August 21, 1992

A Letter from Hyogo

●Hyogo Prefectural Goverment, Japan●

EMECS NEWSLETTER

No. 2

The Second International Conference on Environmental Management of Enclosed Coastal Seas 1993 (EMECS '93)
— Steering Committee and Program Committee Meetings —

The representatives of Hyogo Prefecture and the staff of the University of Maryland

The Second International Conference on Environmental Management of Enclosed Coastal Seas (EMECS '93) Will be held in Baltimore, Maryland from July 19 hrough 21, 1993. Preparations are currently underway by the sponsor, the State of Maryland, as well as the Center for Environmental and Estuarine Studies (CEES) of the University of Maryland System, the Maryland Sea Grant College Program and the Coastal and Environmental Policy Program (CEPP). As steering organizations, the Board of Directors has been set up, and under that the Steering Committee, Program Committee, Planning Committee, The CEPP will serve as the Secretariat for the conference.

EMECS '93 is jointly sponsored or endorsed by international organizations including the United Nations Environment Programme (UNEP), the Organization for Economic Cooperation and Development (OECD), the International Union for Conservation of Nature and Natural Resources (IUCN),the intergovernmental Oceanographic Commission of UNESCO (UNESCO-IOC), and the Marine Forum (U.K.). Organizations in the host country include the U. S. Environmental Protection Agency (USEPA), the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation, the National Academy of Sciences, the Estuarine Research Federation, and, in Japan, the Hyogo Prefectural Government and the Japan Foundation Center for Global Partnership. The members of the Steering Committee come from such organizations as the World Resources Institute; the Heritage Resources Center, University of Waterloo, Ontario (Canada); the EPOMEX program, UniversityofCampeche (Mexico); the Center for the Study of Marine Policy, University of Delaware (U.S.); the Instituto di Scienze Geografiche, Universita di Genoa (Italy); the Institute for Philosophy and Public Policy, University of Maryland College Park (U.S.); the International Coastal and Ocean Organization, University of Massachusetts (U.S.); the Baltic Marine Center, University of Stockholm (Sweden); the Helsinki Commission [fomer Executive Director at Tallinn Technical University (Estonia)]; the Center for Marine Conservation in Washington D.C,; the Washington chapter of Greenpeace; the Alliance of the Chesapeake Bay. Moreover, the Conference Planning Committee, made up of members of the local subgroup of the Steering Committee, will meet once per month to ensure conference preparations progress smoothly. In this way, it will be possible to organize the conference on a large scale.

On July 21 and 22 of this year, the Steering Committee (headed by Mr. David A.C. Carroll, Sate of Maryland Chesapeake Bay Programs Coordinator) and the Program Committee (headed by Dr. Donald F. Boesch, President, Center for Environmental and Estuarine Studies, University of Maryland System) for the conference were held at the Aspen Wye Woods Conference Center in Queenstown, Maryland to discuss palns for the conference and related issues.

The Program Committee is made up of specialists from fields related to the conference theme. At the meeting in July, the following sessions were held:

"Governance and Policy"
(Prof. Robert Knecht, Chair)
"Science, Management, and Policy"
(Dr .Bengt-Owe Jansson, Chair)
"Citizen Involvement"
(Mr. William M.Eichbaum, Chair)

TOPICS:

Theme 1, "Governance and Policy"

＊Lessons Learned from Specific Coastal Seas Programs

- Sub-regional systems:Chesapeake Bay, Seto-Inland Sea of Japan
- Regional/multi-national systems:Red Sea, Caribbean Sea, Baltic Sea, Black Sea

CONTENTS

- ＊Effectiveness of Existing Organizations and Regulations
- ＊Pro-Active Governance:Anticipating and Adapting to Changes in Enoclosed Coastal Seas
- ＊New Techniques in Coastal Seas' Governance

Theme 2, "Science, Management, and Policy"

- ＊The Policy Context for Science in Enclosed Coastal Seas
- ＊Science: Monitoring, Modeling, and Mapping
- ＊Science: Ecological Economics and Eco-Technology
- ＊Science: Guiding the Implementation of Policy
- ＊Case Studies

Theme 3, "Citizen Involvement"

- ＊Creating and Maintaining Public Support
  - ・Competing Values and Interests
  - ・Public Stake in Governance
  - ・Role of Political Action
  - ・Role of the Courts
- ＊Translation of Science for the Citizen
- ＊Role of Journalism
- ＊Cultural Context of Coastal Seas
- ＊Special Events and Activities
  - ・Experiences in Culture of Coastal Seas
  - ・Pre-Conference Environmental Education Course
  - ・Environmental Education Demonstrations(invited)

CALL FOR PAPERS:

A call for papers will be included in the Second Announcement to be issued in September. Abstract should be sent to the EMECS '93 Secretariat not later than January 15,1993 and those who are finally selected to give presentations will be notified on or around February 15. Those selected are required to provide the full text of their paper by June 1,1993.

POSTER SESSIONS:

Poster Sessions will be held in addition to the oral Presentations.

REGISTRATION:

Registration forms will be sent out together with the call for papers. The deadline for registration is June 6,1993.

Further details will be provided with the Second Announcement to be issued by the EMECS '93 Secretariat. Currently, the First Announcement is being sent out by the EMECS '93 Secretariat to participants of EMECS '90. For a summary of the proposed schedule for EMECS ‘93, see the first issue of the ENECS Newsletter.

FOR FURTHER IN FORMATION:

EMECS '93 Secretariat
Coastal and Environmental Policy Program, University of Maryland
P.O.Box 775
Cambridge, Maryland 21613 U.S.A.
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Activities of the Institute for Research of the Seto Inland Sea

— The Inaugural Meeting of the Institute for Research of the Seto Inland Sea —

It was Hyogo Prefectural Government that originally proposed the establishment of the Institute for Research of the Seto Inland Sea, an idea that was incorporated into the Seto Inland Sea Declaration adopted at EMECS ‘90. The Institute for Research of the Seto Inland Sea was inaugurated on March 30,1992, and an inaugural general meeting and commemorative symposium were held in Kobe. At this general meeting, Dr. Takeshi Goda, Professor Emeritus of the University of Kyoto, was elected Chairman. At present, the Institute has approximately 480 menders from a wide variety of fields including the natural sciences, humanities and social sciences.

— Research Forum in Hiroshima —

Rich in natural resources, the Seto Inland Sea has been the site for many large-scale projects in recent years. As a result, effecting a balance between development and preservation has become a major issue. The Institute for Research of the Seto Inland Sea promotes the exchange of information and technology among member researchers and strives to disseminate its achievements to the public at large.

These are the goals of the Research Forum of Institute for Research of the Seto Inland Sea, to be held in Hiroshima on August 27 and 28 at the Hiroshima International Conference Center. The theme of the forum will be "Sustainable Development and Environmental Management of the Seto Inland Sea."

Inaugural Meeting of the Institute for Research of the Seto Inland Sea

Greetings from Dr. Goda

Dr. takeshi Goda
Chairman. Institute for Research of the seto Inland Sea

One of the achievements of EMECS '90 was that the Governors and Mayors' Conference on the Environmental Protection of the Seto Inland Sea served as the catalyst for the establishment of an institute to conduct research on the Seto Inland Sea. In response to this request, a group of researchers concerned about the environmental management and appropriate use of the Seto Inland Sea came together in March 1992 to form the Institute for Research of the Seto Inland Sea. This organization will function as an academic “think tank” that includes members from the natural and social sciences and the humanities.

The Institute for Research of the Seto Inland Sea hopes to provide a forum for the exchange of information and technology among members through study and research and make proposals relating to the Seto Inland Sea, and to contribute to the betterment of society at large through its achievements. On behalf of the Institute, I would like to ask for the support and cooperation of all related parties.

THE SETO INLAND SEA

Enclosed Coastal Seas in the World —No.1—

The Seto Inland Sea, Japan's largest inland sea, is bounded by Honshu, Shikoku, and Kyushu, three of the country's four major islands. With vistas characteristic of an archipelago comprising thousands of islands of various sizes, the Seto Inland Sea is well-Known both in Japan and abroad for its exceptionally scenic beauty. Nearly all of the Seto Inland Sea is designated National park and for its richly varied, peaceful and graceful landscape, in which the social environment and nature harmonize.

It is about 22,000km^2 in area and 37m in mean depth, with the maximum depth 72m.

The total population of prefectures facing the sea is about 35 million accounting for 28% of the nation's population. Along the coast, there are many industries such as steel, electronics and petrochemicals, making up 30% of the nation's industrial product.

Also, the sea has heavy marine traffic and the number of ships arriving at Seto ports make up nearly half of the ships coming into Japanese ports. The fisheries here make an annual catch of about 400,000 tons.

Recently, in coastal areas designated as "waterfronts," development projects such as water-oriented parks, littoral parks and marine leisure facilities for young people have been actively pursued. In addition, such big projects as the constructions of Kansai International Airport and Akasi Strait Bridge as well as the Osaka Bay Phoenix Project for providing places for waste disposal are underway mainly in the Osaka Bay area.

Historically speaking, the Seto Inland Sea has served as a transportation route since ancient times, playing an especially important role as a navigational route for both Japanese envoys to China (during the Tang and Sui dynasties) and foreign missions to Japan, Which in those days introduced foreing cultures into Japan. Because of such contact with the outside world, many port towns developed around the Seto Inalnd Sea, bringing about cultural and industrial progress. The Seto Inland Sea was also the scene of warfare between the Genji and Heike clans in the last years of the Heian era (12th century); many historical sites can be found in its vicinity.

Though blessed with such scenic and historical values, the Seto Inland Sea underwent severe environmental deterioration in the last half of the 1960's and later, due to Japan's rapid postwar economic growth and the concomitant urbanization and concentration of industry and population in large cities. The Seto Inland Sea was even referred to as "the dying sea" in the 1970's.

Numerous environmental preservation actions have been taken continuously since 1971 by the national and local governments and people of the coastal communities, all for the common goal of restoring natural beauty to the Seto Inland Sea. Such actions include establishment of "the Governors and Mayors' Conference on the Environmental Protection of the Seto Inland Sea" and "the Law concerning Special Measures for Conservation of the Environment of the Seto Inland Sea" comprising following special programs: ・Making a basic plan for environmental conservation ・Permission for installation of specified facilities and the changes of the existing ones ・Areawide total COD pollutant load control ・Instructions for reduction of phosphorus and its chemical compounds ・Designation of natural seashore conservation areas ・Consideration of environmental dimensions in reclamation projects.

Areawide total COD pollutant load control has been executed and is now in effect. In 1990, this amounted to 75% of the target, representing a considerable improvement overall, and in recent years the level has remained unchanged With the influx of nutrient salts, however, seaweed has propagated in large quantities, leading to the phenomenon known as eutrophication. The "red tides" which ara one result of eutrophication are widespread, with 107 cases confirmed in 1991.

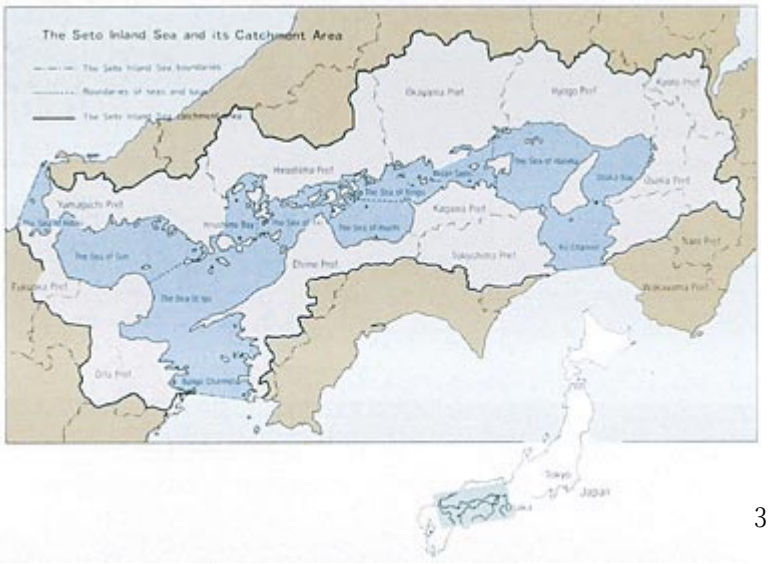
As a result, in order to improve the water of the Seto Inland Sea, a variety of effective and wide-ranging measures must be promoted based on long-term planning. Appropriate scientific findings must also be added to environmental standards, and studies of the possibility of implementing various measures, the effect of measures to improve water quality and the pollution mechanism operating in enclosed coastal seas are also needed.

・The Phoenix Project

The Phoenix Project is a project to establish regional waste disposal areas. It takes its name from the legend of the Phoenix which, expired bat then rose again in glory, reborn from the ashes of its funeral pyre In this projrct, reclaimed land is created from the ashes of disposed waste to create a beautiful environment for the benefit of the community.

・Governors and Mayors' Conference on the Environmental Protection of the Seto Inland Sea

With its origins in a proposal made in 1971 to the governors of Hiroshima and Kagawa Prefecture by the then Governor Sakai of Hyogo Prefecture, this organization was made up of the governors of 11 concerncd prefectures and the mayors of 3 ordinance-designated cities. The first meeting was held in 1971, with concerned local governments and residents of coastal areas Joining together to adopt the Seto Inland Sea Charter on Environmental Protection, calling for local govemments and residents in coastal communities to work together to protect the natural environment of the Seto Inland Sea. The organization now comprises govemors of 13 prefectures and mayors of 5 ordince-designated cities.



COALITION CLEAN BALTIC (CCB)

Coalition Clean Baltic

Organizations in the Field of Enclosed Coastal Seas —No.1—

The past two questionnaires conducted by EMECS Newsletter gathered information and reports on research from many parts of the globe. This will be the first in a series of articles on groups that are involved in research relating to major enclosed coastal seas throughout the world.

This first article in the series focuses on Coalition Clean Baltic (CCB). CCB is active in working to solve the problems of the Baltic Sea, where eutrophication has progressed at an alarming rate, and changes in the ecosystem through the spread of water bloom, as the accumulation of heavy metals in the sea bottom sediment.

CCB is a network for cooperation and coordination between non-governmental environmental organizations in the Baltic Sea region. CCB is a party-politically independent, non-profit-making association.

CCB has at the moment 20 member organizations from Denmark, Estonia, Germany, Finland, Lithuania, poland, Russia and Sweden.

CCB was formed out of a long felt need for better coordination and collaboration between the various NGOs currently working on Baltic Sea issues, and that a joint organization like the CCB could thus perform an important function.

CCB has as its overriding goal

・to promote - on a party-politically independent, non-profit-making basis - the protection of the environmental and natural resources of the Baltic Sea Area.

CCB, to this end, works

・to create public opinion internally about the Baltic Sea issues and to support the work of its member organizations nationally;

・to gather and distribute as well as produce information about environmental problems in the Baltic Sea Area, and about measures that need to be taken in order to restore the Baltic Sea waters thereby safeguarding the future of the Baltic Sea Area and preserving it as a valuable resource for the peoples in all Baltic states;

・to gather and distribute information about activities in the Baltic region of relevance to its member organizations; such as meetings, conferences, cooperation projects etc;

・to give organizational and financial support to those member organizations in need such support;

・to support projects at the request of participating groups, and to promote project cooperation between groups;

・to function as the joint contact and lobby organization for the member groups towards intergovernmental organizations concerned with the Baltic (primarily the Helsinki and Gdansk Conventions and Commissions), and to develop and present joint NGO proposals and demands to be put to these intergovernmental organizations.

CCB is a member of the IUCN, the World Conservation Union, and was granted observer atatus with the Helsinki Commission, HELCOM, in February 1991. CCB coordinated the input of the non-governmental organization to the Baltic Marine Environment Conference held at Heads of Government level in Ronneby Sweden, 2-3 September 1990.

CCB is, as a joint project of its member groups, developing a CCB-NGO Action Plan for the Baltic Sea Area. The plan will be presented to the Baltic govemments and the public in April 1992.

CCB is also actively involved in a numder of concrete field projects in Poland and Baltic republics. The projects are implemented through cooperation between CCB member organizations. project funding has been obtained through an agreement between the Swedish Society for Nature Conservation, SNF, and the Swedish International Development Authority, SIDA. For the current fiscal year 2 million Swedish crowns (330,000USD) have been allocated to these projects.

FOR FURTHER INFORMATION:

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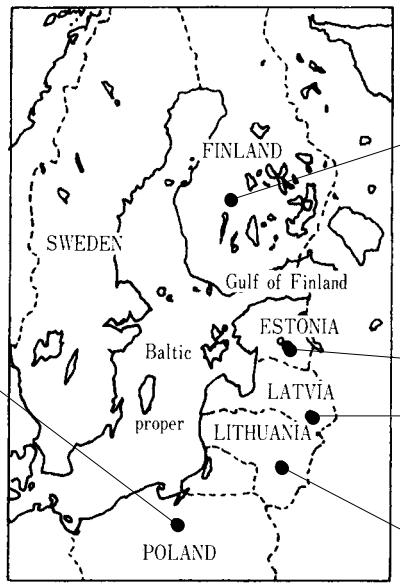
CCB projects for the year 1991/1992

・Translation and printing of environmental literature in Polish, Estonian, Latvian and Lithuaian '91～'92
・Seminars on Green Consumerism and Baltic Sea environment '91～'92

・Education of study circle leaders in Szczecin '91
・Editing and printing of an Environmental Encyclopedia '91～'92



・Arranging the Baltic 1992 NGO-Conference on the Baltic Environment in Finland April 5-6, 1992.

・Nutrient monitoring in lakes, rivers and coastal waters '91
・Composting of sewage and household waste '91
・Monitoring of halogenated organic substances in waters '91～'92
・Study of natural resources on Estonian Islands in the Gulf of Finland '91～'92

・River restoration '91～'92

・Restoration of salmonid stocks '91
・Nutrient monitoring '91～'92
・Conservation of wetlands '91～'92

STRESA '93

5th International Conference on the Conservation and Management of Lakes
" Strategies for lake ecosystem beyond 2000 "

OUTLINE: After the stimulating and successful Conferences organized by ILEC (Japan, 1984; U.S.A., 1986; Hungary, 1988; P.R. of China, 1990), the fifth International Conference on " The conservation and management of lakes " is planned for spring 1993 in Italy. Three main arguments will be focussed:

— Updating of the scientific basis of lakes functioning in natural, stressed and recovered situations as a management tool.
— Political and administrative aspects in the management of lakes as a Primary resource.
— The role of environmental education in involving citizen organizations to support the protection of lakes.

The venue will be Stresa, an important tourist resort on the shore of Lago Maggiore (the second largest Italian lake). Stresa is located in Northern Italy near the border with Switzerland, 70㎞ from Milano and 150km from Torino.

DATE: May 17 (Monday)～May 21 (Fridey), 1993

VENUE: The Venue will be the Palazzo dei Congressi, Stresa, Lago Maggiore. Stresa has good railway connections with three international airports: Milano-Linate (90min.), Milano-Malpensa (60min.), Genève (150min.)

LANGUAGE: English

ORGANIZERS:
- Istituto Italiano di Idrobiologia (CNR)
- Istituto di Ricerca Sulle Acque (CNR)
- International Lake Environment Committee Foundation (ILECI)
- International Association on Water Quality (IAWQ)

OBJECTIVE: The objective of the Conference is to focus on some of the major Problems related to the protection and use of lake ecosystems considered as a primary resource for economic development.

The Conference programme will include invited lectures, offered papers and posters, Which willbe published in the volume of the Conference proceedings.

TOPICS:
— Scientific basis for managing eutrophication
— Water quality in lakes and reservoirs for human uses
— The fate and effects of in -lake micropollutants
— Non-point source control for nutrients
— Acid rain and effects on aquatic ecosystems on a global scale
— Scientific findings and their utilization at socio-economic and administrative levels for lake/reservoir management
— Environmental education
— Citizen participation

Lake Maggiore (Italy)

Northeast Asia Environmental Cooperation Conference

DATE: October 13 (Tuesday)～ October 16 (Friday), 1992

VENUE: Okura Hotel Niigata, Niigata City

ORGANIZERS: The environment Agency and Niigata Prefecture

PARTICIPATING COUNTRIES: Japan, Korea, China, Russia, and Mongolia (Tentative)

DELEGATIONS: Environmental administration agencies and ministries of participating governments and regional public groups, related international organizations, and citizens' groups.

OUTLINE: Each year 1988, the Environment Agency of Japan and the Ministry of Environment, Korea, in cooperation with related agencies from both countries and regional public groups, have alternately held the Japan-Korea Environmental Symposium. However, as a step toward regional cooperation, as emphasized during this past June ' s Earth Summit (UNCED), this has been developed into a conference to discuss policies for environmental cooperation on issues facing countries along the Japan Sea. Through the establishment of regular policy dialogue and information exchange between countries in the Japan Sea region concerning measures for environmental management, this confernce aims to advance each country's specific plans through enhanced cooperation. Hoping to be the center of exchange for the entire Japan Sea region, Niigata Prefecture is conducting the first annual conference in Niigata City in cooperation with the Environment Agency of Japan.

FOR FURTHER INFORMATION:
Office of Overseas Environmental Cooperation
Global Environment
Environment Agency of Japan
2-2, Kasumigaseki 1-chome, Chiyoda-ku, Tokyo 100 Japan
Tel: +81 3-3581-3351 (Ext. 6744)
+81 3-3580-4982 (Direct)
Fax: +81 3-3504-1634

REGISTRATION FEES:

	Until January 31, 1993	After January 31, 1993
Participants	Lit. 600.000	Lit. 750.000
Accompanying persons	Lit. 250.000	Lit. 300.000

The registration fees will cover:
— reception, admission to sessions
— a special monographic volume on Limnology in Italy
— the abstract volume
— some social events

FOR FURTHER INFORMATION:
R.M.Società di Congreei s.r.l.
Via Ciro Menotti 11 20129 Milano, Italy
Tel: + 39-2-70126308/70126772
Fax: + 39-2-7382610

International Lake Environment Committee Foundation
4-22, Kyomachi 3-chome, Otsu, Shiga 520 Japan
Tel: +81-775-25-1076
Fax: + 81-775-23-1581

A LETTER FROM THE BLACK SEA — RUMANIAN ZONE —

Dr. Pia Elena MIHNEA

HOW TO DO

WE ACHIEVE ALL EXTREMELY IMPORTANT BUT ALSO VERY DIFFICULT TARGETS?

Dear Sir/Madam,

As Participant of EMECS'90, I would like to take opportunity again to express my sincere thanks to all the Japanese organizers that offered me the chance of attending one of the best Conferences on the management of enclosed seas and current research in the field. I greatly improved both my Knowledge and my network of acquaintances among scientists in this very important area. The Proceeding of EMECS '90, special issue Vol 23 of Marine pollution Bulletin is considered to be an essential handbook for those interested in research and management of enclosed seas.

In this article, I describe our present projects, future problems and needs for collaboration.

The effect of pollution on the Rumanian Black Sea area was studied early on 1970's. A monitoring system using 30 parameters, as well as ecotoxicological tests, was developed. A good scientific base was established for future management. The implementation of our results as a real contribution to the restoration of physical and conditions and biological resources required the collaboration of all countries with coasts around this sea.

After a long, six-year struggle, the Convention for the protection of the Black Sea and its three Protocols were signed on 22 April, 1922 in Bucharest - Rumania.

Soon after, on 22 - 23 May 1992, a programme coordination meeting was held at Constanta - Rumania, for the Environmental Management and Protection of the Black Sea. To make the discussions both very efficient and focussed on a really cooperative programme, the meeting was attended by five representatives from each riparian country and was supervised by a number of international financial institutions: General Environment Facil-ity (GEF), United Nations Environment programme (UNEP), United Nations Development Programme (UNDP) which is the sponsor for this project, as well as Non-governmental Organizations (NGOs).

Until very recently, there has been no international framework for managing the Black Sea. The recent signing of the Convention for the protection of the Black Sea, enables the establishment of common legal instruments for the control and reduction of marine pollution. The Bucharest 1992 Convention on the Protection of the Black Sea, recently brought into effect by its Commission, will develop detailed criteria for preventing, reducing and controlling pollution as well as performing general duties related to the implementation of the Convention.

A first step towards such a plan was the clear Declaration of policy Objectives which would be a statement of common long and short-term, pragmatic environmental goals for the control of pollution, rational resources management and rehabilitation of natural fauna. The GEF project provides a solid basis for establishing a long-term Action Plan and responds to the immediate needs of the riparian countries in order to achieve their longerterm objectives.

To restore life to the Black Sea, fishing must be prohibited for a while.

To implement the new legislation, all relevant countries must reorganize their Water Pollution Agencies and set up new laboratories whose role will be to inspect the outfalls and to check on treatment technologies, to develop laboratories for each treatment plant, and to train special personnel to see that the laws are implemented.

It is necessary to give careful consideration to the hiearchy of responsibilities: improve the technologies of treatment, modernize the treatment plants, supervise the level of burden into water water, and monitor the specific parameters into receiving areas etc.

The results are expected to return all of us to balanced marine ecosystems as well as creating new opportunities for employment.

We also intend to educate future generations and create a new attitude regarding the protection of natute. To this end, Ecological Universities and the National Center for Ecological Education have been founded in Rumania in the last three years.

At present, we are jist attempting to introduce BIOPOLITICS at high schools and in university curricula. Biopolitics is a multidisciplnary approach to nature and its conservation. This subject will be comprehensively treated in a forthcoming Newsletter.

HOW TO DO we achieve all these extremely important but also very difficult targets?

THE ONLY ANSWER IS: by collaboration with all scientists, engineers, experts in enclosed seas management and everyone specializing in the protection and management of the environment.

My article is a polite challenge or friendly request, addressed to the readers of EMECS Newsletter to debate publicly these subjects that are of great interest and I am sure we shall all derive tremendous benefits from reading these Newsletters. I suggest we contribute questions and answers or short information regarding our own experience with the present problems. Thank you very much.

Dr. Pia Elena MIHNEA
Rumanian Marine Research Institute
Bd. Mamaia 300/8700 Constanta
Rumania

JEMECS '92

The Japan Forum on the Environmental Management of Enclosed Coastal Seas '92

THEME: Revive, our mother seas !
— What's our urgent task for the conservation of the seas ? —
DATE: October 1(Thursday)～Octorber 2(Friday), 1992
VENUES: Omura City, Nagasaki Prefecuture, Japan
The Civic Hall, "Huis Ten Bosh"(amusement facility) and on board ship
ORGANIZERS: ・ Nagasaki Prefectural Government
・ Omura City Government
・ The Association for the Clean-up of Omura Bay

The Japan Forum on the Environmental Management of Coastal Seas (JEMECS '92) is organized by the Nagasaki Prefectural Government and the Omura City Government following in the tradition of the EMECS '90 conference. People involved in enclosed coastal seas, mainly leading officers in administrative bodies in Japan who are presently engaged in enclosed coastal seas, are expected to participate in the Japan Forum conference.

FOR FURTHER INFORMATION:
Environment and Sanitation Section, Environment Department Omura City Government
25, Kushima 1-chome, Omura, Nagasaki 856 Japan

Asia-Pacific Conference for Human Beings and Environment in Kitakyushu ASPAC '92 Kitakyushu Commemorative Program

The JCI-ASIA Pacific Kitakyushu Conference (ASPAC '92) was held in Kitakyushu, Japan four days starting on May 21, 1992. As one of the events to commemorate the conference, the Asia-Pacific Conference for Human Beings and Environment was held concurrently for 3 days starting on May 22 at the Kitakyushu International Conference Center. This conference, sponsored by the ASPAC executive committee, was held for the purpose of discussing worldwide environmental problems.

The main theme of the conference was "Harmony of Human Growth and Advancement and Global Environment." Presentations by Business Corporation dealt with "Corporative activity concerning Nature" and new technologies, while consumer groups discussed changes in "Lifestyles friendly to Nature" and other efforts to preserve the environment. There was lively discussion on these and other topics.

At the plenary session held on the last day, "the Kitakyushu Proposal" was adopted. This proposal was also presented to participants at the global citizen ' s conference of the UNCED held in Rio de Janeiro in June, which was sponsored by the Junior Chamber International (JCI). "The Kitakyushu Proposal " consists of the following three measures:

(1) To set up "the Global Environment Fund '92" to train people in ways to provide regional institution in environmental matters and to implement activities to protect the global environment

(2) To share the experience and technologies used by the city of Kitakyushu to combat pollution and collect/organize data from around the world, in order to make Kitakyushu a publicly-supported center for environmental information

(3) To call on the government to enact an "Employment Promotion Law for International Cooperation Contributors " (tentative)to provide employment to people who have worked overseas in international cooperative endeavors, in order to enable such people to utilize their valuable experience abroad upon their return

ASIAN WETLAND SYMPOSIUM

Towards Wise Use of the Most Productive Places, Wetlands

THEME: -Current issue and required action and legislation for the wise use of wetlands
-Appropriate management and monitoring measures for Ramsar sites
-International cooperation in financing and research for wetland management
DATE: October 15 (Thursday) ～ October 20 (Tuesday), 1992
VENUE: Lake Biwa Research Institute, Otsu City (near Lake Biwa)
[October 15 (Thursday)～ October 17 (Saturday)]
Kushiro Cultural Hall, Kushiro City (near Kushiro Marshland)
[October 19 (Monday)～ October 20 (Tuesday)]
ORGANIZERS: ・ Environment Agency, Government of Japan
・ International Lake Environment Committee (ILEC)
・ Ramsar Center Japan
・ Hokkaido Prefectural Government
・ Shiga Prefectural Government
・ Regional Promotion Committee for the Ramsar Conference in Kushiro
REGISTRATION: Registration fees will be free. However, advance registration is essential to participate in the symposium. Because of the limited capacity (about 150) of the conference hall, we encourage early registration.
FOR FURTHER INFORMATION:
Prof. H.Isozaki
Secretary-General of the Asian Wetland Symposium
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2-10, Shinjuku 2-chome, Shinjuku-ku, Tokyo 160 Japan
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Fax: +81-3-3350-5855

Japanese and French Researchers Cooperate to Clean Up Enclosed Coastal Seas

In recent years, both the Mediterranean Sea and the Seto Inland Sea of Japan have become severely polluted. As a result, research organizations in Japan and France have decided to conduct joint research aimed at restoring these areas. Three research organizations are involved: the Government Industrial Research Institute, Chugoku of the Agency of Industrial science and Technology of the Ministry of International Trade and Industry, located in Kure, Hiroshima Prefecture, Japan; IFRAMER (the National Marine Research Center of France) ; the Laboratorie "Environment Marin Littoral", Faculte des Sciences, Universite de Nice. The results of this research will play an important role in the cleaning up of the Baltic Sea, the Bo Hai and other enclosed coastal seas throughout the world.

Hideki Ueshima, former head of the Marine Technology Division of the Government Industrial Research Institute, recently visited both research organizations in France and was able to reach a basic agreement on the joint research project. Future plants call for the Japanese and French organizations to put forward research topics and exchange the fruits of their research.

Founded in 1971, the Government Industrial Research Institute, Chugoku has created the world ' s largest hydraulic model of the Seto Inland Sea to study technologies for controlling tidal currents. The Institute has also developed a technology for creating tidal currents by sinking blocks onto the ocean floor, and is working to adapt this for practical use in restoration operations.

The Laboratorie Environment Marin Littoral of the Universite de Nice is know for its research in the area of algae transplantation, said to be effective in cleaning seawater.

Existence of "Red Tide Killer" Bacteria Confirimed

Ecology of the Bacteria that Destroys Chattonella

Dr. Masakazu Furuki

Deputy Director, Water Pollution Division
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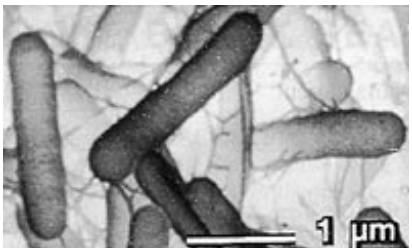

Photo 1 : photo of *Cytophaga* sp. taken by electoron microscope (photographed by Dr. Yokota)

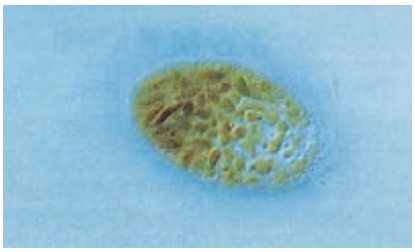

Photo 2 : *Cytophaga* sp. attaching itself to *C.antiqua*

The appearance of Chattonella in the sea is greatly affected by coexisting microbes. It is known that, when symbiotic bacteria exist, if they are provided with large amounts of nutrient salts, they propagate predominantly and cause the phenomenon known as "red tides." In 1985, the propagation of *Chattonella* in the sea of Harima was severe, reaching the level of 10 cells per millilter in early July. After that, however, the cell concentration declined rapidly, and scince that time it has never risen above 2 cells/ml.

Seawater sampled at the begining of July was filtered using a 0.2 μ m nuclepore filter and then inorganic nutrients were added and the seawater was inoculated with *Chattonella antiqua* or *C.antiqua* and Skeletonema costatum, and the mixture was cultivated. In each case, the inoculated phytoplankton propagated well. When the same process was performed using seawater filtered with Watman GF/C filter paper, in each the *C.antiqua* propagated in the initial stages but suddenly perished in mid-cultivation. The S.costatum, on the other hand, propagated well. When inorganic nutrients were added to untreated seawater and the mixture was inoculated with *C.antiqua*, the phytoplankton living in the seawater propagated well but the *C.antiqua* perished. In each case, when the seawater in which the *C.antiqua* perished in both of these cases was added to a culture solution in which *C.autiqua* was flourishing, the *C.autiqua* perished. When this culture solution was added to another culture solution in which the *C.antiqua* was propagating, too, the *C.antiqua* perished in the same manner. No matter how many times this process was repeated, the same thing happened : the *C.antiqua* perished. It was conjectured that there was a bacteria in this seawater that killed the *C.antiqua* and was able to use the *C.antiqua* as a source of nourishment. Consequently, this bacteria was isolated and identified and a study was made of its conditions for growth and its interaction with *Chattonella.*

Isolation and identification of the bacteria breaking down the *C.antiqua* : Isolation was performed using an egg yolk culture medium. (The egg yolk solution was created by adding the yolk from one egg to 30ml of 10% salt water. The medium consisted of the following addition to the seawater that pH was adjusted to 8.0.: Tris 500mg/l, $FeCl_3$ 3.24mg/l and EDTA 0.3mM, 10% of the egg yolk solution and 1.5% of agar.) Of the bacteria that were isolated, it was determined that a yellow colony forming bacteria was responsible for killing the *C.antiqua.* This bacteria flourished on the egg yolk medium, but did not appear to grow well in other mediums. The bacteria was a gram-negative, aerobic bacillus G+C content was 35.7%, and contained menaquinone MK-6, and with bifurcated hydroxy fatty acid with 2-OH iso-15:0, 3-OH iso-17:0 and 3-OH iso-15:0. There was no flagellous movement, but the bacteria showed gliding mobility and was therefore identified as a bacteria of the genus *Cytophaga.* Photo 1 is a photograph of the bacteria taken with an electron microscope.

Propagation of the bacteria : The higher the concentration of the egg yolk solution between 5% and 20%, the better the *Cytophaga* sp. propagated. When the concentration reached 30%, however, propagation was inhibited. 0.5% glucose inhibited the propagation of the bacteria slightly, and at 2% propagation almost stopped entirely. In a medium containing egg yolk peptone only, *Cytophaga* sp. was unable to propagate, but when *C.antiqua* was added, it propagated well.

Interaction with *C.antiqua* : When inoculated with *C.antiqua*, most of the bacteria attached itself to the *C.antiqua* and began to propagate, killing the *C.antiqua*; as the *C.antiqua* cells were broken down, the turbidity of the culture solution was reduced. A study of this change from the standpoint of changes in absorption spectrum revealed that it was equivalent to the absorption spectrum of *C.antiqua.* As a result, it was thought that the bacteria broke down and used the C.antiqua. Phot 2 shows the *Cytophaga* sp. attaching itself to the *C.antiqua.*

A semi-continuous cultivation was conducted, 1/3 of the culture solution was replaced with fresh medium once a day. (medium composition: KNO_3 1mM, Na_2HPO_4 0.05mM, EDTA 30uM, $FeCl_3$ 2uM, vitamin B_{12} 30ng/l). When the cell density became steady-state, the solution was inoculated with Cytophaga sp. and cultured. Figure shows the results of a study of the relationship between C.antiqua and *Cytophaga* sp. As you can see, the *Cytophaga* sp. with which the solution was inoculated propagated using *C.antiqua* as a source of nourishment. When the density of *Cytophaga* sp. became 10^4 - 10^5 cells/ml, *C.antiqua* prorogation was prevented and died.

This study confirms that, in addition to the types of bacteria that accelerate the propagation of *C.antiqua* in the sea, there are parasitic bacteria in the sea in which *C.antiqua* does not propagate well. This suggests that communities of bacteria are a major factor causing fluctuations in the propagation of *C.antiqua.*

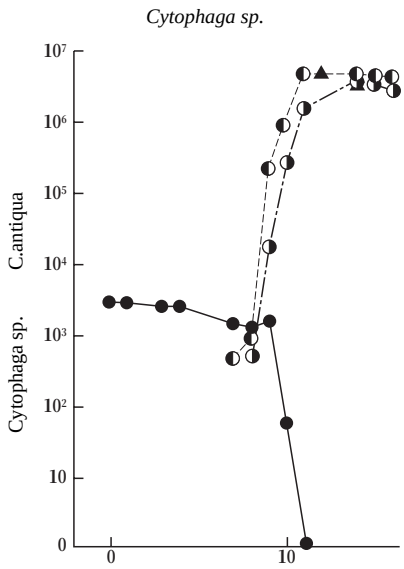

Fig. Interaction of *C.antiqua* and *Cytophaga sp.* in the semicontinuos incubation system
(●) *C.,antiqua*
Cytophaga sp.
(▲) Direct count method based on DAPI staining
(◑) IGMF method on the egg-yolk medium
(◐) The most probable number method based on the effect of killing *C.antiqua*

Bacterium Inhibiting the Growth of *Gymnodinium Nagasakiense (G.mikimotoi)*

Dr. Kimio Fukami

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Over the last couple of decades, heavy algal blooming has often broken out in the coastal waters of Japan, and red tides of Raphidophyceae and Dinophyceae have frequently caused serious damage to mariculture. Today, the prediction and prevention of red tides is one of the most important and urgent tasks facing the Japanese fishing industry.

It is now widely appreciated that bacteria are one of the most effective organisms on the physiology of micro algae (Riquelme et al., 1988), and they appear to play an important role in the development and decay of phytoplankton blooms. Based on recently knowledge, a project for the prevention of red tides from a bacteriological aspect was started at the initiative of the Fisheries Agency of the Japanese government in 1989. Many microbiologists have conducted intensive studies as part of this project.

In Uranouchi Inlet, Kochi Prefecture, we have observed the succession of dominant species of phytoplankton from *Skeletonema costatum* to *Gymnodinium nagasakiense*, and have evaluated the influence of communities of bacteria scattered in ocean water in the field on the growth of phytoplankton by studying their effect on axenic cultured *Gymnodinium nagasakiense* and Skeletonema costatum. As a result, we have discovered that the bacteria in natural sea water are suppressive against *S.costatum* but stimulative of *G.nagasakiense*. This fact uncovered a clear correlation between the development of phytoplankton in the field and the growth stimulative or suppressive effect on them of communities of bacteria, indicating the strong influence of currently existing communities of bacteria in the field on the succession of dominant species in the development and annihilation of specific phytoplankton (Fukami et al., 1991). During the process, a strain that inhibited the growth of *G.nagasakiense* or rapidly killed the growing *G.nagasakiense* have been isolated and named 5N-3 (see photograph) (Fukami et al., 1992). After simplified identification, the 5N-3 strain has been tentatively identified as *Flavobacterium* sp.

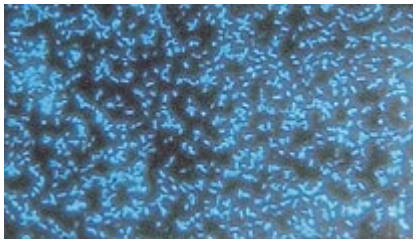
We have tried to analyze in detail the inhibitory effect of the strains of *Flavobacterium* on the growth *G.nagasakiense* and several other species of red tide phytoplankton.

The 5N-3 strain, *Flavobacterium* sp., showed a strong inhibitory effect on the growth of *G.nagasakiemse*. The inhibitory effect of the strain on *G.nagasakiense* was evident when the alga was in either the lag, logarithmic or stationary growth phases, and in particular in the logarithmic growth phase. Several days after the bacterium was inoculated, the cell density of the alga had decreased to less than 1% of the initial concentration, indicating that the effect was algicidal. (See figs.)

The inhibitory effect of the 5N-3 strain on the growth of *G.nagasakiense* was remarkable when the cell density of the bacterium was between 10^6 and 10^7 cells/ml. The 5N-3 strain grows extremely well in the extracellular released organic carbon (EOC) of various species of phytoplankton. When the initial density of the 5N-3 strain was set at 10^3-10^5 cells/ml, it grew to the level of 10^7 cells/ml in two to three days, resulting in a significant inhibitory effect.

Although the 5N-3 strain showed a remarkable algicidal effect on *G.nagasakiense*, it had almost no effect on the growth of other algae including *Skeletonema costatum*, *Chattonella antiqua* and *Heterosigma akashiwo*, indicating that the effect of the 5N-3 strain was *G.nagasakiense*-specific.

To prevent or kill phytoplankton species that cause red tides using microorganisms, it is necessary to utilize algicidal microorganisms that grow in natural sea water. Otherwise, it would be impractical to scatter high concentrations of the microorganisms over a wide area and achieve such a remarkable effect. In considreing the ecosystem, it is important that the growth of the target plankton is inhibited while other species are not affected. Most of the bacteria that have been reported as having an algicidal effect have growth inhibitory effects on many species of plankton. If such algicidal



The 5N-3 strain, Flavobacterium sp.

bacteria cause damage to normal communities of plankton, they would act more or less like a "poison" and the bacteria themselves would be another contaminant. The 5N-3 strain, *Flavobacterium* sp., that we have obtained in the present study grows well using the EOC of various phytoplankton species. Therefore, it is expected that it will grow to a level of concentration that is effective in killing algae using natural organics as a growth substrate. Moreover, its algicidal effect is specific to *G.nagasakiense*, indicating that it is an ideal microorganism for the purposes mentioned above.

In the future, further conditions will have be studied to make possible the practical use of 5N-3.

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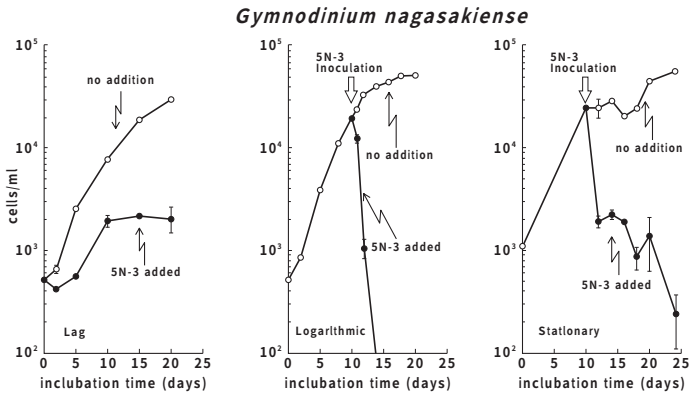

Fig. Effects of bacterium 5N-3 on the growth of Gymnodinium nagasakiense in different growth stages. Time of bacterial inoculation is indicated by the open arrow.

Calender for Forthcoming Conferences and Exhibitions

1992/1993

(1992)

Aug.31-Sep.4
Int. Conference on Sewage into 200 — Netherlands

Sep.1-4
4th Int. Water Technology Exbn. — Amsterdam, Netherlands

Sep.9-10
Waste & Waste Treatment Exbn. Limitation Conference — Glasgow, U.K.

Sep.20-23
Int. Conference on East Asian Seas — Seoul, Korea

Sep.27-28
Petronas IPIECA Seminar on the Environment — Malaysia

Oct.1-2
Japan Forum on Environmental Management of Encloesd Coastal Seas '92 (JEMECS '92) — Omura, Japan

Oct.11-15
Gulf Cleaning & Maintenance Exbn. — Dubai, U.Arab Emirates

Oct.13-16
Northeast Asia Environmental Cooperation Conference — Niigata, Japan

Oct.15-20
Asian wetland symposium — Otsu/Kushiro, Japan

Oct.21-23
Int. Environmental Exbn. (ENVIBRNO) — Brno, Czechoslovakia

Nov.3-6
2nd Int. Conference & Exbn. on Environment (ENVIROASIA '92) — Singapore

Nov.4-5
Understanding the North Sea System — London, U.K.

Nov.4-6
Int. Conference on Environmental Water Chemistry — Tianjin, China

Nov.5-8
Int. Environmental Technology, Conversation & Pollution Control Exbn. — Istanbul, Turkey

Nov.17-20
Int. External Environmental Exbn. — Gothenburg, Sweden

Dec.1-5
Pollution & Environment Technology Exbn. — Jakarta, Indonesia

(1993)

Feb.16-20
SMAQUA Int. Water exbn. — Zaragoza, Spain

Apr.3-7
Middle East Environment Exbn. — Dubai, U.Arab Emirates

May.17-21
5th LECS Stresa '93
Int. Conference on Environmental on the Conservation & Management of Lakes — Stresa, Italy

May.18-21
6th World Filtration Congress — Nagoya, Japan

Jul.19-21
Environmental Management of Enclosed Coastal Seas '93 (EMECS '93) — Baltimore, U.S.A.

Oct.5-9
4th IAWPRC Asian Regional Conference on Water Coservation Control (Asian Waterqual '93) — Jakarta, Indonesia

Call for Articles

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The information requested in the enclosed questionnaire will enable us to create a network of researchers as aide to accomplishing these goals. We ask for your cooperation in completing and returning the questionnaire.

This newsletter welcomes contributions from readers, such as reports of new research in specialized fields, data on enclosed coastal seas around the world, notification of international conferences, and so on.

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Hyogo Prefectural Government
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Tel: +81 78-362-3255
Fax: +81 78-382-1580

The next issue will be published in February, 1993.

(Printed on recycled paper)
4保P2-079A4