May 25, 2009
Japan Agency for Marine-Earth Science and Technology

JAMSTEC Launches Integrated Online Data-system on Marine Species and Habitat Distribution ~Aiming to Facilitate Biodiversity Research~

1. Outline

The Japan Agency for Marine-Earth Science and Technology (JAMSTEC: Yasuhiro Kato, President) has been developing a data system on marine organisms, the "Information Bank on Marine Life and Environment (*1)," aiming to continuously and widely provide extensive information on marine species obtained through JAMSTEC's research, and to facilitate scientific and educational activities in related fields.

As a core system of the information bank, JAMSTEC will launch the "Biological Information System for Marine Life (in short, BISMaL)" on May 26. BISMaL is an integrated data-system designed to provide information on marine species, including taxonomic and biogeographic data. It works together with individual databases already operated by JAMSTEC, such as the Deep-sea Video Database, and serves as a portal site combining all databases in JAMSTEC.

BISMaL is awaiting further improvements, including the integration of data/model systems on physicochemical parameters. Cooperation with global biodiversity data-systems is also planned to facilitate biodiversity informatics and related researches including the impact assessment of global environmental changes on marine biodiversity.

BISMaL URL: http://www.godac.jp/bismal/

2. Functions

BISMaL can store and connect various kinds of data of each species and display them in a window. Users can search species or taxonomic groups by name (scientific or Japanese), geographical area, depth range or combinations of them, and then obtain a broad spectrum of data, encompassing taxonomical information, ecological and physiological properties, observational/collection records, related literature as well as images and videos captured by the JAMSTEC's submersibles.

Currently, approximately 400 deep-sea animal species are registered in BISMaL. These include members of chemosynthetic ecosystem (*2) such as tubeworms (*3) and clams in the genus Calyptogena (*4) found around hydrothermal vents or cold seeps, as well as mesopelagic macrozooplanktons such as jellyfish. Users can browse more than 1,600 exclusive video footage, 1,000 panoramic photographs and 900 specimen

records that were obtained from investigations using JAMSTEC's manned or unmanned deep-sea vehicles.

It has been widely indicated that biodiversity and ecosystem functions have been significantly degraded in recent decades. Marine ecosystems are not an exception, concerning many over the depletion of marine bioresources. Marine species data collected by JASMTEC is considered to be an invaluable asset to all people on Earth, and should be made widely availabel, especially in these times of global "biodiversity crisis."

3. Future perspective

JAMSTEC plans to further progress the compilation of biological data at the Global Oceanographic Data Center (*5) to make it widely accessible through BISMaL. Intensive surveys on the information of Japanese marine species will also be conducted in order to continue to update and expand the database. Furthermore, the incorporation of other related environmental information sources is planned, aiming to contribute to better understanding the current state of marine biodiversity and future predictions, as well as aiding conservation of marine biological resources.

***1. Information Bank on Marine Life and Environment**

The project of the Information Bank on Marine Life and Environment was launched in 2007 to systematically assemble marine species information accumulated in JAMSTEC and other institutes across Japan. The bank information includes imagery data, specimen records and taxonomical/ecological/physiological information on each marine species. The goal of the project is to create a core information infrastructure for marine organisms, by incorporating all data accumulated to date into an integrated database system widely accessible by the public. This will allow JAMSTEC to work closely with global initiatives for marine biodiversity conservation, and contribute to research on biodiversity and ecosystem changes within and among nations.

***2. Chemosynthetic ecosystem**

Terrestrial and shallow-water marine ecosystems are fully or largely depend on organic matters produced during photosynthesis by using sunlight as an energy source (photosynthetic ecosystem). However, in deep-sea environments where light is quite scarce, another type of food chain relying on chemosynthetic bacteria as primary producers plays an important role (chemosynthetic ecosystem). Sulfur-oxidizing bacteria that produce organic matter by sulfide oxidation and methane-oxidizing bacteria that consume methane as an energy or carbon source are among them, which are important primary producers in chemosynthetic ecosystems. Products by bacteria become food for larger organisms (e.g. tube worms and clams) that are often abundant around cold seeps and hydrothermal vents.

***3. Tubeworm**

Tubeworms are polychaetes belonging to the family Siboglinidae. They house symbiotic sulfur-oxidizing bacteria in their body (i.e., trophosome) that use hydrogen sulfide as energy to produce organic matters. Tubeworms have no mouth, no digestive tract nor anus and live on organic matters

produced by symbionts. They are specific to sulfide-rich environment like hydrothermal vents.

4. *Calyptogena

Calyptogena is a genus of bivalve specific to deep-sea environments. Clams belonging to this genus harbor symbiotic bacteria in their tissue like tubeworms, and feed on organic matters produced through sulfur oxidization by symbionts. They also do not have the digestive tract and are specific to methane-rich cold-seeps and hydrothermal vents.

***5. The Global Oceanographic Data Center(GODAC)**

The Global Oceanographic Data Center located in Nago, Okinawa, is a branch of JAMSTEC, and is responsible for accumulating and providing marine-earth data online. Deep-sea videos obtained through JAMSTEC's research and printed materials including research articles published by JAMSTEC, are also digitized in GODAC. All these materials are available from the following website: http://www.godac.jp

Classification : Animalia - Echinodermata - Holothuroidea - Elasipodida - Psychropotina - Pelagothuridae - Enypniastes
動物界 - 棘皮動物門 - ナマコ綱 - 板足目 - Psychropotina 上科 - クラゲナマコ属 - Enypniastes 属

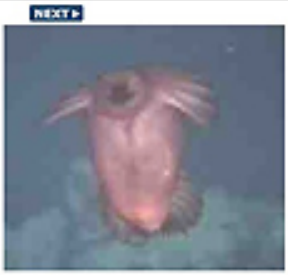
Species: *Enypniastes eximia* Theel, 1882 ユメナマコ

Common Name :

Tree View

IMAGES

NEXT ▶



OVER VIEW

English 日本語

ユメナマコは太平洋に広く分布する深海性種であり、水深 300-6000 m から記録されている。体型の大きは半透明で、後足が鰭でつながりあかさばとなった鰭が前方に一枚、後方の左右に 1 枚ずつ付着する。ゼラチン質の表面は小型の個体では薄いピンクだが、大型個体では赤紅色を呈する。体長は最大で 25 cm 程度に達する。海底を這い、時折泳ぎ出すが、水柱中に泳ぎ出す様子もしばしば観察されている。また、ユメナマコは発光生物であり、機械的な刺激により外皮膜にある肢存在する顆粒状の発光が引き起こされる。

MAPS

OTHER RESOURCES

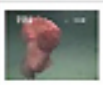
OBIS
ChEssBase
Google scholar
PubMed Central(PMC)

Latitude	Longitude	Date	Area	Videos	Panoramas	Samples	Dive
34-22.000-N	137-39.500-E	2002/07/29	Horiguchi canyon, Nankai trough	2	0	0	SHINKAI2000 Dive:1374
24-51.000-N	123-51.000-E	2000/05/20	Hatoma Knoll, Okinawa Trough	2	0	0	SHINKAI2000 Dive:1183
34-43.000-N	138-35.000-E	2000/04/06	Off Toi, Suruga Bay	1	0	0	SHINKAI2000 Dive:1171
03-43.500-S	151-40.000-E	1998/11/16	PACMANUS, Manus Basin	7	1	0	SHINKAI2000 Dive:1070
25-33.600-N	128-05.400-E	1998/03/25	Nansei-Shoto Trench	1	0	0	SHINKAI6500 Dive:0414
23-49.200-N	046-19.800-W	1994/07/02	Mid-Atlantic Ridge, WIMA99cbe1	1	0	0	SHINKAI6500 Dive:0203
39-20.600-N	144-36.000-E	1992/07/24	Miyako, Off Sanriku	1	0	0	SHINKAI6500 Dive:0134
34-55.000-N	138-39.000-E	1992/04/03	Off Toi, Suruga Bay	1	0	0	SHINKAI2000 Dive:0600
35-01.500-N	138-38.500-E	1990/03/25	Off Fujikawa, Suruga Bay	9	5	0	SHINKAI2000 Dive:0466
35-03.000-N	138-38.500-E	1990/03/17	Off Fujikawa, Suruga Bay	2	0	0	SHINKAI2000 Dive:0459

VIDEO | PANORAMA | SAMPLE | LITERATURE

LIST (51 Results)

PREV 1 2 3 4 5 ... NEXT

1		150K 700K	Date / Location	1998/11/16 03-43.500-S , 151-40.000-E / 1661.0M (PACMANUS, Manus Basin)
			Detail	Enypniastes eximia
2		150K 700K	Date / Location	1998/11/16 03-43.500-S , 151-40.000-E / 1662.0M (PACMANUS, Manus Basin)
			Detail	Enypniastes eximia
3		150K 700K	Date / Location	1998/03/17 35-03.000-N , 138-39.000-E / 1039.0M (Suruga Bay)
			Detail	Enypniastes eximia
4		150K 700K	Date / Location	1998/11/16 03-43.500-S , 151-40.000-E / 1659.0M (PACMANUS, Manus Basin)
			Detail	Enypniastes eximia
5		150K 700K	Date / Location	1998/11/16 03-43.500-S , 151-40.000-E / 1659.0M (PACMANUS, Manus Basin)
			Detail	Enypniastes eximia
6		150K 700K	Date / Location	1995/09/20 35-04.500-N , 138-38.500-E / 614.0M (Suruga Bay)
			Detail	Many Enypniastes Eximia Theel is swimming and creeping on the sea floor
7		150K 700K	Date / Location	1998/11/16 03-43.500-S , 151-40.000-E / 1661.0M (PACMANUS, Manus Basin)
			Detail	Enypniastes eximia
8			Date / Location	1998/03/17

DETAIL

Video Information	
Category	Marine biota > Echinodermata > Holothuroidea
Depth	1661.0M
Concerned information	Depth(m):About1661 :Staff Recommended Image

Dive Information	
Location	Latitude 03-43.500-S Longitude 151-40.000-E
Landing depth	1671.0M
Submersible	SHINKAI2000
Dive	1070
Date of dive	1998/11/16
Diving area	PACMANUS, Manus Basin
Diving objective	Research

Cruise Information	
Cruise	NT98-13
Vessel	natsushima
Objective of the operation	"Shinkai 2000" investigation submergence
Area	Manus basin

Search results example by BISMaL

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