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A checklist of aquatic nematodes from Cuban Archipelago

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Abstract

The diversity of free-living aquatic nematodes is largely unknown for the Gulf of Mexico and Caribbean Sea. The Cuban Archipelago is an important part of this because of its large area and diversity of habitats. We analyzed the free-living nematodes from 83 sites from seven aquatic habitats around Cuba, to produce a checklist for many habitats, including seagrass meadows, coral degradation zones, algal turf, bare sands, unvegetated muds, freshwater and anchihaline caves, and deep-sea sediments. The checklist contains 469 species, 229 genera, 50 families, and 9 orders. Chromadorida, Enoplida, and Monhysterida were the best represented orders with 112, 100, and 83 species respectively. The most abundant species were *Euchromadora vulgaris*, *Terschellingia longicaudata*, *Desmodora pontica*, *Sabatieria pulchra* , and *Epsilonema* sp. Most of the listed species were new records for the region. There were differences in the number of species recorded in each habitat type, with seagrass meadows having 280 species, coral degradation zones having 139 species, deep waters having 116 species, algal turf having 114 species, bare sands having 100 species, unvegetated muds having 78 species, freshwater caves having 19 species, anchihaline caves having 16 species, and freshwater streams having 6 species. The checklist is the most comprehensive recent report of the diversity of free-living nematodes in the regions of Gulf of Mexico and Caribbean Sea. The reported diversity is higher than many other regional checklists likely reflecting the intense sampling effort and the variety of microhabitats in Cuban Archipelago.

Key words: taxonomy, inventory, diversity, Caribbean Sea, tropical

Introduction

Free-living nematodes constitute the most abundant phylum of Metazoa but their diversity is poorly known (Heip *et al*. 1985; Giere 2009). The number of valid described species for free-living marine nematodes is about 6900, which constitute only the 12% of the potential diversity (Appeltans *et al*. 2012). The documentation of the diversity of nematodes is challenging because the high diversity in terms of number of species, the small body size and the scarcity of morphological features for the identification, but the inventory of nematodes is important to document because the progressive loss of species and habitats due to the global change (Costello 2015). Knowledge of the number of species (species inventory) and its variation (β-diversity) is key to understanding the structure and functioning of communities and ecosystems. Furthermore, checklists of species summarizing species diversity constitute the basis of biogeographical hypotheses about taxa (Besteiro & Ayora 2017). Finally, species inventories are vital for making decisions in conservation and management programs (Gotelli 2004; Thomson *et al.* 2018).

The western tropical Atlantic region contains two important units, often treated together: the Caribbean Sea and the Gulf of Mexico (GoM). Only the GoM has an inventory of marine nematodes: it reported 190 species (Hope 2009). The Caribbean Sea lacks such an inventory. The Cuban Archipelago should contain a large fraction of the marine biodiversity of the Caribbean Sea region because of its large geographical area, its variety of habitats and the relatively high environmental quality of its ecosystems (Miloslavich *et al*. 2010). Therefore, a checklist for the whole archipelago should have a notable impact on knowledge of the nematode fauna diversity for the region.

Research on free-living nematodes from several habitats in the Cuban Archipelago has been reported in a series of papers detailing the ecology and diversity (e.g. Armenteros *et al*. 2009a; 2009b; 2012; 2014; Ruiz-Abierno

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& Armenteros 2017; Armenteros & Ruiz-Abierno 2015; Pérez-García *et al.* 2015; 2018; 2019). The only species checklist of nematodes for Cuba so far is the one by López-Cánovas & Pastor De Ward (2006) that reported 48 species from seagrass meadows in part of the Sabana-Camagüey Archipelago. Therefore, the objectives of this study were to summarize the species richness of the phylum and to provide a taxonomic list of all free-living nematodes reported from Cuban waters. This checklist is the most comprehensive synthesis of the diversity of nematodes for the inland and marine waters of Cuban Archipelago.

Materials and Methods

Data of nematode species assemblages from 83 sites representing different habitats and locations of the Cuban Archipelago were used for the preparation of this checklist (Fig. 1 and table 1). The sites corresponded with the following published works: Andrassy (1973) (Sites 1–22), López-Canovas & Pastor de Ward (2006) (Site 23, likely including a series of sampling points but exact locations were unavailable), Pérez-García *et al*. (2015) (Sites 24–29), Armenteros *et al*. (2009b) (Sites 36–41), Pérez-García *et al*. (2019) (Sites 42–47), Pérez-García *et al*. (2018) (Sites 30–35), Ruiz-Abierno & Armenteros (2017) (Sites 52–59). We have added species from other unpublished studies: Bay of Havana (Sites 48–51), seagrass meadows from various locations in Cuba (Sites 60–74), and deep-waters from the insular margin of northwestern Cuba (Sites 75–83).

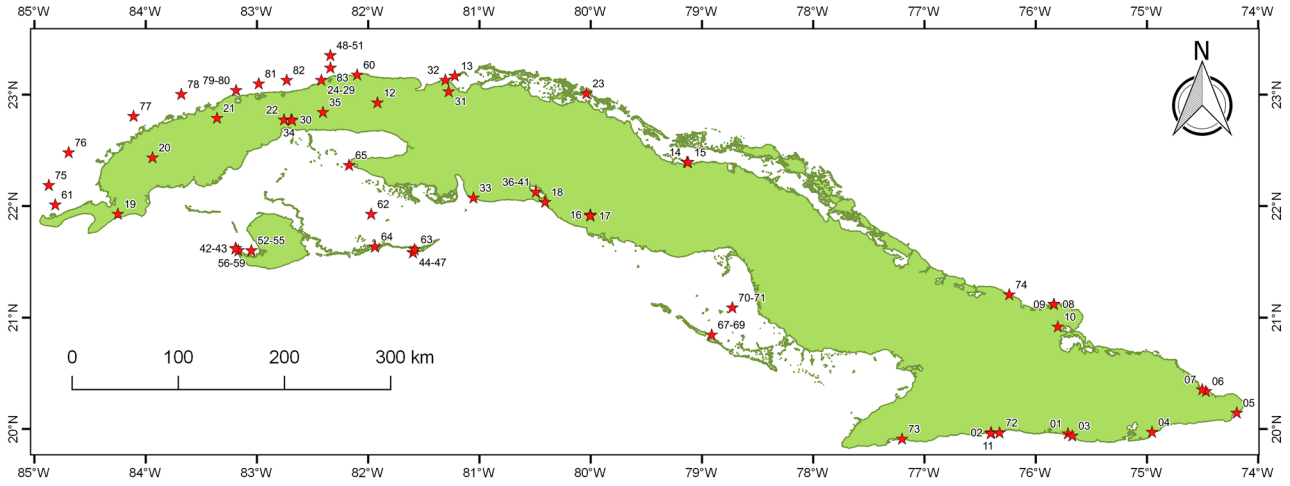

FIGURE 1. Map of the Cuban Archipelago indicating the studied sites.

The sampling sites usually included replicate samples (between three and 10) that were pooled. Sampling devices (multicorer, hand-held plastic corer, box corer) allowed for quantitative sampling (i.e. sampled area and volume were known); therefore abundance and spatial density of species was available as well in most cases. The processing and mounting of nematodes followed established techniques described elsewhere (e.g. Vincx 1996). Identifications were based on the pictorial keys by Platt and Warwick (1983; 1988), Warwick *et al*. (1998) and other taxonomic publications.

Scientific names and authorships were checked and updated using the WoRMS database (Bezerra *et al*. 2019) and published articles and monographs. The classification followed the phylogenetic scheme proposed by De Ley & Blaxter (2004). The term *sp*. was used for specimens, mostly in female or juvenile stages, identified beyond doubt as different from other congeneric species. In the checklist, species identified as *sp*. were included only when represented by two or more individuals so that intraspecific variability could be evaluated. An exception was made for deep-water collections because specimens are few, sampling is difficult and limited information is available, so all available specimens are included in the checklist.

Results and discussion

We identified 25,232 nematodes belonging to 469 species, 229 genera, 50 families, and nine orders. The orders

varied notably in the contribution to the total number of species (in parentheses): Chromadorida (112), Enoplida (100), Monhysterida (83), Desmodorida (78), Araeolaimida (39), Plectida (39), Desmoscolecida (10), Dorylaimida (6), and Mononchida (2). The top ten most abundant families were Chromadoridae, Desmodoridae, Linhomoeidae, Comesomatidae, Epsilonematidae, Xyalidae, Desmoscolecidae, Cyatholaimidae, Oncholaimidae, and Microlaimidae.

The species with the largest abundances (in parentheses the contribution to total abundance) were *Euchromadora vulgaris* (9%), *Terschellingia longicaudata* (6%), *Desmodora pontica* (6%), *Sabatieria pulchra* (5%), and *Epsilonema* sp. (4%). These species were usually characteristic of particular types of habitat. For instance, *E. vulgaris* and *Epsilonema* sp. were typical from coral reefs, *T. longicaudata* and *S. pulchra* were typical of unvegetated and/or polluted muds, and *D. pontica* was typical from seagrass meadows and bare sands.

There were 154 species (33%) indicated as "sp." because they could not be matched with known species and probably they represented a pool of undescribed species. Some speciose genera such as *Ceramonema, Daptonema, Desmodora, Halalaimus, Linhomoeus, Terschellingia,* and *Viscosia* probably included complexes of species that would require molecular data to discriminate among lineages.

The contribution by habitat type to the species list was also highly skewed with marine habitats being the most diverse (in parentheses the species richness): seagrass meadows (280), coral degradation zone (139), deep waters (116), algal turf (114), bare sands (100), unvegetated muds (78), freshwater caves (19), anchihaline caves (16), and freshwater streams (6). The occurrence of more than four hundred species in seagrass meadows and coral degradation zones indicated the importance of coral reefs as hot spots of biodiversity for meiofaunal groups (Ruiz-Abierno & Armenteros 2017). This large species richness was likely promoted by the high spatial heterogeneity that generates different microhabitats and high food availability (Armenteros *et al*. 2012; Pérez-García *et al*. 2019).

Nematode assemblages in Cuban waters showed a high species richness compared to other comparable inventories in tropical (e.g. Boufahja *et al.* 2014; Bhadury *et al*. 2015; Ansari & Bhadury 2017) and temperate regions (e.g. Greenslade 1989; Hope 2009; Besteiro & Ayora 2017). This may be explained by the larger sampling intensity (> 25,000 nematodes) and coverage of many different habitat types (nine) in our study.

Checklist of nematode species from Cuban Archipelago

PHYLUM NEMATODA Cobb, 1932

CLASS ENOPLEA Inglis, 1983

ORDER DORYLAIMIDA Pearse, 1942

Family Aporcelaimidae Heyns, 1965
Aporcelaimellus obtusicaudatus (Bastian, 1865) Altherr, 1968
Aporcelaimus spiralis (Cobb, 1893) Thorne & Swanger, 1936

Family Dorylaimidae de Man, 1876
Dorylaimus stagnalis Dujardin, 1845
Laimydorus pseudostagnalis (Micoletzky, 1927) Siddiqi, 1969
Mesodorylaimus tholocercus Andrássy, 1968

Family Qudsianematidae Jairajpuri, 1965
Allodorylaimus granuliferus (Cobb, 1893) Andrássy, 1986

ORDER ENOPLIDA Filipjev, 1929

Family Anoplostomatidae Gerlach & Riemann, 1974
Anoplostoma viviparum (Bastian, 1865) Bütschli, 1874
Anoplostoma sp.

Family Anticomidae Filipjev, 1918
Anticoma lata Cobb, 1898
Anticoma sp.
Anticoma trichura Cobb, 1898
Cephalanticoma chitwoodi (Inglis, 1964) Platonova, 1976
Cephalanticoma sp.
Paranticoma sp.

Family Enchelidiidae Filipjev, 1918
Bathyeurystomina sp.
Calyptronema acuminatum (Eberth, 1863) Wieser, 1953
Eurystomina minutisculae Chitwood, 1951
Eurystomina sp.
Eurystomina sudensis Inglis, 1964
Ledovitia sp.
Lyranema sp.
Pareurystomina acuminata (de Man, 1889) Gerlach, 1952
Pareurystomina sp.
Polygastrophora edax Wieser & Hopper, 1967
Polygastrophora maior Schulz, 1932
Polygastrophora sp.
Symplocostoma sp.
Symplocostoma tenuicolle (Eberth, 1863) Wieser, 1953

Family Enoplidae Dujardin, 1845
Enoplus sp.

Family Ironidae de Man, 1876
Ironus ignavus Bastian, 1865
Ironus luci Andrássy, 1956
Syringolaimus annae Coelho Lima, Lins, Da Silva & Esteves, 2009
Syringolaimus filicaudatus Vitiello, 1970
Syringolaimus striatocaudatus de Man, 1888
Thalassironus britannicus de Man, 1889
Thalassironus lynnae Keppner, 1987
Thalassironus sp.

Family Leptosomatidae Filipjev, 1916
Cylicolaimus magnus (Villot, 1875) de Man, 1889
Cylicolaimus sp.
Leptosomatum sp.
Platycoma cephalata (Cobb, 1894) Cheng, 2015
Proplatycoma sudafricana (Inglis, 1966) Platonova, 1976
Platycomopsis sp.
Synonchus fasciculatus Cobb, 1893
Synonchus sp.

Family Oncholaimidae Filipjev, 1916
Adoncholaimus sp.
Filoncholaimus prolatus Hopper, 1967
Meyersia major Hopper, 1967
Oncholaimellus sp.

Pontonema sp.
Prooncholaimus ornatus Kreis, 1932
Viscosia abyssorum (Allgén, 1933) Wieser, 1953
Viscosia glabra (Bastian, 1865) de Man, 1890
Viscosia langrunensis (de Man, 1890) Filipjev, 1918
Viscosia macramphida Chitwood, 1951
Viscosia papillatoides Chitwood, 1960
Viscosia sp.
Viscosia viscosa (Bastian, 1865) de Man, 1890

Family Oxystominidae Filipjev, 1918
Halalaimus anne Sergeeva, 1972
Halalaimus bulbocaudatus Keppner, 1992
Halalaimus cubanus Andrássy, 1973
Halalaimus curvicaudatus Juario, 1974
Halalaimus filicollis Timm, 1961
Halalaimus floridanus Keppner, 1992
Halalaimus gracilis de Man, 1888
Halalaimus meyersi Wieser & Hopper, 1967
Halalaimus monstrocaudatus Vitiello, 1970
Nemanema sp.
Oxystomina affinis Gerlach, 1956
Oxystomina sp.
Paroxystomina asymmetrica Micoletzky, 1924
Paroxystomina micoletzkyi Wieser, 1953
Thalassoalaimus tardus de Man, 1893
Thalassoalaimus sp.

Family Phanodermatidae Schuurmans Stekhoven, 1935
Crenopharynx marioni (Southern, 1914) Filipjev, 1934
Crenopharynx paralepturus (Schuurmans Stekhoven, 1950) Wieser, 1953
Crenopharynx sp.
Micoletzkyia elegans Ditlevsen, 1926
Micoletzkyia sp.
Phanoderma albidum Bastian, 1865
Phanoderma laticolle (Marion, 1870) Marion, 1875
Phanoderma serratum Ditlevsen, 1930
Phanoderma sp.
Phanoderma unicum Inglis, 1964
Phanodermella flagellicaudata Vitiello, 1970
Phanodermella sp.
Phanodermopsis longisetae Chitwood, 1936
Phanodermopsis sp.

Family Thoracostomopsidae Filipjev, 1927
Enoploides bisulcus Wieser & Hopper, 1967
Enoploides longicaudatus Wieser, 1953
Enoploides sp.
Enoplolaimus mus Inglis, 1964
Enoplolaimus regius Hopper, 1962
Enoplolaimus sp.
Epacanthion galeatum Boucher, 1977

Mesacanthion sp.
Mesacanthoides fibulatus Wieser & Hopper, 1967
Mesacanthoides psittacus Wieser & Hopper, 1967
Oxyonchus sp.
Paramesacanthion sp.
Trileptium otti Jensen & Gerlach, 1976
Trileptium salvadoriense Gerlach, 1955

Family Trefusiidae Gerlach, 1966
Trefusialaimus monorchis Riemann, 1974
Trefusialaimus sp.

Family Trischistomatidae Andrássy, 2007
Trischistoma monohystera (de Man, 1880) Schuurmans Stekhoven, 1951

Family Xenellidae De Coninck, 1965
Xennella cephalata Cobb, 1920

ORDER MONONCHIDA Jairajpuri, 1969

Family Mononchidae Filipjev, 1934
Miconchus thornei Mulvey & Jensen, 1967
Mononchus truncatus Bastian, 1865

CLASS CHROMADOREA Inglis, 1983

ORDER ARAEOLAIMIDA De Coninck & Schuurmans Stekhoven, 1933

Family Axonolaimidae De Coninck & Schuurmans Stekhoven, 1933
Odontophora bermudensis Jensen & Gerlach, 1976
Odontophora sp.
Parodontophora cobbi (Timm, 1952) Timm, 1963
Parodontophora sp.
Parodontophora xenotricha Boucher, 1973

Family Bodonematidae Jensen, 1991
Bodonema vossi Jensen, 1991

Family Comesomatidae Filipjev, 1918
Cervonema macramphis Jensen, 1979
Comesoma arenae Gerlach, 1956
Comesoma sp.
Dorylaimopsis pellucidum (Cobb, 1920) Jensen, 1979
Dorylaimopsis punctata Ditlevsen, 1918
Dorylaimopsis sp.
Hopperia muscatensis Warwick, 1973
Hopperia sp.
Laimella longicauda Cobb, 1920
Metacomesoma sp.
Paracomesoma dubium (Filipjev, 1918) Schuurmans Stekhoven, 1950

Paracomesoma hexasetosum (Chitwood, 1937) Schuurmans Stekhoven, 1950
Paracomesoma inaequale Jensen & Gerlach, 1977
Paracomesoma sipho (Gerlach, 1956) Jensen & Gerlach, 1977
Paracomesoma sp.
Pierrickia decasetosa Vitiello, 1970
Pierrickia sp.
Sabatieria armata Gerlach, 1952
Sabatieria praedatrix de Man, 1907
Sabatieria pulchra (Schneider, 1906) Riemann, 1970
Sabatieria sp.
Setosabatieria hilarula (de Man, 1922) Platt, 1985
Setosabatieria sp.
Vasostoma sp.

Family Diplopeltidae Filipjev 1918
Araeolaimus boomerangifer Wieser, 1959
Araeolaimus elegans de Man, 1888
Campylaimus sp.
Diplopeltis cirrhatus (Eberth, 1863) Cobb, 1891
Diplopeltula sp.
Intasia nojii (Jensen, 1991) Leduc, 2017
Pseudaraeolaimus sp.
Southerniella allometrica Vitiello, 1971
Southerniella sp.

ORDER CHROMADORIDA Chitwood, 1933

Family Chromadoridae Filipjev, 1917
Acantholaimus maks Gerlach, Schrage & Riemann, 1979
Acantholaimus megamphis Vivier, 1985
Actinonema longicaudatum (Chitwood, 1951) Wieser, 1954
Actinonema fidatum Vitiello, 1970
Actinonema pachydermatum Cobb, 1920
Chromadora brevipapillata Micoletzky, 1924
Chromadora macrolaimoides Steiner, 1915
Chromadora nudicapitata Bastian, 1865
Chromadorella filiformis (Bastian, 1865) Filipjev, 1918
Chromadorella macris (Gerlach, 1956) Lorenzen, 1972
Chromadorella sp.
Chromadorina sp.
Chromadorita sp.
Chromadorita tenuis (G. Schneider, 1906) Filipjev, 1922
Dichromadora amphidiscoides Kito, 1981
Dichromadora apapillata Timm, 1961
Dichromadora sp.
Endeolophos fossiferus (Wieser, 1954) Boucher, 1976
Endeolophos minutus (Gerlach, 1967) Boucher, 1976
Euchromadora atypica Blome, 1985
Euchromadora gaulica Inglis, 1962
Euchromadora sp.
Euchromadora vulgaris (Bastian, 1865) de Man, 1886

Graphonema sp.
Innocuonema asymmetricum Blome, 1985
Neochromadora nicolae Vincx, 1986
Neochromadora oshoroana Kito, 1981
Parapinnanema alii Murphy, 1965
Prochromadora sp.
Prochromadora trisupplementa Murphy, 1963
Prochromadorella ditlevseni (de Man, 1922) Wieser, 1954
Prochromadorella paramucrodonta (Allgén, 1929) Wieser, 1951
Prochromadorella salpingifera Blome, 1985
Ptycholaimellus pandispiculatus (Hopper, 1961) Wieser & Hopper, 1967
Ptycholaimellus Cobb, 1920
Rhips anoxybiotica Jensen, 1985
Rhips paraornata Platt & Zhang, 1982
Rhips sp.
Spiliphera dolichura de Man, 1893
Spiliphera sp.
Spilophorella candida Gerlach, 1951
Spilophorella paradoxa (de Man, 1888) Filipjev, 1917
Spilophorella sp.
Trochamus carinatus Boucher & de Bovée, 1971

Family Cyatholaimidae Filipjev, 1918
Acanthonchus cobbi Chitwood, 1951
Acanthonchus pugionatus Vitiello, 1970
Acanthonchus rostratus Wieser, 1959
Acanthonchus sp.
Acanthonchus viviparus Cobb, 1920
Cyatholaimus sp.
Longicyatholaimus capsulatus Vitiello, 1970
Longicyatholaimus egregius Hopper, 1972
Longicyatholaimus longicaudatus (de Man, 1876) Micoletzky, 1924
Longicyatholaimus sp.
Marylynnia annae (Wieser & Hopper, 1967) Hopper, 1977
Marylynnia eratos (Hopper, 1972) Hopper, 1977
Marylynnia johanseni Jensen, 1985
Marylynnia oculissoma (Hopper, 1972) Hopper, 1977
Marylynnia sp.
Metacyatholaimus chabaudi Gourbault, 1980
Metacyatholaimus effilatus de Bovée, 1974
Minolaimus sp.
Nannolaimoides sp.
Paracanthonchus austrospectabilis Wieser, 1954
Paracanthonchus breviseta (Schuurmans Stekhoven, 1950) Hope & Murphy, 1972
Paracanthonchus longicaudatus Warwick, 1971
Paracanthonchus perspicuus Kito, 1981
Paracanthonchus platypus Wieser & Hopper, 1967
Paracanthonchus sp.
Paracyatholaimoides multispiralis Gerlach, 1953
Paracyatholaimoides sp.
Paracyatholaimus botosaneanui Andrássy, 1973
Paracyatholaimus helicellus Wieser, 1954

Paracyatholaimus oistospiculoides (Allgén, 1935) Wieser, 1954
Paralongicyatholaimus macramphis Lorenzen, 1972
Paralongicyatholaimus sp.
Parapomponema hastatum Ott, 1972
Pomponema clavicaudatum (Schuurmans Stekhoven, 1935) Riemann, 1972
Pomponema concinnum (Wieser, 1954) Lorenzen, 1972
Pomponema sp.
Pomponema tesselatum Wieser & Hopper, 1967

Family Ethmolaimidae Lorenzen, 1981
Ethmolaimus sp.

Family Neotonchidae Lorenzen, 1981
Comesa warwicki (Platt, 1982) Gourbault & Vincx, 1992
Filitonchus ewensis Platt, 1982
Gomphionema typicum Wieser & Hopper, 1966
Nannolaimus phaleratus (Wieser & Hopper, 1966) Platt, 1982
Neotonchus sp.

Family Selachinematidae De Coninck, 1965
Cheironchus sp.
Cheironchus vorax Cobb, 1917
Choanolaimus psammophilus de Man, 1880
Demonema rapax Cobb, 1894
Demonema sp.
Gammanema sp.
Halichoanolaimus chordiurus Gerlach, 1955
Halichoanolaimus dolichurus Ssaweljev, 1912
Halichoanolaimus duodecimpapillatus Timm, 1954
Halichoanolaimus macrophallus Gourbault & Vincx, 1985
Halichoanolaimus quattuordecimpapillatus Chitwood, 1951
Halichoanolaimus sp.
Latronema annulatum (Gerlach, 1953) Wieser, 1954
Latronema sp.
Latronema spinosum Andrássy, 1973
Richtersia coomansi Soetaert & Vincx, 1987
Richtersia sp.
Synonchiella hopperi Ott, 1972
Synonchiella micramphis (Schuurmans Stekhoven, 1950) Gerlach, 1964
Synonchiella riemanni Warwick, 1970
Synonchiella sp.
Synonchium obtusum Cobb, 1920
Synonchium sp.

ORDER DESMODORIDA De Coninck, 1965

Family Aponchiidae Gerlach, 1963
Aponchium cylindricolle Cobb, 1920
Aponchium sp.
Synonema ochrum (Chitwood, 1951) Wieser, 1954
Synonema sp.

Family Desmodoridae Filipjev, 1922

Acanthopharynx denticulata Wieser, 1954
Acanthopharynx micans Eberth, 1863
Acanthopharynx rigida Schuurmans Stekhoven, 1950
Bolbonema sp.
Chromaspirina inglisi Warwick, 1970
Chromaspirina sp.
Croconema cinctum Cobb, 1920
Croconema mawsoni Inglis, 1968
Croconema otti Gourbault & Vincx, 1990
Croconema sp.
Desmodora communis (Bütschli, 1874) de Man, 1889
Desmodora deconincki Inglis, 1968
Desmodora pilosa Ditlevsen, 1926
Desmodora pontica Filipjev, 1922
Desmodora scaldensis de Man, 1889
Desmodora sp.
Desmodora varioannulata (Kreis, 1928) Verschelde, Gourbault & Vincx, 1998
Desmodorella balteata Verschelde, Gourbault & Vincx, 1998
Desmodorella tenuispiculum (Allgén, 1928) Cobb, 1933
Eubostrichus hopperi Muthumbi, Verschelde & Vincx, 1995
Eubostrichus parasitiferus Chitwood, 1936
Eubostrichus sp.
Laxus cosmopolitus Ott, 1995
Laxus parvum Armenteros, Ruiz-Abierno & Decraemer, 2014
Laxus sp.
Leptonemella brevipharynx Armenteros, Ruiz-Abierno & Decraemer, 2014
Leptonemella cincta Cobb, 1920
Leptonemella sigma Gerlach, 1963
Metachromadora meridiana Wieser & Hopper, 1967
Metachromadora pulvinata Wieser & Hopper, 1967
Metachromadora serrata Gerlach, 1963
Metachromadora sp.
Molgolaimus cuanensis (Platt, 1973) Jensen, 1978
Paradesmodora campbelli (Allgén, 1932) Gerlach, 1963
Paradesmodora immersa Wieser, 1954
Paradesmodora punctata Gerlach, 1963
Perspiria sp.
Robbea porosum (Hopper & Cefalu, 1973) Tchesunov, 2013
Robbea sp.
Robbea tenax Gerlach, 1963
Perspiria hamata Wieser & Hopper, 1967
Spirinia inaurita (Wieser & Hopper, 1967) Leduc & Verschelde, 2015
Spirinia parasitifera (Bastian, 1865) Gerlach, 1963
Spirinia sp.
Stilbonema annulatum Gerlach, 1963
Stilbonema brevicolle Cobb, 1920
Stygodesmodora sp.
Zalonema ditlevseni (Micoletzky, 1922) Gerlach, 1963
Zalonema maldivensis (Gerlach, 1963) Verschelde, Gourbault & Vincx, 1998
Zalonema megalosoma (Steiner, 1918) Gerlach, 1963

Family Draconematidae Steiner, 1930
Apenodraconema chlidosis Allen & Noffsinger, 1978
Draconema sp.
Paradraconema sp.
Prochaetosoma sp.

Family Epsilonematidae Steiner, 1927
Bathyepsilonema sp.
Epsilonema sp.
Glochinema sp.
Leptepsilonema richardi Verschelde & Vincx, 1992
Leptepsilonema sp.
Metepsilonema sp.
Pternepsilonema sp.

Family Microlaimidae De Coninck & Schuurmans Stekhoven, 1933
Aponema sp.
Aponema torosum (Lorenzen, 1973) Jensen, 1978
Bolbolaimus riemanni (Riemann, 1966) Jensen, 1978
Bolbolaimus sp.
Calomicrolaimus sp.
Microlaimus cyatholaimoides de Man, 1922
Microlaimus sp.
Spirobolbolaimus bathyalis Soetaert & Vincx, 1988

Family Monoposthiidae De Coninck, 1965
Monoposthia mirabilis Schulz, 1932
Monoposthioides mayri Wieser & Hopper, 1967
Nudora gerlachi Andrássy, 1973
Rhinema retrorsum Cobb, 1920
Rhinema sp.

ORDER DESMOSCOLECIDA Filipjev, 1929

Family Cyartonematidae Tchesunov, 1990
Cyartonema germanicum Juario, 1972

Family Desmoscolecidae Shipley, 1896
Desmoscolex sp.
Greeffiella dasyura Cobb, 1922
Greeffiella sp.
Pareudesmoscolex sp.
Protricoma sp.
Quadricoma sp.
Tricoma fisheri Timm, 1970
Tricoma similis Cobb, 1912
Tricoma sp.

ORDER MONHYSTERIDA Filipjev, 1929

Family Linhomoeidae Filipjev, 1922
Desmolaimus brasiliensis Gerlach, 1963
Desmolaimus sp.
Didelta maculatum Cobb, 1920
Didelta scutatum Wieser, 1956
Didelta scutellatum Vitiello, 1969
Didelta sp.
Disconema longicaudatum Vitiello, 1969
Disconema sp.
Disconema suecicum Allgén, 1935
Eleutherolaimus sp.
Linhomoeus dolichocaudatus Gerlach, 1963
Linhomoeus dolichurus Allgén, 1959
Linhomoeus elongatus Bastian, 1865
Linhomoeus lepturus de Man, 1907
Linhomoeus paralongicaudatus (Allgén, 1934) Wieser, 1956
Linhomoeus sp.
Megadesmolaimus sp.
Megadesmolaimus uncinatus Gerlach, 1963
Metalinhomoeus biformis Juario, 1974
Metalinhomoeus effilatus Schuurmans Stekhoven, 1942
Metalinhomoeus flagellicaudatus Schuurmans Stekhoven, 1935
Metalinhomoeus sp.
Metalinhomoeus variabilis Murphy, 1965
Monhysteroides bulbiferus Timm, 1961
Monhysteroides macramphidus Timm, 1961
Pseudoterschellingia ibarrae Armenteros, Vincx & Decraemer, 2009
Terschellingia communis de Man, 1888
Terschellingia gourbaultae Austen, 1989
Terschellingia longicaudata de Man, 1907
Terschellingia sp.

Family Monhysteridae de Man, 1876
Diplolaimelloides sp.
Geomonhystera sp.
Monhystrella sp.

Family Siphonolaimidae Chitwood, 1937
Astomonema sp.
Siphonolaimus sp.

Family Sphaerolaimidae Filipjev, 1918
Doliolaimus sp.
Metasphaerolaimus crassicauda (Freudenhammer, 1975) Gourbault & Boucher, 1981
Metasphaerolaimus sp.
Sphaerolaimus macrocirculus Filipjev, 1918
Sphaerolaimus maeoticus Filipjev, 1922
Sphaerolaimus sp.

Family Xyalidae Chitwood, 1951

Ammotheristus sp.
Amphimonhystera Allgén, 1929
Amphimonhystrella megastoma Timm, 1961
Cienfuegia cachoi Armenteros, Vincx & Decraemer, 2009
Cobbia caledonia Warwick & Platt, 1973
Cobbia sp.
Daptonema erectum (Wieser & Hopper, 1967) Lorenzen, 1977
Daptonema fistulatum (Wieser & Hopper, 1967) Lorenzen, 1977
Daptonema floridanum (Wieser & Hopper, 1967) Tchesunov, 1990
Daptonema longicaudatum (Filipjev, 1922) Lorenzen, 1977
Daptonema longissimecaudatum (Kreis, 1935) Lorenzen, 1977
Daptonema normandicum (de Man, 1890) Lorenzen, 1977
Daptonema ostentator Wieser & Hopper, 1967
Daptonema oxycerca (de Man, 1888) Lorenzen, 1977
Daptonema proprium (Lorenzen, 1972) Lorenzen, 1977
Daptonema sp.
Daptonema tortum (Wieser & Hopper, 1967) Lorenzen, 1977
Elzalia floresi Gerlach, 1957
Elzalia sp.
Enchonema umbrosum Bussau, 1993
Gnomoxyala sp.
Linhystera problematica Juario, 1974
Linhystera sp.
Manganonema sp.
Metadesmolaimus caniculus (Wieser & Hopper, 1967) Gerlach & Riemann, 1973
Metadesmolaimus coronatus Schuurmans Stekhoven, 1950
Metadesmolaimus sp.
Paramonohystera levicula (Lorenzen, 1973) Lorenzen, 1977
Paramonohystera proteus Wieser, 1956
Promonhystera faber Wieser, 1956
Promonhystera sp.
Retrotheristus breviseta (Juario, 1974) Lorenzen, 1977
Scaptrella cincta Cobb, 1917
Steineria ampullacea Wieser & Hopper, 1967
Steineria sp.
Steineria sterreri Ott, 1977
Stylotheristus mutilus (Lorenzen, 1973) Lorenzen, 1977
Stylotheristus sp.
Theristus copulatus Jensen, 1986
Theristus ensifer Gerlach, 1951
Theristus otoplanobius Gerlach, 1951
Theristus sp.
Xenolaimus striatus Cobb, 1920
Xyala sp.

ORDER PLECTIDA Gadea, 1973

Family Aegialoalaimidae Lorenzen, 1981

Aegialoalaimus sp.

Family Aphanolaimidae Chitwood, 1936
Anonchus millelacunatus (Andrássy, 1973) Holovachov, Zullini, Loof & Bongers, 2002
Aphanolaimus sp.

Family Camacolaimidae De Coninck & Schuurmans Stekhoven, 1933
Dagda bipapillata Southern, 1914
Deontolaimus longicauda (de Man, 1922) Holovachov & Boström, 2015
Deontolaimus sp.
Onchium sp.

Family Ceramonematidae Cobb, 1933
Ceramonema attenuatum Cobb, 1920
Ceramonema carinatum Wieser, 1959
Ceramonema filipjevi De Coninck, 1942
Ceramonema racovitzai Andrássy, 1973
Ceramonema reticulatum Chitwood, 1936
Ceramonema rhombus Andrássy, 1973
Ceramonema sp.
Ceramonema yunfengi Platt & Zhang, 1982
Dasynemoides sp.
Metadasynemella cassidiniensis Vitiello & Haspeslagh, 1972
Metadasynemella falciphalla Vitiello & Haspeslagh, 1972
Metadasynemella sp.
Pselionema annulatum (Filipjev, 1922) Schuurmans Stekhoven, 1942
Pselionema beauforti Chitwood, 1936
Pselionema simile De Coninck, 1942
Pselionema sp.

Family Chronogasteridae Gagarin, 1975
Caribplectus magdalenae (Riemann, 1970) Andrássy, 1973
Cynura cerambus Andrássy, 1973

Family Diplopeltoididae Tchesunov, 1990
Diplopeltoides sp.

Family Haliplectidae Chitwood, 1951
Haliplectus bickneri Chitwood, 1956
Haliplectus brevispiculatus Andrássy, 1973
Haliplectus sp.
Setoplectus procerovisceralis Andrássy, 1973
Setoplectus sp.

Family Leptolaimidae Oerley, 1880
Leptolaimus acicula Lorenzen, 1966
Leptolaimus danicus Jensen, 1978
Leptolaimus papilliger de Man, 1876

Family Paramicrolaimidae Lorenzen, 1981
Microlaimus lunatus (Wieser & Hopper, 1967) Jensen, 1978
Paramicrolaimus sp.

Family Rhadinematidae Lorenzen, 1981
Cricolaimus elongatus Southern, 1914

Family Tarvaiidae Lorenzen, 1981

Tarvaia sp.

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TABLE 1. List of the sites and associated information used for the checklist of nematodes.

No.	Site name	Code	Latitude (N)	Longitude (W)	Depth (m)	Habitat	Reference
1	Station 1—Cueva Majaes	A_1	19 57.39	-75 42.57	-	Freshwater cave	Andrassy (1973)
2	Station 4—Boca del Caballo	A_4	19 58.01	-76 24.01	1	Bare sand	Andrassy (1973)
3	Station 6—Playa Juragua	A_6	19 56.23	-75 40.23	1	Bare sand	Andrassy (1973)
4	Station 9—Playa Yateritas	A_9	19 58.22	-74 57.21	-	Bare sand	Andrassy (1973)
5	Station 10—Cueva La Patana	A_10	20 08.60	-74 11.52	-	Freshwater cave	Andrassy (1973)
6	Station 12—Río Miel	A_12	20 20.26	-74 28.18	-	Freshwater stream	Andrassy (1973)
7	Station 13—Playa Baracoa	A_13	20 21.15	-74 30.13	-	Bare sand	Andrassy (1973)
8	Station 15—Playa Guardalavaca	A_15	21 07.20	-75 50.17	-	Bare sand	Andrassy (1973)
9	Station 16—Guardalavaca	A_16	21 07.10	-75 50.11	-	Bare sand	Andrassy (1973)
10	Station 17—Las cuatrocientas rosas	A_17	20 55.00	-75 48.00	-	Freshwater cave	Andrassy (1973)
11	Station 20—Playa Sevilla	A_20	19 57.51	-76 24.22	-	Bare sand	Andrassy (1973)
12	Station 21—Cueva El Mudo	A_21	22 55.59	-81 55.00	-	Freshwater cave	Andrassy (1973)
13	Station 25—Playa Varadero	A_25	23 10.04	-81 13.26	-	Bare sand	Andrassy (1973)
14	Station 34—Cueva de los Animales de Cayo Caguanes	A_34	22 23.52	-79 08.00	-	Freshwater cave	Andrassy (1973)
15	Station 36—Cueva Grande de Cayo Caguanes	A_36	22 23.46	-79 07.46	-	Freshwater cave	Andrassy (1973)
16	Station 37—Río Caburní	A_37	21 55.17	-80 00.17	-	Freshwater stream	Andrassy (1973)
17	Station 41—Río Chorrito	A_41	21 54.57	-80 00.21	-	Freshwater stream	Andrassy (1973)

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TABLE 1. (Continued)

No.	Site name	Code	Latitude (N)	Longitude (W)	Depth (m)	Habitat	Reference
18	Station 42—Playa Rancho Luna	A_42	22 02.02	-80 24.58	-	Bare sand	Andrassy (1973)
19	Station 43—Cueva del Jaguey	A_43	21 55.59	-84 15.00	-	Freshwater cave	Andrassy (1973)
20	Station 45—Cueva de Pio Domingo	A_45	22 26.00	-83 56.30	-	Freshwater cave	Andrassy (1973)
21	Station 47—Cueva del Abono	A_47	22 47.27	-83 21.53	-	Freshwater cave	Andrassy (1973)
22	Station 50—Cueva de Los Perez	A_50	22 46.37	-82 45.36	-	Freshwater cave	Andrassy (1973)
23	Sabana Camaguey	S_C	23 00.57	-80 02.27	-	Seagrass meadow	López-Canovas & Pastor de Ward (2006)
24	Calle 16—Lobophora	C16_Lob	23 07.73	-82 25.24	9-21	Algal turf	Pérez-García *et al*. (2015)
25	Calle 16—Dictyopteris	C16_Dic	23 07.73	-82 25.24	9-21	Algal turf	Pérez-García *et al*. (2015)
26	Calle 16—Amphiroa	C16_Amp	23 07.73	-82 25.24	9-21	Algal turf	Pérez-García *et al*. (2015)
27	Calle 16—Bryothammion sp. 1	C16_Bry1	23 07.73	-82 25.24	9-21	Algal turf	Pérez-García *et al*. (2015)
28	Calle 16—Bryothammion sp. 2	C16_Bry2	23 07.73	-82 25.24	9-21	Algal turf	Pérez-García *et al*. (2015)
29	Calle 16—Halimeda	C16_Hal	23 07.73	-82 25.24	9-21	Algal turf	Pérez-García *et al*. (2015)
30	Cueva Emilio	C_Emi	22 46.43	-82 41.52	-	Freshwater cave	Pérez-García *et al*. (2018)
31	Cueva El Agua	C_Agu	23 01.59	-81 16.59	-	Freshwater cave	Pérez-García *et al*. (2018)
32	Cueva Saturno	C_Sat	23 07.84	-81 18.36	-	Freshwater cave	Pérez-García *et al*. (2018)
33	Cueva El Brinco	C_Bri	22 04.32	-81 03.22	-	Anchialine cave	Pérez-García *et al*. (2018)
34	Cueva El Sitio	C_Sit	22 46.12	-82 41.05	-	Freshwater cave	Pérez-García *et al*. (2018)
35	Cueva El Tunel	C_Tun	22 50.43	-82 24.39	-	Freshwater cave	Pérez-García *et al*. (2018)
36	Cienfuegos Bay—Station 5	CB_5	22 07.48	-80 29.55	12	Unvegetated mud	Armenteros *et al*. (2009)
37	Cienfuegos Bay—Station 7a	CB_7a	22 10.09	-80 30.47	10	Unvegetated mud	Armenteros *et al*. (2009)
38	Cienfuegos Bay—Station 10	CB_10	22 09.19	-80 27.16	5	Unvegetated mud	Armenteros *et al*. (2009)
39	Cienfuegos Bay—Station 12	CB_12	22 07.55	-80 27.23	9	Unvegetated mud	Armenteros *et al*. (2009)
40	Cienfuegos Bay—Station 12a	CB_12a	22 07.55	-80 27.23	5	Unvegetated mud	Armenteros *et al*. (2009)
41	Cienfuegos Bay—Station 15	CB_15	22 05.33	-80 26.00	14	Unvegetated mud	Armenteros *et al*. (2009)

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TABLE 1. (Continued)

No.	Site name	Code	Latitude (N)	Longitude (W)	Depth (m)	Habitat	Reference
42	Punta Francés	P1	21 37.13	-83 11.40	2-4	Coral rubble	Pérez-García *et al*. (2019)
43	Punta Francés	P2	21 35.80	-83 10.36	2-4	Coral rubble	Pérez-García *et al*. (2019)
44	Ballenatos	B1	21 34.71	-81 38.41	2-6	Coral rubble	Pérez-García *et al*. (2019)
45	Ballenatos	B2	21 35.03	-81 37.23	2-6	Coral rubble	Pérez-García *et al*. (2019)
46	Ballenatos	B3	21 34.96	-81 35.84	2-6	Coral rubble	Pérez-García *et al*. (2019)
47	Ballenatos	B4	21 35.20	-81 34.72	2-6	Coral rubble	Pérez-García *et al*. (2019)
48	Centro	C	23 21.10	-82 20.38	12	Unvegetated mud	Pérez-García *et al*. (in prep)
49	Marimelena	M	23 08.07	-82 20.08	12	Unvegetated mud	Pérez-García *et al*. (in prep)
50	Guasabacoa	G	23 07.23	-82 20.34	9	Unvegetated mud	Pérez-García *et al*. (in prep)
51	Atares	A	23 07.23	-82 21.18	10	Unvegetated mud	Pérez-García *et al*. (in prep)
52	Punta Francés	PF_SM	21 36.00	-83 03.00	2	Seagrass meadow	Ruiz-Abierno & Armenteros (2017)
53	Punta Francés	PF_BS	21 36.00	-83 03.00	3	Bare sand	Ruiz-Abierno & Armenteros (2017)
54	Punta Francés	PF_CR	21 36.00	-83 03.00	2	Coral rubble	Ruiz-Abierno & Armenteros (2017)
55	Punta Francés	PF_AT	21 36.00	-83 03.00	2	Algal turf	Ruiz-Abierno & Armenteros (2017)
56	Cabezo de Moya	CM_SM	21 36.00	-83 10.00	2	Seagrass meadow	Ruiz-Abierno & Armenteros (2017)
57	Cabezo de Moya	CM_BS	21 36.00	-83 10.00	3	Bare sand	Ruiz-Abierno & Armenteros (2017)
58	Cabezo de Moya	CM_CR	21 36.00	-83 10.00	2	Coral rubble	Ruiz-Abierno & Armenteros (2017)
59	Cabezo de Moya	CM_AT	21 36.00	-83 10.00	2	Algal turf	Ruiz-Abierno & Armenteros (2017)
60	Rincón de Guanabo	RG	23 10.62	-82 05.95	2	Seagrass meadow	Pérez-García *et al*. (in prep.)
61	G. Guanahacabibes—Pasto Occidental	GG_14	22 00.58	-84 48.78	5	Seagrass meadow	Pérez-García *et al*. (in prep.)
62	G. Batabanó—Norte de Cayo Traviesa	GB_NT	21 55.56	-81 58.35	5	Seagrass meadow	Pérez-García *et al*. (in prep.)
63	G. Batabanó—Canal de Cayo Largo	GB_CA	21 36.52	-81 34.95	3	Seagrass meadow	Pérez-García *et al*. (in prep.)
64	G. Batabanó—Pasa de Cayo Rosario	GB_CR	21 38.03	-81 56.34	1	Seagrass meadow	Pérez-García *et al*. (in prep.)
65	G. Batabanó—Punta Gorda	GB_PG	22 21.90	-82 10.30	3	Seagrass meadow	Pérez-García *et al*. (in prep.)

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TABLE 1. (Continued)

No.	Site name	Code	Latitude (N)	Longitude (W)	Depth (m)	Habitat	Reference
66	G. Batabanó—Punta Francés	GB_PF	21 37.00	-83 11.59	2	Seagrass meadow	Pérez-García *et al*. (in prep.)
67	G. Ana María—N de Cayo Anclitas	GA_NA	20 50.67	-78 54.75	3	Seagrass meadow	Pérez-García *et al*. (in prep.)
68	G. Ana María—N de Cayo Caballones	GA_NC	20 52.51	-78 58.18	2	Seagrass meadow	Pérez-García *et al*. (in prep.)
69	G. Ana María—Patana	GA_PA	20 48.86	-78 52.98	3	Seagrass meadow	Pérez-García *et al*. (in prep.)
70	G. Ana María—S de Cayo Algodón Grande	GA_AGS	21 05.29	-78 43.59	2	Seagrass meadow	Pérez-García *et al*. (in prep.)
71	G. Ana María—N de Cayo Algodón Grande	GA_AGN	21 06.34	-78 43.21	2	Seagrass meadow	Pérez-García *et al*. (in prep.)
72	Oriente S—Sierra Mar	OS_SM	19 57.90	-76 19.47	1	Seagrass meadow	Pérez-García *et al*. (in prep.)
73	Oriente S—Farallon	OS_F	19 54.57	-77 12.04	1	Seagrass meadow	Pérez-García *et al*. (in prep.)
74	Oriente N—Playa Caletones	ON	21 12.32	-76 14.20	1	Seagrass meadow	Pérez-García *et al*. (in prep.)
75	Cabo de San Antonio	WB 37-500	22 11.09	-84 52.24	1209	Deep water	Armenteros *et al*. (in prep)
76	Mantua	WB 38-750	22 28.73	-84 41.56	1670	Deep water	Armenteros *et al*. (in prep)
77	Cayo Jutía	WB 39-750	22 48.32	-84 06.53	1296	Deep water	Armenteros *et al*. (in prep)
78	Cayo Levisa	WB 40-750	23 00.15	-83 40.77	1580	Deep water	Armenteros *et al*. (in prep)
79	Bahía Honda B	WB 41-500	23 02.26	-83 11.24	974	Deep water	Armenteros *et al*. (in prep)
80	Bahía Honda A	WB 41-750	23 05.13	-83 11.82	1513	Deep water	Armenteros *et al*. (in prep)
81	Bahía Cabañas	WB 42-750	23 05.84	-82 59.03	1420	Deep water	Armenteros *et al*. (in prep)
82	Bahía Mariel	WB 43-750	23 07.73	-82 43.91	1535	Deep water	Armenteros *et al*. (in prep)
83	Bahía Habana	WB 44-750	23 14.37	-82 20.35	1430	Deep water	Armenteros *et al*. (in prep)

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