

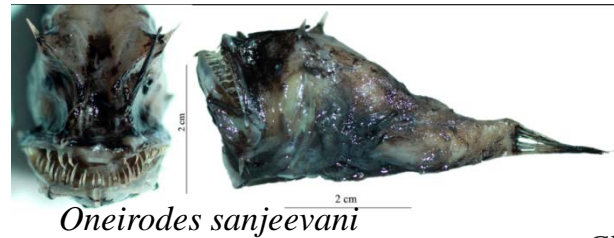
Deep Sea Biodiversity inventORIZATION – India contribution

Dr. M. Sudhakar
Director

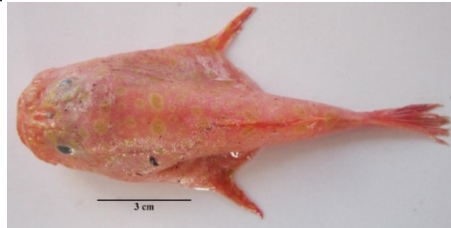


Centre for Marine Living Resources and Ecology
Ministry of Earth Sciences (Govt. of India)
Kochi, India

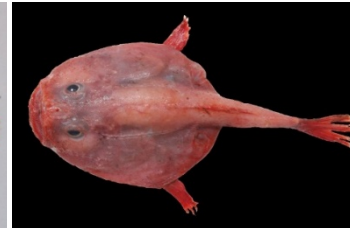
New Records of fishes and sea spiders from deep sea from Northern India Ocean



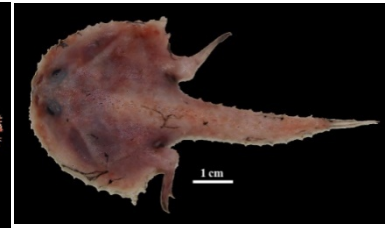
Oneirodes sanjeevani



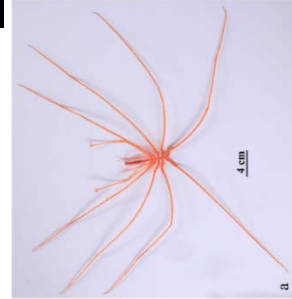
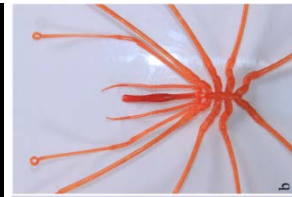
Chaunax multilepis



Chaunax sp



Halicmetus sp.



Colossendeis colossea



Haliuteae sp.



Malthopsis sp.



Ophichthus sp.



Peristedion amblygenys



Aphanopus microphthalmus



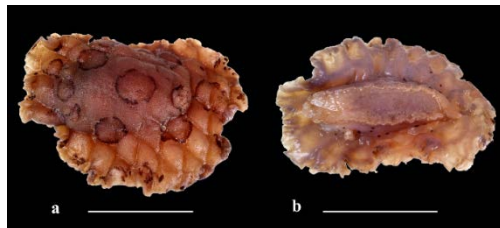
Bufoceratias shaoi



Diceratias trilobus



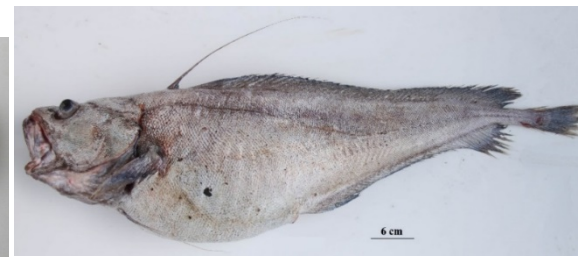
Ceratias uranoscopus



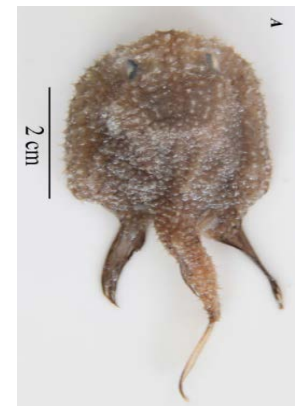
Platydoris annulata



Macrocephenchelys brevirostris



Lepidion inosimae

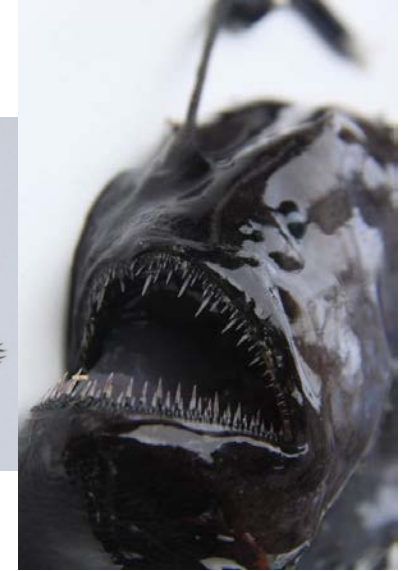
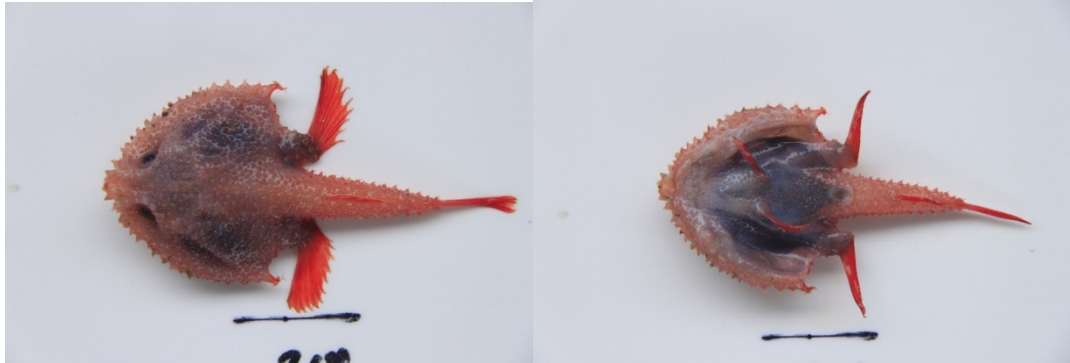


Haliutopsis stellifera

Order- Lophiiformes
 Subordr- Ogcocephaloidei
 Family-Ogcocephalidae
 Genus- *Haliieutopsis*

New species to Science

Order- Lophiiformes
 Subordr- Ceratioidei
 Family-Himantolophidae
 Genus- *Himantolophus*



Collection Locality- Latitude- 13° 15. 902´ N; Longitude- 93 ° 15. 927 ´ E; Andaman waters; Depth- 635 m. Gear- HSDT; Date -11/ 2017; Cruise- no:367

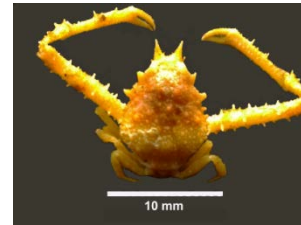
New Records to Indian waters



Diretmoides verginae
 8°24'261"N, 93°20'482"E, and
 11°09'903"N, 92°19'061"E,



Owstonia kamoharai Endo, Liao and Matsuu
 13°07'626"N , 93°11'633"E

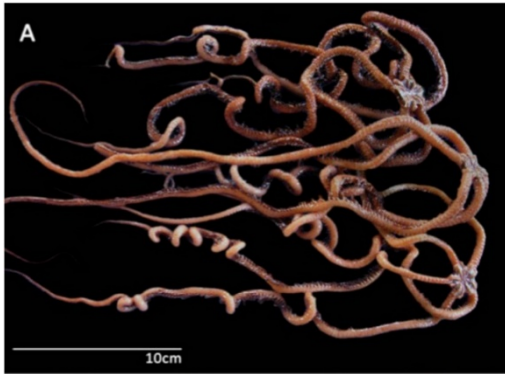


Kasagia arbastoi Richer de Forges & N
 7° 26.536´ N, 77° 36.276´ E g, 2007

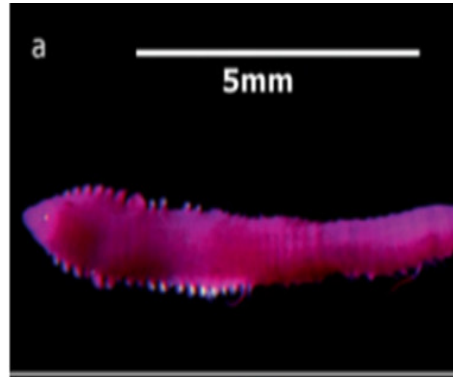


Acanthephyra carinata Spence Bate, 1888
 11°09.903´, E 092°19.061´, 11°04.663´, E 092°29.9´

New species of benthic invertebrates from Indian EEZ



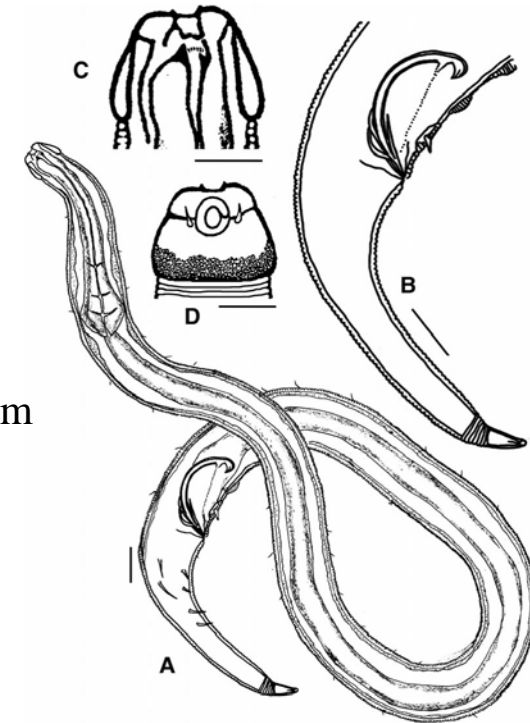
Asteroschema sampadae
Off Cape Comorin, 454m



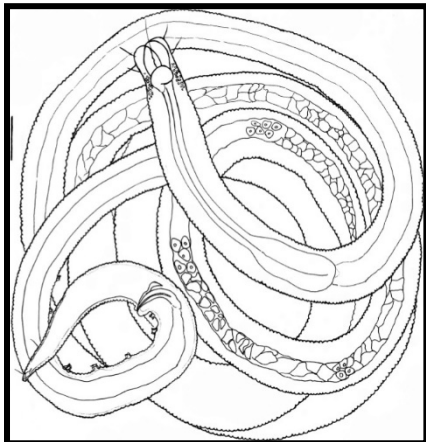
Pettibonella shompens
Off Car Nicobar Island,
50m



Armandia sampadae
Off Rutland Island, 50m

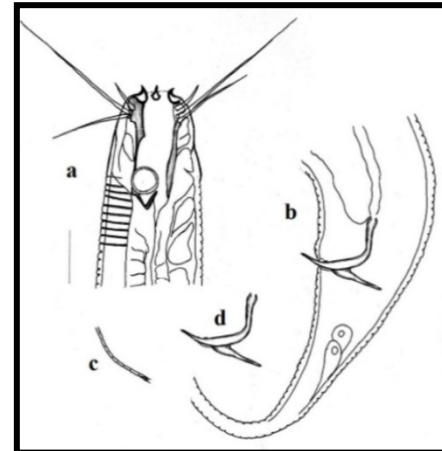


Psammonema kuriani
Off Goa, 214 m



Paramicrolaimus damodarani
Off Kannur, 95 m

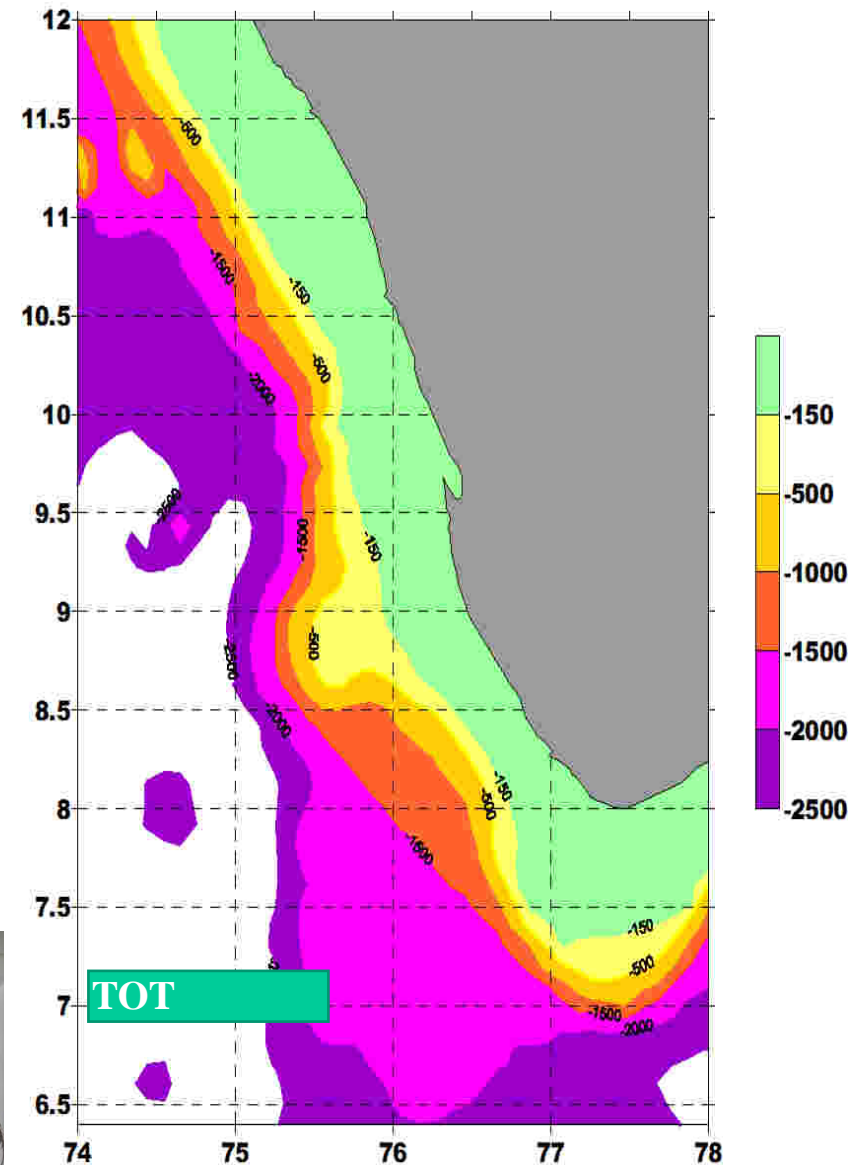
Scaptrella filicaudata
Off Cape
Comorin,
1100 m



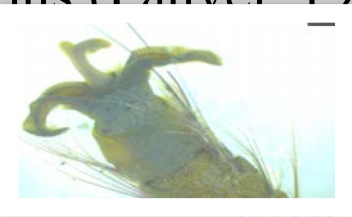
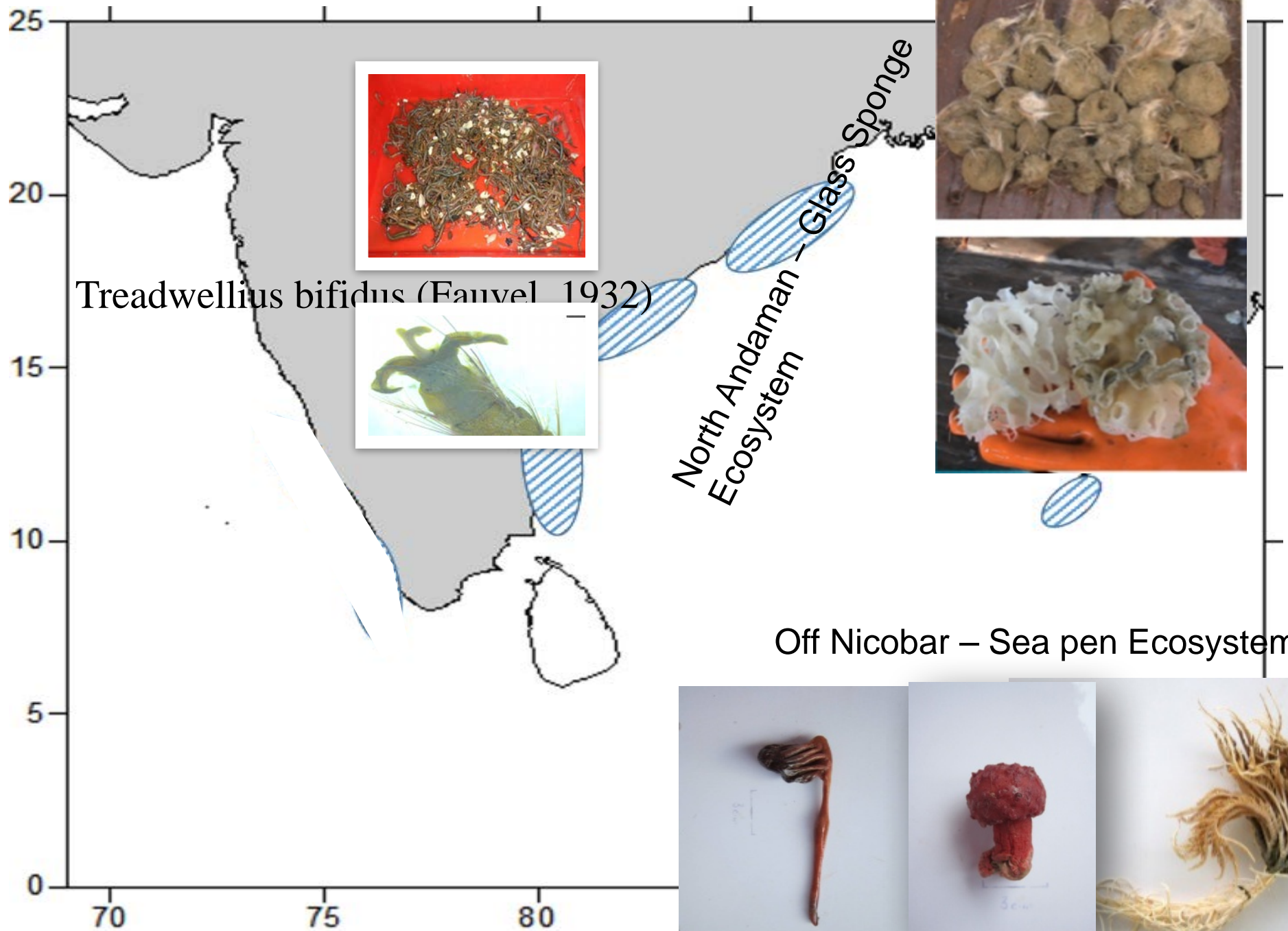
Major Deep sea Ecosystems

Terrace off Trivandrum: A new deep-sea biodiversity hot spot

Bathyal plateau off Trivandrum, Terrace off Trivandrum (TOT) is found to unique habitat in the deep sea biodiversity. Around 150 species of very rare deep sea organisms were collected using bottom trawl from this area which all preserved in the CMLRE referral centre. TOT found to support unique biodiversity and high biomass when compared to other deep sea regions.



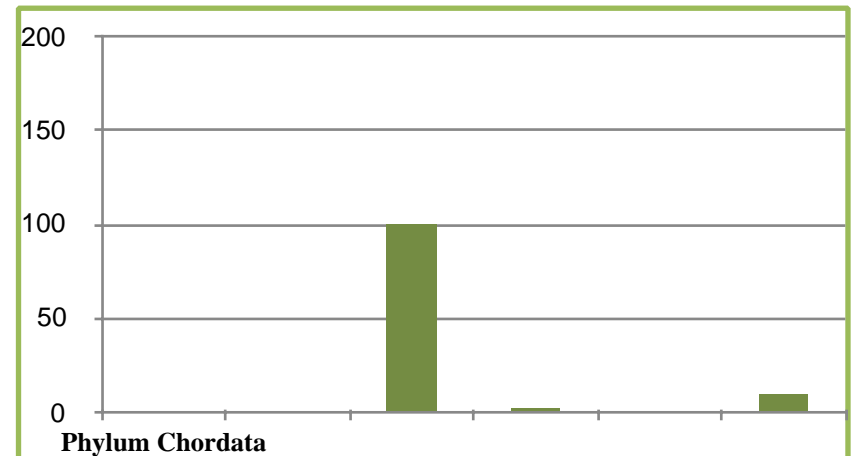
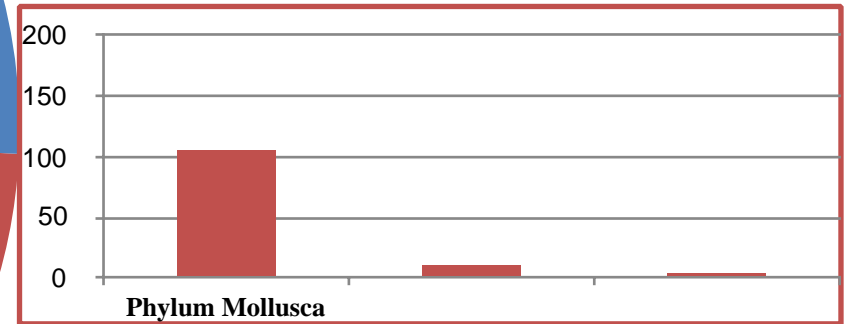
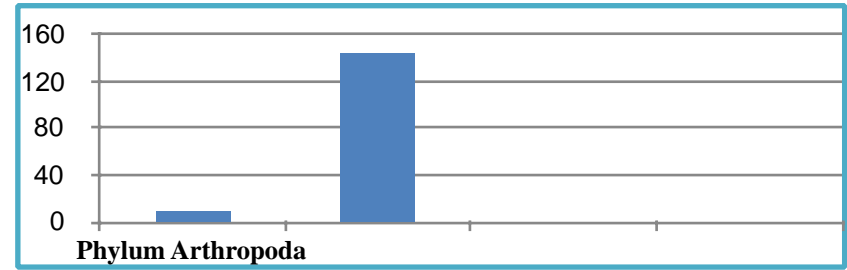
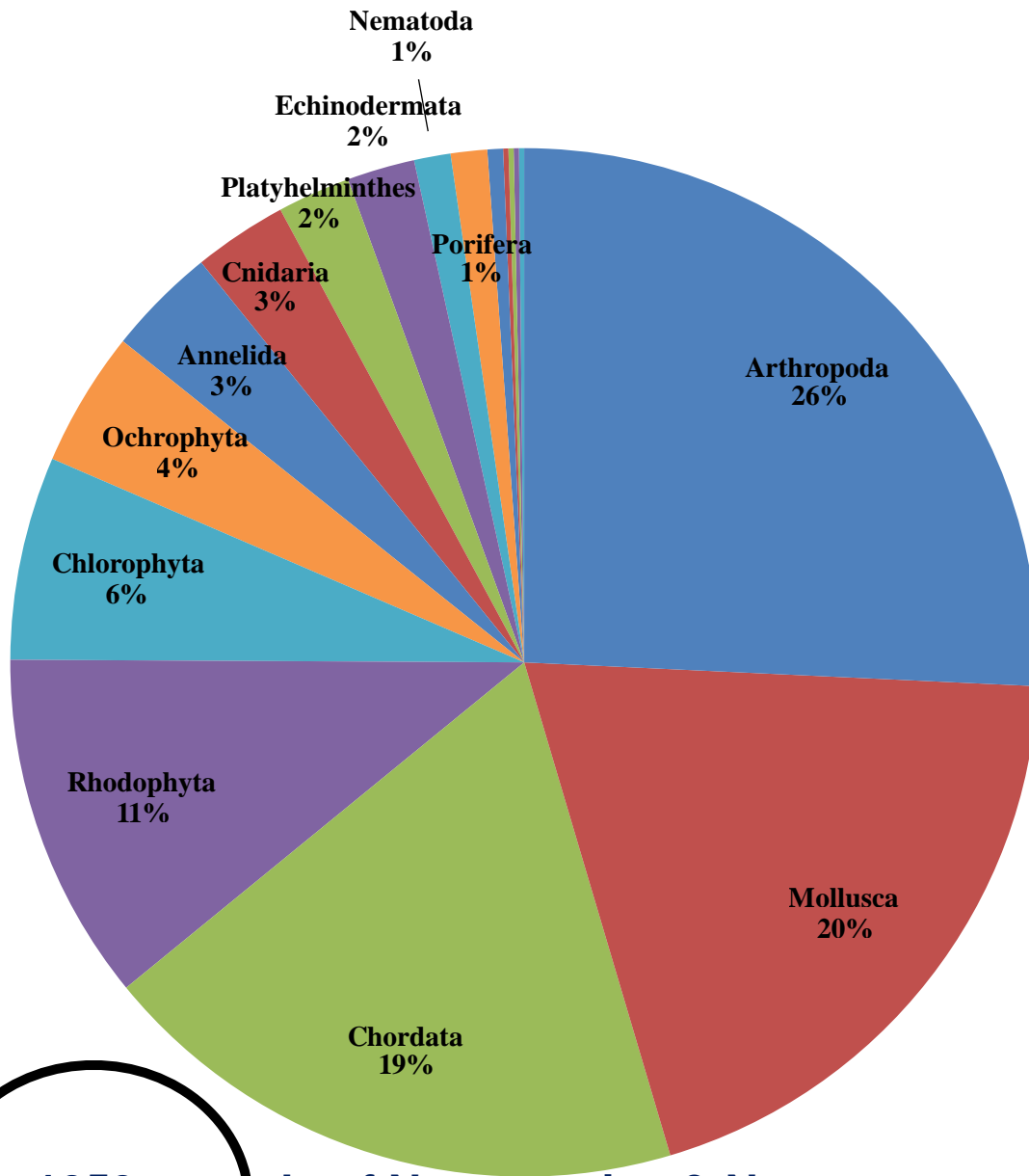
Major Deep sea ecosystem in Bay of Bengal and Andaman



Some of the deep voucher specimens with FORV Referral Centre



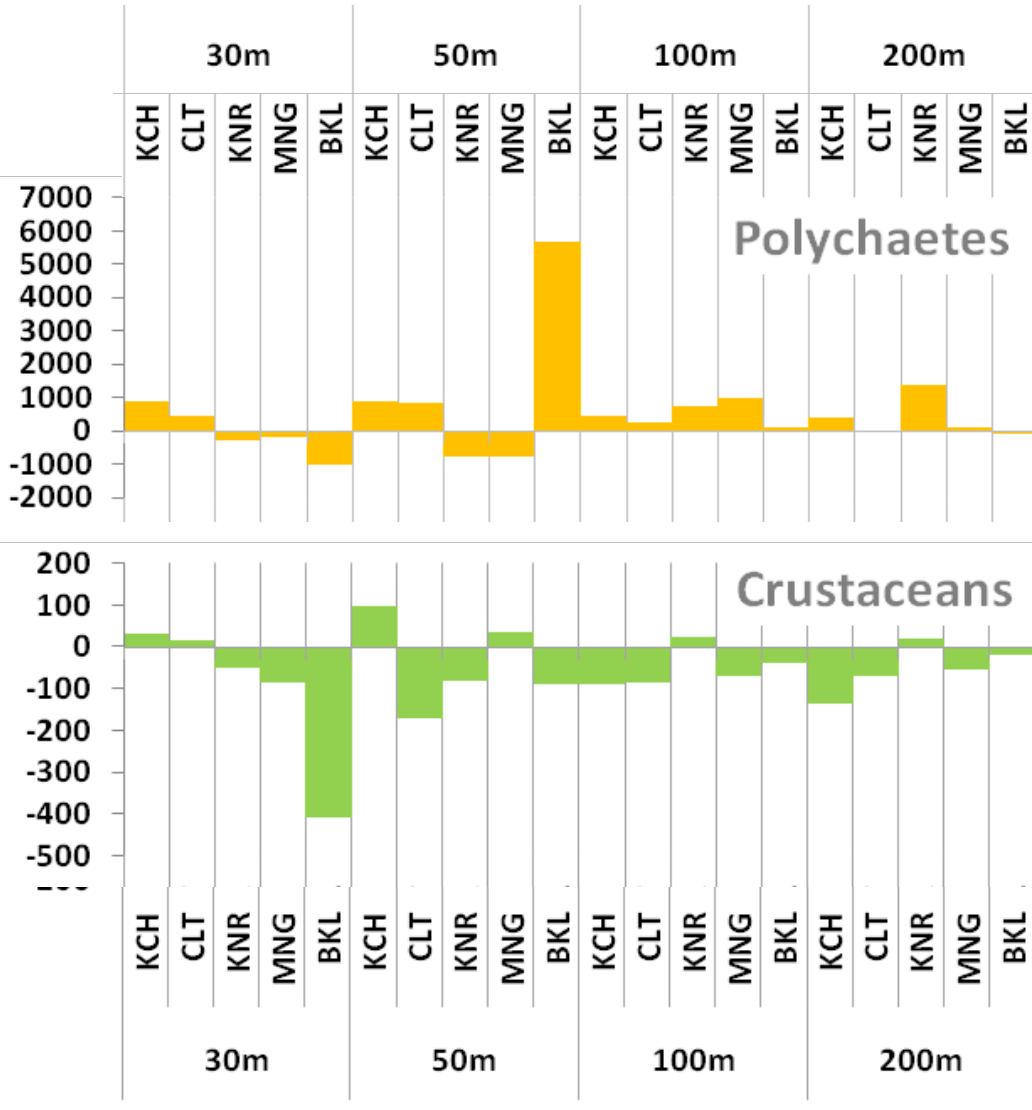
Marine Biodiversity Inventions under Marine Living Resources Program



1059 records of New species & New records from Indian Ocean (1965 -2018)

Decadal changes in Marine Benthos

Comparison between 1998 and 2012



Environmental conditions were more or less unchanged and the bathymetric variations were prominent

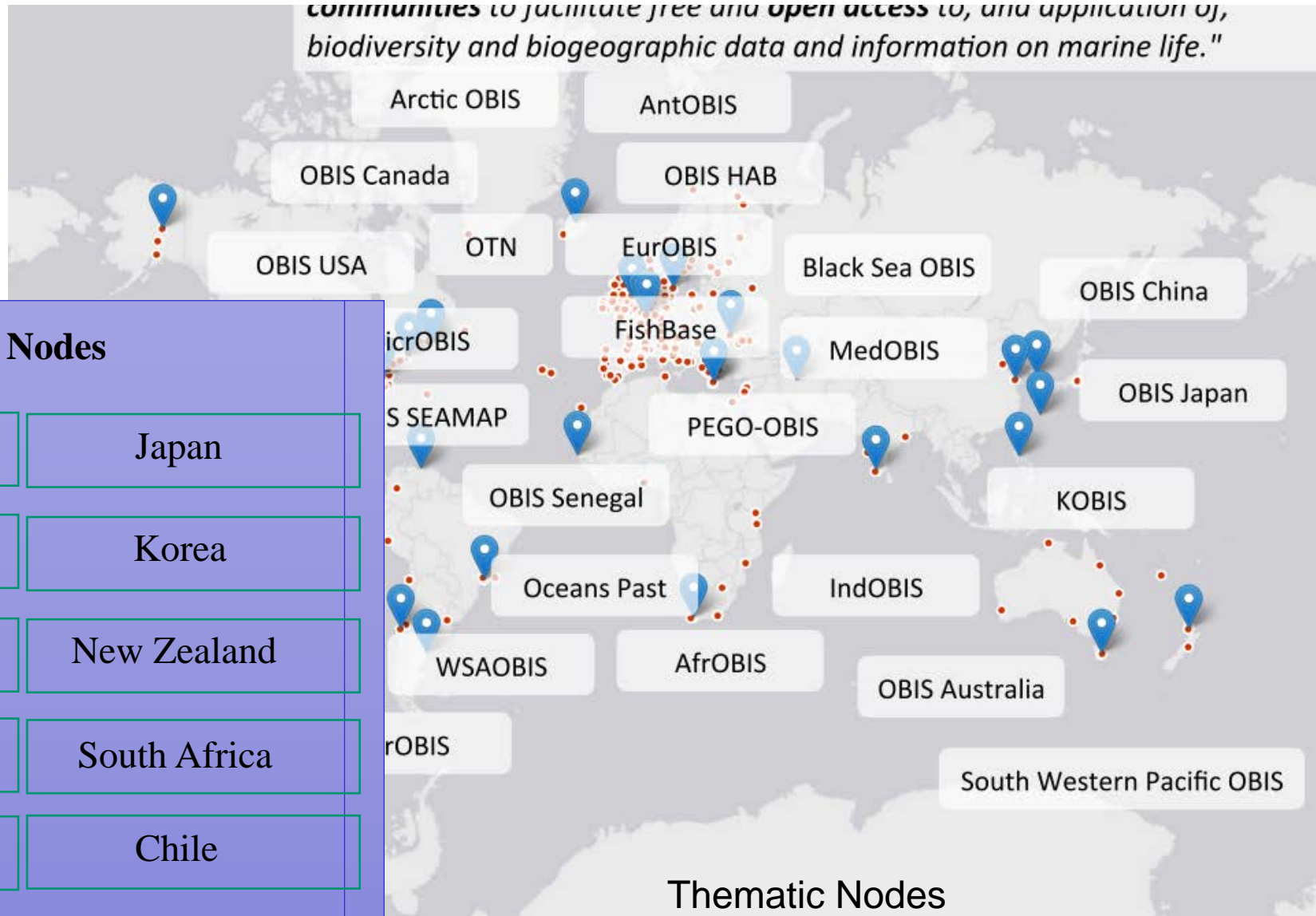
Density of polychaetes increased and crustaceans decreased at most sites – increase in total density

Total biomass decreased, indicating an overall reduction in size of fauna

Increase in dominance of opportunists (polychaetes) in 2012, and decline in crustacean density - not a good trend in healthy ecosystem

OBIS network

communities to facilitate free and open access to, and application of, biodiversity and biogeographic data and information on marine life."



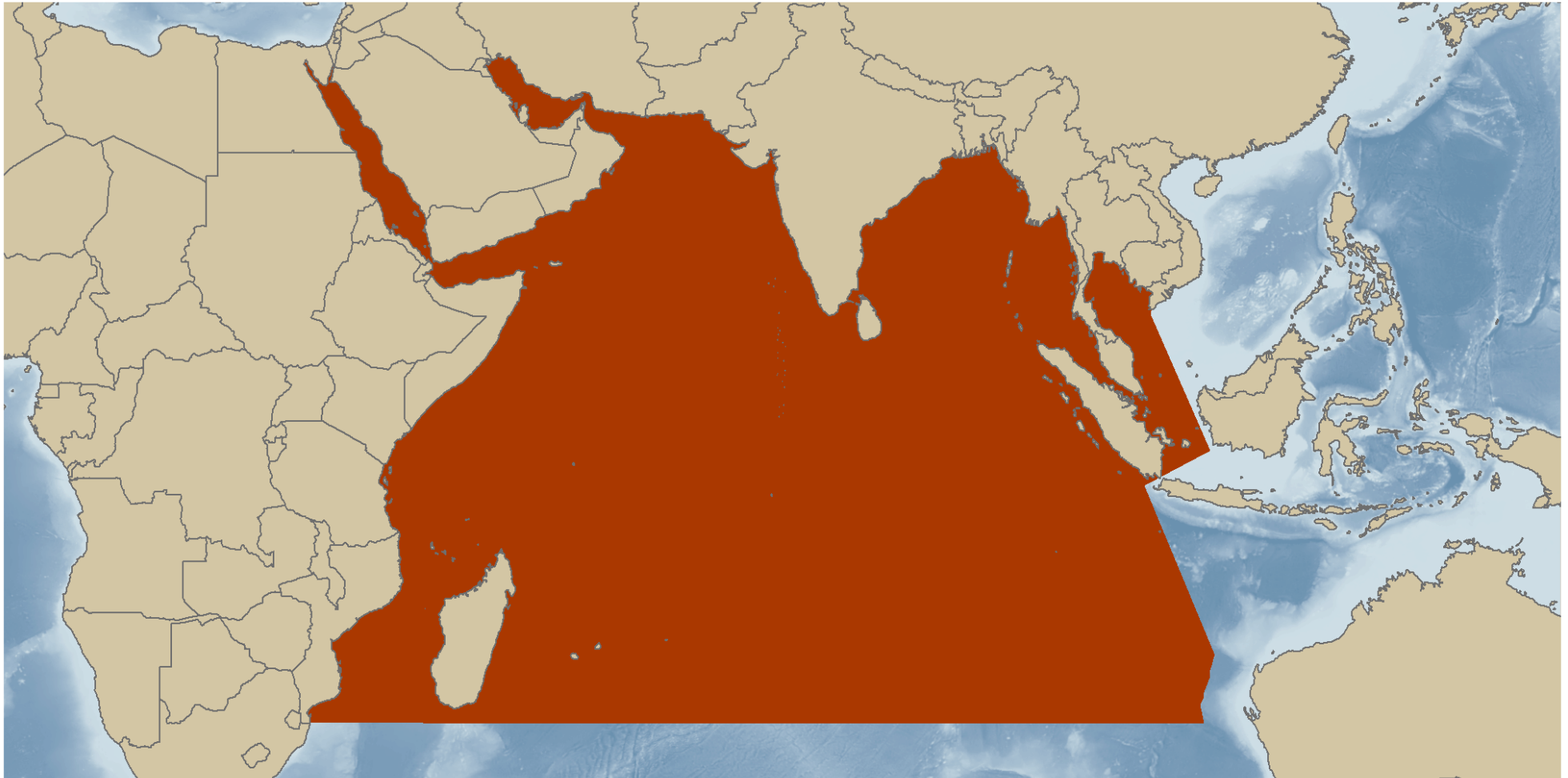
Regional Nodes

Antarctica	Japan
Argentina	Korea
Australia	New Zealand
Canada	South Africa
China	Chile
Belgium	Brazil
India - IndOBIS	USA

Thematic Nodes

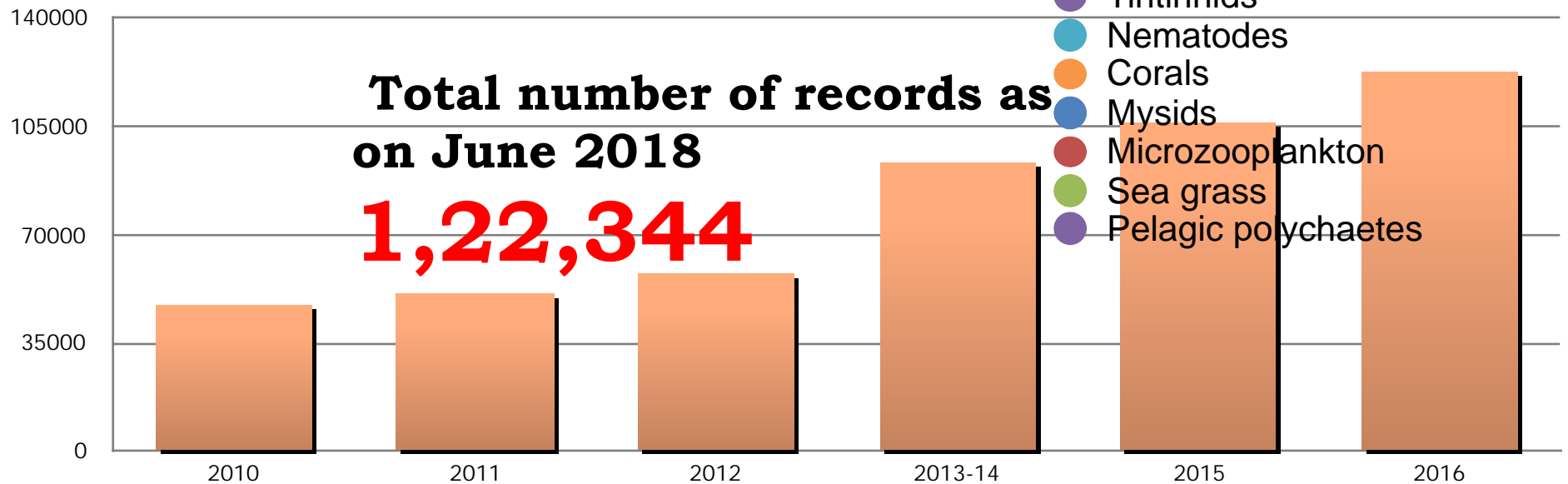
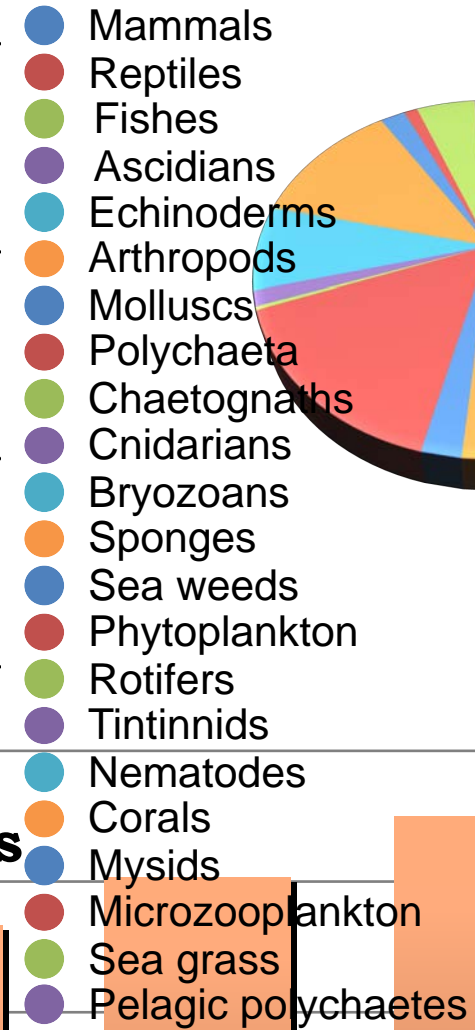
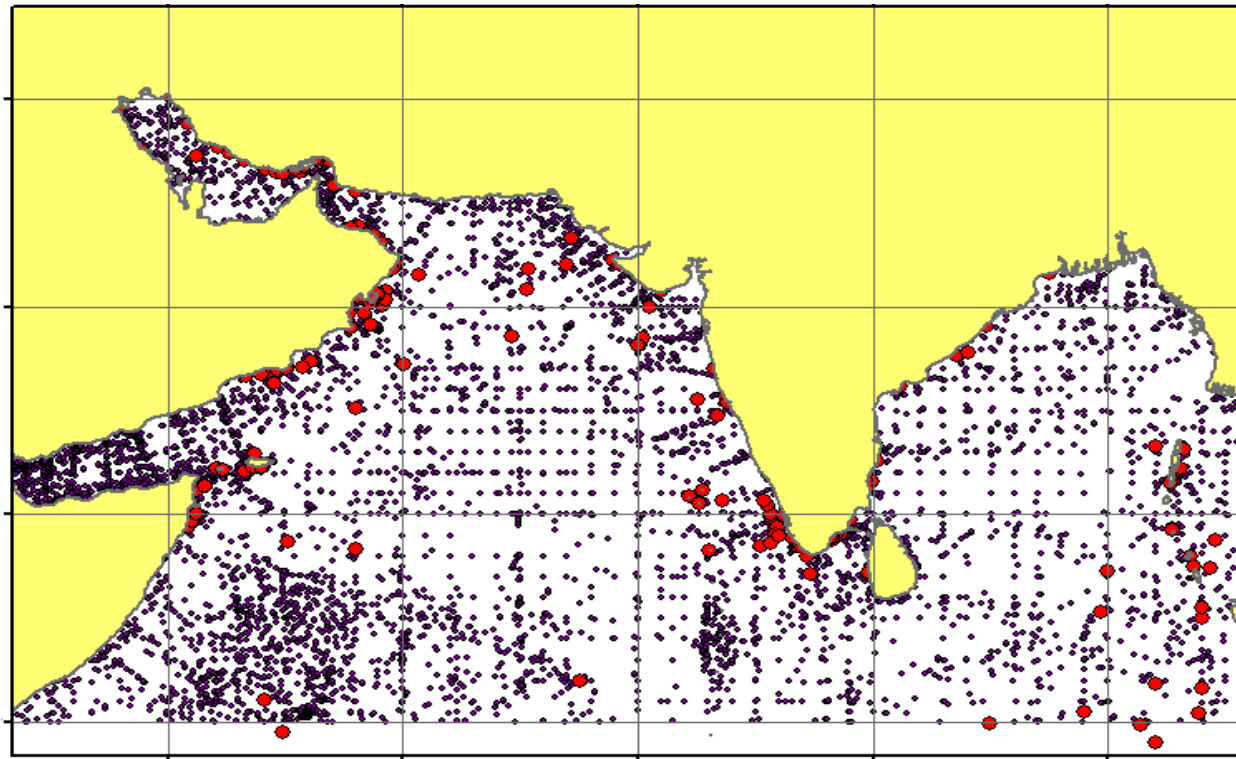
Hexacorals	OBIS-SEAMAP	FishBase
MicrOBIS	Seamounts	Syndeep

Geographic extent of coverage under OBIS



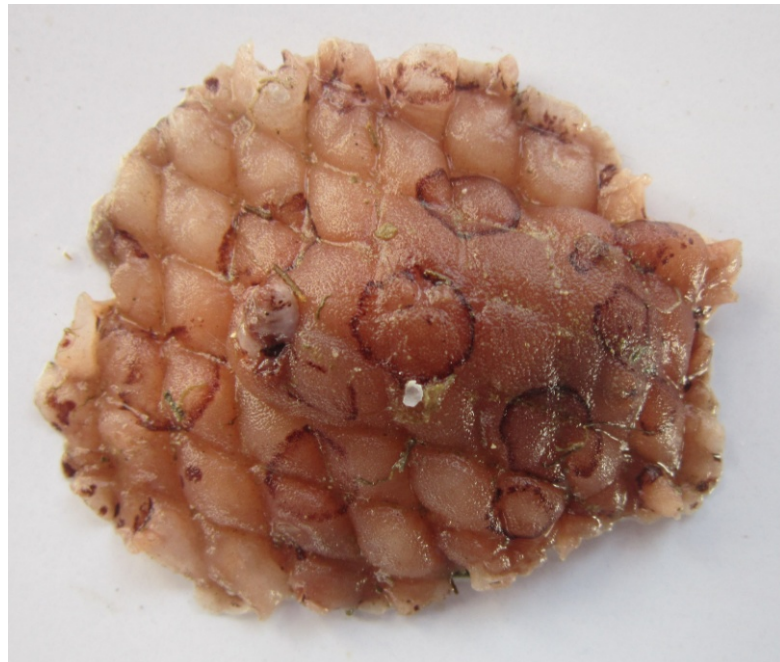
Indian Ocean Region

OBIS data coverage in the Northern Indian Ocean

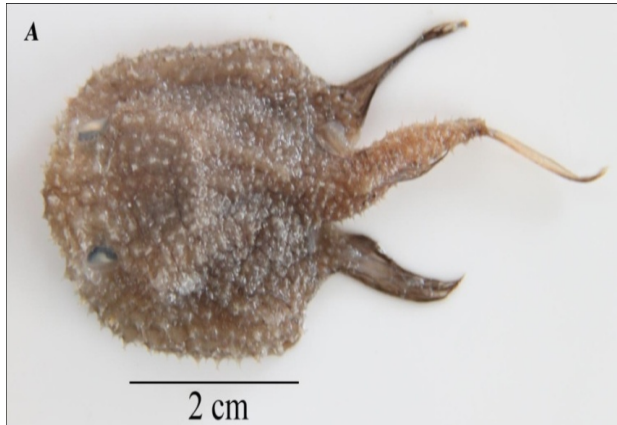


New reports of deep sea organisms from Indian EEZ – Continued....

Platydoris annulata Dorgan, Valdés & Gosliner, 2002
Andaman waters; 440 m



New reports of deep sea fishes from Indian EEZ



Halieutoposis stellifera (Smith and Radcliffe, in Radcliffe 1912)

First report from Andaman sea 300 m



Bufoceratias shaoi (Pietsch *et al* 2004)

First report from Arabian sea 1000 m

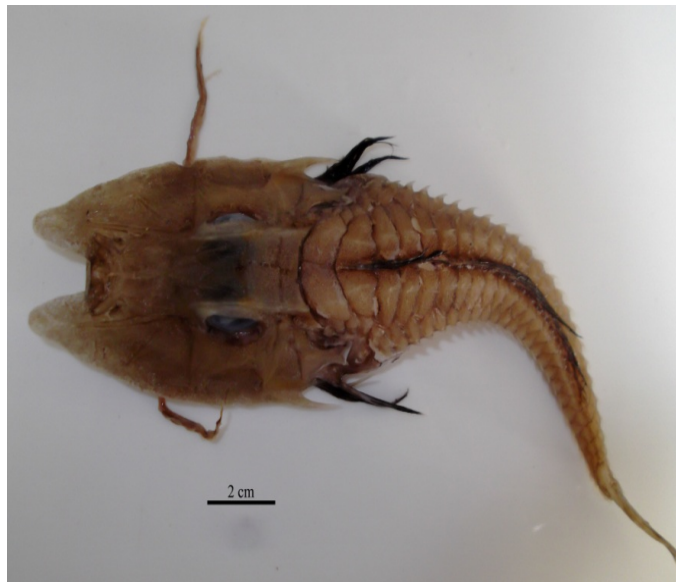


Diceratias trilobus Arabian Sea,
1300-1350m

New reports of deep sea fishes from Indian EEZ – Continued....



Peristedion amblygenys Fowler, 1938
First report from Andaman sea 200 m



Scalicus orientalis (Fowler, 1938)
First report from Andaman sea
200 m

New reports of deep sea fishes from Indian EEZ – Continued....



Hexatrygon bickelli
Heemstra & Smith, 1980
First report from Andaman
Sea & Bay of Bengal 500m



Hoplostethus rubellopterus
Kotlyar, 1980
First report from Arabian Sea and
Bay of Bengal 300m



Bathytyphlops marionae
Mead, 1958
First report from Arabian Sea
1000 m

New reports of deep sea fishes from Indian EEZ – Continued....



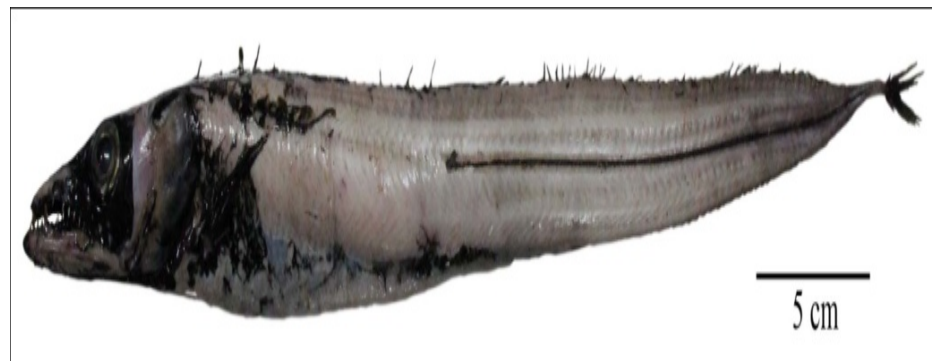
Lepidion inoshimae (Günther,
1887)

First report from Arabian Sea
1000 m



Harriotta raleighana Goode &
Bean, 1895

First report from Arabian Sea
1000 m



Aphanopus microphthalmus

First report from Arabian Sea 1000 m

New reports of deep sea fishes from Indian EEZ – Continued....



Nettastoma solitarium Castle & Smith, 1981; Eastern Indian Ocean; AN; 400 m



Congrhynechus talabonoides Fowler, 1934; Indian Ocean; AN;

New reports of deep sea fishes from Indian EEZ – Continued....



Macrocephenchelys brevirostris (Chen & Weng, 1967) Indian Ocean; SEAS; 392 m



Facciolella sp Indian Ocean ; SEAS; 392

New reports of deep sea fishes from Indian EEZ – Continued....



Dysomma bucephalus Alcock, 1889; Arabian Sea; 328 m



Xenomystax trucidans Alcock, 1894, Andaman waters , 400 m

New reports of deep sea fishes from Indian EEZ – Continued....



Dysomma muciparus (Alcock, 1891)
Arabian Sea ; 392 m



Bathycongrus nasicus (Alcock, 1894)
Arabian sea ; 392 m

New reports of deep sea fishes from Indian EEZ – Continued....



3 New species of the
genus *Apristurus*
from Arabian Sea
1000 m depth





New species Family Dalatidae; Andaman waters ; 629 m



**New species *Gymnothorax sp*
Arabian sea 220 m**

Myctophid Species new to science (Arabian Sea)



South eastern Arabian Sea 100m



South eastern Arabian Sea 200m



South eastern Arabian Sea 1000m

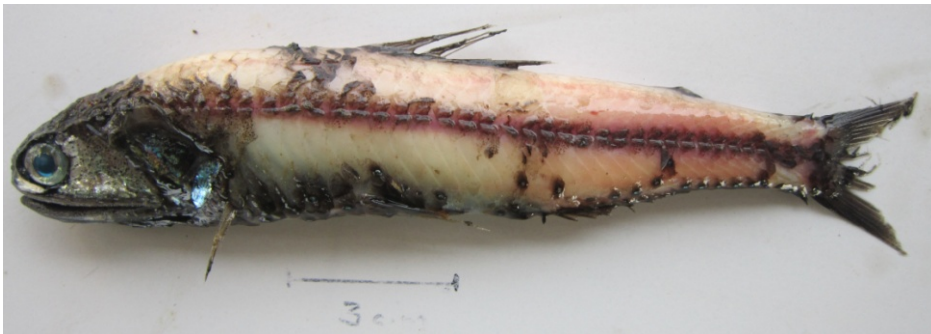
Myctophid Species (new record and new species from Andaman waters)



Lampedna anomala (new record-514m)

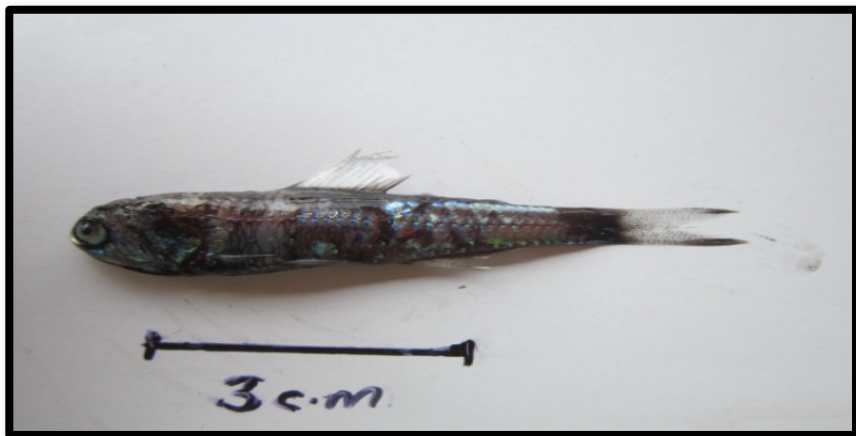


Diaphus garmani (new Record -100m)



Diaphus sp (new sp- 100m)

New reports of deep sea fishes from Indian EEZ – Continued....



Diaphus adenomus (new record- 514m)



Diaphus thiollieri (new record- 660m)



Thank you