

日本産鳥獣類に関する寄生線虫報文（2001年～2012年刊行）の中で酪農学園大学野生動物医学センターを拠点になされた研究の位置付け

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An overview on parasitic nematodes obtained from the birds and mammals of Japan between 2001 and 2012 and Wild Animal Medical Center, Rakuno Gakuen University, Japan

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はじめに

浅川・長谷川（2003）は日本動物分類学関連学会連合による「日本産生物種数調査」の一環として、日本に生息する、あるいは飼育される鳥類および哺乳類を宿主とする寄生線虫類の文献情報を提示した。その情報となった根拠は20世紀前半から2000年頃までの関連刊行物を基にまとめたものであったので、純粋に自然史（誌）という観点のみならず、動物衛生面で貴重な資料として活用された。さらに、調査対象となった哺乳類にはヒト *Homo sapiens* も含まれていたことから、公衆衛生学的にも有用であった。しかし、その後20年以上、この作業が停滞していたため、国内における寄生線虫相あるいは線虫症発生の概要は欠落していた。そこで本稿では、21世紀に入ってからの約10年間（2001年から2012年）の記録の概要整理を行い、浅川・長谷川（2003）の追加情報とした。

ところで、調査対象となった刊行期間（2001年～2012年刊行）は、奇しくも酪農学園大学（以下、本学）における野生動物医学センター（以下、WAMC）の設置申請と運用期間の前半期にほぼ相当した。この施設は野生動物医学振興のため、文部科学省私立大学戦略的研究基盤形成支援事業の一環として、本学附属動物病院（現・動物医療センター）構内に設立された。そして、2004年4月から2023年夏季まで医動物学ユニットにより運用され、同時に日本野生動物医学会から「寄生蠕虫症センター」の指定も受けた。2023年度にWAMCは運用停止となったため、WAMCを拠点にした研究実績の回

顧調査を行ったところ、多くが鳥獣類に寄生する線虫類の刊行物で占められていた（以上、小綿・浅川、2023）。

そこで、本追加情報の整理作業（前述）により判った日本における野生鳥獣類に関する寄生線虫研究（2001年～2012年刊行）の中で、WAMCを拠点になされたものがどの程度の比率であったのかを算出し、WAMCの果たした役割を回顧する一助とした。

材料と方法

本稿の主要な情報源は2002年から2012年に英国CABIで刊行された寄生蠕虫学2次資料“Helminthological Abstracts” (<https://www.cabi.org/publishing-products/helminthological-abstracts/>) の冊子体版の巻末索引で、浅川・長谷川（2003）同様、「線虫」と「日本」により検索した。また、対象宿主および線虫種を絞り込んだ方法も前報に準じた。さらに、記録種一覧表における線虫種配列法とそれに用いた線虫類分類体系、宿主名の明示法（英語一般名、単数形）他記載方法も浅川・長谷川（2003）に準じた。

結果と考察

その結果、調査対象の年代期間中に刊行された報文では、計28科110種が記録された（註：種名不明複数種 spp.も1種としてカウント；表1）。1900年代中盤から2000年代初頭の記録を取りまとめた浅川・長谷川（2003）で37科411種であったことに比較すると、僅か十分の一の期間で前回記録された約25%の種数が確認されたことは注目すべき事実で

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表 1. 2001 年～2012 年までに公表された報文上の日本産鳥獣類寄生線虫類

Table 1. Parasitic nematodes obtained from the birds and mammals of Japan between 2001 and 2012.

Class ENOPLIA	
Subclass Dorylaima	
Order Dioctophymatida	
Family Dioctophymatidae	
<i>Dioctophyme renale</i>	rat (Tokiwa et al., 2011)
	weasel (Nakagawa et al., 2012)
<i>Eustrongylides</i> sp.	cormorant (EL-Dakhly et al., 2012)
Family Soboliphymatidae	
<i>Sobolyphyme buturini</i>	weasel (Nakagawa et al., 2012)
Order Trichinellida	
Family Capillariidae	
<i>Capillaria caudinflata</i>	grouse (Ito et al., 2012)
<i>C. anatis</i>	anseriform bird (Yoshino et al., 2009)
<i>Calodium hepaticum</i>	coypus (Matsudate et al., 2003)
<i>Eucoleus contortus</i>	anseriform bird (Yoshino et al., 2009)
<i>E.</i> sp.	field mouse (Sakata et al., 2007)
<i>Baruscapilaria mergi</i>	anseriform bird (Yoshino et al., 2009)
<i>Aonchotheca</i> sp.	grouse (Ito et al., 2012)
Family Trichinellidae	
<i>Trichinella nativa</i>	fox (Yiman et al., 2001)
<i>T. britovi</i>	fox (Kudo et al., 2001)
<i>T.</i> spp.	fox (Kanai et al., 2007)
	rodent & shrew (Kanai et al., 2007)
	raccoon (Kobayashi et al., 2007)
Family Trichuridae	
<i>Trichuris ovis</i>	deer (Shiihashi et al., 2004)
<i>T. trichiura</i>	Japanese macaque (Satayoshi et al., 2005, 2011)
<i>T. vulpis</i>	dog (Morishima et al., 2007; Itou et al., 2010)
<i>T. suis.</i>	wild boar (Sato et al., 2008)
	pig & cow (Matsubayashi et al., 2009)
	pig (Kobayashi et al., 2010; Asano et al., 2012)
<i>T. trichiura.</i>	human (Taguchi et al., 2008)
<i>T.</i> sp.	field mouse (Sakata et al., 2007)
Class CHROMADOREA	
Subclass Chromadoria	
Order Rhabditida	
Suborder Spirurina	
Superfamily Gnathostomatoidea	
Family Gnathostomatidae	
<i>Gnathostoma doloresi</i>	wild boar (Sato et al., 2008)
	human (Horino et al., 2008)
<i>G. nipponica</i>	human (Ishida et al., 2003)
	weasel (Nakagawa et al., 2012)
Superfamily Oxyuroidea	

表 1. (続) Table 1. (cont.)

Family Oxyuridae	
<i>Enterobius vermicularis</i>	chimpanzee & human (Murata et al., 2003)
	human (Matsushita et al., 2002)
<i>E. anthropopitheci</i>	chimpanzee (Hasegawa et al., 2008)
<i>Syphacia muris</i> .	field mouse (Sakata et al., 2006)
<i>S. frederici</i>	field mouse (Sakata et al., 2007)
<i>S. mesocriceti</i>	golden hamster (Hasegawa et al., 2008)
Superfamily Physalopteroidea	
Family Physalopteridae	
<i>Physaloptera</i> sp.	field mouse (Sakata et al., 2007)
Superfamily Rictularoidea	
Family Rictulariidae	
<i>Pterygodermatites nycticebi</i>	slow loris (Ikeda et al., 2003)
	marmoset (Sato et al., 2004)
Superfamily Thelaziidae	
Family Thelazoidea	
<i>Thelazia callipaeda</i>	dog & cat (Okajima et al., 2011)
	human (Kim et al., 2010)
Superfamily Spiruroidea	
Family Gongylonematidae	
<i>Gongylonema pulchrum</i>	sheep (Kudo et al., 2003)
	squirrel monkey (Sato et al., 2005)
	human (Wilde et al., 2002)
Family Spirocercidae	
<i>Physocephalus sexlata</i>	wild boar (Sato et al., 2008)
<i>Ascarops strongylina</i>	wild boar (Sato et al., 2008)
<i>A. mogera</i>	lesser Japanese mole (Koizumi et al., 2012)
Family Spiruridae.	
<i>Protospirura</i> sp.	mongoose (Ishibashi et al., 2011)
<i>P. pseudomuris</i>	lesser Japanese mole (Koizumi et al., 2012)
<i>Mastophorus muris</i>	field mouse (Sakata et al., 2007)
Superfamily Habronematoidea	
Family Tetrameridae	
<i>Actuarial skrjabini</i> .	Sparrow & gray starling (Sato et al., 2005)
<i>Tetrameres fissispina</i> .	anseriform bird (Yoshino et al., 2009)
Family Acuariidae	
<i>Synhimantus groffi</i>	waterfowl (Uchida et al., 2005)
<i>S. invaginatus</i>	waterfowl (Uchida et al., 2005)
<i>Stegophorus stellaepolaris</i>	short-tailed albatross (Iwaki et al., 2007)
<i>Echinuria uncinata</i>	anseriform bird (Yoshino et al., 2009)
Superfamily Filarioidea	
Family Filariidae	
<i>Cutifilaria</i> spp.	deer (Uni et al., 2004)
<i>Filaria</i> spp.	black wood pigeon (Hagiwara et al., 2006)
Family Onchosercidae	

表 1. (続) Table 1. (cont.)

<i>Onchocerca dewittei japonica</i>	wild boar (Uni et al., 2002; Fukuda et al., 2010, 2011)
<i>O. volvus</i>	wild boar & human (Fukuda et al., 2002; Takaoka et al., 2002, 2005)
<i>O. eberhardi</i>	wild boar (Takaoka et al., 2005)
<i>Dirofilaria</i> spp.	deer (Uni et al., 2008)
<i>D. immitis</i>	cat & human (Miura et al., 2002)
	human (Hirano et al., 2003)
	dog (Suzuki et al., 2002; Hidaka et al., 2004; Fukunaga et al., 2006; Takahashi et al., 2008)
	snow leopard (Murata et al., 2003)
	Humboldt penguin (Sano et al., 2006)
	raccoon dog (Kido et al., 2011)
	cat (Hayasaki et al., 2008)
	human (Mori et al., 2004; Miyoshi et al., 2007; Yoshikawa et al., 2008)
<i>Cercopithifilaria</i> spp.	Japanese serow (Suzuki et al., 2002)
	deer (Uni et al., 2003)
<i>Setaria mashalli</i>	calf (Oshita et al., 2003)
<i>S.</i> spp.	cow (Nakano et al., 2007)
<i>Sarconema eurycerca</i>	anseriform bird (Yoshino et al., 2009)
Superfamily Ascaridoidea	
Family Ascarididae	
<i>Ascaris suum</i>	pig (Kano., 2002; Kon et al., 2002; Kobayashi et al., 2010)
	pig & cow (Matsubayashi et al., 2009)
	pig & human (Arizona et al., 2011)
	human (Osoegawa et al., 2002; Sakakibara et al., 2002; Kim et al., 2003; Izumisawa et al., 2011)
<i>A. lumbricoids</i>	pig & human (Arizona et al., 2011)
	human (Yoshikawa et al., 2002)
<i>Porrocaecum angusticolle</i>	water fowl (Uchida et al., 2005)
<i>P. reticulatum</i>	water fowl (Uchida et al., 2005)
<i>P. semiteres</i>	starling (Onuma et al., 2012)
<i>Toxocara canis</i>	human (Akao et al., 2007)
	dog (Morishima et al., 2007; Itou et al., 2010, 2011; Asano et al., 2012)
<i>T. cati</i>	cat (Itou et al., 2012)
	human (Fukue et al., 2012)
<i>T.</i> sp.	mongoose (Ishibashi et al., 2011)
<i>Toxascaris leonina</i>	dog (Itou et al., 2011)
	cat (Itou et al., 2012)
<i>Baylisascaris procyonis</i>	rabbit (Sato et al., 2002, 2003; Furuoka et al., 2003)
	Japanese macaque (Sato et al., 2005)
<i>B. transfuga</i>	bear (Asakawa et al., 2006)
Family Anisakidae	
<i>Anisakis simplex</i>	dolphin (Kikuchi, 2002)
<i>A. pegreffii</i>	cetacean (Umehara, 2007)
<i>A.</i> spp. (larva)	human (Ishiguro et al., 2002; Sasaki et al., 2003; Makinodan et al., 2005; Saito et al., 2005; Ito et al., 2007; Omori et al., 2009; Miura et al., 2010)
<i>Contracaecum rudolphii</i>	cormorant (Barus et al., 2000)

表 1. (続) Table 1. (cont.)

	waterfowl (Uchida et al., 2005)
	anseriform bird (Yoshino et al., 2009)
<i>C. microcephalum</i>	waterfowl (Uchida et al., 2005)
<i>C. sp.</i>	cormorant (El-Dakhly et al., 2012)
<i>Pseudoterranova azarasi</i>	seal & human (Arizona et al., 2011)
Superfamily Cosmocercoidea	
Family Atractidae	
<i>Grassenema procaviae</i>	Cape hyrax (Saito et al., 2005)
Superfamily Heterakoidea	
Family Heterakidae	
<i>Heterakis isolonche</i>	Okinawa rail (Zhou et al., 2009; Onuma et al., 2012)
<i>H. gallinarum</i>	hazel grouse (Itou et al., 2012)
<i>H. spumosa</i>	field mouse (Sakata et al., 2007)
Suborder Tylenchina	
Superfamily Strongyloidea	
Family Strongyloidae	
<i>Strongyloides sp.</i>	Pallas's squirrel (Matsudate et al., 2003)
	dog & human (Takano et al., 2010)
	dog (Itou et al., 2011)
<i>S. planiceps</i>	cat (Ito et al., 2006)
<i>S. fulleborni</i>	Japanese macaque (Satayoshi et al., 2005, 2011)
<i>S. ransomi</i>	wild boar (Sato et al., 2008)
<i>S. stercoralis</i>	dog & human (Itoh et al., 2009, 2010)
<i>S. myopotami</i>	coypus (Asakawa et al., 2009)
<i>Parastrongyloides winchesi</i>	lesser Japanese mole (Koizumi et al., 2012)
Superfamily Cephaloidea	
Family Cephalobidae	
<i>Halicephalobus gingivalis</i>	pony (Akagami et al., 2008)
Suborder Rhabditina	
Superfamily Rhabditoidea	
Family Rhabditidae	
<i>Pelodera strongyloides</i>	human (Tanaka et al., 2005)
	field mouse (Sakata et al., 2007)
Superfamily Strongyloidea	
Family Strongylidae	
<i>Strongylus vulgaris</i>	horse (Oyamada et al., 2007)
<i>Oesophagostomum aculeatum.</i>	Japanese macaque (Macintosh et al., 2011)
<i>O. dentatum</i>	wild boar (Sato et al., 2008)
<i>O. watanabei</i>	wild boar (Sato et al., 2008)
<i>O. sp.</i>	pig (Kobayashi et al., 2010)
<i>Bourgelatia deducts</i>	wild boar (Sato et al., 2008)
<i>Stephanurus dentatus</i>	wild boar (Sato et al., 2008)
<i>Mammomonogamus auris</i>	cat & human (Tudor et al., 2009)
Family Ancylostomatidae	
<i>Ancylostoma duodenal</i>	human (Nakagawa et al., 2010)

<i>A. caninum</i>	dog (Itou et al., 2010; Asano et al., 2012)
<i>A. tubaeforme</i>	cat (Itou et al., 2012)
<i>A. malayanum</i>	brown bear (Asakawa et al., 2006)
<i>A. sp.</i>	Asian tapir (Ohtsuka et al., 2004)
<i>Globocephalus samoensis</i>	wild boar (Sato et al., 2008)
<i>G. samoensis</i>	wild boar (Sato et al., 2008)
<i>Uncinaria sp.</i>	mongoose (Ishibashi et al., 2011)
<i>Uncinaria spp.</i>	Tsushima leopard cat (Shimono et al., 2012)
Family Trichostrongylidae	
<i>Tricholinstowia talpae</i>	mole (Sakata et al., 2003; Koizumi et al., 2012)
<i>Heligmosomoides kurilensis</i>	field mouse (Sakata et al., 2006)
<i>Heligmonoides specious</i>	field mouse (Sakata et al., 2007)
<i>Amidostomum anseris</i>	anseriform bird (Yoshino et al., 2009)
<i>A. acutum</i>	anseriform bird (Yoshino et al., 2009, 2012)
<i>Epomidiostomum crami</i>	anseriform bird (Yoshino et al., 2009)
<i>E. uncinatum</i>	anseriform bird (Yoshino et al., 2009)
Family Metastrongylidae	
<i>Metastrongylus spp.</i>	pig & cow (Matsubayashi et al., 2009)
	wild boar (Morita et al., 2007; Sato et al., 2008)
<i>Protostrongylus shiozawai</i>	serow (Oyamada et al., 2003)
<i>Angiostrongylus cantonensis</i>	human (Toma et al., 2002)

あった。その背景として当該調査期間、寄生線虫学が活性化したのはほぼ間違いはないと考えられた。その背景に日本の獣医学が家畜家禽や愛玩動物のみならず、エキゾチックペット、特用家畜・家禽、動物園水族館の飼育動物あるいは野生動物をも対象にするようになった。そして、前世紀末あたりに日本で新興した野生動物医学の進展があり、その中心的な役割を果たしたのがWAMCであった（以上、小綿・浅川, 2023）。実際、本調査でも引用した全論文計105件中37件（35.2%）がWAMCを拠点あるいは間接的に関わったものであった点は、その証左の一つと解したい。しかし、この点は2012年以降になされた実績を対象にした解析を待つ必要がある。

おわりに

前世紀（100年間）と比較するに、わずか十分の一の期間で四分の一を超える寄生線虫の記録が認められ、かつ、うち35%以上がWAMC関連であったことから、本学が寄生線虫という側面で、野生動物医学分野で一定の貢献をしたことが推し量られた。今後は、2013年から2024年あるいはそれ以降までを対象にした継続的な文献調査と、現在、WAMCか

ら酪農学園大学のキャンパス内に移動・保存された未公表段階の試料の早急な公表化に努め、今後も寄生線虫学分野に貢献をしたい。

謝 辞

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要 旨

日本動物分類学関連学会連合による「日本産生物種数調査」の一環、すなわち、自然史(誌)という観点のみならず、動物/公衆衛生的な視点から、2001年から2012年までに刊行された日本産鳥獣類に寄生する線虫類(線虫症含)報告を基にその概要を提示した。また、その中で酪農学園大学野生動物医学センターを拠点になされた研究の位置付けを客観的に知る目的でその占有率を算出した。

Summary

An overview on parasitic nematodes and/or its diseases recorded between 2002 and 2012 in Japan was given, as not only one of the general surveys conducted by the Union of Taxonomy of Japan, viz., natural historical context, as but both animal and public health concerns, was given.