Fascinating Seaslugs & Flatworms of Indian Seas

K. Venkataraman | C. Raghunathan | R. Raghuraman | Sudhanshu Dixit

Zoological Survey of India

Fascinating

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ZOOLOGICAL SURVEY OF INDIA
Ministry of Environment, Forests & Climate Change
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Foreword

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Maine faunal communities are the prime contributors for the sustainable development of marine biodiversity as this signifies the marine ecological attributes of the world which occupies around 71% of the globe. India is one of the mega biodiversity countries in the world and it has a coastline of 8,118 km long with an Exclusive Economic Zone of 2.02 milion sq km. The vast coastline is home to the most diverse marine fauna and flora. About 4,68,000 sq km continental shelf area harbours 5,800 sq km of coral reefs and it is dived in to four major zones *viz*. Andaman & Nicobar Islands, Gulf of Mannar, Lakshadweep and Gulf of Katchchh. Coral reefs represent some of the most biologically diverse ecosystem on the earth providing critical habitats to approximately 25% of marine organisms.

Molluscans are one of the major components in the coral reefs. So far 4697 species of marine molluscs have been reported from Indian seas, among these 373 species are Seaslugs (Opisthobranchs). These soft bodied crawling animals are small and brightly coloured, most of them does not have hard shells (Nudibranchs) remaining have inner shells. They are distributed from inter-tidal region to greater depths. The flatworms (Polyclads) are free living non-parasitic worms described under the Phylum Platyhelminthes, which are often confused with seaslugs due to their contrasting colour and similar in size. The flatworms are named due to their dorso-ventrally compressed body, they are very tender mostly lives under the rocks and crevices to avoid the direct sun light and active during night time.

Zoological Survey of India, a 100 years old organisation contributing the inevitable publication to the world scientific community. The present book "Fascinating Seaslugs & Flatworms of Indian Seas" is depicting detailed underwater photographs of these stunning marine creatures and their geographical ranges. It comprehends about 89 species of Seaslugs and 36 species of marine flatworms recorded from Indian coastal waters by Zoological Survey of India and also provides the checklist of these beautiful animals.

I am pleased to present this book during the **Centenary Celebration of Zoological Survey of India**. I appreciate the authors in bringing out this valuable source of information on these lesser known marine faunal communities to the scientific communities, naturalist, students and general public. I sincerely hope that this effort succeeds in creating a keen interest to the further generation of India.

30 January, 2015

(HEM PANDE)

Preface

Dr. K. VENKATARAMAN
Director

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Despite of marine biological investigation initiated way back in 1700 in seas around India by surgeon naturalists and sailors, exploration of several marine organisms are far from complete. The published literatures on coastal and marine biodiversity indicate that a total of 17,855+ species of faunal and floral communities were reported from seas around India. The taxonomy of many of the minor groups particularly invertebrates remain a challenge to specialists and as a result these taxa continue to be inadequately known from Indian seas. Based on thorough consultation of literature, it is found that the fauna under 21 taxa are remain least studied / explored and requires much attention on taxonomical account in Indian scenario. Moreover, most of the data on marine biodiversity collected from surveys to the maximum depth of 200 meters on the continental shelf. The gaps in knowledge extend to several smaller taxa and to large parts of the shelf and deep sea ecosystems, including seamounts. At this juncture, the Zoological Survey of India brought out the book on Seaslugs (Opisthobranchs) and Flatworms (Polyclads) of Indian Seas provide the undersea pictures of these brilliantly coloured coral inhabited creatures considered as lesser known marine fauna in Indian context.

Though opisthobranchs and polyclads are classified under different phyla i.e. Mollusca and Platyhelminthes respectively, they are look-alike animals in their external morphology. Rhinophores of the opisthobranch are only externally visible morphological features distinguish it from polyclads. Hence these two fascinating groups are published under one book to motivate the researchers to pay attention on the exploration of these least studied fauna. This comprehensive book illustrated with more than 140 photographs can serve as a perfect reference material for marine enthusiasts, researchers, students etc. the underneath life of Ocean. The book provides the identification of species, based on the collective experience of the authors who have been working for several years on the marine biodiversity.

Furthermore, accelerated loss of coastal and marine biodiversity components over the last few decades has been of great concern. Environmental changes, over exploitation and habitat loss are among the major causes of species loss that, according to certain estimates, is of the order of a species a day. Equally important as knowledge of what lives in the seas, is a prediction of what would live there in the future. This is especially true of regions where rapid loss of habitats and decline in water quality could be drastically altering the species diversity. It is the prime time for the people of this country from each level to take care about the pristine marine biodiversity to secure our future generation.

On the occasion of ***Centenary Celebrations*** **of Zoological Survey of India,** it is aimed to bring out this book on 'Fascinating Seaslugs and Flatworms of Indian Seas' to understand our own lesser known marine bio-resources for the benefit of the commons. I believe, this book will create the awareness about these two faunal groups to entertain further studies upon them.

30 January, 2015

(K. VENKATARAMAN)

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Introduction

Seaslugs (Opisthobranchs) and Flatworms (Polyclads) are often confused with each other due to similarity of colours and patterns on the individuals of these two groups. Opisthobranchs classified under Phylum Mollusca and class Gastropoda while Polyclads comes under Phylum Platyhelminthes. Opisthobranchs also considered as nudibranchs but it is to note that all opisthobranchs are not nudibranchs, only animal falling under Order Nudibranchia can be called as nudibranchs. There are eight orders under Opisthobranchia including order Nudibranchia. The Order Polycladida commonly called as marine flatworms are the only free living and non-parasitic worms under Platyhelminthes. These worms are named so due to their highly branched gut.

Despite of being so colourful, these animal are rare and cannot be easily seen due to their small size. Most of the times these animals are found hiding under rocks and boulders. These animals groups are among the least studied groups in Indian fauna and it is a fact that their availability and difficulty in preservation (especially in polyclads) are the main reason behind such less studies.

The first study on opisthobranchs in Indian waters dates back to 1864 when Alder & Hancock published a work from south-east coast of India. Some other major contributions are from Eliot (1906a, b, 1909, 1910a, b and 1916) in early nineties while in mid-nineties Narayana (1968, 1969, 1970 and 1971) contributed some reports on these animals. In last ten years there are many extensive works being done especially in major reef areas of India i.e. Andaman and Nicobar Islands and Lakshadweep. Some major works include Apte (2009), Sreeraj *et al*. (2010), Ramakrishna *et al*. (2010), Apte *et al*. (2010), Sachithanandam *et al*. (2011), Sreeraj *et al*. (2012a, b), Apte (2012, 2014).

The first report on Polyclads came in the year 1903 when Laidlaw described novel families, genus and species of Polyclads from Laccadive archipelago. After this account, next account came after a span of about more than hundred years by Sreeraj & Raghunathan (2011), Apte & Reshma (2011), Sreeraj & Raghunathan (2013), Dixit & Raghunathan (2013). In comparison to world oceans where about 1500 species are described so far, from India the studies regarding polyclads are very less.

Opisthobranchs

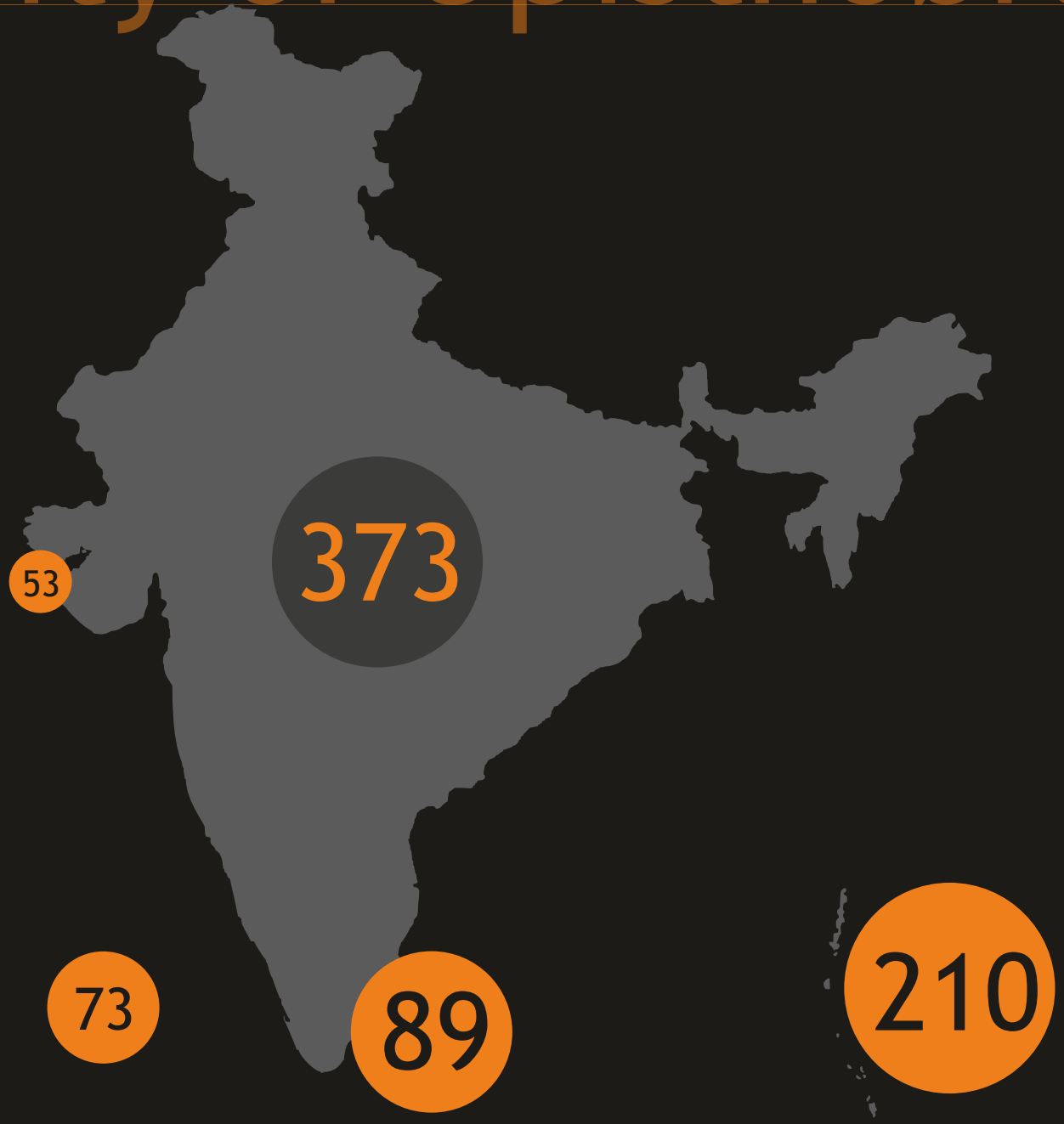
Phylum: Mollusca

Class: Gatropoda

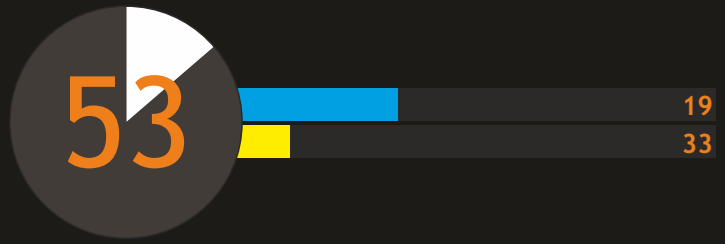
Informal group: Opisthobranchia

Nudibranchs are shell-less marine Opisthobranch gastropod molluscs, which are noted for their often extraordinary colors and striking forms (Nudibranch means naked gills-mostly on the dorsal part of some species or along the side covered by a protective flap as these species tend to bury into sand or mud). Nudibranchia is the largest group in Opisthobranchia with more than 3500 described species. The gills can be used for identification. Some species wave their gills as they move or feed. Nudibranchs live in marine environments from Antartica to the tropics. Nudibranchs dwell at virtually all depths of sea, but reach their greatest size and variation in warm, shallow waters. Most spend their adult life on the bottom. *Glaucus marginata* and *G. altanticus* float around upside down on the ocean surface. *Glaucus* feed on *Physalia physalis* and *Velella velella*. The largest species grow to 40cm (*Hexabranchus sanguineus*), the smallest, microscopic and are easily able to move through grains of sand. Most of the opisthobranchs are smaller than 10cm.

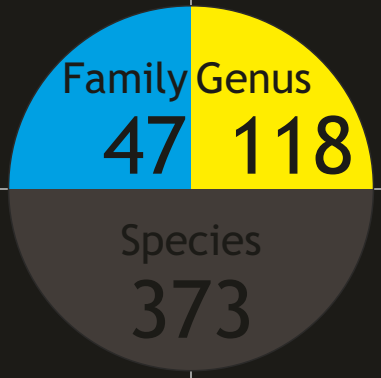
Diversity of Opisthobranchs

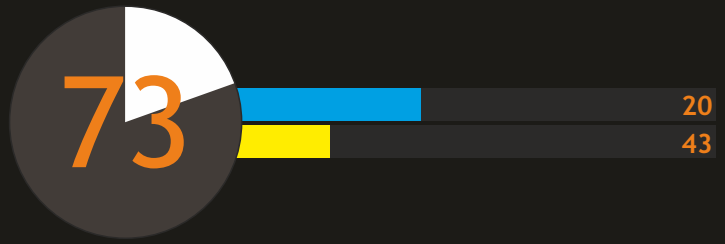


Gujarat Coast



Tamil Nadu Coast





Lakshadweep

Andaman & Nicobar Islands

Aldisa erwinkoehleri Perrone, 2001

Habitat : Shallow reefs, rocky bottom
Distribution : A & N Islands

Armina semperi (Bergh, 1861)

Habitat : Rare, found in shallow reefs underneath the rocks
Distribution : A & N Islands

Asteronotus cespitosus (Hasselt, 1824)

Habitat : Intertidal regions
Distribution : A & N Islands, Tamil Nadu, Lakshadweep and Andhra Pradesh

Berthella martensi (Pilsbry, 1896)

Habitat : Shallow reef, usually feeding on sponges
Distribution : A & N Islands

Berthellina delicata (Pease, 1861)

Habitat : Rare, found in shallow reefs underneath the rocks
Distribution : A & N Islands and Lashadweep

Bornella stellifer (Adams and Reeve in Adams, 1848)

Habitat : Intertidal region to shallow reefs upto 20 m depth
Distribution : A & N Islands, Tamil Nadu and Andhra Pradesh

Carminodoris esterlyado (Gosliner & Behrens, 1998)

Habitat : Shallow reefs either in surface or underneath the rock
Distribution : A & N Islands

Cerberilla annulata (Quoy and Gaimard, 1832)

Habitat : Intertidal to shallow sandy slopes, usually active in night
Distribution : A & N Islands

Chelidonura pallida Risbec, 1951

Habitat : Shallow patch reefs, usually feeds upon small flatworms
Distribution : A & N Islands

Chelidonura punctata Eliot, 1903

Habitat : Shallow reefs
Distribution : A & N Islands

Chromodoris colemani Rudman, 1982

Habitat : Usually found on reefs up to 20, less common, usually active in day time
Distribution : A & N Islands

Chromodoris conchyliata Yonow, 1984

Habitat : Intertidal region and reefs up to 10 m
Distribution : A & N Islands

Chromodoris elisabethina Bergh, 1877

Habitat : Reefs up to 20m depth, very common, usually active in day time
Distribution : A & N Islands

Chromodoris fidelis (Kelaart, 1858)

Habitat : Intertidal region to shallow reefs up to 20 m depth
Distribution : A & N Islands, Tamil Nadu, Andhra Pradesh and Lakshadweep

Chromodoris geminus Rudman, 1987

Habitat : Shallow reefs, quite common
Distribution : A & N Islands and Tamil Nadu

Chromodoris gleniei (Kelaart, 1858)

Habitat : Shallow reefs, active in day
Distribution : A & N Islands and Andhra Pradesh

Chromodoris reticulata (Quoy & Gaimard, 1832)

Habitat : Shallow reefs, crawling on corals, active in day
Distribution : A & N Islands

Chromodoris striatella Bergh, 1876

Habitat : Found in intertidal zone to shallow reefs underside of rocks or crawling over algal covered rocks
Distribution : A & N Islands

Costasiella formicaria (Baba, 1959)

Habitat : Found crawling on sandy bottom in large aggregates
Distribution : A & N Islands

Costasiella paweli Ichikawa, 1993

Habitat : Found crawling on sandy bottom
Distribution : A & N Islands

Cratena peregrina (Gmelin 1791)

Habitat : Shallow reefs and sandy bottom
Distribution : A & N Islands

Dendrodoris fumata (Ruppel & Leuckart, 1831)

Habitat : Found in intertidal zone underneath the rocks
Distribution : A & N Islands, Tamil Nadu, Andhra Pradesh and Lakshadweep

Dendrodoris nigra (Stimpson, 1855)

Habitat : Intertidal region under stones
Distribution : A & N Islands, Tamil Nadu, Andhra Pradesh, Lakshadweep and Gujarat

Discodoris boholensis Bergh, 1877

Habitat : Intertidal regions
Distribution : A & N Islands and Tamil Nadu

Durvilledoris similaris (Rudmaan, 1986)

Habitat : Usually found on muddy bottom
Distribution : A & N Islands

Elysia leucolegnota Jensen, 1990

Habitat : Usually found in intertidal rock pools
Distribution : A & N Islands

Elysia ornata (Swainson, 1840)

Habitat : Found crawling on sandy bottom in shallow depth
Distribution : A & N Islands, Tamil Nadu and Lakshadweep

Favorinus mirabilis Baba, 1955

Habitat : Often found resting on egg mass of another nudibranch in shallow reef
Distribution : A & N Islands

Flabellina exoptata (Gosliner & Willan, 1991)

Habitat : Usually found in intertidal region as well as in shallow reefs
Distribution : A & N Islands

Fryeria marindica (Yonow & Hayward, 1991)

Habitat : Usually found in shallow reefs
Distribution : A & N Islands, Tamil Nadu and Lakshadweep

Gastropteron bicornutum Baba and Tokioka, 1965

Habitat : Usually found in sandy bottom in shallow depth and often in large aggregates
Distribution : A & N Islands

Glossodoris atromarginata (Cuvier, 1804)

Habitat : Usually found in muddy area as well as on reefs
Distribution : A & N Islands, Tamil Nadu, Andhra Pradesh and Kerela

Glossodoris cincta (Bergh, 1888)

Habitat : Usually found in muddy area as well as on reefs beneath coral rubble
Distribution : A & N Islands, Tamil Nadu and Lakshadweep

Glossodoris hikuerensis (Pruvot-fol, 1954)

Habitat : Usually found in shallow reefs beneath or above coral rubble
Distribution : A & N Islands

Goniobranchus aspersa (Gould 1852)

Habitat : Intertidal regions
Distribution : A & N Islands and Lakshadweep

Gymnodoris alba (Bergh, 1877)

Habitat : Usually found in shallow reefs beneath the coral rubble
Distribution : A & N Islands, Lakshadweep and Gujarat

Gymnodoris citrina (Bergh, 1875)

Habitat : Usually found in intertidal region to shallow reefs up to 10 m
Distribution : A & N Islands and Lakshadweep

Gymnodoris rubropalulosa (Bergh, 1905)

Habitat : Usually found in shallow reef up to 20 m depth
Distribution : A & N Islands

Gymnodoris striata (Eliot, 1908)

Habitat : Usually found in intertidal region to shallow reefs up to 10 m
Distribution : A & N Islands

Halgerda bacalusia Fahey & Gosliner 1999

Habitat : Usually found in reefs up to 30 m depth
Distribution : A & N Islands

Halgerda stricklandi Fahey & Gosliner, 1999

Habitat : Usually found reefs up to 30 m depth
Distribution : A & N Islands

Halgerda tessellata (Bergh, 1880)

Habitat : Found in shallow reefs underneath the rocks, active during night
Distribution : A & N Islands and Lakshadweep

Haminoea ovalis Pease, 1868

Habitat : Usually found in intertidal region to shallow reefs on algal substratum
Distribution : A & N Islands

Hexabranchus sanguineus (Ruppell and Leuckart, 1828)

Habitat : Usually found in shallow reefs, active in night
Distribution : A & N Islands and Lakshadweep

Hypselodoris bullocki (Collingwood, 1881)

Habitat : Usually found in shallow reefs as well as in muddy bottom feeding on sponges
Distribution : A & N Islands and Tamil Nadu

Hypselodoris maculosa (Pease, 1871)

Habitat : Usually found in shallow reefs and intertidal zone
Distribution : A & N Islands

Hypselodoris nigrostriata (Eliot, 1904)

Habitat : Usually found in shallow reefs up to 15 m depth
Distribution : A & N Islands

Jorunna funebris (Kelaart, 1858)

Habitat : Usually found in intertidal as well as in reefs
Distribution : A & N Islands, Tamil Nadu, Andhra Pradesh, Kerala and Lakshadweep

Kaloplocamus acutus Baba, 1955

Habitat : Usually found in muddy bottom and dead reefs
Distribution : A & N Islands

Mexichromis multituberculata (Baba, 1953)

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Tamil Nadu

Micromelo undatum (Brugiere, 1792)

Habitat : Usually found in sandy bottom
Distribution : A & N Islands

Odontoglaja guamensis Rudman, 1978

Habitat : Usually found under coral rubble in shallow reefs
Distribution : A & N Islands

Phestilla lugubris (Bergh, 1870)

Habitat : Usually found in intertidal zone
Distribution : A & N Islands

Phestilla melanobrachia Bergh, 1874

Habitat : Usually found in shallow reefs feeding on *Tubastreae* corals during night time
Distribution : A & N Islands

Phidiana indica (Bergh, 1896)

Habitat : Very common, usually found in shallow reefs feeding on hydroids
Distribution : A & N Islands

Phidiana militaris (Alder & Hancock, 1864)

Habitat : Usually found in shallow reefs crawling on algal substratum
Distribution : A & N Islands, Tamil Nadu, Lakshadweep and Gujarat

Philinopsis gardineri (Eliot, 1903)

Habitat : Usually found in areas with sandy substratum
Distribution : A & N Islands

Philinopsis pilsbryi (Eliot, 1900)

Habitat : Usually found in areas with sandy substratum
Distribution : A & N Islands

Phyllidiella hageni Fahrner & Beck, 2000

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Lakshadweep

Phyllidiella nigra (van Hasselt, 1824)

Habitat : Found in shallow reefs
Distribution : A & N Islands

Phyllidiella rudmani Brunckhorst, 1993

Habitat : Usually found in shallow reefs feeding on sponges
Distribution : A & N Islands

Phyllidiella zeylanica (Keelart, 1859)

Habitat : Very common, usually found in shallow reefs
Distribution : A & N Islands, Tamil Nadu, Andhra Pradesh, Gujarat and Lakshadweep

Phyllidia alyta Yonow, 1996

Habitat : Usually found in shallow reefs
Distribution : A & N Islands, Tamil Nadu and Lakshadweep

Phyllidia coelestis Bergh, 1905

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Lakshadweep

Phyllidia ocellata Cuvier, 1804

Habitat : Very common, usually found in shallow reefs
Distribution : A & N Islands and Tamil Nadu

Phyllidia varicosa Lamarck, 1801

Habitat : Usually found in shallow reefs
Distribution : A & N Islands, Tamil Nadu and Lakshadweep

Phyllidiopsis annae Brunckhorst, 1993

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Lakshadweep

Phyllidiopsis gemmata (Pruvot-Fol, 1957)

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Lakshadweep

Phyllidiopsis krempfi Purvot-Fol, 1957

Habitat : Rare, found in shallow reefs
Distribution : A & N Islands

Phyllidiopsis monacha (Yonow, 1986)

Habitat : Usually found in reefs up to 40 m depth
Distribution : A & N Islands and Lakshadweep

Phyllidiopsis phiphiensis Brunckhorst, 1993

Habitat : Usually found in shallow reefs up to 20 m
Distribution : A & N Islands and Lakshadweep

Phyllidiopsis shireenae Brunckhorst, 1993

Habitat : Usually found in deep reefs up to 40 m depth
Distribution : A & N Islands

Phyllidiopsis striata Bergh, 1888

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Lakshadweep

Plakobranchus ocellatus van Hasselt, 1824

Habitat : Very common, found crawling in intertidal zone
Distribution : A & N Islands, Tamil Nadu and Lakshadweep

Platydoris formosa (Alder & Hancock, 1864)

Habitat : Usually found in shallow reefs during night time
Distribution : A & N Islands and Lakshadweep

Pteraeolidia ianthina (Angas, 1864)

Habitat : Usually found in intertidal zone in large numbers
Distribution : A & N Islands, Tamil Nadu, Gujarat and Lakshadweep

Risbecia pulchella (Ruppell and Leuckart, 1828)

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Tamil Nadu

Roboastra gracilis (Bergh, 1877)

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Tamil Nadu

Sagaminopteron psychedelicum Carlson & Hoff, 1974

Habitat : Found in shallow reefs on sponges up to 25 m depth
Distribution : A & N Islands and Lakshadweep

Thorunna africana Rudman, 1984

Habitat : Usually found crawling in shallow reefs
Distribution : A & N Islands

Thorunna frutiva Bergh, 1878

Habitat : Usually found in shallow reefs feeding on sponges
Distribution : A & N Islands

Thuridilla indopacifica Gosliner, 1995

Habitat : Usually found in intertidal zone with filamentous algae
Distribution : A & N Islands

Thuridilla undula Gosliner, 1995

Habitat : Usually found in intertidal zone as well as shallow reefs
Distribution : A & N Islands

Volvatella vigourouxi (Montrouzier in Souverbie, 1861)

Habitat : Usually found crawling in shallow reefs
Distribution : A & N Islands

Polyclads



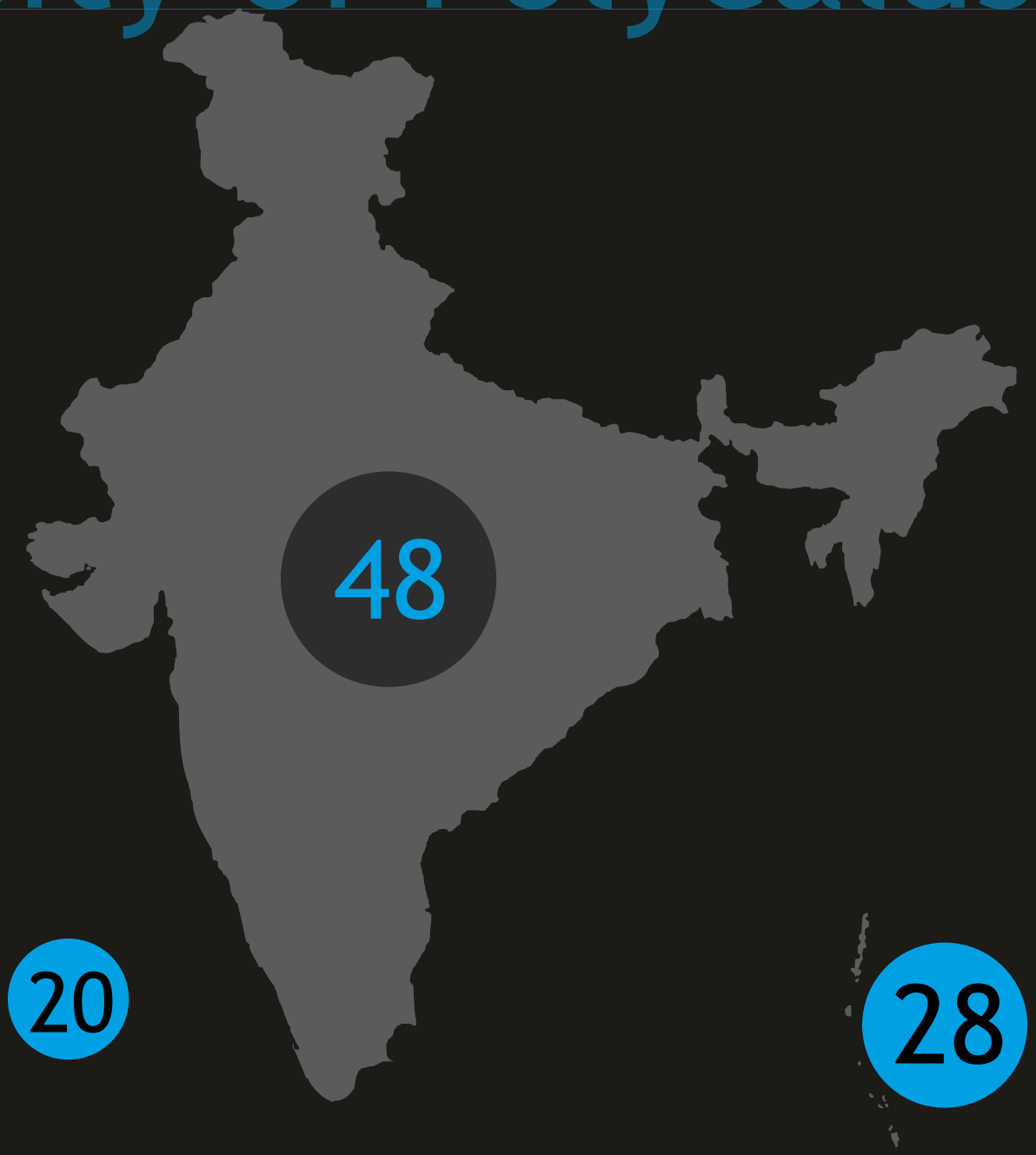

Phylum: Platyhelminthes

Class: Turbellaria

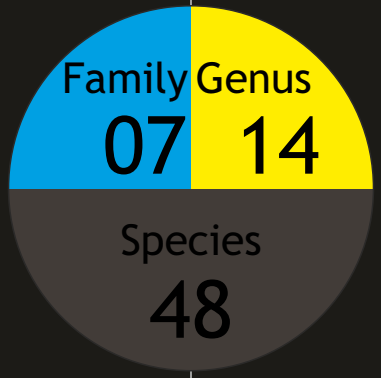
Order: Polycladida

The Platyhelminthes which belong in the kingdom Animalia are unsegmented flat worms. They are considered the most primitive bilaterally symmetrical animals. Furthermore, flatworms are triploblastic, which means that body structure is based on three fundamental cell layers (endoderm, mesoderm and ectoderm). As a third characteristic, they have no body cavity (coelom) other than the gut, an organization which is called acoelomate. They lack an anus and therefore, the same pharyngeal opening both takes in food and expels waste. Respiratory system and blood vessel system are also completely missing and therefore, diffusion is used for transport of oxygen inside the body. These constraints flatworms to be flat. For maintaining metabolism, no cell can be too far from the outside, making a flattened body shape necessary. Almost all species are hermaphrodites with a quite complex reproductive system. In most cases, number and arrangement of male and female reproductive structures are highly species specific and can be used in taxonomic studies for discrimination of morphologically even highly similar species. The length of flatworms varies between 0.4 mm for some free living species and several meters for parasitic forms (fish tapeworm *Diphyllobothrium latum*: 25m in length).

Diversity of Polycalds



Lakshadweep



Andaman & Nicobar Islands

Boninia divae Bois-Reymond Marcus & Marcus, 1968

Habitat : Usually found in intertidal zone under the rock in large numbers
Distribution : A & N Islands

Notoplana sp.

Habitat : Usually found in sandy intertidal zone under the rock
Distribution : A & N Islands

Paraplanocera sp.

Habitat : Usually found in sandy intertidal zone under the rock
Distribution : A & N Islands

Phirkoceros fritillus Newman & Cannon, 1996

Habitat : Usually found in intertidal regions and shallow reefs
Distribution : A & N Islands

Phrikoceros mopsus (Marcus, 1952)

Habitat : Mostly found in sub-tidal zone on sandy bottom
Distribution : A & N Islands

Prostheceraeus sp.

Habitat : Usually found crawling in sandy bottom
Distribution : A & N Islands

Prosthiostomum trilineatum Yeri & Kaburaki, 1920

Habitat : Usually found in intertidal zone under the rock
Distribution : A & N Islands and Maharashtra

Prosthistomum sp.

Habitat : Usually found in intertidal zone under the rock
Distribution : A & N Islands

Prosthistomum sp.

Habitat : Usually found in intertidal zone under the rock
Distribution : A & N Islands

Pseudobiceros bedfordi Laidlaw, 1903

Habitat : Usually found in shallow reefs crawling on bottom
Distribution : A & N Islands

Pseudobiceros gratus (Kato, 1937)

Habitat : Usually found in shallow reefs and rocks
Distribution : A & N Islands and Lakshadweep

Pseudobiceros hymanae Newman and cannon, 1998

Habitat : Shallow reefs feeding on sponges, active in night
Distribution : A & N Islands

Pseudobiceros murinus Newman & Cannon, 1997

Habitat : Usually found in intertidal zone and shallow reefs
Distribution : A & N Islands and Lakshadweep

Pseudobiceros sp.

Habitat : Usually found in intertidal regions
Distribution : A & N Islands and Lakshadweep

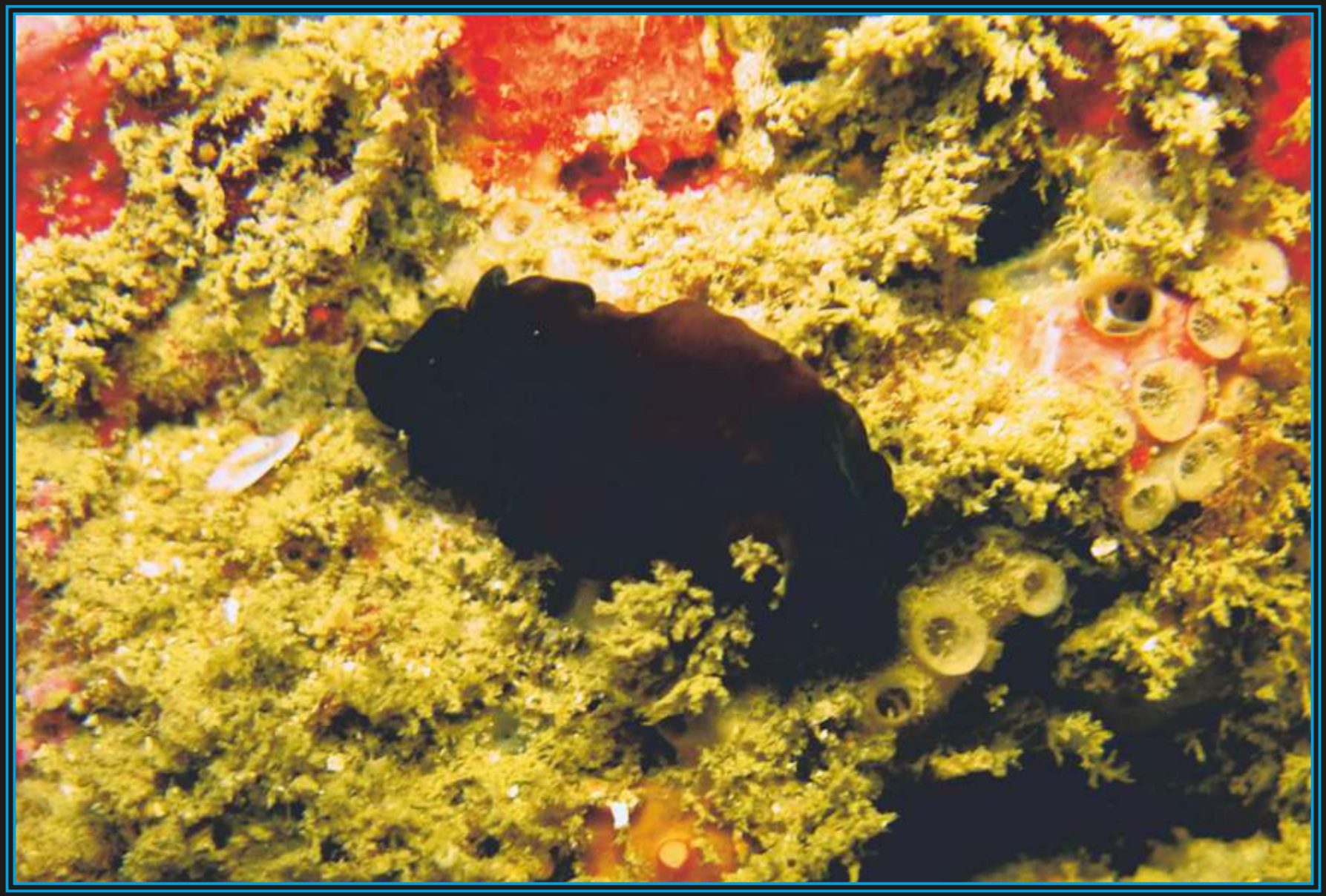
Pseudobiceros stellae Newman and Cannon, 1994

Habitat : Usually found in shallow reefs
Distribution : A & N Islands and Lakshadweep

Pseudoceros bifurcus Prudhoe, 1989

Habitat : Mostly found in intertidal zone underneath the rocks
Distribution : A & N Islands

Pseudoceros bolool Newman & Cannon, 1994



Habitat : Usually found in shallow reefs, active in night
Distribution : A & N Islands

Pseudoceros concinnus (Collingwood, 1876)

Habitat : Usually found in intertidal as well as shallow reefs
Distribution : A & N Islands

Pseuodceros goslineri Newman & Cannon, 1994

Habitat : Usually found in intertidal as well as shallow reefs and sandy substratum
Distribution : A & N Islands and Lakshadweep

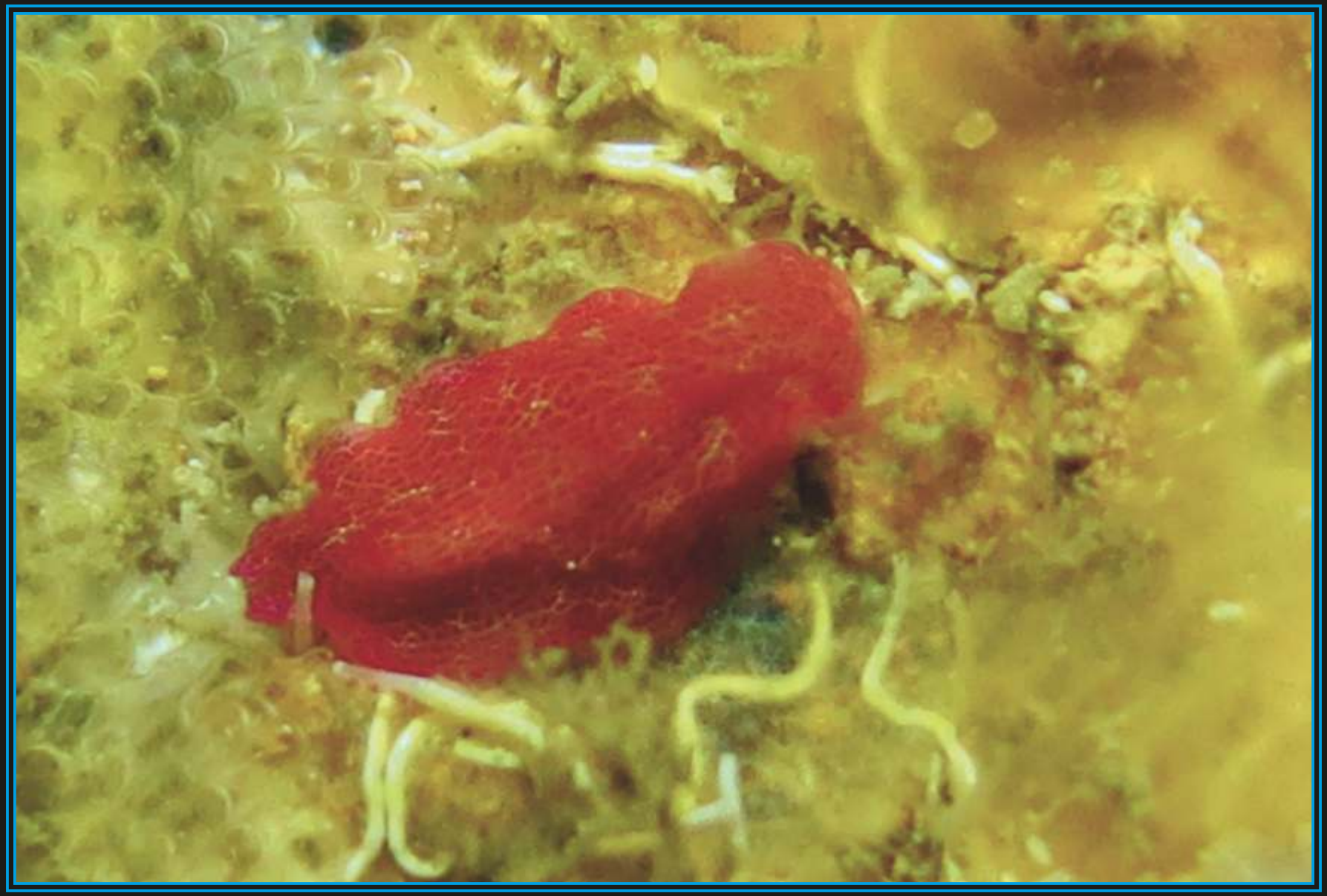
Pseudoceros imitatus Newman, Cannon & Brunckhorst, 1994

Habitat : Usually found in shallow reefs during night
Distribution : A & N Islands

Pseudoceros indicus Newman & Schupp, 2002

Habitat : Usually found in intertidal as well as sub-tidal regions
Distribution : A & N Islands and Lakshadweep

Pseudoceros irretitus Newman & Cannon, 1998



Habitat : Usually found in intertidal as well as sub-tidal regions on sandy substratum
Distribution : A & N Islands

Pseudoceros leptostichus Bock, 1913

Habitat : Usually found in sub-tidal region beneath rocks
Distribution : A & N Islands

Pseudoceros rubronanus Newman & Cannon, 1998

Habitat : Mostly found in shallow reefs in during night time
Distribution : A & N Islands

Pseudoceros sp.

Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

Pseudoceros sp.

Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

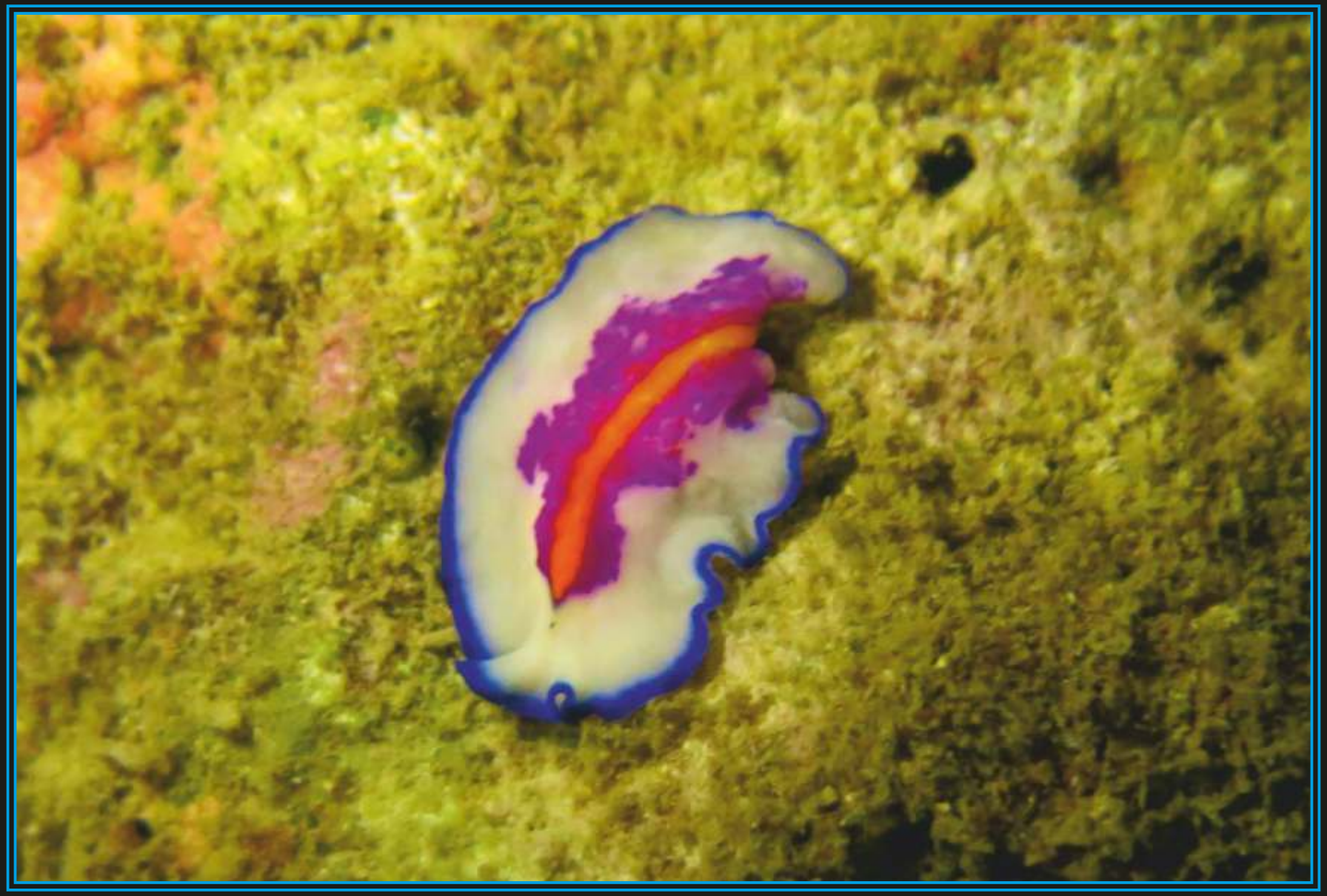
Pseudoceros sp.

Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

Pseudoceros sp.

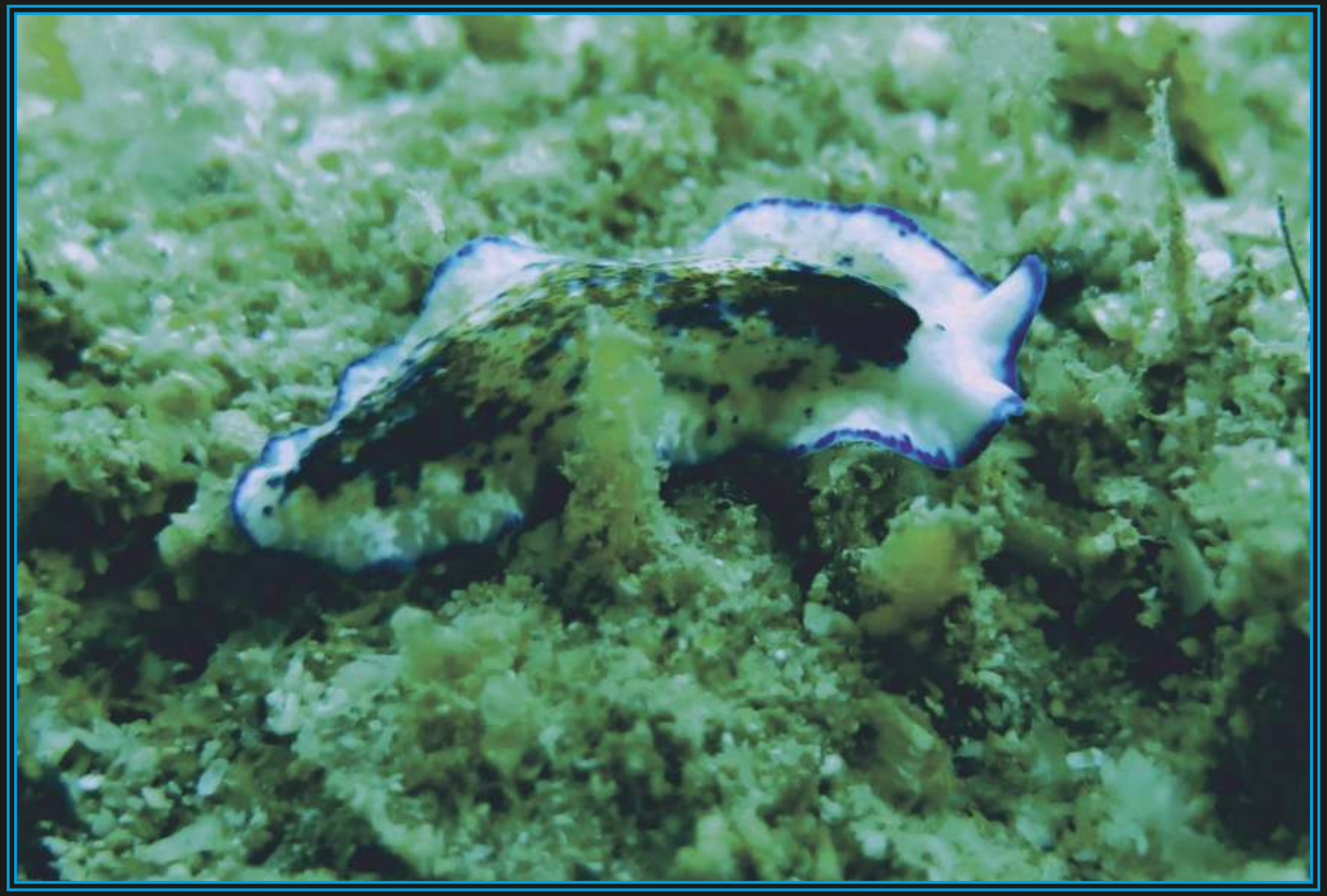
Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

Pseudoceros sp.



Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

Pseudoceros sp.



Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

Pseudoceros sp.

Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

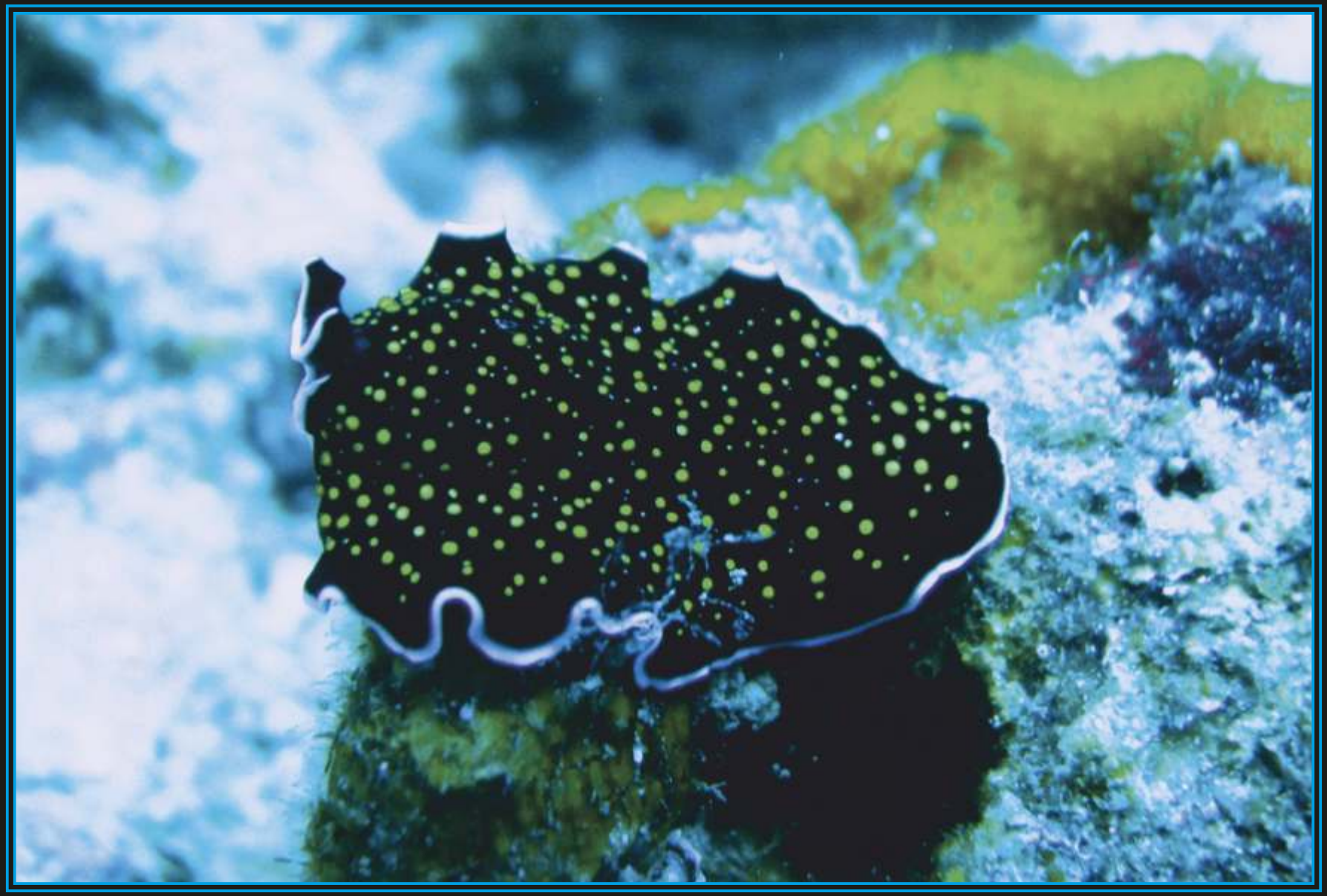
Pseudoceros tristriatus Hyman, 1959

Habitat : Mostly found in intertidal zone underneath the rocks
Distribution : A & N Islands

Tytthosoceros lizardensis Newman & Cannon, 1996

Habitat : Usually found in intertidal region on sandy substratum
Distribution : A & N Islands

Thysanozoon nigropapillosum (Hayman, 1959)



Habitat : Mostly found in shallow reefs in close association with sponges
Distribution : A & N Islands

Thysanozoon sp.

Habitat : Usually found in sub-tidal region feeding on sponges
Distribution : A & N Islands

Thysanozoon sp.

Habitat : Found usually from intertidal region to sub-tidal zone
Distribution : A & N Islands

Checklist (Opisthobranchs)

S. No.	SPECIES	A & N	TN	AP	KL	LK	KA	Goa	MH	GT	WB	OD
	Phylum: Mollusca											
	Class: Gastropoda											
	Subclass: Opisthobranchia											
	Order: NOTASPIDEA											
	Family: PLEUROBRANCHIDAE											
1	*Berthella martensi* (Pilsbry, 1896)	P										
2	*Berthella stellata* (Risso, 1826)									P		
3	*Berthellina citrina* (Ruppell & Leuckart, 1828)									P		
4	*Berthellina cf. citrina*									P		
5	*Berthellina cf delicata* (Pease, 1861)					P						
6	*Berthellina minor* Bergh, 1905									P		
7	*Euselenops luniceps* (Cuvier, 1817)					P						
8	*Euselenops winckworthi* Satyamurti, 1946		P									
9	*Pleurobranchus forskalii* (Rüppell & Leuckart, 1831)					P						
10	*Pleurobranchus mamillatus* Quoy & Gaimard, 1832		P			P						
11	*Pleurobranchus peroni* Cuvier, 1804					P						
12	*Pleurobranchus albiguttatus* (Bergh, 1905)					P						
13	*Pleurobranchea morula* (Bergh, 1905)									P		
	Family: UMBRACULIDAE											
14	*Umbraculum umbraculum* (Lightfoot, 1786)		P									
	Order: ANASPIDEA Fischer, 1883											
	Family: APLYSIIDAE Lamarck, 1809											
15	*Aplysia benedicti* Eliot, 1899	P	P							P		
16	*Aplysia cornigera* Sowerby, 1870		P			P				P		
17	*Aplysia dactylomela* Rang, 1828					P				P		
18	*Aplysia lineolata* Adams and Reeve, 1848		P									

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
19	*Aplysia oculifera* (Adams & Reeve, 1850)								P			
20	*Aplysia parvula* Morch, 1863	P				P				P		
21	*Bursatella leachii* de Blainville, 1817		P									
22	*Dolabella auricularia* (Lightfoot, 1786)	P	P			P						
23	*Dolabella ecaudata* Rang, 1828	P										
24	*Dolabella rumphii* Cuvier, 1804		P									
25	*Dolabrifera dolabrifera* (Cuvier, 1817)	P				P						
26	*Petalifera krusadaiae* O Donoghue, 1930		P									
27	*Phyllaplysia plana*. Eales, 1944	P										
28	*Stylocheilus longicauda* (Quoy & Gaimard, 1825)	P										
29	*Stylocheilus striatus* (Quoy & Gaimard, 1832)	P				P						
30	***Syphonota geographica* (Adams & Reeve, 1850)**	P	P									
	Order: CEPHALALSPEDIA Fisher, 1883											
	Family: RINGICULIDAE											
31	*Ringicula propinquans* Hinds, 1844			P								P
32	*Ringicula encarpoferens* de Folin, 1867		P								P	P
	Family: BULLIDAE Gray, 1827											
33	*Bulla ampulla* Linnaeus, 1758	P	P	P	P	P	P		P	P	P	P
	Family: GASTROPTERIDAE Swainson, 1840											
34	*Gastropteron bicornutum* Baba and Tokioka, 1965	P										
35	*Siphopteron brunneomarginatum* Carlson & Hoff, 1974	P										
36	*Siphopteron cf fuscum* (Baba & Tikioka, 1965)	P										
37	*Siphopteron nigrpmarginatum* Gosliner, 1989	P										
38	*Siphopteron tigrinum* Gosliner, 1989	P										
39	*Sagaminopteron psychedelicum* Carlson and Hoff, 1974					P						

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
	Family: SMARAGDINELLIDAE											
40	*Phanerophthalmus smaragdinus* (Ruppell & Leuckart, 1828)					P						
	Family: CYLICHNIDAE Adams, 1850											
41	*Acteocina (Acteocina) conspicua* (Preston, 1908)	P										
42	*Actaeocina estriata* (Preston, 1914)											P
43	*Acteocina olivaeformis* (Issel, 1869)	P										
44	*Cylichna andamanica* Smith, 1904	P										
45	*Cylichna grandi* (Adams)	P										
46	*Cylichna sygenes* Preston, 1916	P										
47	*Scaphander andamanicus* Smith, 1894	P	P									
48	*Tornatina conspicua* Preston, 1908	P										
	Family: AGLAJIDAE Pilsbry, 1895											
49	*Aglaja tricolorata* Renier, 1807	P										
50	*Chelidonura electra* Rudman, 1970					P						
51	*Chelidonura fulvipunctata* Baba, 1938	P										
52	*Chelidonura hirundinina* (Quoy & Gaimard, 1832)	P										
53	*Chelidonura pallida* Risbec, 1951	P										
54	*Chelidonura punctata* Eliot, 1903	P				P						
55	*Chelidonura sandrana* Rudman, 1973	P										
56	*Philinopsis cyanea* (Martens, 1879)	P									P	
57	*Philinopsis gardineri* (Eliot, 1903)	P										
58	*Philinopsis lineolata* (H. & A. Adams, 1854)	P										
59	*Philinopsis pilsbryi* (Eliot, 1900)	P										
60	*Philinopsis speciosa* Pease, 1860	P	P									
	Family: PHILINIDAE											
61	*Philine aperta* (Linnaeus, 1758)		P									
	Family: ACETONIDAE d'Orbigny, 1843											

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
62	*Acteon virgatus* (Reeve, 1842)	P										
63	*Pupa coccinata* (Reeve, 1842)	P										
64	*Pupa solidula* (Linnaeus, 1758)		P									
65	*Pupa strigosa* (Gould, 1859)	P										
	Family: APLUSTRIDAE (Pilsbry, 1893)											
66	*Micromelo undatum* (Brugiere, 1792)	P										
	Family: HYDATINIDAE											
67	*Hydatina amplustre* (Linnaeus, 1758)	P										
68	*Hydatina eximia* (Deshayes, 1863)	P										
69	*Hydatina velum* (Lightfoot, 1786)		P			P						
70	*Hydatina zonata* (Lightfoot, 1786)									P		
	Family: HAMINOEIDAE Pilsbry, 1895											
71	*Atys amygdala* Sowerby, 1869	P										
72	*Atys cylindricus* (Helbling, 1779)	P										
73	*Atys darnleyensis* Brazier, 1879	P										
74	*Atys debilis* Pease, 1860	P										
75	*Atys elongatus* Adams, 1850	P										
76	*Atys hyalina* Watson, 1883	P										
77	*Atys naucum* (Linnaeus, 1758)	P										
78	*Atys neglecta* Preston, 1908	P										
79	*Atys nonscripta* (A. Aams, 1850)	P										
80	*Atys pacei* Preston, 1908	P										
81	*Atys submalleata* Smith, 1904	P										
82	*Atys (Aliculastrum) cylindricus* (Helbling, 1779)	P										
83	*Atys vixumbilicata* Preston, 1908	P										
84	*Haminoea ambigua*. (Adams, A., 1850)	P										
85	*Haminoea crocata* Pease, 1861	P	P								P	P
86	*Haminoea curta* A. Adams, 1850	P										

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
87	*Haminoea cymbalum* (Quoy and Gaimard, 1835)	P	P			P						
88	*Haminoea elegans* Adams		P									
89	*Haminoea ovalis* Pease, 1868	P								P		
90	*Haminoea tenera* (Adams, 1855)		P							P		
	Family: Retusidae Thiele, 1925											
91	*Retusa pyramidata* (Adams, 1850)		P								P	P
92	*Volvulella perangusta* (A. Adams)	P										
	Order: SACOGLOSSA von Ihering											
	Family: CYLINDROBULLIDAE Thiele, 1931											
93	*Cylindrobulla pusilla* Nevill, 1869	P										
	Family: VOLVATELLIDAE Pilsbry, 1895											
94	*Volvatella vigourouxi* (Montrouzier in Souverbie, 1861)	P				P						
	Family: PLAKOBRANCHIDAE Gray, 1840											
95	*Elysia abei* Baba, 1955	P										
96	*Elysia bangtawaensis* Swennen, 1997	P						P				
97	*Elysia chilkensis* Eliot, 1916											P
99	*Elysia grandifolia* Kelaart, 1858		P	P						P		
100	*Elysia obtusa* Baba, 1938									P		
101	*Elysia ornata* (Swainson, 1840)	P	P			P	P					
102	*Elysia pusilla* Bergh, 1872								P	P		
103	*Elysia leucolegnote* Jensen, 1990	P										
104	Elysia rufescens (Pease, 1871)					P						
105	*Elysia tomentosa* Jensen, 1997					P				P		
106	*Elysia thompsoni* Jensen, 1993									P		
107	*Thuridilla bayeri* (Marcus, 1965)	P										
108	*Thuridilla carlsoni* Gosliner, 1995	P				P						
109	*Thuridilla caerulea* (Kelaart, 1858)	P		P								

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
110	*Thuridilla gracilis* (Risbec, 1828)					P						
111	*Thuridilla livida* (Baba, 1955)					P						
112	*Thuridilla vatae* (Risbec, 1928)	P				P						
113	*Thuridilla indopacifica* Gosliner, 1995	P										
114	*Thuridilla moebii* (Bergh, 1888)	P										
115	*Plakobranchus ocellatus* Van Hasselt, 1824	P	P			P						
	Family: LIMAPONTIIDAE Gray, 1847											
116	*Costasiella paweli* Ichikawa, 1993	P										
117	*Polybranchia orientalis* (Kelaart, 1858)	P	P	P		P						
118	*Stiliger nigrovittatus* Rao and Rao, 1962		P									
119	*Stiliger viridis* (Kelaart, 1858)			P								
120	*Sohgenia palauensis* Hamatani, 1991					P						
	Family: JULIIDAE E. A. Smith, 1885											
121	*Tamanovalva limax* Kawaguti and Baba, 1959		P	P								
122	*Tamanovalva schlumbergeri* Dautzenberg, 1895	P										
123	Julia burni Sarma, 1975	P										
124	*Berthelinia (Tamanovalva) ganapatii* Sarma, 1975											
125	*Berthelinia (Tamanovalva) waltairensis* Sarma, 1975											
	Order: NUDIBRANCHIA Blainville, 1814											
	Family: ARMINIDAE Iredale & O'Donoghue, 1923											
126	*Armina (Linguella)* cinerea (Farran, 1905)									P		
127	*Armina cygnea* (Bergh, 1876)	P										
128	*Armina semperi* (Bergh, 1861)	P										
129	*Armina formosa* (Kelaart, 1858)		P	P								
130	*Armina gracilis* (Bergh, 1874)					P						
131	*Armina taeniolata* (Peters) Bergh, 1860			P								

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
132	*Armina variolosa* (Bergh, 1904)		P	P								
133	*Dermatobranchus fortunata* (Bergh 1888)									P		
134	*Dermatobranchus semistriatus* (Baba, 1949)									P		
135	*Linguella quadrilateralis* (Bergh, 1860)	P										
136	*Pleurophyllidiella paucidentata* (O'Donoghue, 1932)		P									
	Family: PROCTONOTIDAE Gray, 1853											
137	*Janolus indica* (Eliot, 1909)									P		
	Family: ACTINOCYCLIDAE O'Donoghue, 1929											
138	*Actinocyclus verrucosus* Ehrenberg, 1831					P						
	Family: DISCODORIDIDAE Bergh, 1891											
139	*Archidoris minor* (Eliot, 1903)									P		
140	*Asteronotus cespitosus* (Hasselt, 1824)	P	P	P		P						
141	*Atagema intecta* (Kelaart, 1858)			P		P						
142	*Atagema spongiosa* (Kelaart, 1858)			P						P		
143	Atagema *cf. rugosa* Pruvot-Fol, 1951									P		
144	*Atagema tristis* (Alder and Hancock, 1864)		P	P					P			
145	*Carminodoris cf. grandiflora* (Pease, 1860)									P		
146	*Discodoris boholiensis* Bergh, 1877	P	P							P		
147	*Discodoris fragilis* (Alder and Hancock, 1864)		P									
148	*Discodoris lilacina* (Gould, 1852)			P								
149	*Discodoris pardalis* (Alder & Hancock, 1864)			P								
150	*Doris granulosa* (Pease, 1860)					P						
151	Doris (*Staurodoris) pustulata* Abraham, 1877	P										
152	*Halgerda apiculata* (Alder & Hancock, 1864)		P	P								
153	*Halgerda bacalusia* Fahey & Gosliner 1999	P										
154	*Halgerda maculata* Eliot, 1906					P						
155	*Halgerda stricklandi* Fahey & Gosliner, 1999	P										
156	*Halgerda tessellata* (Bergh, 1880)	P				P						

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
157	*Hoplodoris armata* (Baba, 1993)	P										
158	*Hoplodoris desmoparypha* Bergh, 1880									P		
159	*Jorunna funebris* (Kelaart, 1858)	P	P	P	P	P				P		
160	*Jorunna rubescens* Bergh, 1876	P				P						
161	*Peltodoris murrea* (Abraham, 1877)					P				P		
162	*Platydoris cruenta* (Quoy and Gaimard, 1832)					P						
163	*Platydoris ellioti* (Alder and Hancock, 1864)			P								
164	*Platydoris formosa* (Alder & Hancock, 1864)			P								
165	*Platydoris formosa* var. Eliot, 1903			P								
166	*Platydoris picta* (Kelaart, 1858)			P								
167	*Platydoris scabra* (Cuvier, 1804)	P		P	P	P						
168	*Platydoris striata* (Kelaart, 1859)			P								
169	*Sclerodoris apiculata* (Alder and Hancock, 1864)		P	P		P						
170	*Sclerodoris coriacea* Eliot, 1903		P									
171	*Sclerodoris tuberculata* Eliot, 1904									P		
172	*Thordisa annulata* Eliot, 1910	P										
173	*Sebadoris fragilis* (Alder & Hancock, 1864)	P										
174	*Thordisa crosslandi* Eliot, 1906		P	P								
175	*Sebadoris nubilosa* (Pease, 1871)	P	P									
176	*Tayuva lilacina* (Gould, 1852)									P		
	Family: CADLINIDAE Bergh, 1891											
177	*Aldisa erwinkoehleri* Perrone, 2001	P										
178	*Cadlinella ornatissima* (Risbec, 1928)	P										
	Family: CHROMODORIDIDAE Bergh, 1891											
179	*Ceratosoma trilobatum* (J. E. Gray, 1827)	P		P								
180	*Ceratosoma sinuatum* (van Hasselt, 1824)	P										
181	*Chromodoris albopunctata* (Garrett, 1879)	P										
182	*Chromodoris alius* Rudman, 1987	P										

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
183	*Chromodoris colemani* Rudman, 1982	P										
184	*Chromodoris conchyliata* Yonow, 1984	P										
185	*Chromodoris decora* (Pease, 1860)	P										
186	*Chromodoris aspersa* Gould 1852	P				P						
187	*Chromodoris bombayana* (Winkworth, 1946)								P	P		
188	*Chromodoris cf setoensis* Baba, 1938					P						
189	*Chromodoris elisabethina* Bergh, 1877	P										
190	*Chromodoris fidelis* (Kelaart, 1858)	P	P	P		P						
191	*Chromodoris geminus* Rudman, 1987	P	P				P					
192	*Chromodoris gleniei* (Kelaart, 1858)	P		P								
193	*Chromodoris geometrica* Risbec, 1928	P										
194	*Chromodoris hintuanensis* Gosliner & Behrens, 1998	P										
195	*Chromodoris sinensis* Rudman, 1985	P										
196	*Chromodoris strigata* Rudman, 1982	P										
197	*Chromodoris mandapamensis* Valdes et al , 1999		P		P							
198	*Chromodoris naiki* Valde et al., 1999		P		P							
199	*Chromodoris preciosa* (Kelaart, 1858)			P								
200	*Chromodoris setoensis* Baba, 1938					P						
201	*Chromodoris striatella* Bergh, 1876	P										
202	*Chromodoris tennentana* (Kelaart, 1859)			P								
203	*Chromodoris tinctoria* (Ruppell & Leuckart, 1828)	P								P		
204	*Chromodoris trimarginata* (Winckworth, 1946)		P						P			
205	*Digidentis kulonba* (Burn, 1966)	P										
206	*Durvilledoris pusilla* (Bergh, 1874)	P										
207	*Glossodoris atromarginata* (Cuvier, 1804)	P	P	P	P							
208	*Glossodoris cincta* (Bergh, 1888)	P	P			P						

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
209	*Glossodoris hikuerensis* (Pruvot-fol, 1954)	P										
210	*Glossodoris humberti* (Kelaart, 1858)		P									
211	*Glossodoris inopinata* (Bergh, 1905)			P								
212	*Glossodoris poecila* Winckworth, 1946								P			
213	*Glossodoris pustulans* (Bergh, 1877)		P									
214	*Glossodoris rosans* (Bergh, 1889)		P									
215	*Glossodoris semeion* (Winckworth, 1946)								P			
216	*Glossodoris pallida* (Ruppell and Leuckart, 1830)	P										
217	*Glossodoris rufomarginata* (Bergh, 1890)	P										
218	*Glossodoris tomsmithi* Bertch & Gosliner, 1989)	P										
219	*Hypselodoris bullockii* (Collingwood, 1881)	P	P									
220	*Hypselodoris carnea* (Bergh 1889)									P		
221	*Hypselodoris emmae* Rudman, 1977	P										
222	*Hypselodoris infucata* (Ruppell & Leuckart, 1828)	P		P		P				P		
223	*Hypselodoris kanga* Rudman, 1977		P						P			
224	*Hypselodoris krakatoa* Gosliner & Johnson, 1999	P										
225	*Hypselodoris maculosa* (Pease, 1871)	P				P						
226	*Hypselodoris maridadilus* Rudman, 1977	P				P						
227	*Hypselodoris nigrostriata* (Eliot, 1904)	P	P									
228	*Hypselodoris sagamiensis* (Baba, 1949)	P										
229	*Hypselodoris zebrina* (Alder & Hancock, 1864)	P		P								
230	*Mexichromis multituberculata* (Baba, 1953)	P	P									
231	*Noumea alboannulata* Rudman, 1986	P										
232	*Noumea angustolutea* Rudman, 1990	P										
233	*Noumea simplex* (Pease, 1871)	P										
234	*Noumea varians* (Pease, 1871)	P										

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
235	*Risbecia ghardaqana* (Gohar & Aboul-Ela, 1957)	P										
236	*Risbecia pulchella* (Ruppell and Leuckart, 1828)	P	P									
237	*Thorunna australis* (Risbec, 1928)	P					P					
238	*Thorunna africana* Rudman, 1984	P										
239	*Thorunna florens* (Baba, 1949)	P										
240	*Thorunna horologia* Rudman, 1984	P										
241	*Thorunna punicea* (Rudman, 1995)	P										
242	*Thorunna cf punicea* (Rudman, 1995)	P										
	Family: DENDRODORIDIDAE O'Donoghue, 1924											
243	*Dendrodoris atromaculata* (Alder & Hancock, 1864)		P									
244	*Dendrodoris denisoni* (Angas, 1864)	P		P								
245	*Dendrodoris fumata* (Rüppell and Leuckart, 1828)	P	P	P						P		
246	*Dendrodoris (Dendrodoris) goani* Rao & Kumary, 1973							P				
247	*Dendrodoris rubra var. fusca* (Alder & Hancock, 1864)		P									
248	*Dendrodoris nigra* (Stimpson, 1855)	P	P	P		P				P		
249	*Dendrodoris tuberculosa* (Quoy & Gaimard, 1832)			P		P						
250	*Dendrodoris tuberculosa* var. Eliot, 1906		P									
251	*Doriopsilla miniata* (Alder and Hancock, 1866)								P	P		
252	Doriopsilla *cf. miniata* (Alder and Hancock, 1864)									P		
253	*Doriopsilla miniata* var Narayanan 1968									P		
	Family: GONIODORIDIDAE H. Adams & A. Adams, 1854											
255	*Goniodoris kolabana* Winckworth, 1946								P			

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
256	*Goniodoridella savignyi* Pruvot-Fol, 1933	P										
257	*Okenia pellucida* Burn 1967								P			
258	*Okenia kendi* Gosliner, 2004	P										
259	*Okenia liklik* Gosliner, 2004	P										
260	*Okenia rhinorma* Rudman, 2007	P										
	Family: HEXABRANCHIDAE Bergh, 1891											
261	*Hexabranchus sanguineus* (Ruppell and Leuckart, 1828)	P			P							
	Family: POLYCERIDAE Alder & Hancock, 1845											
262	*Kaloplocamus acutus* Baba, 1955	P										
263	*Nembrotha lineolata* (Bergh, 1905)	P										
264	*Kalinga ornata* Alder and Hancock, 1864		P	P								
265	*Plocamopherus ceylonicus* (Kelaart, 1858)									P		
266	*Plocamopherus ocellatus* (Ruppel and Leuckart, 1828)									P		
	Family: GYMNODORIDIDAE Odhner, 1941											
268	*Gymnodoris alba* (Bergh, 1877)					P				P		
269	*Gymnodoris ceylonica* (Kelaart, 1858)	P		P		P						
270	*Gymnodoris citrina* (Bergh, 1875)	P				P						
271	*Gymnodoris okinawae* Baba, 1936					P						
272	*Gymnodoris rubropapulosa* (Bergh, 1905)	P										
273	*Gymnodoris striata* (Eliot, 1908)	P										
274	*Gymnodoris subflava* (Baba, 1949)	P										
	Family: PHYLLIDIIDAE Rafinesque, 1814											
275	*Fryeria marindica* (Yonow & Hayward, 1991)	P	P			P						
276	*Phyllidia alyta* Yonow, 1996	P	P			P						
277	*Phyllidia coelestis* Bergh, 1905	P				P						
278	*Phyllidia elegans* Bergh, 1869	P										
279	*Phyllidia madangensis* Brunckhorst, 1993	P										

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
280	*Phyllidia ocellata* Cuvier, 1804	P	P									
281	*Phyllidia polkadotsa* Brunckhorst, 1993	P										
282	*Phyllidia varicosa* Lamarck, 1801	P	P			P	P					
283	*Phyllidiella burni* Brunckhorst, 1993	P										
284	*Phyllidiella cooraburrama* Brunckhorst, 1993	P										
285	*Phyllidiella granulata* Brunckhorst, 1993	P										
286	*Phyllidiella hageni* Fahrner & Beck, 2000	P										
287	*Phyllidiella nigra* (van Hasselt, 1824)	P										
288	*Phyllidiella pustulosa* (Cuvier, 1804)	P	P			P						
289	*Phyllidiella rosans* (Bergh, 1873)	P	P			P						
290	*Phyllidiella zeylanica* (Kelaart, 1859)	P	P	P		P	P			P		
291	*Phyllidiella hageni* Fahrner & Beck, 2000	P										
292	*Phyllidiella nigra* (van Hasselt, 1824)	P										
293	*Phyllidiopsis gemmata* (Pruvot-Fol, 1957)	P				P						
294	*Phyllidiopsis annae* Brunckhorst, 1993	P										
295	*Phyllidiopsis burni* Brunckhorst, 1993	P										
296	*Phyllidiopsis phiphiensis* Brunckhorst, 1993	P				P						
297	*Phyllidiopsis shireenae* Brunckhorst, 1993	P										
298	*Phyllidiopsis striata* Bergh, 1888	P				P						
299	*Reticulidia suzanneae* Valdes & Behrens, 2002	P										
	Family: TERGIPEDIDAE Bergh, 1889											
300	*Cuthona adyarensis* Rao 1952		P									
301	*Cuthona annadalei* Eliot, 1910										P	
302	*Cuthona henrici* (Eliot, 1916)											P
303	*Cuthona yamasui* Hamatani, 1993								P	P		
304	*Phestilla lugubris* (Bergh, 1870)					P				P		
	Family: AEOLIDIDAE Gray, 1827											
306	*Anteaeolidiella indica* (Bergh 1888)								P			
307	*Cerberilla ambonensis* Bergh, 1905	P										

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
308	*Cerberilla annulata* (Quoy and Gaimard, 1832)	P										
309	*Eolidina mannarensis* Rao and Alagarswami, 1960		P									
310	Aeolidiella alba Risbec, 1928	P										
311	*Aeolidia effulgens* (Kelaart, 1858)		P									
	Family: EUBRANCHIDAE Odhner, 1934											
312	*Eubranchus fuscannulata* (Rao, 1968)		P									
313	*Eubranchus indicus* (Rao, 1968)		P									
314	*Eubranchus mandapamensis* (Rao, 1968)		P									
315	*Eubranchus mannarensis* Rao, 1968		P									
316	*Eubranchus productus* (Farran, 1905)		P									
317	*Eubranchus rubropunctatus* Edmunds 1969								P			
	Family: FLABELLINIDAE Bergh, 1881											
318	*Flabellina bicolor* (Kelaart, 1858)	P		P		P				P		
319	*Flabellina exoptata* (Gosliner & Willan, 1991)	P										
320	*Flabellina riwo* Gosliner and Willan, 1991	P										
321	*Flabellina rubrolineata* (O'Donoghue, 1929)	P										
322	*Flabellina rubropurpurata* Gosliner & willan, 1991	P										
	Family: FACELINIDAE Bergh, 1889											
323	*Dondice ceylonica* (Farran, 1905)		P									
324	*Favorinus argentimaculatus* Rao, 1967		P									
325	*Favorinus japonicus* Baba, 1949			P								
	Favorinus mirabilis Baba, 1955	P										
326	*Glaucus atlanticus* Forster, 1777			P								
327	*Glaucus marinus* (Dupont, 1763)		P									
328	*Herviella affinis* Baba, 1960					P						
329	*Herviella albida* Baba, 1966					P						
330	*Moridilla brockii* Bergh, 1888	P	P									

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
331	Phidiana indca (Bergh, 1896)	P										
332	*Phidiana militaris* (Alder & Hancock, 1864)	P	P	P						P		
333	*Phidiana semidecora* (Pease, 1860)					P						
334	*Pteraeolidia ianthina* (Angas,1864)	P	P			P				P		
335	*Sakuraeolis gujaratica* Rudman, 1980									P		
336	*Sakuraeolis kirembosa* Rudman, 1980	P										
	Family: TRITONIIDAE Lamarck, 1809											
337	*Marionia pambanensis* O'Donoghue, 1932		P									
338	*Marianina rosea* (Pruvot-Fol, 1930)											
	Family: PSEUDOVERMIDAE Thiele, 1931											
339	*Pseudovermis solcatus* Salviniplaven and Rao, 1973	P										
	Family: HANCOCKIIDAE Mac Farland, 1923											
340	*Hancockia papillata* (O'Donoghue, 1932)		P									
	Family: TETHYDIDAE Rafinesque, 1815											
341	*Melibe megaceras* Gosliner, 1987	P										
342	*Melibe fimbriata* Alder & Hancock, 1864		P									
343	*Melibe ocellata* Bergh, 1888	P										
344	*Melibe rangii* (Bergh, 1875)									P		
	Family: BORNELLIDAE Bergh, 1874											
345	*Bornella anguilla* Johnson, 1984	P										
347	*Bornella dotoides* Pola, Rudman & Gosliner, 2009	P										
348	*Bornella stellifer* (Adams and Reeve in Adams, 1848)	P	P	P						P		
	Family: LIMACINIDAE Gray, 1840											
349	*Limacina bulimoides* (d'Orbignyi, 1836)											
350	*Limacina inflata* (d'Orbignyi, 1836)	P										
351	*Limacina trochiformis* (d'Orbignyi, 1836)											
	Family: CRESEIDAE Rampal, 1973											

		A & N	TN	AP	KL	LK	KA	GOA	MH	GT	WB	OD
352	*Creseis acicula* (Rang, 1826)		P		P							
353	*Creseis cherchari* (Bows, 1886)	P										
354	*Creseis virgula* (Rang, 1828)											
355	*Creseis virgula* conica Eschscholtz, 1829											
356	*Creseis virgula* constricta (Chen and Be, 1964)											
	Family: CLIIDAE Jeffreys, 1869											
357	*Clio cuspidata* (Bosc, 1862)											
358	*Clio convexa* (Boas, 1886)	P										
359	*Clio pyramidata* Linnaeus, 1767	P										
360	*Hyalocylis striata* (Rang, 1828)	P										
361	*Styliola subula* Quoy and Gaimard, 1827	P										
	Family: CAVOLINIIDAE Gray, 1850											
362	*Cavolinia globulus* (Gray, 1805)	P										
363	*Cavolinia inflexa* (Lesueur, 1813)	P										
364	*Cavolinia longirostris* (Lesueur, 1813)											
365	*Cavolinia longirostris* longirostris											
366	*Cavolinia longirostris* limbata											
367	*Cavolinia longirostris* angulosa											
368	*Cavolinia longirostris* strangulata											
369	*Cavolinia tridentata* (Forskal, 1773)	P										
370	*Cavolinia uncinata* (Rang, 1829)											
371	*Diacria quadridentata* (de Blainville, 1827)											
372	*Diacria trispinosa* (de Blainville, 1827)											
	Family: PERACLIDAE Tesch, 1913											
373	*Peraclis reticulata* (d'Orbignyi, 1836)											
		210	89	47	8	73	6	2	15	53	6	8

A&N: Andaman & Nicobar Islands | TN: Tamil Nadu | AP: Andhra Predesh | KL: Kerala | LK: Lakshadweep | KA: Karnataka | MH: Maharashtra | GT: Gujarat | WB: West Bengal | OD: Odissa

Checklist (Polyclads)

Sl. No.	SPECIES	A & N Is.	Lakshadweep	Peninsular Indian Coast
	Order: Polycladida Lang, 1844			
	Family- Pseudocerotidae Lang, 1844			
1	*Phirkoceros fritillus* Newman & Cannon, 1996	P		
2	*Phirkoceros katoi* Newman & Cannon, 1996	P		
3	*Phirkoceros mopsus* (Marcus, 1952)	P		
4	*Pseudobiceros bedfordi* (Laidlaw, 1903)	P		
5	*Pseudobiceros apricus* Newman and Cannon, 1994	P		
6	*Pseudobiceros damawan* Newman and Cannon, 1994	P		
7	*Pseudobiceros flavomarginatus* (Laidlaw, 1902)		P	
8	*Pseudobiceros flavocanthus* Newman and Cannon, 1994		P	
9	*Pseudobiceros fulgor* Newman and Cannon, 1994	P		
10	*Pseudobiceros murinus* Newman & Cannon, 1997		P	
11	*Pseudobiceros gratus* (Kato, 1937)		P	
12	*Pseudobiceros gardinieri* (Laidlaw, 1902)		P	
13	Pseudobiceros hymanae Newman and Cannon, 1997	P		
14	*Pseudobiceros stellae* Newman and Cannon, 1994	P		P
15	*Pseudobiceros uniarborensis* Newman and Cannon, 1994	P		
16	*Pseudoceros buskii* (Collingwood, 1876)		P	
17	*Pseudoceros indicus* Newman and cannon, 2002	P		P
18	*Pseudoceros goslineri* Newman and Cannon, 1994	P		
19	*Pseudoceros bifurcus* Prudhoe, 1989	P		
20	Pseudoceros concinnus (Collingwood, 1876)	P		
21	*Pseudoceros scintillatus* Newman and Cannon, 1994	P		
22	*Pseudoceros leptostichus* Bock, 1913	P		
23	*Pseudoceros confuscus* Newman & Cannon, 1995	P		
24	*Pseudoceros gamblei* Laidlaw, 1903	P		
25	Pseudoceros irretitus Newman & cannon,1998	P		

		A & N	Lakshadweep	Peninsular Indian Coast
27	*Pseudoceros intermittus* Newman & cannon,1995	P		
28	*Pseudoceros rubronanus* Newman & Cannon, 1998	P		
29	*Pseudoceros paralaticlavus*Newman and Cannon, 1994		P	
30	*Pseudoceros prudhoei* Newman and Cannon, 1994		P	
31	*Pseudoceros cf susanae* Newman and Anderson, 1997		P	P
32	*Pseudoceros cruentus* Newman & Cannon, 1998	P		
33	*Pseudoceros tigrinus* Laidlaw, 1902		P	
34	*Pseudoceros tristratus* Hayman, 1959		P	
35	*Acanthozoon plehni* (Laidlaw, 1902)		P	
36	*Tytthosoceros lizardensis* Newman & Cannon, 1998	P		
37	*Thysanozoon nigropapillosum* (Hayman, 1959)	P		
	Family- Planoceridae Lang, 1844			
38	*Planocera armata* Laidlaw, 1902		P	
39	*Paraplanocera langi* (Ladilaw, 1902)		P	
40	*Paraplanocera oligoglena* Schmarda, 1859	P		
	Family: Euryleptidae Lang, 1884			
41	*Cycloporus venetus* Newman & Cannon, 2002	P		
42	*Maritigrella fuscopunctata* Newman & Cannon, 2000		P	
	Family: Prosthiostomidae Lang, 1884			
43	*Prosthiostomum elegans* Laidlaw, 1902		P	
44	*Prosthiostomum cooperi* Laidlaw, 1902		P	
45	*Prosthiostomum trilineatum* Yeri & Kaburaki, 1920	P		P
	Family: Euplanidae Marcus & Marcus, 1966			
46	Euplanoida pardalis (Laidlaw, 1902)		P	
	Family: Pericelidae Laidlaw, 1902			
47	*Pericelis byerleyana* Collingwood, 1876		P	
	Family: Latocestidae Laidlaw, 1903			
48	*Latocestus maldivensis* (Laidlaw, 1902)		P	
	Total No. of species	28	20	4

References

Apte, D. and R.D. Pitale. 2011. New records of polyclad flatworms (Platyhelmenthes: Turbellaria) from coral reef of Lakshadweep Island, India. *J. Bombay Nat. Hist. Soc.* 108(2), 109-113.

Apte, D. and R.D. Pitale. 2011. New records of polyclad flatworms (Platyhelmenthes: Turbellaria) from coral reef of Lakshadweep Island, India. *J. Bombay Nat. Hist. Soc.* 108(2), 109-113.

Deepak, A. 2009. Opisthobranch fauna of Lakshadweep Islands, India, with 52 new records to Lakshadweep and 40 new records to India: Part 1. *J. Bombay Nat. Hist. Soc.* 106 (2): 162-175.

Deepak, A., B. Vishal and P. Dishant. 2010. An annotated and illustrated checklist of the opisthobranch fauna of Gulf of Kutch, Gujarat, India with 21 new records for Gujarat and 13 new records for India: part 1. *J. Bombay Nat. Hist. Soc.* 107 (1): 14-23.

Dixit, S. and C. Raghunathan. 2013. Polyclads of Andaman and Nicobar Islands. *Andaman Science Association*, Vol. 18; (2), 165-169.

Eliot, C. 1906a. On the nudibranchs from southern India and Ceylon with special reference to the drawings by Kelaart and the collections belonging to Alder and Hancock preserved in the Hancock Museum at Newcastle-on-Tyne. *Proc Zool Soc London* 2:636-691 (pl. 42-47)

Eliot, C. 1910a. Nudibranchs collected by Mr. Stanely Gardiner from the Indian Ocean in HMS Sealark. In: reports of Percy Sladen trust expedition to the Indian Ocean in 1905 under the leadership of Mr. J. Stanely Gardiner MA. *Trans Linn Soc zool Series* 2 13 (2):411-439 (pl. 25)

Eliot, C. 1906b. Nudibranchiata with some remarks on the familes and genera and description of a new genus *Doridomorpha*. In: J Stanely Gardiner (Ed) *The fauna and geography of Maldives and Laccadive Archipelagos being the account of the work carried on and of the collections made by an expedition during years 1899 and 1900*. 2:540-573 (pl. 32)

Eliot, C. 1909. Report on nudibranchs collected by Mr. James Hornell at Okhamandal in Kattiawar in 1905-1906. In: *Report to government of Baroda on the marine zoology of Okhamandal*. 1 pp 137-145.

Eliot, C. 1910b. Notes on nudibranchs from the Indian Museum. *Rec. Indian Mus.* 5(4) : 247-252. Pl. 19.

Eliot, C. 1916. Mollusca Nudibranchia. In: Fauna of Chilika Lake. *Mem Ind Mus.* 5:375-380

Narayana, K. R 1969. On the opisthobranchite fauna of Gulf of Kutch. In: *Proc of the symposium on Mollusca* held at Cochin, from jan 12-16, 1968. Part I: 189-213 (pl. 1-2)

Narayana, K. R. 1968. On three opisthobranchs from south west coast of India. *J. Mar. Biol. Ass. India*. 10 (2):.337-380 (pl. 1-2)

Narayana, K. R. 1970. On a species of the genus *Berthellina* (Opisthobranchia: Notaspedia) of the Gulf of Kutch. *J. Mar. Biol. Ass. India*. 12(1-2):210-212

Narayana, K. R. 1971. On two doridacian nudibranchs (Mollusca: Gastropoda) from the Gulf of Kutch new to Indian coast. *J Bombay Nat Hist Soc* 68(1):280-281

Raghunathan, C., C. Sivaperuman and Ramakrishna. 2009. An account of newly recorded five species of nudibranch (Opisthobranchia, Gastropoda) in Andaman and Nicobar Islands. In: *Recent trends in biodiversity of Andaman and Nicobar Islands*. Z.S.I., Kolkata.

Ramakrishna., C. R. Sreeraj, C. Raghunathan, C. Sivaperuman, J. S. Yogesh Kumar, R. Raghuraman, T. Immanuel and P.T. Rajan. 2010. *Guide to Opisthobranchs of Andaman and Nicobar Islands*. Zoological Survey of India, 196 pp.

Sreeraj, C. R., C. Sivaperuman and C. Raghunathan. 2012a. Report on twelve newly reported Opisthobranchs (Opisthobranhia, Gastropoda) from Andman and Nicobar Islands, India. *Int. J Ocean Mar Ecol Syst* 1(2): 50-59

Sreeraj, C. R., C. Sivaperuman and C. Raghunathan. 2012b. An annolated checklist of opisthobranch fauna (Gastropoda: Opisthobranchia) of Nicobar Islands, India. *Journal of Threatened Taxa* 4(4):2499-2509

Sreeraj, C. R., C. Sivaperuman and C. Raghunathan. 2013. Species diversity and abundance of opisthobranch Molluscs (Gastropoda: Opisthobranchia) in the coral reef environments of Andaman and Nicobar Islands, India. K. Venkataraman et al. (eds), *Ecology and Conservation of Tropical Marine Communities*. Ch- 6 Pp. 81-106.

Sreeraj, C. R., P. T. Rajan, R. Raghuraman, C. Raghunathan, R. Rajkumar, T. Immanuel and Ramakrishna. 2010. On some new records of sea slugs (Class: Gastropoda, Subclass: Opisthobranchia) from Andaman and Nicobar Islands. In: *Recent Trends in biodiversity of Andaman and Nicobar Islands, ZSI, Kolkata*. pp 289-298.

Sreeraj, C.R. and C. Raghunathan. 2011. New records of pseudocerotid polyclads from Andaman and Nicobar Islands, India. *Journal of the Marine Biological Association of the United Kingdom* 4; e73; doi: 10.1017/S1755267211000819.

Sreeraj, C.R. and C. Raghunathan. 2013. Pseudocerotid polyclads (Platyhelminthes, Turbellaria, Polycladida) from Andaman and Nicobar Islands, India. *Proceedings of the International Academy of Ecology and Environmental Sciences* 3(1): 36-41.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