Copepods subsorted from the zooplankton collected during the International Indian OceanExpedition (IIOE) from14 cruises on R/V Anton Bruun, R/V Argo, RRS Discovery, and R/V Natal in the Indian Ocean from 1962-1964 (IIOE project)

Website: https://www.bco-dmo.org/dataset/2483
Version: final
Version Date: 2010-11-22

Project
» International Indian Ocean Expedition (IIOE)

Program
» Census of Marine Life (CoML)

Contributors	Affiliation	Role
Nair, Vijayalakshmi R.	National Institute of Oceanography, Kochi, India (NIO)	Principal Investigator
Allison, Dicky	Woods Hole Oceanographic Institution (WHOI)	BCO-DMO Data Manager

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Dataset Description

'Zooplankton samples collected during International Indian Ocean Expedition (IIOE) 1960-65 are by far the largest and the most important collections from the Indian Ocean in the world today. Though several experts spent decades to study various groups of zooplankton, these valuable data have not been computerized to make permanent records. Hence a database for IIOE zooplankton is initiated as a cooperative project of CMarZ and a part of the IIOE data have been digitized.

During IIOE 1548 standard zooplankton samples were collected covering the entire Indian Ocean. The database is prepared based on published information on these zooplankton samples. Three sets of Tables are made (1) Basic data on zooplankton volume, total population and all the 54 taxa found in the collections. (2) Data emerged from subsorting of copepods, decapods and fish larvae (3) Species level data for chaetognaths for entire Indian Ocean and ostracods for northern Indian Ocean.' (from summary of CMarZ Cooperative Project final report)

Enormous amount of data emerged through IIOE collections (25 °N to 45°S latitude and 30 to 120°E longitude) had been digitized to make permanent records of the zooplankton of the Indian Ocean (Nair, 2005). The proposed baseline biodiversity assessment of CMarZ has a critical application for ocean research to provide a benchmark against which future comparisons can be made. The first step towards this endeavour would be to digitize the recorded species from different sectors of the world oceans along with their biogeography. This project aims to bring out inventories for the known species of major groups of zooplankton of the Indian Ocean. This information can be incorporated into CMarZ species page, an endeavour to enhance capacity in zooplankton taxonomic analyses.

Related objects: iioe_zoo and iioe_zoo_other

Although technically retired, **Vijaya Nair** remains the contact for anyone seeking information about these data.

Contact information:
Vijayalakshmi R. Nair
HB/50, Vijaya
South Bridge Avenue, Panampilly Nagar
Kochi 682036, Kerala, India
(telephone/fax) 00-91-484-2316999
vijayalakshmi40@hotmail.com

Methods & Sampling

"It was recommended that each research vessel, every night between 2200 and 0200 hours local time, take one vertical haul from 200m to the surface, hauling in the net at a speed of 1 m/sec. The samples were then to be preserved in 10% formalin neutralized with hexamethylenetetramine. The displacement volume of the catch [was], if possible, measured at the earliest opportunity by an accepted method. The samples were then sent to the Sorting Centre for further processing. Many vessels took duplicate hauls, one for the Centre and one for the use of individual scientists in their respective countries." (Hansen, 1966).

Inventory is based on materials collected during IIOE and later collections made by NIO and other Institutions along the coastal and oceanic realms of the Indian Ocean.

References: Hansen, Vagn Kr., 1966. The Indian Ocean Biological Centre: The centre for sorting plankton samples of the International Indian Ocean Expedition. Deep-Sea Res., **13**, pp.229-234.

Data Processing Description

Sixty species of calanoid copepods from 31 genera belonging to 8 families are described. Most of the species are epi and mesopelagic and showed wide distribution in the Atlantic, Pacific and Indian Oceans. Bathypelagic species recorded are *Megacalanus princeps*, *Bathycalanus richardi*, *Gaussia princeps*, *G. scotti* and *G. sewelli* which are occasionally caught in 1000-500m hauls. *G. sewelli* is known only from the Indian Ocean. *Paracalanus indicus* and *Pleuromamma indica* are the most abundant species in the mixed layer depth of the Indian Exclusive Economic Zone. *Undinula vulgaris* and *Cosmocalanus darwinii* are mostly confined to the upper 50m. *Lucicutia wolfendeni* shows affinity to the Oxygen Minimum Zone (OMZ). The herbivorous copepods namely Calanidae and Paracalanidae dominate the highly productive waters of Indian Ocean during summer monsoon and form food for pelagic shoaling fishes.

References

Nair, V.R., 2001. Zooplankton. In : The Indian Ocean, a Perspective Volume 2. R. Sen Gupta and E. Desa (Eds.) 417-450. Oxford and IBH Publishing Co. Pvt., Ltd., New Delhi, Calcutta.

Nair, V.R., 2005. Database for zooplankton collected during International Indian Ocean Expedition (IIOE) 1960-65. Cooperating project Report. Census of Marine Zooplankton (CMarZ), Connecticut, USA.

Rosamma Stephen, 1999. Studies on copepods of the Indian Ocean with reference to the west coast of India, Ph.D. Thesis, University of Mumbai, Mumbai. 206pp.

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Data Files

File
iioe_copes_new.csv (Comma Separated Values (.csv), 624.37 KB) MD5:a087a592c85ee0a7db2c149cb4200f7d Primary data file for dataset ID 2483

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Parameters

Parameter	Description	Units
reference	master reference number of sample	
taxon	common name of group	
count	number of individuals counted	number per standard haul
total_organisms	total number of individuals in tow	number per standard haul
zooplankton_vol	displacement volume of sample	ml
day_night_flag	D = Day; N = night	
time_local	Self explanatory	
date_local	Self explanatory	
lon	longitude tow, East = positive	decimal degrees
lat	latitude of tow, North = positive	decimal degrees
station	Station number gives approximate location	
cruise	cruise number of the particular vessel	
vessel	ship designation	
depth_w	depth of water at this station	meters
year	year data was collected	

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Instruments

Dataset-specific Instrument Name	Indian Ocean Standard Net
Generic Instrument Name	Indian Ocean Standard Net
Generic Instrument Description	The Indian Ocean Standard Net was designed specifically for the International Indian Ocean Exploration project. The net has a mouth area of one square meter and a total length of 5 meters. The net is made of nylon gauze with a mesh size of .333 mm (330um).

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Deployments

AB_63_1

Website	https://www.bco-dmo.org/deployment/57850
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3878
Start Date	1963-03-12
End Date	1963-05-10
Description	Cruise Itinerary (from cruise report): Depart Bombay, India on 3/12/63 and arrive at Phuket, Thailand on 3/22/63. Depart Phuket on 3/23/63 and arrive at Chittagong, E. Pakistan on 4/3/63. Depart Chittagong on 4/4/63 and arrive at Vizagapatnam, India on 4/11/63. Depart Vizagapatnam on 4/14/63 and arrive at Vizagapatnam on 4/25/63. Depart Vizagapatnam on 4/28/63 and arrive at Madras, India on 5/3/63. Depart Madras on 5/4/63 and arrive at Bombay on 5/10/63 (no sampling during this leg).

AB_63_2

Website	https://www.bco-dmo.org/deployment/57851
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3879
Start Date	1963-05-22
End Date	1963-07-23
Description	Itinerary, Cruise 2, R/V ANTON BRUUN (from cruise report): May 22, 1963: Departed Bombay, India. May 22 - June 11: Completed series of stations from 17° N to 20° S latitude along 70° E longitude. June 14: Arrived Port Louis, Mauritius (fuel and provisions). June 18: Departed Port Louis. June 22: Returned Port Louis (emergency call, appendicitis case on board). June 22: Departed Port Louis. June 25 - July 2: Completed series of stations from 22° S to 37° S latitude along 70° E longitude. July 5 - July 17: Completed series of stations from 30° S to 4° N latitude along 80° E longitude. July 18: Arrived Colombo, Ceylon (fuel and provisions). July 19: Departed Colombo. July 23: Arrived Bombay - end of Cruise 2.

AB_63_3

Website	https://www.bco-dmo.org/deployment/57860
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3880
Start Date	1963-08-08
End Date	1963-09-20
Description	Cruise Itinerary (from cruise report): August 8, 1963: Departed Bombay, India. August 13-25: Completed series of stations from l2° N to l2° S latitude along 60° E longitude. August 29: Arrived Port Louis, Mauritius. September 3: Departed Port Louis. September 4-13: Completed series of stations from 23° S to 44° S latitude along 60° E longitude. September 20: Arrived Port Louis - end of Cruise 3.

AB_63_4A

Website	https://www.bco-dmo.org/deployment/57861
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3881
Start Date	1963-09-25
End Date	1963-11-08
Description	Cruise 4A Itinerary (from cruise report): September 25, 1963: Departed Port Louis, Mauritius September 25 - October 1: Occupied Stations I6I-I65 October 1: Arrived Port Victoria, Seychelles October 4: Departed Port Victoria October 4-10: Occupied Stations I66-I70 October 10: Arrived Aden October 12: Departed Aden October 12-24: Occupied Stations I7I-I82 October 24: Arrived Karachi October 28: Departed Karachi October 28 - November 8: Occupied Stations I83-200 November 8: Arrived Bombay, India - End of Cruise 4A

AB_63_A

Website	https://www.bco-dmo.org/deployment/57849
Platform	R/V Anton Bruun
Start Date	1963-02-24
End Date	1963-03-04

AB_64_5

Website	https://www.bco-dmo.org/deployment/57862
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3882
Start Date	1964-01-26
End Date	1964-05-04
Description	Cruise 5 of the R/V ANTON BRUUN originated from Bombay on January 26 and terminated at Bombay on May 4, 1964. In addition to the basic hydrographic and biological programs continued from previous cruises, a special program of longline fishing was conducted in cooperation with the U. S. Bureau of Commercial Fisheries. See cruise report for itinerary and more information.

AB_64_6

Website	https://www.bco-dmo.org/deployment/57863
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3883
Start Date	1964-05-15
End Date	1964-07-16
Description	Cruise 6 Itinerary (from cruise report): May 15, 1964: Departed Bombay, India. May 17 - June 8: Occupied Stations 328 to 346 from 18 degrees N to 19 degrees S latitude on 65 degrees E longitude. June 11: Arrived Port Louis, Mauritius. June 21: Departed Port Louis. June 23 - July 4: Occupied Stations 347 to 354 from 22 degrees S to 41 degrees S latitude on 65 degrees E longitude. July 11: Occupied Station 355. July 16: Arrived Durban, South Africa - end of Cruise 6.

AB_64_7

Website	https://www.bco-dmo.org/deployment/57864
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3884
Start Date	1964-07-29
End Date	1964-09-10
Description	Cruise 7 Itinerary (from cruise report): 29 July 1964: Departed Durban (SOUTH AFRICA) - Start Cruise 7 7 August: Arrived Tulear (MADAGASCAR) 10 August: Departed Tulear 20 August: Arrived Lourenco Marques (MOZAMBIQUE) 22 August: Departed Lourenco Marques 10 September: Arrived Durban - End Cruise 7

AB_64_8

Website	https://www.bco-dmo.org/deployment/57865
Platform	R/V Anton Bruun
Report	http://hdl.handle.net/1912/3884
Start Date	1964-09-25
End Date	1964-11-09
Description	Cruise 8 Itinerary (from cruise report): 25 September: Departed Durban - Start Cruise 8 5 October: Arrived Beira (MOZAMBIQUE) 8 October: Departed Beira 24 October: Arrived Nossi Be (MADAGASCAR) 24 October: Departed Nossi Be 24 October: Arrived Diego Suarez (MADAGASCA) 27 October: Departed Diego Suarez 28 October: Arrived Nossi Be 29 October: Departed Nossi Be 9 November: Arrived Mombasa (KENYA) - End Cruise 8

Ar_62_Lu

Website	https://www.bco-dmo.org/deployment/57866
Platform	R/V Argo
Start Date	1962-07-01
End Date	1962-09-21

Di_63_1

Website	https://www.bco-dmo.org/deployment/57870
Platform	RRS Discovery
Start Date	1963-06-16
End Date	1963-08-17

Di_64_3

Website	https://www.bco-dmo.org/deployment/57871
Platform	RRS Discovery
Start Date	1964-03-08
End Date	1964-09-03

Na_62_5

Website	https://www.bco-dmo.org/deployment/57906
Platform	R/V Natal
Start Date	1962-10-05
End Date	1962-10-22

Na_63_6

Website	https://www.bco-dmo.org/deployment/57907
Platform	R/V Natal
Start Date	1963-01-11
End Date	1963-01-27

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Project Information

International Indian Ocean Expedition (IIOE)

Coverage: Indian Ocean

"During IIOE 1548 standard zooplankton samples were collected covering the entire Indian Ocean. The database is prepared based on published information on these zooplankton samples. Three sets of Tables are made (1) Basic data on zooplankton volume, total population and all the 54 taxa found in the collections. (2) Data emerged from subsorting of copepods, decapods and fish larvae (3) Species level data for chaetognaths for entire Indian Ocean and ostracods for northern Indian Ocean." (from summary of CMarZ Cooperative Project final report)

CMarZ Cooperative Project: Database for Zooplankton collected during International Indian Ocean Expedition (IIOE) 1960-65

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Program Information

Census of Marine Life (CoML)

Website: http://www.coml.org/

Coverage: global

The Census of Marine Life is a global network of researchers in more than 80 nations engaged in a 10-year scientific initiative to assess and explain the diversity, distribution, and abundance of life in the oceans. The world's first comprehensive Census of Marine Life - past, present, and future - will be released in 2010.

The stated purpose of the Census of Marine Life is to assess and explain the diversity, distribution, and abundance of marine life. Each plays an important role in what is known, unknown, and may never be known about what lives in the global ocean.

First, diversity. The Census aims to make for the first time a comprehensive global list of all forms of life in the sea. No such unified list yet exists. Census scientists estimate that about 230,000 species of marine animals

have been described and reside in jars in collections in museums of natural history and other repositories. Since the Census began in 2000, researchers have added more than 5600 species to the lists. They aim to add many thousands more by 2010. The database of the Census already includes records for more than 16 million records, old and new. By 2010, the goal is to have all the old and the new species in an on-line encyclopedia with a webpage for every species. In addition, we will estimate how many species remain unknown, that is, remain to be discovered. The number could be astonishingly large, perhaps a million or more, if all small animals and protists are included. For comparison, biologists have described about 1.5 million terrestrial plants and animals.

Second, distribution. The Census aims to produce maps where the animals have been observed or where they could live, that is, the territory or range of the species. Knowing the range matters a lot for people concerned about, for example, possible consequences of global climate change.

Third, abundance. No Census is complete without measures of abundance. We want to know not only that there is such a thing as a Madagascar crab but how many there are. For marine life, populations are being estimated either in numbers or in total kilos, called biomass.

To complete the context, it is important to understand the top motivations for the Census of Marine Life. Most importantly, much of the ocean is unexplored. Most of the records in its database are for observations near the surface, and down to 1000 meters. No observations have been made in most of the deep ocean, while most of the ocean is deep.

Another important issue is that diversity varies in space. Marine hot spots, like the rain forests of the land, exist off for large fish off the coasts of Brazil and Australia. The goal is to know much more about marine hot spots, to help conserve these large fish. Their abundance and thus their diversity is changing, especially for commercially important species. Between 1952 and 1976, for example, fishermen and their customers emptied many areas of the ocean of tuna.

The Census has evolved a strategy of 14 field projects to touch the major habitats and groups of species in the global ocean. Eleven field projects address habitats, such as seamounts or the Arctic Ocean. Three field projects look globally at animals that either traverse the seas or appear globally distributed: the top predators such as tuna and the plankton and the microbes. The projects employ a mix of technologies. These include acoustics or sound, optics or cameras, tags placed on individual animals that store or report data, and genetics, as well as some actual capture of animals. The technologies complement one another. Sound can survey large areas in the ocean, while light cannot. Light can capture detail and characters that sound cannot. And genetics can make identifications from fragments of specimens or larvae where pictures tell little.

This mix of curiosity, need to know, technology, and scientists willing to investigate the unexplored and undiscovered will result in a Census of Marine Life in 2010 that provides a much clearer picture of what lives below the surface around the globe. Several reasons make such a report timely, indeed urgent. Crises in the sea are reported regularly. One recent study predicted the end of commercial fishery globally by 2050, if current trends persist. Better information is needed to fashion the management that will sustain fisheries, conserve diversity, reverse losses of habitat, reduce impacts of pollution, and respond to global climate change. Hence, there are biological, economic, philosophical and political reasons to push for greater exploration and understanding of the ocean and its inhabitants. Indeed, the United Nations Convention on Biological Diversity requires signatories to collect information on living resources, but, as yet, no nation has a complete baseline of such information. The Census of Marine Life's global network of researchers will help to fill this knowledge gap, providing critical information to help guide decisions on how to manage global marine resources for the future.

[Text copied from the CoML web site, November 5, 2008]

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