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BIODIVERSITY OF PLANT AND SOIL NEMATODES FROM ANDAMAN AND CAR NICOBAR ISLANDS

PADMA BOHRA AND QAISER H. BAQRI

Desert Regional Station, Zoological Survey of India, Jodhpur-342 005, Rajasthan

INTRODUCTION

Analysis of the nematology literature from India reveals that our information on the fauna of plant and soil nematodes is meagre from Andaman and Car Nicobar Islands, which form a fragile ecosystem. Jairajpuri (1965, 1969), Khan (1968), Sukul (1968-1969), Rao, G. C. (1975), Baqri and Khera (1976), Khan *et al.*, (1978), Rahman *et al.*, (1994) and a few others are the only available important references on the survey, distribution and taxonomy of plant and soil nematodes from these islands. During 1990-1991, random surveys were conducted by one of us (QHB) in the following islands of Andaman and Nicobar : Diglipur, Mayabander, Rangat, Baratang, Havelock, Ross, Port Blair, Car Nicobar, Kamorta, Nancowry, Katchal, Great Nicobar.

The collected soil samples yielded 62 species of the following four Orders : Tylenchida (9 spp.), Aphelenchida (1 sp.), Dorylaimida (41 spp.) and Mononchida (11 spp.). However, in order to provide over all information on the known diversity of these economically important organisms, already known species from Andaman and Nicobar islands have also been listed in the paper.

MATERIALS AND METHODS

The nematodes were fixed in hot 4% formalin, dehydrated slowly in a desiccator and mounted in anhydrous glycerine.

RESULTS

The nematode species identified by the authors and species already known from the islands are being listed hereunder according to their systematic position in Table 1.

Table 1. : Distribution of plant and soil Nematodes in the Andaman & Car Nicobar Islands.

Order, Family & Nematode species	Locality(ies)
Order : TYLENCHIDA Family : TYLENCHIDAE	
<i>Aglencus agricola</i> * (de Man, 1884) Meyl, 1961	Hut Bay, Little Andaman, Port Blair, Kamorta, Nicobar Islands
Family : HOPLOMAIMIDAE	
<i>Hoplolaimus indicus</i> * Sher, 1963	Malaka, Car Nicobar, Campbell Great Nicobar, Port Blair
<i>Hoplolaimus (Basirolaimus) seinhorsti</i> Luc, 1958	Havelock Islands, Andaman
<i>Helicotylenchus dihystra</i> * (Cobb, 1893) Sher, 1961	Kamorta, Nicobar Island
<i>Helicotylenchus crenacauda</i> * Sher, 1966	Malaka, Car Nicobar, Havelock, South Andaman, Diglipur, North Andaman
<i>Helicotylenchus exallus</i> Sher, 1966	Car Nicobar
<i>Helicotylenchus multicinctus</i> * (Cobb, 1893) Golden, 1956	Diglipur, North Andaman
Family : TELOTYLENCHIDAE	
<i>Tylenchorhynchus annulatus</i> (Cassidy, 1930) Golden, 1971	Havelock, Andaman
<i>Tylenchorhynchus nudus</i> Allen, 1955	Mayabander, Andaman
<i>Tylenchorhynchus robustus</i> * Thome & Malek, 1968	Wibertigunj, South Andaman
<i>Quinisulcius curvus</i> (Williams, 1960) Siddiqi, 1971	Car Nicobar
Family : CRICONEMATIDAE	
<i>Hemicriconemoides cocophillus</i> * (Loos, 1949) Chitwood & Birchfield, 1957	Cambene cave, Port Blair
<i>Hemicriconemoides mangiferae</i> * Siddiqi, 1961	Campbell Bay, Nicobar
Order : APHELENCHIDA Family : APHELENCHIDAE	
<i>Aphelenchus avenae</i> Bastian, 1865	Malaka (Car Nicobar), Havelock (South Andaman), Kadmatata (Middle Andaman), Shayama Jetty (Middle Andaman)

Table 1. : (Cont'd.)

Order, Family & Nematode species	Locality(ies)
Order : DORYLAIMIDA	
Family : DORYLAIMIDAE	
<i>Mesodorylaimus recurvus</i> * Andrassy, 1964	Malaka, Car Nicobar
<i>Laimydorus baldus</i> * Baqri & Jana, 1982	Havelock, South Andaman
<i>Thornenema longicaudatum</i> * Jairajpuri, Ahmad & Dhanachand, 1979	Tugapur, Middle Andaman
<i>Thornenema mauritanum</i> (William, 1959) Baqri & Jairajpuri, 1969	Wibertigunj, South Andaman, Kamorta, Nicobar Island
<i>Paratimminema brevibulbum</i> Rahman, Ahmad & Khan, 1994	Campbell, Great Nicobar
Family : APORCELAIMIDAE	
<i>Aporcelaimellus heynsi</i> Baqri & Jairajpuri, 1968	Malaka, Car Nicobar, Mamorta, Nicobar, Hut Bay, Little Andaman
<i>Aporcelaimellus paraconicaudatus</i> (Meyl, 1956), Heyns, 1965	Heyns, 1965 Mayabander, Andaman
<i>Aporcelaimellus porcus</i> Thorne, 1974	Car Nicobar
Family : QUDSIANEMATIDAE	
<i>Labronema obesum</i> * Thorne, 1974	Katchal near Jetty, Nicobar Island
<i>Eudorylaimus sabulophilus</i> Tjipkema, Ferris & Ferris, 1971	Havelock, Andaman
<i>Labronemella andrassyi</i> * (Baqri & Khera, 1975) Andrassy, 1985	Kamorta, Nicobar Island
<i>Discolaimus major</i> Thorne, 1939	Kamorta, Nicobar Island
<i>Disclaimium clavatum</i> Baqri & Khera, 1976	Malaka, Car Nicobar Islands
<i>Mylodiscus nanus</i> * Thorne, 1939	Kamorta, Nicobar Island
<i>Discolaimoides bulbiferus</i> * (Cobb, 1906) Heyns, 1963	Katchal, Nicobar Island
<i>Moshajia warriari</i> (Jairajpuri, 1965) Siddiqi, 1982	Kamorta, Nicobar Island
<i>Moshajia idiofora</i> * Siddiqi, 1982	Kamorta, Nicobar Island
Family : NORDIIDAE	
<i>Oriverutus labiatus</i> * Ahmad & Jairajpuri, 1987	Kamorta, Nicobar Island
Family : LONGIDORIDAE	
<i>Paralongidorus rosundatus</i> Khan, 1987	Port Blair, Andaman

Table 1. : (Cont'd.)

Order, Family & Nematode species	Locality(ies)
Family : XIPHINEMATIDAE	
<i>Xiphinema elongatum</i> Sch. Stekhoven & Teunissen, 1938	Havelock, South Andaman
<i>Xiphinema elitum</i> Khan, Chawla & Saha, 1978	Andaman Island
<i>Xiphinema insigne</i> * Loos, 1949	Kamorta, Nicobar Island
Family : BELONDIRIDAE	
<i>Belondira apitica</i> * Thorne, 1939	Mayabander, Middle Andaman
<i>Belondira ortha</i> * Thorne, 1939	Rosa Island, Port Blair
<i>Belondira tenuidens</i> * Thorne, 1964	Kamorta, Nicobar Island
<i>Belondira thornei</i> * Suryawanshi, 1972	Kamorta, Nicobar Island
<i>Axonchium (Axonchium) amplicolle</i> * Cobb, 1920	Canimaka, Car Nicobar Island
<i>Axonchium (Axonchium) shamimi</i> Baqri & Khera, 1976	Neill Islands, Andman
<i>Dorylaimellus (Dorylaimellus) indicus</i> * Siddiqi, 1964	Hut Bay, Little Andaman
<i>Dorylaimellus (Belondorylaimellus) belondirelloides</i> Siddiqi, 1968	Havelock, Andaman
<i>Oxydirus elongatus</i> * Altherr, 1963	Havelock, Sippighat, South Andaman
<i>Paraoxydirus novus</i> * (Jairajpuri, 1965) Jairajpuri & Ahmad, 1979	Havelock, Sippighat, South Andaman
Family : TYLENCHOLAIMIDAE	
<i>Discomyctus cephalatus</i> * Thorne, 1939	Tugapur, Mayabander Middle
Family : LEPTONCHIDAE	
<i>Leptonchus granulatus</i> * Cobb, 1920	Havelock, South Andaman
<i>Proleptonchus clarus</i> * Timm, 1964	Danapur, Mayabande Middle Andaman
<i>Proleptonchus indicus</i> * Siddiqi & Khan, 1964	Hut Bay, Little Andaman
<i>Proleptonchus aestivus</i> * Laordello, 1955	Malaka, Car Nicobar Island
<i>Tyleptus projectus</i> * Thorne, 1939	Wibertigunj, South Andman
<i>Tyleptus variabilis</i> * Jairajpuri & Loof, 1966	Wibertigunj, South Andaman
<i>Doryllium minor</i> * Jairajpuri, 1963	Malaca, Car Nicobar

Table 1. : (Cont'd.)

Order, Family & Nematode species	Locality(ies)
<i>Meylis dicephalus</i> * (Yeates, 1967) Goseco, Ferris & Ferris, 1974	Katchal, Nicobar Island
<i>Oostenbrinkella oostenbrinki</i> Jairajpuri, 1965	Katchal, Nicobar Island
Family : MYDONOMIDAE	
<i>Dorylaimoides (Digidorylaimoides) pakistanensis</i> Siddiqi, 1964	Neill Island, Mayabander, Andaman
<i>Dorylaimoides (Digidorylaimoides) micoletzkyi</i> * (De Man, 1922), Thorne & Swanger, 1936	Katchal, Nicobar Island
<i>Dorylaimoides (Longidorylaimoides) lepidus</i> * Timm, 1964	Katchal, Nicobar Island
<i>Dorylaimoides (Longidorylaimoides) leptura</i> * Siddiqi, 1995	Danapur, Mayabander Middle Andaman
<i>Dorylaimoides (Tarjania) bulbosa</i> (Brzeski & Szczgiel, 1961) Szczgiel, 1965	Car Nicobar
<i>Dorylaimoides (Arcidorylaimoides) arcuatus</i> Siddiqi, 1964	Chiriatapu, Andaman
<i>Dorylaimoides (Arcidorylaimoides) saueri</i> * Baqri & Jairajpuri, 1969	Katchal, Nicobar Island
<i>Morasia dimorphicauda</i> * Baqri & Jairajpuri, 1969	Katchal, Nicobar Island
Family : NYGOLAIMIDAE	
<i>Nygolaimus anneckei</i> * Heyns, 1968	Mayabander, Middle Andaman
<i>Clavicaudoides trophurus</i> (Heyns, 1968) Ahmad & Jairajpuri, 1982	Mayabander, Andaman
<i>Laevides laevis</i> * (Thorne, 1939) Thorne, 1974	Wibertigunj, South Andaman
<i>Solididens bisexualis</i> (Thorne, 1939) Thorne, 1974	Neill, Andaman
Order : MONONCHIDA Family : MONONCHIDAE	
<i>Mononchus aquaticus</i> * Coetzee, 1968	Canni Malaca, Car Nicobar
Family : MYLONCHULIDAE	
<i>Mylonchulus brachyuris</i> * (Butschli, 1873) Andrassy, 1958	Kamorta, Nicobar Island

Table 1. : (Cont'd.)

Order, Family & Nematode species	Locality(ies)
<i>Mylonchulus minor</i> * (Cobb, 1893) Andrassy, 1958	Malaca, Car Nicobar
<i>Mylonchulus contractus</i> * Jairajpuri, 1970	Havelock, South Andaman, Hut Bay, Little Andaman, Kamorta, Nicobar Island
<i>Mylonchulus dentatus</i> * Jairajpuri, 1970	Shayama Jetty, Middle Andaman, Havelock, South Andaman
<i>Mylonchulus hawaiiensis</i> (Cassidy, 1931) Andrassy, 1958	Neill Islands, Andaman
<i>Mylonchulus lacustris</i> * (N. A. Cobb in M. V. Cobb, 1915) Andrassy, 1958	Kamorta, Nicobar Island
Family : ANATONCHIDAE	
<i>Miconchoides studeri</i> * (Steiner, 1914) Jairajpuri, 1982	Campbell, Great Nicobar
Family : IOTONCHIDAE	
<i>Iotonchus indicus</i> Jairajpuri, 1969	Rangat, Middle Andaman
<i>Iotonchus trichuris</i> (Cobb, 1917) Andrassy, 1958	Wibertigunj, South Andaman
<i>Parahadronchus shakili</i> (Jairajpuri, 1969) Mulvey, 1978	Kamorta, Nicobar Island

DISCUSSION

The analysis of Nematology literature reveals that only 31 species of plant and soil nematodes had been recorded by earlier Nematologists till 2003. After adding our information, 80 species are now known from Andaman and Nicobar Islands. Out of these, 49 species are being recorded for the first time from the Islands by the present authors.

In spite of the above mentioned achievements, identification of nematodes like root-knot (*Meloidogyne* spp.) which are not only cosmopolitan in their distribution, but also polyphagous are yet to be recorded and the cyst nematode (*Heterodera* spp.) have not been recorded from Andaman and Nicobar Islands till date. Some families belonging to Order Dorylaimida (Nordiidae, Longidoridae, Tylencholaimidae, Nygolaimidae) are poorly represented in the Islands. Predatory nematodes of families like Mononchidae, Cobbonchidae etc., of the Order Mononchida, which are abundantly found in Indo-Malayan region, still remain unrecorded.

SUMMARY

Present paper reports 62 species of plant and soil nematodes, identified by authors from Andaman and Nicobar islands. These species belong to 41 genera, 19 families of four Orders. In order to provide an overview of nematode diversity from the islands, already known species have also been listed in paper. After adding already known species, a total of 80 species belonging to 46 genera under 19 families of four Orders are known now from islands. Out of 62 species identified by the authors, 49 species are being reported for the first time from Andaman and Nicobar islands. Our study and analysis of nematological literature reveal that *Tylenchorhynchus* spp., *Hoplolaimus* spp. and *Helicotylenchus* spp. are widely distributed in the islands. Presently known diversity of plant and soil nematodes from Andaman and Nicobar comes to about 4.7% of terrestrial nematode fauna of India.

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