

New Direction of CEARAC Activities

Greetings from the Director of CEARAC, Takeshi Ogawa



It is my great pleasure to join this "NOWPAP Family" by appointed as a new CEARAC director this July. I hope that this newsletter will keep connecting CEARAC to people who are interested

in marine environment and our activities.

CEARAC activities for the 2006-2007 biennium will be implemented based on the workplans approved at the 10th Inter Governmental Meeting (IGM). Working Group 3 (WG3) and Working Group 4 (WG4) will conduct activities of CEARAC for the new biennium same as for the 2004-2005 biennium; however, in accordance with "the New Direction of NOWPAP RACs", which was approved in the 10th IGM, CEARAC will take additional responsibilities such as "Land based Sources of Pollution" and "Marine Litter (mainly land-based one)." "Land based Sources of Pollution" has not been launched yet. Final workplans and schedules of WG3, WG4 and Marine Litter Activity (MALITA) were decided based on suggestions from experts at the 4th CEARAC Focal Points Meeting, the 3rd WG3 and WG4 Meetings last July.

During the 2004-2005 biennium, both WG3 and WG4 made the National Reports and the Integrated Reports. Also, these Working Groups spent time and made efforts on collecting and providing information on Harmful Algal Blooms (HABs) and Remote Sensing (RS) in the NOWPAP region. As a result, WG3 set up HAB Reference Database, and WG4 set up Ocean Remote Sensing Portal Site. These activities were quite useful to comprehend current situations of HABs and RS in the area and to clarify issues which CEARAC will address in the new biennium(s). As the outcomes of the last biennium and issues to be addressed were

reviewed, the following activities were approved to implement for the 2006-2007 biennium : WG3 will publish a booklet, "Countermeasures against HABs"; WG4 will refine "NPEC Guideline for Eutrophication Monitoring by RS" by the NOWPAP Members (2006) and will conduct a RS training course on data analysis (2007).

Northwest Pacific Region Environmental Cooperation Center (NPEC), the host organization of CEARAC, has been carrying out "Research on Buried Objects and Washed up Driftage on the Coasts along the Northwest Pacific Region" since 1996. Co-hosting with the Ministry of the Environment, "the 1st Workshop on Marine Litter in the Northwest Pacific Region" was organized in Toyama in November 2005 with inviting participants from the four countries in the NOWPAP Region. The participants agreed that marine litter was a significant international concern and that the NOWPAP Members would cooperatively address this issue in the area. CEARAC will work on the issues of marine litter with taking part in MALITA under the initiative of NOWPAP RCU and will develop regional and national strategies for integrated management.

As mentioned above, CEARAC workplans of the 2006-2007 biennium are based on the past activities, and new activities are added in response to the New Direction of NOWPAP RACs. However, ultimate goals of CEARAC, within the framework of NOWPAP, have never been changed since establishment of CEARAC, and will never change under this new direction. CEARAC, as well as NPEC, makes our utmost efforts to enable next generations to keep receiving abundance of natural resources in the Northwest Pacific Region. Thank you very much for your continuous cooperation with CEARAC and its activities, and I look forward to witnessing that our efforts and your support will yield satisfactory outcomes.

Contents

New Direction of CEARAC
Activities1

NOWPAP Marine Litter
Activity.....2

Workplan and Budget of
CEARAC3

NOWPAP Working Group 3
(HAB)3

NOWPAP Working Group 4
(RS)4

CEARAC Activities on
Marine Litter.....5

Voice from the Region6

Visit CEARAC Website.....8

No. 3

November 2006

NOWPAP Marine Litter Activity

Dr. Jeung Sook Park, Scientific Affairs Officer, North Pacific Action Plan (NOWPAP) of UNEP



Acknowledging the severity and urgent need to cope with the marine litter problem in the Northwest Pacific region, the Marine Litter

Activity (MALITA) has been developed by the NOWPAP Regional Coordinating Unit in close cooperation with the UNEP Regional Seas Programme and the NOWPAP member states. MALITA is being implemented, right after its approval at the NOWPAP Tenth Intergovernmental Meeting (Toyama, Japan, November 2005), by the Regional Coordinating Unit, the four NOWPAP Regional Activity Centres and the Marine Litter National Focal Points. The main objective of MALITA is to assist in the environmental protection and sustainable development of the NOWPAP region through the development of a NOWPAP Regional Action Plan for the Marine Litter Management.

The NOWPAP MALITA consists of several components as follows:

- formulation of the long-term strategy to deal with marine litter problem;
- approach to the civil society (including private sector, NGOs and the scientific community) to develop partnerships;
- development and implementation of the long-term monitoring programme;
- formulation and implementation of awareness and education campaigns;
- development of sectoral guidelines for the management of marine litter; and
- development and improvement of waste management policies and systems.

The first step to implement MALITA is to collect existing data and information on marine litter in the member states and on national legal instruments to deal with marine litter, including compliance with international agreements such as the MARPOL, the Basel and the London Conventions. So far, Japan and the Republic of Korea have provided the quantitative data

on the amounts and distribution of marine litter on the beaches. The People's Republic of China and the Russian Federation have provided short summaries. In addition, all four member states have prepared a national summary on legal instruments related to marine litter which will be integrated into a regional overview later this year.

The First MALITA Working Meeting was held in June 2006 to review the current progress of the MALITA implementation and discuss the next steps to be taken. The First NOWPAP Workshop on Marine Litter was convened back to back the working meeting to present a variety of information from the member states with respect to marine litter national monitoring, policies, management approaches and treatment technologies.

The Second MALITA Working Meeting, and the NOWPAP Workshop, will be held in Japan in early 2007 where the further progress on regional and national strategies on the integrated management of marine litter will be further discussed, including marine litter monitoring, public awareness and civil society involvement.

NOWPAP also organized an International Coastal Cleanup (ICC) campaign in Yamagata, Japan in September 2006 that brought representatives of government agencies, general public, academic institutions and NGOs from all NOWPAP member states to jointly participate in the event. With the support of the member states, the ICC event will be continued in 2007 in the NOWPAP region.

The MALITA activities are being implemented in close collaboration with the four NOWPAP member states and the Regional Activity Centres under the overall responsibility of the NOWPAP Regional Coordinating Unit. The further information on the progress of the MALITA implementation will be placed on the NOWPAP website and updated periodically.

Please join and help us keep our seas and coastal areas clean without marine litter!



Step Forward –CEARAC Activities

Workplan and Budget for CEARAC for the 2006-2007 biennium

The 10th IGM (Toyama, Japan, November 2005) approved the allocation of US \$169,500 on the budget for CEARAC for the 2006 -2007 biennium. Following the approval at the IGM, the 4th CEARAC FPM (Toyama, Japan, March 2006) approved the Workplan and Budget for CEARAC for the 2006-2007 biennium.

Activity	Planned date	Budget US\$	Activity	Planned date	Budget US\$
Organization of CEARAC 4 th Focal Points Meeting	March 2006	23,000	Organization of CEARAC 5 th Focal Points Meeting	September 2007	23,000
Organization of 3 rd Meeting of WG3 (HAB)	July 2006	15,000	WG3 (HAB) - Booklet of Countermeasures against HABs	2007	14,000
Organization of 3 rd Meeting of WG4 (RS)	July 2006	15,000	WG4 (RS) - training	2007	15,000
WG3 (HAB) - Booklet of Countermeasures against HABs	Throughout 2006	12,000	MALITA	Throughout 2007	11,000
WG4 (RS) - guideline	Throughout 2006	15,000	Publication of CEARAC Newsletter	Summer 2007	2,000
MALITA	Throughout 2006	8,500	Intersessional work	Throughout 2007	3,000
Publication of CEARAC Newsletter	November 2006	2,000	Cooperation and coordination of CEARAC activities	Throughout 2006 / 2007	8,000
Intersessional work	Throughout 2006	3,000	TOTAL		169,500

NOWPAP Working Group 3 (WG3)

NOWPAP Working Group3 (WG3) was established to mainly implement monitoring and assessment of harmful algal blooms (HABs) including red tide, which are chosen as the initial subject of coastal environment assessment.

For the 2004-2005 biennium, WG3 mainly

conducted the following things: (1) publication of the National Reports and the Integrated Report on Harmful Algal Blooms (HABs) for the NOWPAP Region, (2) establishment of HAB Reference Database and (3) publication of a *Cochlodinium* pamphlet and establishment of *Cochlodinium* Homepage in order to

treat HABs-related problems as a part of activities of coastal environmental assessments.

Thanks to continuous cooperation of WG3 colleagues, NOWPAP CEARAC successfully held the 3rd NOWPAP Working Group 3 Meeting on 6-7 July 2006 in Toyama, Japan.

List of WG3 members

Country	Name	Organization
China	Mr. Xiaofeng KANG	China National Environmental Monitoring Center
	Prof. Mingjiang ZHOU	Chinese Academy of Sciences
Japan	Dr. Yasuwo FUKUYO	The University of Tokyo
	Dr. Osamu MATSUDA	Professor Emeritus, Hiroshima University
Korea	Dr. Sam-Geum LEE	National Fisheries Research and Development Institute
	Dr. Hak-Gyoon KIM	Pukyong National University
Russia	Dr. Vladimir SHULKIN	Russian Academy of Sciences
	Dr. Tatiana ORLOVA	Russian Academy of Sciences



The 3rd Meetings of NOWPAP WG3 and WG4

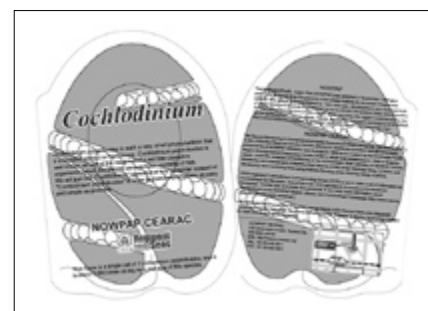
The meeting reviewed activities and budget for WG3 for the 2004-2005 biennium, and discussed the details of WG3 new activities for the 2006-2007 biennium and the mid and long term strategies of CEARAC and mid and long term objectives of WG3 and WG4. In this Meeting, it was confirmed that the *Cochlodinium* pamphlet would be published in each language of the NOWPAP Members for its use of fishermen and students in association with other topics in this meeting.

New activity of WG3 during the 2006-2007

biennium is publication of a booklet, "Countermeasures against HABs". In accordance with the agreement at the 3rd NOWPAP WG3 Meeting and based on the approved workplan at the 4th CEARAC FPM, countermeasures against HABs will be collected by the expert of each NOWPAP Member along with the proposed format. Information will be collected in 2006. The collected information will be compiled into a booklet and it will be published in 2007.

CEARAC is expecting that this booklet will be used to learn advantage and disadvantage

of mitigation activities and to invent better methods and applications to terminate and mitigate HABs in the NOWPAP Region.



Cochlodinium pamphlet

NOWPAP Working Group 4 (WG4)

WG4 has been working on the development of monitoring tools for marine and coastal environment with using RS (Remote Sensing) techniques since its establishment in 2001.

As major outcomes of WG4 for the 2004-2005 biennium, the National Reports and the Integrated Report on Ocean Remote Sensing for the NOWPAP Region that summarize the situation of ocean RS in the NOWPAP Region were published in 2005. These reports are open to the public via CEARAC homepage. WG4 also constructed homepages relevant to ocean remote sensing (RS) such as Ocean RS Portal site and website on Oil spill monitoring by remote sensing.

Thanks to continuous cooperation of WG4 experts, NOWPAP CEARAC successfully organized the 3rd NOWPAP Working Group 4 Meeting on 6-7 July 2006 in Toyama, Japan.

The meeting reviewed past activities and discussed the workplan and budget on WG4 future activities for the 2006-2007 biennium

and the mid and long term strategies of CEARAC and mid and long term objectives of WG3 and WG4.

New activities of WG4 during the 2006-2007 biennium are refinement of "NPEC Eutrophication Monitoring Guideline by RS" by the NOWPAP Members and preparation of a RS training program on data analysis. In accordance with the agreement at the 3rd NOWPAP WG4 Meeting and based on the approved workplan at the 4th CEARAC FPM, NPEC Eutrophication Monitoring Guideline was reviewed and refined by the experts of China, Korea and Russia. These refinement works were compiled into one consolidated guideline in 2006, aiming at forming a basis for establishing common methods for evaluation and using satellite data for cooperative environmental monitoring in the NOWPAP Region.

A provisional implementation plan of a RS training program is now being reviewed by the WG4 experts and it will be finalized by the end of 2006 by correspondence among WG4. Date and place of the training

program will be decided by the 1st quarter of 2007 and will be conducted in 2007. CEARAC is expecting that this training program will establish a framework that enables mutual technical assistance for the marine environmental monitoring by RS and will provide capacity building assistance to improve technical capability in ocean RS in the NOWPAP Region.

A new function to search for literatures referring to Ocean RS in the NOWPAP was added to the Ocean Remote Sensing Portal site in June 2006.

The 4th International Workshop on Remote Sensing of the Marine Environment in the Northwest Pacific Region was co-organized by NPEC and Pukyong National University on 1-2 August 2006 in Busan, Korea, aiming at providing an opportunity for experts to present their latest research results and to exchange information on ocean remote sensing application.

List of WG4 members

Country	Name	Organization
China	Mr. Chuanqing WU	China National Environmental Monitoring Center
	Dr. Chenghu ZHOU	Chinese Academy of Sciences
Japan	Dr. Ichio ASANUMA	Tokyo University of Information Sciences
	Dr. Joji ISHIZAKA	Nagasaki University
Korea	Dr. Young-Sang SUH	National Fisheries Research and Development Institute
	Dr. Sang-Woo KIM	National Fisheries Research and Development Institute
Russia	Dr. Leonid MITNIK	Russian Academy of Sciences
	Dr. Anatoly ALEXANIN	Russian Academy of Sciences



Mid and long term strategies of CEARAC and objectives of WG3 and WG4

At the 4th CEARAC FPM (Toyama, Japan, 8-9 March 2006), there was a suggestion that mid and long term objectives of CEARAC would be documented in a workplan, and the issues to be discussed in WG meetings and next FPM were decided.

In response to the suggestion made at the 4th CEARAC FPM, the 3rd WG3 and WG4 Meetings were jointly held on 6-7 July 2006 in Toyama, Japan to discuss the mid and long term strategies of CEARAC and mid and long term objectives of WG3 and WG4.

In the discussion about mid and long term objectives of WG3, the Secretariat presented a draft of mid and long term objectives of WG3. It was composed of three elements : (1) review of the

National and the Integrated Reports on HABs to understand interaction between HABs occurrence and the environmental parameters (such as temperature, salinity and nutrient) in mid term, (2) Collection of data in "red tide hot spot" as a pilot study to understand the environmental parameters which lead to HABs occurrence, (3) incorporation of the collected and standardized data into ecosystem model for construction of prediction tools for the NOWPAP Region.

The Secretariat also presented a draft of mid and long term objectives of WG4. The draft was composed of the following: (1) coordination of development of environment assessment tools utilizing remote sensing data in the mid term, (2) coordination of development of prediction

tools with existing physical and ecosystem model.

Comments from experts on the drafts were: (1) the long term objective should be to establish assessment tools not prediction tools. (2) What parameter should be indicators for coastal environmental assessment? It was agreed that the Secretariat would improve mid and long term strategies of CEARAC and objectives of WG3 and WG4 along with correspondences among the experts of both WGs.

CEARAC has just started development of mid and long term strategies of CEARAC and objectives of WG3 and WG4, and CEARAC has been preparing a revised draft for the 12th IGM in 2007.

CEARAC Activities on Marine Litter

As a new project, MALITA was approved at the 10th NOWPAP IGM in November 2005. The main objective of MALITA is development of a NOWPAP Regional Action Plan on marine litter.

CEARAC started several segments of MALITA with its own responsibility with approval by IGM. Activities of CEARAC are as follows:

1. Collecting and reviewing existing information and data relevant to land-based marine litter
2. Developing regional and national strategies on integrated management of marine litter
3. Approaching tourism industry and manufacturers of plastics to develop partnerships
4. Developing and implementing long-term regional and national monitoring programmes on land-based marine litter
5. Formulating and implementing awareness and education campaigns for the general public, various groups within the tourism sector, industry and municipal authorities.
6. Preparing brochures for the purpose of promoting public awareness on the reduction of marine litter
7. Developing sectoral guidelines for

tourism, coastal construction and recycling

8. Developing responsible citizenship guidelines for children and the youth

CEARAC collected information and data on marine litter in Japan and submitted it to NOWPAP RCU. CEARAC also analyzed long-term regional and national monitoring programmes on land-based marine litter

in the NOWPAP Region and prepared a draft of monitoring guideline. Furthermore, CEARAC participated in International Coastal Cleanup on 28-30 September 2006 in Yamagata, Japan as a part of Activity 10 of MALITA. CEARAC will make a brochure on reduction of marine litter in English for the purpose of promoting public awareness and will publish it in 2006.



Research on Washed-up Driftage on the Coasts in Toyama, Japan

Voice from the Region

Application of oligo nucleic acid probe to monitor *Alexandrium catenella* blooms in China

Mingjiang Zhou, Professor, Institute of Oceanology, Chinese Academy of Sciences (NOWPAP WG3 Expert of China)



Blooms caused by the species in Genus *Alexandrium* have been extensively studied all around the world, since potent neurotoxins, paralytic shellfish poisons, could be produced by some species in this Genus. However, monitoring of toxic *Alexandrium* species is often difficult. Expertise and well-trained staff are needed to identify the targeted species, and the process for algal cell identification and enumeration is time-consuming and labor intensive. Besides, the techniques for monitoring large scale blooms, such as remote-sensing, are also hampered in monitoring *Alexandrium* blooms because the *Alexandrium* cells would not dominate the phytoplankton community under most of the circumstances. This has led to the application of new techniques, especially those of molecular biology, in helping improving the monitoring of such blooms in the last decade.

Blooms caused by the *Alexandrium* species were not very well documented in China due to the reason mentioned above. However, during the study of the large-scale dinoflagellate blooms in sea areas adjacent to the estuary of Yangtze

River, blooms of *Alexandrium* spp. were observed co-occurring with the dominant species *Prorocentrum donghaiense*. Cells of *Alexandrium catenella* were the most abundant among all the *Alexandrium* cells. The area of the bloom could reach hundreds of square kilometers, and it is clear that the species was capable of producing PSP toxins, mostly C1 and C2.

To further investigate the dynamics of *A. catenella* bloom, oligo nucleic acid probes were established for this species based on the partial LSU rDNA and ITS sequences analyzed. The fluorescence labeled probes targeted on LSU rRNA were used to identify *A. catenella* cells based on a fluorescence in situ hybridization (FISH) method. The specificity of the probes was testified using the natural phytoplankton samples spiked with target species *A. catenella*, as well as the mixed samples of *A. catenella* and *A. minutum*, another *Alexandrium* species found in this area. Our first trial of the method in the field proved that it was a promising method for monitoring *A. catenella*, using the net samples collected in this area (Fig 1).

The application of this FISH method in monitoring *Alexandrium* blooms has many advantages over the traditional method. It would take less time and labor in sample processing, and people without any

background of dinoflagellate taxonomy could also do the cell identification and enumeration of the target cells. However, more field works are still needed due to the complexity of *Alexandrium* species occurred in the field. The cooperation under the framework of CEARAC should also be encouraged to improve the communication and inter-calibration of the emerging new techniques in monitoring algal blooms in the NOWPAP area.

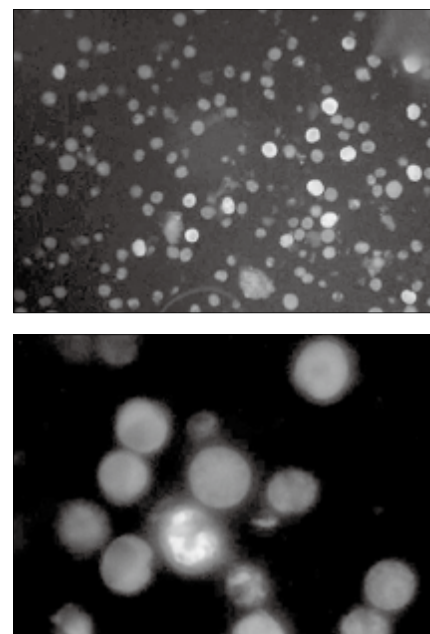


Fig. 1 Detection of *A. catenella* cells using a probe labeled with green fluorescence.

The 4th International Workshop on Remote Sensing of Marine Environment in the Northwest Pacific Region

Hak-Gyoon Kim, Invitation Professor, Pukyong National University, Korea (NOWPAP WG3 Expert of Korea)

As one of joint activities of Working Group 3 (the monitoring and assessment of

harmful algal blooms (HABs) and Working Group 4 (developing new monitoring

tools using remote sensing) in Special Monitoring and Coastal Environmental



Assessment Regional Activity Centre (NOWPAP/CEARAC), the 4th International Workshop on Remote Sensing

of Marine Environment in the Northwest Pacific Region was held in August 1-2, 2006, at the Korea Inter-University Institute of Ocean Science (KIOS), Pukyong National University (PKNU), Busan, Korea. More than 70 participants from over 6 countries such as China, Japan, Russia, the Philippines, Germany and Korea, and international organizations attended the workshop. The workshop was organized by Pukyong National University and Northwest Pacific Region Environmental Cooperation Center with the support of Korea Ministry of Maritime Affairs and Fisheries, National Fisheries Research & Development Institute, and the Ministry of the Environment, Japan, Toyama Prefecture, IOC/WESTPAC and North Pacific Marine Science Organization (PICES).

This two-day joint workshop was processed on seven sessions with 27 presentations covering biogeography of HABs, ocean environment, and the evaluation of marine remote sensing technology. The most important topic was how we develop commercially practicable remote sensing

technologies as a tool especially to detect the deleterious environmental impacts such as Eutrophication, Red-tide HABs and oil spill in the NOWPAP Region. It was found that the change of remotely sensed ocean color using satellite can be a promising agent for the detection of abnormal ocean changes. Acknowledging the present socio-scientific demand, all participants were agreed that we should develop more comprehensive remote sensing algorithm with enhancing the quality assurance of its application in the working field.

Prior to this workshop, the International Symposium on the Bio-invasion of Non-indigenous Species organized by Korea Inter-University Institute of Ocean Science (KIOS) was held on July 31, 2006 at

Pukyong National University, so that the participants could harvest two birds with one stone. It was a good opportunity to touch and discuss that kind of marine issues among the participants through the back-to-back meeting.

As a result of this workshop, the meeting reaffirmed the importance of cooperation in the NOWPAP member countries and agreed to share their new scientific findings on the monitoring and assessment of HABs, eutrophication and oil spill by remote sensing technology.

For more information, please visit the CEARAC website at the following address; <http://www.cearac.nowpap.org/>



The workshop group photo taken on August 1, 2006, Busan, Korea.

Recent Activities related to Marine Environment Conservation by the Ministry of the Environment, Japan

Keiko Segawa, Deputy Director, Global Environmental Issues Division, Global Environment Bureau, Ministry of the Environment, Japan (CEARAC Focal Point of Japan)



Concerning marine issues, Japan has taken major steps to improve its capacity to cope with various issues in national, regional and global level. Here, I would like to describe recent notable activities of the Japanese Government related to marine conservation issues; Marine Litter Issues.

Drifted and washed-up marine litter has resulted in degradation of coastal functions, deterioration of the environment, especially ecosystem, and sea landscapes and has given adverse impacts to maintenance of safe navigation of ships and to fisheries. These tendencies have been significant in recent years. Therefore, the Japanese Government organized an inter-governmental meeting on drifted marine litter in 2000; the Ministry of the Environment has led activities for information exchange. However, there have not been any effective

measures to be regarded as quick-acting medicine because it is difficult to address sources of discharge as some are located in foreign lands, and it is also difficult to coordinate many different governmental agencies which work on different tasks. Hence, the Government decided to establish the framework in order to discuss more effective measures against marine litter last April.

The outline of the framework is:
1. Director-General level Meeting of relevant ministries was established in

April, 2006.

2. The Ministry of the Environment is in charge of management of the meeting in cooperation with the Ministry of Land, Infrastructure and Transport and Fisheries Agency. The Cabinet Secretariat also attends the meeting and provides necessary advice.
3. Main tasks of the Meeting are as follows. The meeting will review and discuss 1) current status, 2) measures being taken, 3) measures including international measures, which address pollutant sources, and 4) measures in areas where damages are significant. The meeting is scheduled to compile the measures to be taken in March, 2007.

The Special Committee Meeting has been held three times, and the participants has discussed mainly possible countermeasures in the national policy context. Several ministries submitted FY 2007 budget request related to marine litter issues, e.g. special research(es) for gaining knowledge of the marine litter origin, R&D for a new type incinerator which resists salinity of marine litter, subsidiaries for prefectures which struggle with drifted wood and waste in the Typhoon season. These requests have been examined by Ministry of Finance since September and the final governmental budget will be set by the end of this year.



both are from Shiretoko, Japan

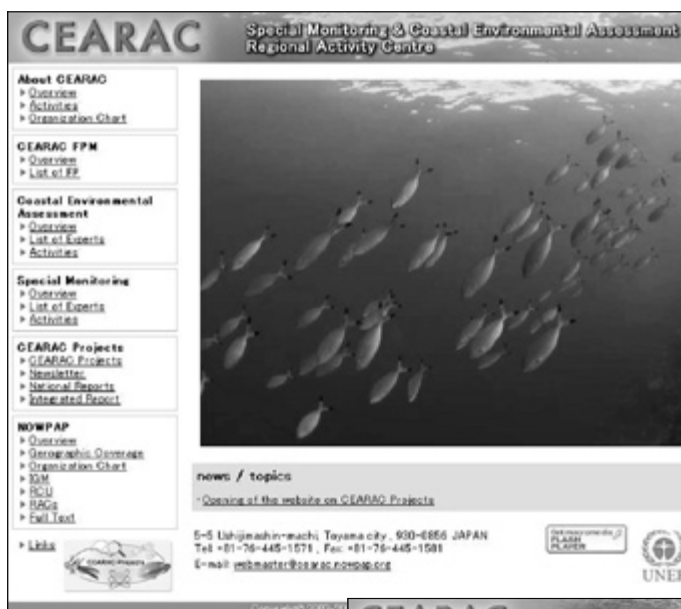
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Visit our Website:<http://cearac.nowpap.org/>

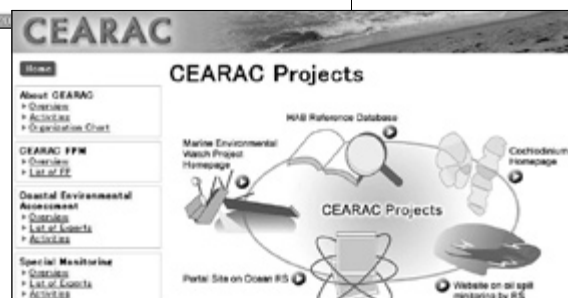
The CEARAC Website greatly contributes to wider publicity for CEARAC and NOWPAP activities together with CEARAC Newsletter.

The Website was renewed in 2006, and links to CEARAC projects were added : HAB Reference Database, *Cochlodinium* Homepage, Ocean RS Portal Site, Oil spilling monitoring by RS and Marine Environmental Watch Project.

They introduce currently implimenting activities and their progress of WG3 and WG4 as well as that of CEARAC.



CEARAC Website
<http://www.cearac.nowpap.org/>



CEARAC Projects

Announcement

The CEARAC Newsletter is published every year and is distributed free of charge. For additional copies, or if you would like to be placed on our mailing list, please contact CEARAC at the following address: webmaster@cearac.nowpap.org

All the information about this newsletter and more can be downloaded from NOWPAP CEARAC Website.

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