 1996).

Distribution. Linfen (Yin *et al.*, 1996).

176) *Nematodirus oiratianus* Rajewskaja, 1929

Host/Habitat. Small intestine of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen, Southeast Shanxi, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Lvliang (Zhao & Yang, 1989).

177) *Nematodirus spathiger* (Railliet, 1896) Railliet & Henry, 1909

Host/Habitat. *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Yin *et al.*, 1996).

Distribution. Linfen (Yin *et al.*, 1996).

178) *Nematodirus* sp.

Host/Habitat. Intestine of *Bos taurus* Linnaeus (cattle), *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhang *et al.*, 1991; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010).

Distribution. Shanxi (Zhang *et al.*, 1991; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010).

5.8.8. Genus *Ostertagia* Ransom, 1907

179) *Ostertagia circumcincta* (Stadelmann, 1894) Ransom, 1907

Host/Habitat. Small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996; Luo *et al.*, 2020).

Distribution. Jinzhong, Linfen, Southeast Shanxi, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Lvliang (Zhao & Yang, 1989); Yuci (Luo *et al.*, 2020).

180) *Ostertagia dahurica* Orloff, Belowa & Gnedina, 1931

Host/Habitat. Small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Southeast Shanxi (Zhao & Yang, 1989); Xinzhou (Zhao & Yang, 1989; Yin *et al.*, 1996).

181) *Ostertagia ostertagi* (Stiles, 1892) Ransom, 1907

Host/Habitat. Small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Jinzhong, Linfen (Zhao & Yang, 1989; Yin *et al.*, 1996).

182) *Ostertagia trifurcata* Ransom, 1907

Host/Habitat. Small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen, Southeast Shanxi, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996).

183) *Ostertagia wuhingensis* Ling & Chow, 1960

Host/Habitat. Small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen, Southeast Shanxi, Xinzhou, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996).

184) *Ostertagia* sp.

Host/Habitat. Intestine of *Bos taurus* Linnaeus (cattle), *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhang *et al.*, 1991; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010).

Distribution. Shanxi (Zhang *et al.*, 1991; Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010).

5.8.9. Genus *Trichostrongylus* Looss, 1905

185) *Trichostrongylus colubriformis* (Giles, 1892) Ransom, 1911

Host/Habitat. Small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen, Lvliang, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996).

186) *Trichostrongylus orientalis* Jimbo, 1914

Host/Habitat. *Camelus bactrianus* Linnaeus (camel), *Capra hircus* Linnaeus (goat), *Equus asinus* Linnaeus (donkey), *Equus caballus* Linnaeus (horse), intestine of *Homo sapiens* Linnaeus (human) (Ye *et al.*, 1960; Cui *et al.*, 1989; Qi *et al.*, 1991; Wu & Li, 1991; Li *et al.*, 1993, 1994).

Distribution. Datong (Ye *et al.*, 1960); Linyi, Taiyuan (Cui *et al.*, 1989); Ruicheng (Wu & Li, 1991); Xinzhou (Qi *et al.*, 1991); Shanxi (Li *et al.*, 1993, 1994; Wu, 2001).

187) *Trichostrongylus* sp.

Host/Habitat. Intestine of *Bos taurus* Linnaeus (cattle) and *Homo sapiens* Linnaeus (human), small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) (Zhou & Wu, 1960; Zhao & Yang, 1989; Zhang *et al.*, 1991; Xi & Yang, 1995; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010).

Distribution. Datong (Zhou & Wu, 1960); Southeast Shanxi, Yanbei prefecture (Zhao & Yang, 1989); Yuncheng (Xi & Yang, 1995); Shanxi (Zhang *et al.*, 1991; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010).

6. Order Trichinellida Hall, 1916

3 families, 4 genera, 12 species and
2 unknown species

6.1. Family Capillariidae Neveu-Lemaire 1936
(1 genus, 2 species, 1 unknown species)

6.1.1. Genus *Capillaria* Zeder, 1800

188) *Capillaria annulata* (Molin, 1858) Cram, 1926

Host/Habitat. Ingluvies of *Gallus domesticus* Linnaeus (chicken) (Pan *et al.*, 2004).

Distribution. Shanxi (Pan *et al.*, 2004).

Remarks. Pan *et al.* (2004) recorded this species as *Capillaria anaulata* [sic].

189) *Capillaria columbae* Rudolphi, 1819

Host/Habitat. Small intestine of *Gallus domesticus* Linnaeus (chicken) (Pan *et al.*, 2004; Lang *et al.*, 2005).

Distribution. Shanxi (Pan *et al.*, 2004; Lang *et al.*, 2005).

190) *Capillaria* sp.

Host/Habitat. *Gallus domesticus* Linnaeus (chicken) (Lang *et al.*, 2005).

Distribution. Shanxi (Lang *et al.*, 2005).

6.2. Family Trichinellidae Ward, 1907 (2 genera, 7 species, 1 unknown species)

6.2.1. Genus *Trichinella* Railliet, 1895

191) *Trichinella spiralis* (Owen, 1835) Railliet, 1895

Host/Habitat. Gastrocnemius of *Homo sapiens*

Linnaeus (human); *Sus scrofa domesticus* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991; Gao *et al.*, 1997).

Distribution. Taiyuan (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991; Gao *et al.*, 1997).

Remarks. SIAHVS (1977) recorded the publishing year as 1833.

6.2.2. Genus *Trichocephalus* Roederer, 1761

192) *Trichocephalus concolor* Burdelev, 1951

Host/Habitat. *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Yin *et al.*, 1996).

Distribution. Linfen, Yanbei prefecture (Yin *et al.*, 1996).

193) *Trichocephalus gazellae* (Gebauer, 1933)

Host/Habitat. Cecum of *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Linfen, Southeast Shanxi, Xinzhou, Yanbei prefecture, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Lvliang (Yin *et al.*, 1996).

194) *Trichocephalus globulosa* von Linstow, 1901

Host/Habitat. Cecum of *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Jinzhong, Linfen, Yanbei prefecture, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Southeast Shanxi (Zhao & Yang, 1989).

195) *Trichocephalus lani* (Artjuch, 1948)

Host/Habitat. Cecum of *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep), *Sus scrofa domesticus* Linnaeus (pig) (SIAHVS, 1977; Zhao & Yang, 1989; Zhang *et al.*, 1991; Yin *et al.*, 1996).

Distribution. Linfen, Southeast Shanxi, Xinzhou, Yanbei prefecture, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Taiyuan (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991).

Remarks. SIAHVS (1977) incorrectly recorded the authority as Artjueh.

196) *Trichocephalus longispiculus* Artjuch, 1948

Host/Habitat. Cecum of *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996).

Distribution. Yanbei prefecture (Zhao & Yang, 1989; Yin *et al.*, 1996).

197) *Trichocephalus ovis* Abilgaard, 1795

Host/Habitat. Cecum of *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep) (Zhao & Yang, 1989; Yin *et al.*, 1996; Lang *et al.*, 2005).

Distribution. Jinzhong, Linfen, Yanbei prefecture, Yuncheng (Zhao & Yang, 1989; Yin *et al.*, 1996); Shanxi (Lang *et al.*, 2005).

198) *Trichocephalus* sp.

Host/Habitat. *Bos taurus* Linnaeus (cattle), *Capra hircus* Linnaeus (goat), *Ovis aries* Linnaeus (sheep), *Sus scrofa domesticus* Linnaeus (pig)

(Zhang *et al.*, 1991; Lang *et al.*, 2005).

Distribution. Shanxi (Zhang *et al.*, 1991; Lang *et al.*, 2005).

6.3. Family Trichuridae Railliet, 1915 (1 genus, 3 species)

6.3.1. Genus *Trichuris* Roederer, 1761

199) *Trichuris ovis* (Abilgaard, 1795)

Host/Habitat. Intestine of *Ovis aries* Linnaeus (sheep) (Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010; Luo *et al.*, 2020).

Distribution. Yuci (Luo *et al.*, 2020); Shanxi (Lang *et al.*, 2005; Ding *et al.*, 2010; Wang *et al.*, 2010, 2011; Zhu *et al.*, 2010).

200) *Trichuris suis* (Schränk, 1788)

Host/Habitat. *Sus scrofa domesticus* Linnaeus (pig) (SIAHVS, 1977; Zhang *et al.*, 1991; Lang *et al.*, 2005).

Distribution. Datong, Gaoping, Jiaocheng, Taigu, Taiyuan, Tianzhen, Yuncheng (SIAHVS, 1977); Shanxi (Zhang *et al.*, 1991; Lang *et al.*, 2005).

Remarks. SIAHVS (1977) and Zhang *et al.* (1991) recorded this species as *Trichocephalus suum* [sic] and *Trichocephalus suis*, which are now synonym *Trichuris suis* (*Trichuris* was opted for the commonly accepted name by the 1941 Committee on Nomenclature of the American Society of Parasitologists).

201) *Trichuris trichiura* (Linnaeus, 1771)

Host/Habitat. Intestine of *Homo sapiens* Linnaeus (human) (Ye *et al.*, 1960; Zhou & Wu, 1960; Zhao *et al.*, 1984; Qiao & Lu, 1988; Cui *et al.*, 1989; Feng *et al.*, 1991b; Qi *et al.*, 1991; Wu & Li, 1991; Jin *et al.*, 1993; Li *et al.*, 1993, 1994; Yan & Li, 1994; Xi & Yang, 1995; Zhang *et al.*, 2013, 2019; Jing, 2015).

Distribution. Datong (Ye *et al.*, 1960; Zhou & Wu, 1960); Jinzhong (Jin *et al.*, 1993); Linyi (Cui *et al.*, 1989); Puxian, Xiyang, Yuci (Feng *et al.*, 1991b); Qinxian (Yan & Li, 1994); Ruicheng (Wu & Li, 1991); Taiyuan (Zhao *et al.*, 1984; Qiao & Lu, 1988; Cui *et al.*, 1989); Xinzhou (Qi *et al.*, 1991); Yanggao (Zhang *et al.*, 2013); Yangquan (Jing, 2015); Yuncheng (Xi & Yang, 1995); Shanxi (Li *et al.*, 1993, 1994; Zhang *et al.*, 2019).

7. Order Triplonchida Cobb, 1920

1 family, 1 genus and 1 unknown species

7.1. Family Trichodoridae Thorne, 1935 (1 genus, 1 unknown species)

7.1.1. Genus *Trichodorus* Cobb, 1913

202) *Trichodorus* sp.

Host/Habitat. Soil from the rhizosphere of *Malus pumila* Mill. (apple tree) (Yu *et al.*, 2005).

Distribution. Taigu (Yu *et al.*, 2005).

DISCUSSION

Trichostrongylus abnormalis was reported from the small intestine and abomasum of *Capra hircus* Linnaeus (goat) and *Ovis aries* Linnaeus (sheep) in Lvliang City by Zhao & Yang (1989), but its authority and publishing year were not available in the database and references. Therefore, it is not listed in the current list as a valid record in Shanxi province.

There is some confusion in the literature about the name Shanxi and its neighbouring province Shaanxi. For examples, *Heterodera glycines* Ichinohe, 1952 was reported in Shanxi by Wang & Liu (2001), but it was published as Shaanxi [*sic*] Province in English title. In addition, *Ascaris lumbricoides* Linnaeus, 1758, *Enterobius vermicularis* (Linnaeus, 1758) Leach, 1853, *Trichuris trichiura* Linnaeus, 1771 and *Ancylostoma* sp. were reported in Shaanxi Province by Huo *et al.* (2009); however, the English title of the paper was published as Shanxi Province. Moreover, a nematode identified at generic level parasitising finless eel was reported in Shaanxi Province, but the English title of the paper was also published as Shanxi by Liu *et al.* (2006). More recently, Zhang *et al.* (2020) misspelled Shaanxi as Shanxi when they referred the root-knot nematodes infecting mulberry trees by citing Zhang & Gao (1988), Wang & Chen (1989).

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J.J. Geng, J.R. Yan, Y.N. Yao, Z.Q. Zhao, J.M. Wang and Y.M. Xu. Список видов нематод (Nematoda) из провинции Шаньси, северный Китай.

Резюме. Представлен список видов нематод, зарегистрированных в провинции Шаньси до 1 января 2021 года. Этот список состоит из 202 видов (177 идентифицированных до вида и 25 таксонов, идентифицированных на родовом уровне), представляющих семь отрядов, 40 семейств и 80 родов. Приводится информация об их хозяевах, местоположении и соответствующие ссылки.
