**Supplementary Material 1:** List of the valid genera and species of Cyatholaimidae. The type species of each genus are underlined.

**Class Chromadorea Inglis, 1983**

**Order Chromadorida Chitwood 1933**

**Family Cyatholaimidae Filipjev, 1918**

**Genus *Acanthonchus* Cobb, 1920**

*Acanthonchus* (*Acanthonchus*) *arcuatus* (Kreis, 1926) Wieser, 1955

*Acanthonchus* (*Acanthonchus*) *cobbi* Chitwood, 1951

*Acanthonchus* (*Acanthonchus*) *duplicatus* Wieser, 1959

*Acanthonchus* (*Acanthonchus*) *setoi* Wieser, 1955

*Acanthonchus* (*Acanthonchus*) *viviparus* Cobb, 1920

*Acanthonchus* (*Seuratiella*) *gracilis* (Ditlevsen, 1919) Wieser, 1955

*Acanthonchus* (*Seuratiella*) *pugionatus* Vitiello, 1970

*Acanthonchus* (*Seuratiella*) *rostratus* Wieser, 1959

*Acanthonchus* (*Seuratiella*) *singaporensis* Cheng-Ann, Nguyen Dinh Tu & Smol, 2015

*Acanthonchus* (*Seuratiella*) *tridentatus* Kito, 1976

**Genus *Biarmifer* Wieser, 1954**

*Biarmifer cochleatus* Wieser, 1954

*Biarmifer dayi* (Inglis, 1963) **comb. n.**

syn. *Marylynnia dayi* (Inglis, 1963) Hopper, 1977

*Biarmifer hopperi* (Sharma & Vincx, 1982) **comb. n.**

syn.*Marylynnia hopperi* Sharma & Vincx, 1982

*Biarmifer laminatus* Wieser, 1954

*Biarmifer madrynensis* Pastor de Ward, 2001

*Biarmifer punctata* (Jensen, 1985) **comb. n.**

syn. *Marylynnia punctata* Jensen, 1985

**Genus *Craspodema* Gerlach, 1956**

*Craspodema octogoniata* (Gerlach, 1954) Gerlach, 1956

*Craspodema reflectans* Gerlach, 1964

**Genus *Cyatholaimus* Bastian, 1865**

*Cyatholaimus cirolanae* Adamson & Marcogliese, 1994

*Cyatholaimus gracilis* (Eberth, 1863) Bastian, 1865

*Cyatholaimus microsetosus* Wieser, 1954

*Cyatholaimus minor* Gagarin, 2012

*Cyatholaimus ocellatus* Bastian, 1865

*Cyatholaimus papilliferus* Allgén, 1929

*Cyatholaimus prinzi* (Marion, 1870) Inglis, 1961

*Cyatholaimus scarratti* Inglis, 1961

*Cyatholaimus simulatus* Kreis, 1924

**Genus *Cyathoshiva* Datta, Miljutin, Chakraborty & Mohapatra, 2016**

*Cyathoshiva amaleshi* Datta, Miljutin, Chakraborty & Mohapatra, 2016

**Genus *Isacanthonchus* Gagarin & Nguyen Vu Thanh, 2008**

*Isacanthonchus obesus* Gagarin & Nguyen Vu Thanh, 2008

**Genus *Longicyatholaimus* Micoletzky, 1924**

*Longicyatholaimus cervoides* Vitiello, 1970

*Longicyatholaimus continus* Filipjev, 1946

*Longicyatholaimus egregius* Hopper, 1972

*Longicyatholaimus falcatus* Vitiello, 1971

*Longicyatholaimus longicaudatus* (de Man, 1876) Micoletzky, 1924

*Longicyatholaimus maldivarum* Gerlach, 1964

*Longicyatholaimus marilynae* Hopper, 1972

*Longicyatholaimus minor* (Cobb, 1898) Micoletzky, 1924

*Longicyatholaimus orientalis* Gagarin & Nguyen Vu Thanh, 2015

*Longicyatholaimus subtenuis* Gagarin & Nguyen Vu Thanh, 2007

*Longicyatholaimus trichocauda* Gerlach, 1955

*Longicyatholaimus trichurus* (Cobb, 1898) Micoletzky, 1924

**Genus *Marylynnia* (Hopper, 1972) Hopper, 1977**

*Marylynnia annae* (Wieser & Hopper, 1967) Hopper, 1977

*Marylynnia bellula* (Vitiello, 1970) Hopper, 1977

*Marylynnia choanolaimoides* (Schuurmans Stekhoven, 1942) Hopper, 1977

*Marylynnia complexa* (Warwick, 1971) Hopper, 1977

*Marylynnia dubia* (Filipjev, 1946) Hopper, 1977

*Marylynnia effilata* (Schuurmans Stekhoven, 1946) Hopper, 1977

*Marylynnia eratos* (Hopper, 1972) Hopper, 1977

*Marylynnia gerlachi* (Hopper, 1972) Hopper, 1977

*Marylynnia gracila* Huang & Xu, 2013

*Marylynnia johanseni* Jensen, 1985

*Marylynnia macrodentata* (Wieser, 1959) Hopper, 1977

*Marylynnia mulsa* (Hopper, 1972) Hopper, 1977

*Marylynnia musharafii* Nasira, Kamran & Shahina, 2007

*Marylynnia oculissoma* (Hopper, 1972) Hopper, 1977

*Marylynnia preclara* (Hopper, 1972) Hopper, 1977

*Marylynnia puncticaudata* Boufahja & Beyrem, 2014

*Marylynnia stekhoveni* (Wieser, 1954) Hopper, 1977

*Marylynnia wieseri* (Inglis, 1963) Hopper, 1977

**Genus *Metacyatholaimus* Schuurmans Stekhoven, 1942**

*Metacyatholaimus adriaticus* Vidakovic, Travizi & Boucher, 2003

*Metacyatholaimus brevicollis* (Cobb, 1898) Gerlach, 1964

*Metacyatholaimus chabaudi* Gourbault, 1980

*Metacyatholaimus cylindribucca* (Schuurmans Stekhoven, 1950) Wieser, 1954

*Metacyatholaimus delicatus* Leduc & Zhao, 2016

*Metacyatholaimus effilatus* de Bovee, 1973

*Metacyatholaimus hirschi* Schuurmans Stekhoven, 1942

*Metacyatholaimus papillatus* Vidakovic, Travizi & Boucher, 2003

*Metacyatholaimus spatiosus* Wieser, 1954

**Genus *Nannolaimoides* Ott, 1972**

*Nannolaimoides armatus* (Gerlach, 1964) Ott, 1972

*Nannolaimoides decoratus* Ott, 1972

*Nannolaimoides effilatus* (Boucher, 1976) Platt & Warwick, 1988

**Genus *Paracanthonchus* Micoletzky, 1924**

*Paracanthonchus austrospectabilis* Wieser, 1954

*Paracanthonchus barka* Inglis, 1962

*Paracanthonchus batidus* Gerlach, 1957

*Paracanthonchus bipapillatus* Kreis, 1928

*Paracanthonchus bothnicus* Schiemer, Jensen & Riemann, 1983

*Paracanthonchus brevicaudatus* Gagarin & Nguyen Vu Thanh, 2016

*Paracanthonchus breviseta* (Schuurmans Stekhoven, 1950) Hope & Murphy, 1972

*Paracanthonchus bulbicola* Bussau, 1993

*Paracanthonchus caecus* Micoletzky, 1924

*Paracanthonchus canadensis* Vincx, Sharma & Smol, 1982

*Paracanthonchus cheynei* Inglis, 1970

*Paracanthonchus cochlearis* Gerlach, 1957

*Paracanthonchus cristatus* Wieser, 1954

*Paracanthonchus denticulata* (Kim, Tchesunov & Lee, 2015) **comb. n.**

syn.*Marylynnia denticulata* Kim, Tchesunov & Lee, 2015

*Paracanthonchus duplicatus* (Gerlach, 1964) **comb. n.**

syn. *Paracyatholaimus duplicatus* Gerlach, 1964

*Paracanthonchus elongatus* (de Man, 1907) Micoletzky, 1924

*Paracanthonchus filipjevi* Micoletzky, 1924

*Paracanthonchus gerlachi* Vincx, Sharma & Smol, 1982

*Paracanthonchus gynodiporata* Oliveira *et al*., 2017

*Paracanthonchus hartogi* Inglis, 1970

*Paracanthonchus hawaiiensis* Allgén, 1951

*Paracanthonchus heterocaudatus* Huang & Xu, 2013

*Paracanthonchus heterodontus* (Schulz, 1932) Vincx, Sharma & Smol, 1982

*Paracanthonchus kamui* Kito, 1981

*Paracanthonchus kartanum* (Mawson, 1953) Wieser, 1959

*Paracanthonchus latens* Gourbault, 1980

*Paracanthonchus lissus* Gagarin & Klerman, 2008

*Paracanthonchus longicaudatus* Warwick, 1971

*Paracanthonchus longispiculum* Pastor de Ward, 1985

*Paracanthonchus macrodon* (Ditlevsen, 1918) Micoletzky, 1924

*Paracanthonchus macrospiralis* Allgén, 1959

*Paracanthonchus major* (Kreis, 1928) Wieser, 1954

*Paracanthonchus mamubiae* Miljutina & Miljutin, 2015

*Paracanthonchus margaretae* Inglis, 1970

*Paracanthonchus medius* Galtsova, 1976

*Paracanthonchus micoletzkyi* Schuurmans Stekhoven, 1943

*Paracanthonchus micropapillatus* Wieser, 1954

*Paracanthonchus miltommatus* Leduc & Zhao, 2016

*Paracanthonchus multisupplementatus* Gagarin, 2012

*Paracanthonchus multitubifer* Timm, 1961

*Paracanthonchus mutatus* Wieser, 1959

*Paracanthonchus nannodontus* (Schulz, 1932) Wieser, 1954

*Paracanthonchus olgae* Tchesunov, 2015

*Paracanthonchus parahartogi* Decraemer & Coomans, 1978

*Paracanthonchus perspicuus* Kito, 1981

*Paracanthonchus platti* Vadhyar, 1980

*Paracanthonchus platypus* Wieser & Hopper, 1967

*Paracanthonchus quinquepapillatus* Wieser, 1959

*Paracanthonchus ruens* Wieser, 1954

*Paracanthonchus sabulicolus* Bouwman, 1981

*Paracanthonchus sandspitensis* Nasira, Kamran & Shanina, 2007

*Paracanthonchus sonadiae* Timm, 1961

*Paracanthonchus stateni* Allgén, 1930

*Paracanthonchus stekhoveni* Wieser, 1954

*Paracanthonchus steueri* (Micoletzky, 1922) Micoletzky, 1924

*Paracanthonchus sunesoni* (Allgén, 1942) Wieser, 1954

*Paracanthonchus thaumasius* (Schulz, 1932) Vincx, Sharma & Smol, 1982

*Paracanthonchus tyrrhenicus* (Brunetti, 1949) Gerlach, 1953

*Paracanthonchus uniformis* (Schuurmans Stekhoven, 1950) Wieser, 1954

**Genus *Paracyatholaimoides* Gerlach, 1953**

*Paracyatholaimoides asymmetricus* Boucher, 1976

*Paracyatholaimoides labiosetosus* Riemann, 1966

*Paracyatholaimoides multispiralis* Gerlach, 1953

*Paracyatholaimoides serpens* Gerlach, 1957

**Genus *Paracyatholaimus* Micoletzky, 1922**

*Paracyatholaimus arcticus* Kreis, 1963

*Paracyatholaimus botosaneanui* Andrássy, 1973

*Paracyatholaimus chilensis* Gerlach, 1953

*Paracyatholaimus comatus* Bussau, 1993

*Paracyatholaimus diva* Tchesunov, 2008

*Paracyatholaimus dubiosus* (Bütschli, 1874) Micoletzky, 1922

*Paracyatholaimus helicellus* Wieser, 1954

*Paracyatholaimus huanghaiensis* Huang & Xu, 2013

*Paracyatholaimus inglisi* (Wieser & Hopper, 1967) Andrássy, 1973

syn. *Xyzzors inglisi* Wieser & Hopper, 1967

*Paracyatholaimus intermedius* (de Man, 1880) Micoletzky, 1922

*Paracyatholaimus occultus* Gerlach, 1956

*Paracyatholaimus papillatus* Vinciguerra & Orcelli, 1997

*Paracyatholaimus paramonovi* Gagarin, 2004

*Paracyatholaimus paucipapillatus* Gerlach, 1955

*Paracyatholaimus pentodon* Riemann, 1966

*Paracyatholaimus pesavis* Wieser & Hopper, 1967

*Paracyatholaimus proximus* (Bütschli, 1874) Micoletzky, 1924

*Paracyatholaimus pugettensis* Wieser & Hopper, 1967

*Paracyatholaimus qingdaoensis* Huang & Xu, 2013

*Paracyatholaimus quadriseta* (Wieser, 1954) Tchesunov, 2008

*Paracyatholaimus rotundus* Gerlach, 1964

*Paracyatholaimus saradi* Gerlach, 1967

*Paracyatholaimus separatus* Wieser, 1954

*Paracyatholaimus spinulosus* Jensen, 1985

*Paracyatholaimus ternus* Wieser, 1954

*Paracyatholaimus truncatus* (Cobb, 1914) Micoletzky, 1922

*Paracyatholaimus vancouverensis* Sharma & Vincx, 1982

*Paracyatholaimus vitraeus* Gerlach, 1957

**Genus *Paralongicyatholaimus* Schuurmans Stekhoven, 1950**

*Paralongicyatholaimus complicatus* (Gerlach, 1957) Platt, 1982

*Paralongicyatholaimus macramphis* Lorenzen, 1972

*Paralongicyatholaimus mastigodes* Schuurmans Stekhoven, 1950

*Paralongicyatholaimus minutus* Warwick, 1971

*Paralongicyatholaimus zosterae* (Allgén, 1933) Lorenzen, 1972

**Genus *Paramarylynnia* Huang & Zhang, 2007**

*Paramarylynnia filicaudata* Huang & Sun, 2011

*Paramarylynnia stenocervica* Huang & Sun, 2011

*Paramarylynnia subventrosetata* Huang & Zhang, 2007

**Genus *Phyllolaimus* Murphy, 1963**

*Phyllolaimus dentatus* (Wieser, 1959) Murphy, 1963

*Phyllolaimus tridentatus* Murphy, 1963

**Genus *Pomponema* Cobb, 1917**

*Pomponema ammophilum* Lorenzen, 1972

*Pomponema astrodes* Lorenzen, 1972

*Pomponema clavicaudatum* (Schuurmans Stekhoven, 1935) Riemann, 1972

*Pomponema compactum* Lorenzen, 1972

*Pomponema concinnum* (Wieser, 1954) Lorenzen, 1972

*Pomponema coomansi* Vincx, 1981

*Pomponema corniculata* Gourbault, 1980

*Pomponema cotylophorum* (Steiner, 1916) Lorenzen, 1972

*Pomponema debile* Lorenzen, 1972

*Pomponema elegans* Lorenzen, 1972

*Pomponema foeticolum* (Ott, 1972) Cidreira *et al*., 2019

*Pomponema golikovi* Platonova, 1988

*Pomponema hastatum* (Ott, 1972) Cidreira *et al*., 2019

*Pomponema koesterae* Jensen, 1992

*Pomponema lineatum* (Gerlach, 1953) Wieser, 1959

*Pomponema litorium* (Cobb, 1920) Lorenzen, 1972

*Pomponema loticum* Lorenzen, 1972

*Pomponema macrospirale* (Ott, 1972) Cidreira *et al*., 2019

*Pomponema mirabile* Cobb, 1917

*Pomponema multipapillatum* (Filipjev, 1922) Wieser, 1954

*Pomponema polydontus* Murphy, 1963

*Pomponema proximamphidum* Tchesunov, 2008

*Pomponema reductum* Warwick, 1970

*Pomponema sedecima* Platt, 1973

*Pomponema segregatum* Wieser, 1959

*Pomponema stomachor* Wieser, 1954

*Pomponema syltense* Blome, 1974

*Pomponema tautraense* (Allgén, 1933) Lorenzen, 1972

*Pomponema tesselatum* Wieser & Hopper, 1967

*Pomponema veronicae* Cidreira *et al*. 2019

*Pomponema websteri* (Sharma & Vincx, 1982) Cidreira *et al*. 2019

**Genus *Praeacanthonchus* Micoletzky, 1924**

*Praeacanthonchus cygnis* Inglis, 1970

*Praeacanthonchus inglisi* (Coles, 1965) Platt & Warwick, 1988

*Praeacanthonchus kreisi* (Allgén, 1929) Gerlach & Riemann, 1973

*Praeacanthonchus opheliae* (Warwick, 1970) Gerlach & Riemann, 1973

*Praeacanthonchus punctatus* (Bastian, 1865) Micoletzky, 1924

**Genus *Xenocyatholaimus* Gerlach, 1953**

*Xenocyatholaimus delamarei* Gerlach, 1953

**Genus *Xyzzors* Inglis, 1963**

*Xyzzors fitzgeraldae* Inglis, 1963

*Xyzzors iubatus* Ott, 1972