NEWS & ANNOUNCEMENTS

The INQUA Commission on Quaternary Shorelines

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I. INTRODUCTION

It is twenty-one years since Fairbridge and Richards (1967) recorded the history of the Commission on Quaternary shorelines and enunciated a programme of work and *desiderata* for the intercongress period following the VIIth INQUA Congress in Boulder, Colorado, USA in 1965. Their explicit statements are a model and serve as a *modus vivendi* for all commissions and subcommissions at the out set of each intercongress period. The work of the Commission subsequently has been reviewed within the context of other international organizations such as the International Geographical Union (IGU) and the International Geological Correlation Programme (IGCP) (Tooley, 1987). Schlüchter (1987) has noted that INQUA is at the cross-roads both financially and in terms of the balance between pure and applied research stimulated by the international union and its constituent bodies. He has stressed the need to establish a corporate plan for INQUA in which scientific and financial priorities are established.

The problems were addressed during the meetings of the Commission on Quaternary Shorelines at the XII INQUA Congress held in Ottawa in August 1987. Three priorities for Intercongress Period XIII were agreed at the meeting on 1 August 1987, and the organization of the subcommissions was restructured and a budget prepared. The purpose of this paper is to inform all those with an interest in Quaternary Shorelines of the priorities, structure and working programme of the Commission for intercongress period XIII, 1987-(1991), and to encourage participation in the work of the Commission and its subcommissions.

II. PRIORITIES

The main aims of the Commission, subcommissions and working groups are to promote the study of former shorelines and to trace the history of sea-level changes during the Quaternary through international collaboration.

Within the framework provided by these long-established aims, three priorities for intercongress period XIII were identified and agreed.:

(1) The reconstruction of former shorelines and sea-level changes from areas and time periods deficient in sea-level data.
(2) The compilation of selected coastal and continental shelf palaeogeographical maps.
(3) The compilation of maps of selected, populous coastal lowlands showing the impact of projected sea-level change to AD 2100.

In these priorities, the commission has responded to Schlüchter's prognosis that scientific investigations should address both fundamental and strategic problems, in this case, related to coastal and sea-level changes within the Quaternary. The problem of resourcing these investigations remains a challenge.

III. RESTRUCTURING

The structure of the Commission and subcommissions was approved with the exception that the Pacific and Indian Oceans Subcommittee was replaced for the time being by three temporary working groups:

(1) Australasia and Oceania Working Group
(2) East and Southeast Asia Working Group

(3) Indian Ocean Working Group

The structure of the Commission for 1987-(1991) comprises:

The Commission on Quaternary Shorelines
Working Group 1
Working Group 2
Working Group 3
Subcommissions
Africa
Americas
Mediterranean and Black Sea
Northwestern Europe

The overall tasks and objectives of the working groups and subcommissions were agreed, as far as possible, at Ottawa, and it was stressed that these tasks and objectives should be realized within the congress period. A written report on work accomplished should be sent to the Secretary of the Commission nine months before the next General Assembly.

IV. WORKING GROUP ACTIVITY

Three working groups have been set up to undertake specific objectives in three areas formerly covered by a single subcommission.

Working Group 1. Australasia and Oceania

The specific objective is to analyze patterns of deformation of coral reefs and other shoreline phenomena in the area.

Working Group 2. East and South Asia

In the last intercongress period, the subcommission for Pacific and Indian Oceans collected data on shorelines and published 'Inventory of Quaternary Shorelines, Pacific and Indian Ocean Regions.' It was recognized that there was a great regional and local variety in the studies and a density of information of Quaternary shorelines in the region.

For a better understanding of Quaternary shorelines of the region, close international cooperation should be focussed in the region between the East Asian continent and the Northwestern Pacific. A specific objective would be the preparation of a Quaternary shoreline map of the East and Southeast Asia regions based on three specified studies of Quaternary shorelines mentioned below:

(1) Identification and correlation of late Quaternary shoreline sequences.
(2) Comparative studies of shoreline deformation on tectonically active areas along the continental margin.
(3) Identification of continental shelf shorelines and depositional reserves on the shelf.

Working Group 3. Indian Ocean Working Group

The provisional objectives include the establishment of sea-level changes and shoreline deformation on the coasts of the Indian subcontinent, offshore and oceanic islands and adjacent areas.

Sub-commission Activity

The subcommissions carry out their duties by encouraging individual workers, organizing cooperative projects and holding scientific meetings and field excursions. The tasks and objectives were discussed by proposed subcommission members on 3 August 1987, and agreed at the full meeting of the Commission on 5 August 1987 in Ottawa.

(1). *Sub-commission for Africa*
- (a) Continuation of work on a shoreline map of Africa, particularly the coasts of East Africa and the Red Sea coast.
- (b) Development of Continental Shelf research with particular attention given to those parts of the shelf that are little known and the origin of resources (placers).
- (c) Applied, coastal research, especially hydrology, agriculture, natural resources and coastal protection.
- (d) Fostering programmes of training and collaboration with European and American universities.
- (e) Compilation and distribution of annual reports or work undertaken by the large number of African investigators.

(2). *Sub-commission for The Americas*
- (a) Correlation of Late Cenozic marine terrace sequences along the Pacific Coast of the American Continent.
- (b) Chronostratigraphy and evolution of the Atlantic Coasts of the Americas.
- (c) Comparison of formerly glaciated coastlines of the tip of South America with those in North America.
- (d) Recent shoreline changes in the Americas.

(3). *Sub-commission for Mediterreanean and Black Seas*
- (a) Study of all Quaternary shorelines in relation to continental formations.

(b) Interregional stratigraphical correlation.
(c) Shorelines and neotectonics.
(d) Marine deposits of the continental shelf sea in relation to emerging shorelines.
(e) Continuation of the mapping of Quaternary shorelines.

(4) *Sub-commission for Northwestern Europe*
(a) Reconstruction of former shorelines and sea-level changes from areas and time periods deficient in sea-level data.
(b) Compilation of selected coastal and continental shelf palaeogeographical maps.
(c) Compilation of maps of selected populous coastal lowlands showing the impact of projected sea-level change.
(d) Modelling glacio-isostatic movements.

VI. MEETINGS

The sub-commissions have already initiated a programme of meetings, and those interested in attending or receiving the documentation should write to the secretary of the appropriate sub-commission. The sub-commission for the Americas has organized meetings in Ushuaia, Argentina (2-6 December 1987), Sao Paulo, Brazil (8-12 May 1989) and in Washington, D.C., USA, during the International Geological Congress (20-27 July 1989). The Sub-commission for the Mediterranean and Black Sea has arranged a field excursion from Almeria to Valencia and a meeting in Madrid, Spain (25-29 September 1989). The Sub-commission for Northwestern Europe has arranged a meeting in Scotland on Late Quaternary Sea levels and Crustal Deformation (9-15 September 1988) and a meeting on the coasts of the English Channel/*La Manche* (September 1989).

VII. MEMBERSHIP OF THE INQUA COMMISSION ON QUATERNARY SHORELINES MAIN COMMITTEE

President: Dr. S. Jelgersma
Rijks Geologische Dienst
Postbus 157
NL-2000 AD Haarlem
THE NETHERLANDS

Vice-President: Prof. P. A. Kaplin
Faculty of Geography
Moscow State University
Moscow 119889, USSR

Secretary: Dr. M. J. Tooley
Department of Geology
University of Durham
Durham DH1 3LE, U.K.

Honorary Advisor: Prof. R. W. Fairbridge
P.O. Box 801
Amaganset, NY 11930

Ex officio members: presidents of the working groups and the sub-commissions, and the President of the Commission of Neotectonics and of the Commission for the study of the Holocene.

Dr. Birgitte Ammann (Holocene) Dr. D. Hopley, Dr. N. A. Mörner (Neotectonics), Professor Y. Ota, Professor K. Suguio, Professor D. E. Smith, Professor A. Weisrock, Dr. Cari Zazo.

Working Group-1. Australasia and Oceania

President: Dr. D. Hopley, Head, Sir George Fisher Centre for Tropical Marine Studies, James Cook University, Townsville, Queensland 4811, AUSTRALIA.

Vice-President: Dr. P. Nunn, University of South Pacific, Suva, Fiji.

Secretary: Dr. B. Pillans, Research School of Earth Science, Victoria University, Wellington, NEW ZEALAND.

Working Group-2. East and South-east ASIA

President: Professor Y. Ota, Department of Geography, Yokohama National University, 156 Tokiwadai, Hodogaya-Ku, Yokohama 240, JAPAN.

Vice-President: Professor Y. S. Qin, Institute of Oceanology, Academia Sinica, 7 Nanhai Road, Quingdao, CHINA.

Secretary: Dr. Y. A. Park, Department of Oceanography, College of Natural Sciences, Seoul National University, Seoul 151, KOREA.

Working Group-3. Indian Ocean

To be appointed

Sub-Commission for Africa

President: Professor A. Weisrock, University de Nancy II, Laboratoire de Geographic Physique, 23, bd. Albert-1er, BP 33.97
54015 Nancy, FRANCE.

Vice-President: Bisi Durotoye, University of Ife, Natural History Museum of Ife, Ife, NIGERIA.

Secretary: M. Oyede, Department de Geologie, University Nationale du Benin, BENIN.

Sub-Commission for the Americas
President: Dr. Kenitiro Suguio, Instituto de Geociencias USP, Caixa Postal 20899, 01498 Sao Paulo (SP), BRAZIL.
Vice-President: Dr. John Suter, Louisiana Geological Survey, Box G, University Station, Baton Rouge, LA 70806, USA.
Secretary: Dr. Marie Therese Prost, Centre ORSTOM B.P. 165, Cayenne 97301, GUYANE FRANCAISE.

Sub-Commission for the Mediterranean and Black Seas
President: Dr. C. Zazo, Department de Geodinamica, Facultad de Geologia, Ciudad Universitaria, 28040 Madrid, SPAIN.
Vice-Presidents: Black Sea, E. N. Bylinsky (USSR).
Mediterranean, A. Oueslati (Tunisia).
Secretary: A. Ulzega (Italy).

Sub-Commission for Northwestern Europe
President: Professor D. E. Smith, Department of Geography, Coventry Polytechnic, Coventry CVI 5FB, U.K.
Vice-President: Dr. M. J. Eronen, Karelian Institute, University of Joensun, P. O. Box 111, SF80101 Joensun, FINLAND.
Secretary: Dr. C. Baeteman, Belgische Geologische Dienst, Jennerstraat 13, B1040 Brussel, BELGIUM.

Commission on Neotectonics
President: Dr. N. A. Mörner, Geologiska Institutionen, Kungstengatan 45, Box 6801, S-11386 Stockholm, SWEDEN.

Commission for the Study of the Holocene
President: Dr. Birgitte Ammann, Botanical Institute, University of Bern, Altenbergerrein 21, Bern, CH-3013, SWITZERLAND.

VIII. REFERENCES

Fairbridge, R. W. and Richards, H. G. 1967 The INQUA Shorelines Commission. *Zeitschrift für Geomorphologie,* 11(2), 205–215.
Schlüchter, C. 1987 INQUA at the Crossroads. *Quaternary Science Reviews* 6, 169.
Tooley, M. J. 1987 Sea-level studies. In: Tooley, M. J. and Shennan, I. (Eds.) *Sea-level Changes.* Oxford, Basil: Blackwell, pp. 1–24.

International Geological Correlation Programme (IGCP)

The first meeting of the new Project IGCP-274 "Coastal Evolution in the Quaternary" will be held at Amsterdam (Netherlands) on 20-23 September 1988. Organizer: Dr. O. van de Plassche, Instituut voor Aardwetenschappen, Vrije Universiteit, Postbus 7161, 1007 MC Amsterdam, The Netherlands.

International Geological Correlation Program Project 274

QUATERNARY COASTAL EVOLUTION: CASE STUDIES, MODELS, AND REGIONAL PATTERNS

The Board of the International Geological Correlation Program (IGCP) has approved a proposal for a five year study entitled "Quaternary Coastal Evolution: Case studies, Models, and Regional Patterns" (short title: Coastal Evolution), to be known as IGCP Project 274. This new project, proposed by O. van de Plassche of the Netherlands, is in many respects an outgrowth of IGCP Project 200: Sea Level Correlations and Applications, which was viewed as a big success by IGCP. The primary objectives of the new project, which will focus on the last 125,000 years of Quaternary history, include an effort to explain local to global variations in coastal and continental shelf evolution, incorporating knowledge of coastal and shelf processes and environments with geodynamic, climatic, oceanographic, and other information to produce local and regional models, ranging from descriptive to numerical, that will

aid in analysis of and correlation with other areas. The five years of Project 274 are viewed as an initial step towards this ambitious goal. The project aims to prepare a program for integrated, interdisciplinary study of Quaternary coastal and shelf areas throughout the world, and to provide as a final result a multi-volume publication which can serve as a basis of reference and comparison for geological and other research in coastal and shelf areas. The better understanding of coastal evolution thus achieved will hopefully result in improved strategies and techniques for managing the increasingly important coastal zone as well as developing coastal resources.

The United States National Committee for IGCP has agreed to participate in this project, and an effort is underway to organize a preliminary American Working Group. Researchers interested in participating in and contributing to the project are urged to contact John R. Suter, Louisiana Geological Survey, Box G, University Station, Baton Rouge, LA 70893 (605-388-3481) for further information. The initial organizational meeting for the Project will be held in Amsterdam, The Netherlands, at the Trippenhuis of the Royal Netherlands Academy of Sciences, from the 19-24 of September, 1988. Information on this meeting can be obtained from Suter at the address above. It is anticipated that there will be a formal organizational meeting of the American Working Group during the Annual Meeting of the Geological Society of America in Denver in November, with arrangements to be announced.

John R. Suter
Baton Rouge, LA

The Biological Flora of Coastal Dunes and Wetlands: A Format

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INTRODUCTION

The *Journal of Coastal Research* is starting a series on "Biological Flora of Coastal Dunes and Wetlands." The series will be worldwide in scope and will consist of reviews of published and unpublished information on biological and geomorphological aspects of a plant species along a coastal location. The contributor is invited to present critical ideas and discussion on problems of an interdisciplinary nature. It is our hope that such reviews would not only increase international communication and interaction among coastal ecologists, biologists, geologists and geomorphologists but would also encourage research in new aspects of the biology of a plant species.

The offers of contribution by individuals or groups should be made to Dr. M. A. Maun, Department of Plant Sciences, University of Western Ontario, London, Ontario, Canada N6A 5B7, for approval. The journal would also invite individuals to write an account on a specific plant species.

Three copies of the completed manuscripts should be submitted to Dr. Charles W. Finkl, Jnr., Editor-in-Chief, Journal of Coastal Research, P. O. Box 8068, Charlottesville, VA 22906-8068. The manuscripts should follow the style of *Journal of Coastal Research*. The length of each account of a species including tables, graphs and maps should not normally exceed 20 printed pages of the journal. Each account will be given a number by the journal, for example, The Biological Flora of Coastal Dunes and Wetlands. 1. *Cakile edentula* (Bigel.) Hook.

For consistency, the following format of headings and subheadings should be followed. For this format, we have consulted other established series such as *The Biological Flora of the*

British Isles (CLAPHAM *et al*, 1958) and *The Biology of Canadian Weeds* (CAVERS and MULLIGAN, 1972).

FORMAT

ABSTRACT

ADDITIONAL INDEX WORDS:

I. INTRODUCTION

Briefly state the salient features of the species, historic or otherwise, that are of importance from the ecological and geomorphological viewpoint.

II. TAXONOMY AND VARIATION

(a) Name

Scientific name (genus, species and authority) of the species and its synonyms, family name and common names in English, French and German.

(b) Taxonomic Description

Give a taxonomic description of the species with sub-genus including morphological features of seeds, seedlings, juveniles, roots, shoots, inflorescences, fruits and fruiting structures that distinguish it from other closely related taxa. Illustrate anatomical features of the plant species. Give a photograph or drawings of fruit, seed, seedling, juvenile and mature plant that would be useful in plant identification.

(c) Variability

Describe variability within the species, with subspecies, varieties, ecotypes, and chromosome number.

III. GEOGRAPHICAL DISTRIBUTION

Give the distribution of the species based on your own records and those of major herbaria in the country or sub-continent in which the studies were undertaken. Describe from literature other areas of the world in which the species has been reported.

IV. RANGE OF HABITATS

(a) Zone of Occurrence.

Describe the zone of occurrence of the species and the range of habitats in which the species is found.

(b) Substrate Characteristics.

Give the types of preferred substrate and habitat conditions in various parts of the species range. Describe physical (texture, drainage, soil class, mechanical analysis, moisture holding capacity *etc.*) and chemical (nutrient status, pH, organic matter *etc.*) characteristics of the substrate.

(c) Climatic Requirements.

Relate the species distribution to the climatic conditions with regard to temperature, photoperiod, light intensity, rainfall, wind velocity, turbidity etc. State limitations imposed by climate for spread northward or southward.

V. COMMUNITIES

For the range of habitats (*e.g.* beach, dune, slack, bay, marsh, open water) in which the species is found, briefly describe the plant communities. Present data (if available) on abundance and frequency of the species and give complete lists of associated species of plants.

VI. PHYSIOLOGICAL ECOLOGY

(a) Physiology

Present physiological responses such as photosynthesis, nutrient relations, water relations, respiration, productivity relations, responses to environmental factors including salt spray, soil salinity, oxygen tension in water, CO_2 concentration, alkalinity, pH, dissolved gases, metals, nutrients, organic substances and other relevant aspects of the physiology of the species.

(b) Phenology

Give a detailed description of periodic phenomenon of the species. For example, describe the time or period of germination, seedling growth, initiation of roots and shoots in spring, flowering, fruiting, leaf shedding, bud formation and dormancy. Describe any other aspect related to the phenology of the species.

VII. POPULATION BIOLOGY

(a) Perennation

Describe the Raunkiaer life form of the species (MUELLER-DOMBOIS and ELLENBERG, 1974). Give mode of perennation and general description of the species in winter and in unfavourable season. Describe sensitivity of the plant to frost, drought and severe weather conditions.

(b) Population Dynamics

Describe decline and rebuilding of popula-

tions over time and the possible causes of such changes. Describe the birth and death rates of individuals or modules in various habitats. Any other relevant information should be included.

VIII. REPRODUCTION

(a) Sexual Reproduction

(i) *Pollination and Fertilization.* Describe the mode of pollination of flowers. If insect or animal pollinated, give names and behaviour of insect visitors—if known. Describe whether flowers are self-compatible and if seeds are produced by autogamy, allogamy or agamospermy. Present any evidence of outcrossing in species that produce seed autogamously.

(ii) *Seed Production.* Describe the seed production characteristics of the species. How many seeds are produced per fruit, per plant and per unit area? Does the species produce seeds on a regular basis each year? Are there any factors that limit seed production? Give data on allocation to sexual reproduction.

(ii) *Dispersal.* What is the unit of dispersal in the species? Give mode of seed, fruit or propagule dispersal. Does the propagule possess special features for dispersal on land or water? Are any animals involved in dispersal?

(iv) *Seed Bank and Seed Size.* Does the species maintain a seed bank? How long can the seed survive in the seed bank? Describe seed size (weight per seed) and variability in seed size.

(v) *Germination Ecology and Establishment of Seedlings.* Describe seed germination and establishment of seedlings. Give the mechanism of dormancy (if known) and best methods to break seed dormancy. Give information on viability under different environmental conditions. Present the special requirements of seeds (*e.g.* photoperiod, light intensity, chilling) for germination. Describe establishment of seedlings under natural conditions and factors that may limit the establishment of seedlings.

(b) Vegetative Reproduction

Describe the mode (tillering, rhizome formation) of lateral and vertical vegetative reproduction and expansion of the species. Does the species disperse through vegetative propagules or fragments? Give relative importance of sexual and vegetative reproduction for the species.

IX. GEOMORPHOLOGICAL INTERACTIONS

(a) Response to Burial

Adaptations of seeds, seedlings, juveniles and adult plants to changes in the substrate, for example, burial in sand, organic debris or bottom of a body of water.

(b) Role in Geomorphology

Describe the importance of the plant in dune formation, stabilization and maintenance. What characters of the plant allow it to survive in its habitat.

X. INTERACTIONS WITH OTHER SPECIES

Describe response of the species to inter- and intra-specific competition. List names of insects and other animals that feed on the plant. Describe diseases, their symptoms and causal organisms. Give details of host specificity, distribution and relative abundance. Describe mycorrhizal relationships if any.

XI. RESPONSE TO WATER LEVELS

Describe how the species responds to rise and fall in water table or water level in aquatic habitats. Do the plants possess special adaptations to withstand excess water levels?

XII. ECONOMIC IMPORTANCE

Give the economic importance of the species for man. Can the species be used for dune stabilization or other useful purposes? What characters make the species a suitable agent for the economic benefit to mankind? Some aquatic species may be tolerant or sensitive to human wastes such as toxic metals, and other pollutants. State if the species can be utilized to remove undesirable waste products.

ACKNOWLEDGEMENTS

The authors thank Peter R. Baye, Marguerite Bough and Charles Trick for suggestions and constructive criticism of the format.

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CLAPHAM, A. R.; COOMBE, D. E.; PIGOTT, C. D., and RICHARDS, P. W., 1958. The biological flora of the British Isles. *Journal of Ecology*, 46, 495–506.

MUELLER-DOMBOIS, D. and ELLENBERG, H. 1974. *Aims and Methods of Vegetation Ecology*. New York: Wiley. 547p.

Virginia Coast Reserve Long-Term Ecological Research Program

INTRODUCTION

The Department of Environmental Sciences at the University of Virginia, in conjunction with The Nature Conservancy, the Virginia Institute of Marine Sciences, and Old Dominion University, has initiated a long-term interdisciplinary research program on the Eastern Shore of the Delmarva Peninsula. The program—The Virginia Coast Reserve Long-Term Ecological Research Program (VCR-LTER)—joins a national network of 15 LTER programs sponsored by the National Science Foundation for long-term basic research into processes within ecosystems. The National Science Foundation's Associate Program Director of Ecosystem Studies, James T. Callahan, states the point of view of the Foundation with reference to LTER programs.

> Research in ecology has traditionally been funded for short periods of time and performed at single sites, conditions not conducive to projects addressing much greater time and geographic scales. NSF's support of an experimental emphasis on long-term ecological research seeks to alleviate this discontinuity and use available research resources more effectively to provide a more stable platform for the ecological sciences (*BioScience*, 1984).

THE LONG-TERM ECOLOGICAL RESEARCH PROGRAM

The Virginia Coast Reserve LTER Program extends the original concept of long-term *ecological* research by taking an interdisciplinary approach: it couples the disciplines of geology, hydrology, atmospheric science, and environmental chemistry with ecology. In addition, the individual projects within the Program are designed to identify and measure ecosystem processes over a broad domain of space as well as time. The VCR-LTER Program encompasses the interrelationships of secular climate change, sea-level rise, island geomorphology, and marsh development. The general research objectives are: to reconstruct the Holocene geological history of the Virginia barrier islands; (2) to identify and measure the rates of response of the barrier/lagoon system to climatic events; (3) to identify and measure the rates of ecosystem processes such as primary production and groundwater movement.

The problem of variation on multiple scales of space and time is paramount in the VCR-LTER research. For example, heterogeneous vegetation data, collected on small scales often can not be extrapolated to the large scale questions of other disciplines such as climatology. As a result, a total synthesis of ideas is precluded across disciplines and patterns remain indistinguishable. The Virginia Coast Reserve LTER Program will respond to these critical scientific questions for a barrier island-marsh ecosystem through a comprehensive, multi-disciplinary research design which includes:

- laboratory and field research of an intensively monitored sea-to-land transect crossing six major landscape units
- interfaced computer simulation models of biogeochemistry, succession, geomorphology, and landscape evolution
- Landsat imagery, computer-assisted analytical techniques—such as ERDAS—seasonal aerial photography, and a continuation of large coordinate-based mapping systems

THE VIRGINIA COAST RESERVE SITE

The Virginia Coast Reserve site on the Eastern Shore of Virginia is a representative model of a barrier island-lagoon complex. It includes 11 barrier islands and extends 100 km from Wallops Island and Chincoteague Inlet southward to Fisherman Island at the mouth of the Chesapeake Bay (Figure 1). The 1,000-square km system has evolved geologically and ecologically in association with sea-level rise during the past 5,000 to 7,000 years. The area encompasses barrier islands, inlets, bays, tidal flats, and salt marshes. Vegetation is maritime in composition, ranging from dune grasses to pine forests. The mild, marine-dominated thermal

Acknowledgements are given to Raymond Dueser, Director and Principal Investigator, Virginia Coast Reserve Long-Term Ecological Research Program, for his review of this article.

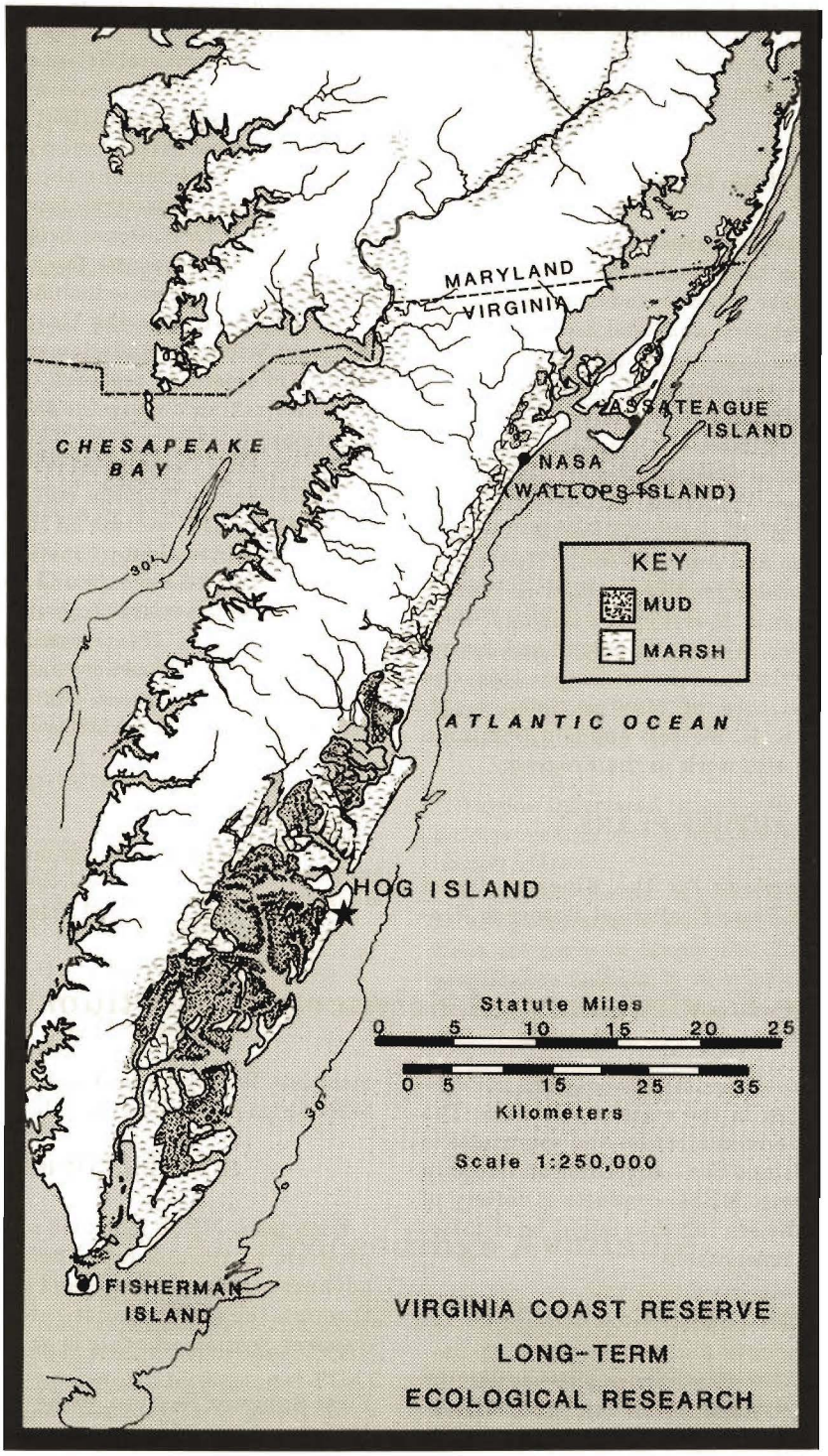

FIGURE 1. See caption inside the figure.

climate is influenced by extra-tropical frontal storms and by tropical storms and hurricanes. The site is a part of the United Nations international network of Biosphere Reserves and is guaranteed in perpetuity by The Nature Conservancy to remain protected and available for research.

PRINCIPAL INVESTIGATORS

All the principal investigators of the VCR-LTER Program have conducted research on the Virginia barrier islands and have published hundreds of papers and books pertaining to barrier island/lagoon/marsh systems. The researchers at the University of Virginia represent many disciplines and have a longstanding record of collaborative, interdisciplinary research: Coastal Geology, Robert Dolan; Climatology, Bruce P. Hayden; Ecosystem Modelling, Herman H. Shugart; Microbial Ecology, Linda K. Blum and Aaron L. Mills; Hydrology, George M. Hornberger and William K. Nuttle; Biology, James J. Murray, Jr.; Ecology, Raymond D. Dueser, William E. Odum, and Joseph C. Zieman. Principal investigators from the Virginia Institute of Marine Science (M. Castgna and R. L. Wetzel) and Old Dominion (G. F. Oertel) also work in the Program.

FUTURE PLANS

The future plans for the Virginia Coast Reserve Long-Term Ecological Research Program are to assemble a core group of post-doctoral associates, graduate students and visiting collaborators to work on the five-year Program. These individuals will be based at the Department of Environmental Sciences at the University of Virginia. Several senior scientists from the network of national LTER sites have indicated an interest in collaborative research. Proposals that complement the original VCR-LTER research objectives have already been submitted to the National Science Foundation and additional proposals for research support are now being written to include scientists from other LTER sites in the United States. The National Science Foundation encourages a continuity of scientific research, interaction and communication among the individual LTER programs.

The Virginia Coast Reserve Long-Term Ecological Research Program will provide a foundation for future research on the Estern Shore. The team of investigators invites participation from individuals or groups and welcomes applications from graduate students, summer students and interns. If interested, contact one of faculty members listed above at: Department of Environmental Sciences, Clark Hall, University of Virginia, Charlottesville, VA 22903 (804) 924-7761.

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Marine Environmental Sciences Consortium (MESC)

MESC is a consortium of twenty-one colleges and universities in the state of Alabama. The center for our administration and operations is the Dauphin Island Sea Lab located on Dauphin Island, Alabama. MESC conducts a variety of activities at the sea lab that might be of interest to coastal researchers.

GRADUATE STUDIES PROGRAM

MESC provides an academic curriculum and research opportunities at the sea lab in support of the graduate programs of member schools. Courses are offered in alternating years on an academic quarter calendar. Eligible students may qualify for research support in the form of logistical support, research space, and equipment use. Research assistanships and graduate fellowships are made available periodically.

SUMMER COURSES

Each year, MESC conducts a summer school program at the sea lab. These courses offer advanced undergraduate and graduate credit through the member institutions. The 1988 Summer Session schedule is as follows:

First Summer Session: June 13–July 15, 1988

Marine Botany
Marine Biology
Marine Invertebrate Zoology

Marine Geology
Marine Technical Methods
Coastal Geomorphology
Seminar
Directed Research

Second Summer Session: July 18–August 19, 1988

Introduction to Oceanography
Marine Ecology
Marine Vertebrate Zoology
Marsh Ecology
Commercial Marine Fisheries of Alabama
Coastal Zone Management
Seminar
Directed Research

Requests for more information about either the graduate studies program or the summer session program should be forwarded to:

Dr. Judy Stout,
Associate Director for Academic Affairs
Marine Environmental Sciences Consortium
Dauphin Island Sea Lab
PO Box 369-370
Dauphin Island, AL 36528

GRADUATE PROGRAMS

Eight of the member institutions of MESC offer Masters and Doctorate degrees in marine science. These institutions and their liaison officers to MESC are listed below:

Alabama State University
Dr. Mike Hudgins
Dept. of Science and Mathematics
Montgomery, AL 36101

Auburn University
Dr. Ann Williams
Dept. of Zoology and Entomology
Auburn, AL 36849

Jacksonville State University
Dr. L. G. Sanford
Arts and Sciences
Jacksonville, AL 26265

Samford University
Dr. Robert Stiles
Dept. of Biology
Birmingham, AL 35229

University of Alabama
Dr. Fred Gabrielson
Dept. of Biology
University, AL 35486

University of Alabama in Birmingham
Dr. Ken Marion
Dept. of Biology
University Station
Birmingham, AL 35294

University of Alabama in Huntsville
Dr. Richard Modlin
Dept. of Biological Sciences
Huntsville, AL 35899

University of South Alabama
Dr. Robert L. Shipp
Dept. of Biology
Mobile, AL 36688

Anyone interested in any one of these graduate programs should contact the appropriate liaison officer.

The deadlines for application for the most recent postgraduate positions and faculty positions are early in March and thus would ot be practical to include in this collection of information. However, as new openings occur we would appreciate the announcements being included in your publication.

Rebecca Clark
Communications
Technician

POAC Proceedings Available

The series of conferences on Port and Ocean Engineering under Arctic Conditions, POAC, are organized biennially by national POAC committees under the long-term policy direction of the POAC International Committee.

The ninth conference in the series, POAC-87, was held at the University of Alaska, Fairbanks, on August 16-21, 1987.

All scientists and engineers interested in technical and environmental aspects of northern development, with a coastal and offshore perspective, are cordially invited to attend future meetings. Since their founding in 1971, the POAC Conferences have provided an outstanding forum for discussion of new developments and research findings in Arctic and Antarctic regions.

Earlier conferences have been held at:

• The Norwegian Institute of Technology, Trondheim, Norway, 1971
• The Department of Ports and Lighthouses, Reykjavik, Iceland, 1973
• The University of Alaska, Fairbanks, 1975
• The Memorial University of Newfoundland, St. John's, Canada, 1977
• The Norwegian Institute of Technology, Trondheim, Norway, 1979
• The Université Laval, Québec City, Canada, 1981
• The Technical Research Centre of Finland, Helsinki, 1983
• The Danish Hydraulic Institute/Ministry for Greeland, Narssarssuq, 1985

Proceedings of POAC conferences may be ordere from:

Dr. T. Carstens, POAC Secretariat
Norwegian Hydrodynamics Laboratories
Norwegian Institute of Technology
Trondheim, Norway

POAC '89

The first international conference on Port and Ocean Engineering under Arctic Conditions was held in 1971 on the initiative of the Norwegian Institute of Technology, to improve knowledge of arctic problems. Since then, POAC conferences have been held in alternate years in countries with a strong interest in new developments and research in Arctic and Antarctic regions. POAC continues to attract many participants and a high standard of contributions. Together, the papers presented at the various POAC conferences give a comprehensive overview of arctic technology. The establishment of an international secretariat in Trondheim has made it possible for all the proceedings to be obtained from one centre. POAC papers are now accessible on database.

The tenth conference on Port and Ocean Engineering under Arctic Conditions will be held at the University of Luleå, Sweden.

Further information can be obtained from the Chairman:

Mr. Alf Engelbrektson
VBB—SWECO
Box 5038
10244 Stockholm, SWEDEN

or from the Secretariat General:

Dr. Per Bruun
34 Baynard Cove Road
Hilton Head, SC 29928, USA

The International Secretariat

A decision was made in 1985 to establish a permanent secretariat for POAC to be based at the Norwegian Institute of Technology. The secretariat, headed by Professor Torkild Carstens, is responsible for the following essential tasks:

• Establishing an index of POAC authors and subjects
• The sale of POAC conference proceedings
• Maintaining lists of participants and persons with POAC-related interests
• Maintaining document files regarding essential information for each of the previous conferences and for the planning of new conferences. This includes conference brochures, invitations, programme planning, registration statistics, instructions for the printing of proceedings, time-tables, budgets and accounts and address lists from previous conferences.

Atlas of the Marine Fauna of the Southern Spitzbergen

Ossolineum Publishing House of the Polish Academy of Sciences is to publish the unique *Atlas of the Marine Fauna of the Southern Spitsbergen,* which presents the results of over ten years' work of Polish biologists and oceanologists in this region. Volume 1—Vertebrates (Fishes, Birds, Mammals) will be available in 1988. Next two volumes—Invertebrates with supplement Marine Algae will be published in 1989 and 1990, respectively. All the materials which the *Atlas* will be composed of are based on original data collected by the authors during their research work. The pictorial material is made by specialists in virtue of living or preserved specimens, photos, and outlines. To facilitate use of the *Atlas,* Latin names of animals are given as well as Polish, English, Russian, and Norwegian ones. Detailed descriptions are given in Polish, English, and Russian.

We hope and expect that our book will con-

tribute to better knowledge of the Spitsbergen fauna and turn attention to the unique character of the regional environment as well as help to preserve it for future generations. Our *Atlas* will be of interest not only for specialists but also for tourist groups, sailors, fishermen, geologists and oil exploiters who work on the southern coast of the Spitsbergen Archipelago and who would like not only to admire its splendid nature but also to get acquainted with it.

Order our *Atlas of the Marine Fauna of the Southern Spitsbergen* at Foreign Trade Enterprise "Ars Polona," Krakowskie Przedmieście 7, 00-068 Warsaw, Poland. Individual orders can also be sent to the Distribution Center of the Polish Academy of Sciences ORWN PAN-Export, Palac Kultury i Nauki, 00-901 Warsaw, Poland.

Port Engineering IV

by Per Bruun

Port Engineering IV is the fourth edition of *Port Engineering*. Earlier editions were published in 1973, 1976 and 1981 by The Golf Publishing Company, Houston, Texas.

Port Engineering is this time published in two volumes. Volume 1 includes the following subjects:

Port Economics; Site Selection; Port Navigation; Port Hydraulics; Layout of Ports; Risk Analyses; Design of Breakwaters (new principles); Design of Piers, Wharves, Quays, Walls; Upgrading of Old Structures; Layout and Design of Terminals for Oil, Gas, Bulks; Unit Transports and Ferries; Design of Unprotected Terminals; Berthing, Mooring, Fendering (new principles); Transportation Design and Analyses; Equipment for Handling and Transport; and Materials. Several Appendices give information on details.

Volume 2 includes the following subjects:

Sediment Transport, Basic Aspects; Littoral Drift; Estuary Sedimentation; Remedies Against Shoaling; Seashores and Estuaries; Bypassing; Tracing of Sediments; Modelling of Sediment Transport; Density Currents; Gravity Flows; Coastal Geomorphology; Modelling of Shore Development; Interactions Between Structures and Sediment Transport; Remedies Against Adverse Effects of Structures; Design of Tidal Inlets and Entrances; Maintenance, Bypassing and Channel Stability; Dredging Technology; Unconventional Dredging Methods; Environmental Aspects of Dredging and Disposal of Dredged Materials; International Conventions on Spoiling, *et cetera*.

Several new subjects like Risk Analyses, New Design Principles for Breakwaters, Upgrading of Old Structures, Design of Unprotected Terminals, New Principles of Berthing, Mooring and Fendering, New Principles of Inlet Design for Channel and Bypassing Stability, and Dredging by Unconventional Principles are treated in considerable detail for design.

Price Range for *Port Engineering,* Volume 1 (about 950p.) is $85–$105; Price Range for *Port Engineering,* Volume 2 (about 750p.) is $75–$95; Total Price Range for *Port Engineering* (both volumes) is $160–$200. Available on market in early 1989.

Challenger Society Changes Name

The Challenger society, named after the World Expedition of the last Century was founded in 1903, for the promotion of the study of Oceanography. Over the last few years it has become apparent that the role of the Society needed to change to keep up with modern requirements. Consequently, the membership have voted to change the name of the Challenger Society to the Challenger Society for Marine Science, and the activities of the society will be increased and attempts made to expand its membership. The Constitution has been redrafted and a number of Working Groups have been formed to investigate the way in which meetings and publications should be organized. The new Constitution and the find-

ings and recommendations of the various Working Groups were presented for discussion at an Extraordinary General Meeting of the Society on the 19th January 1988. This meeting agreed the adoption of the new Articles of Association. One of the key objectives will be to ensure that the society becomes representative of both practicing Marine Scientists and those training in Marine Science. Further information is available from the Membership Secretary, Institute of Oceanographic Sciences, Deacon Laboratory, Brook Road, Wormley, Surrey, GU8 5UB, United Kingdom.

Keith Dyer
Institute of Marine Sciences
Plymouth Polytechnic
Devon, England

United States Coast Guard Academy

MARINE SCIENCE PROGRAM

The Marine Science major provides a sound educational background for future Coast Guard Officers. This major is specifically structured to provide a thorough undergraduate program in the environmental sciences. Its graduates will have a solid, well-balanced foundation for post-graduate study in any marine-related area or virtually any other discipline which would be enhanced by a technical background.

Course topics deal with meteorology and the physical, geological, biological, ecological and chemical aspects of the ocean. Specific topics include the study of tides, winds and waves and their effects on the circulation of the oceans and coastal areas, biological productivity and the problems of understanding and controlling many types of marine pollution. Search and rescue problems, environmental protection, and marine fisheries are emphasized especially as they apply to the Coast Guard's statutory missions. Laboratory hours are devoted to studying such subjects as seawater chemistry, the methods of collection and analysis of data, ocean sediments, estuarine circulations, the physiology of marine organisms, and mathematical computer modeling of the marine environment. Courses are primarily quantitative in nature and require a good understanding of physics, chemistry, calculus, and computer operations.

I. Core Requirements:*

*Substitute Physical Oceanography (5338) for Oceanography (5330).

II. Major Requirements:*

3211 Multivariable Calculus
3215 Differential Equations
5232 Marine Biology
5234 Marine Geology
5240 Meteorology
5430 Remote Sensing
5447 Polar Oceanography

III. Major Area Electives:*

Select *two* of the following three *groups*:

Physical
5351 Dynamical Oceanography
5352 Advanced Dynamical Oceanography
5436 Coastal Oceanography

Biol-environmental
5342 Biol-chemical Oceanography
5441 Marine Pollution
5434 Marine Fisheries

Chem-environmental
5202 Organic Chemistry
5412 Analytical Methods
5415 Hazardous Materials

*Successful completion of asterisked sections required for degree designation.

Douglas S. Tolderlund
Professor, Marine Science
Head, Department of Science
U.S. Coast Guard Academy
New London, CT 06320

Oceanology International

Oceanology International 88–OI88—which is concerned with commercial oceanography and state-of-the-art technology, will be followed in Spring 1989 by Defence Oceanology International an underwater defence conference and exhibition.

Defence Oceanology International will serve as a natural precursor to the biennial OI90 which will reposition itself in response to changing market conditions as OI90—incorporating Underwater Defence. The three day 1989 event will be held at the Brighton Centre 13–15 March. Since 01 was first held in 1969 it has constantly evolved to suit market needs. The new defence event shows our commitment to the underwater industry.

Further information on Defence Oceanology International is available from Spearhead Exhibitions, Rowe House, 55/59 Fife Road, Kingston upon Thames, Surrey, KT1 1TA. TELEPHONE; 01-549-5831. TELEX: 928042 SPEARS G. Fax: 01-541 5657

Chesapeake Bay: Environmental Data Directory, compiled by Dan Jacobs, Daniel Haberman, David Smith, David Swartz, Elizabeth Sigel and Michael Adams. 1987 Maryland Sea Grant College, Virginia Sea Grant College and NOAA, $10.00. 926pp. No ISBN. (Available from Maryland Sea Grant Program, 1224 H. J. Patterson Hall, University of Maryland, College Park, Md 20742 USA—Publication Number UM-SG-TS-87-5.)

This enormous Directory is offered as an *aide memoire* to those searching for information on Chesapeake Bay. It is designed for use with, rather than instead of, electronic databases. The Directory comprises over 800 records, listing key index information, plus tabulated summaries of why, when and how data were collected. The work is obviously of great relevance to those working in the Bay, but it also serves as a model for others who might be contemplating embarking on a similar exercise. At a cost of $10.00 this is a real bargain.

Bill Carter
University of Ulster
Coleraine, County Londonderry
Northern Ireland

Déplacements des lignes de rivage en Méditeranée, edited by P. Toursset. 1987. Centre Nationale de la Researche Scientifique, Paris. 250.-FF, 225pp., ISBN 2-222-04074-4.

This is a report of an interdisciplinary symposium help in 1985 to consider shoreline displacement in and around the Mediterranean. What makes it especially interesting is the widespread use of archeological remains to date shoreline changes, on a tectonically unstable coast. The volume ranges from Spain in the west to the Iranian Gulf in the east, and concentrates on the occupation of the coastal zone by Man. The papers are brief, but well-illustrated, including some spectacular LANDSAT images. Perhaps the biggest drawback is the extreme parochialism of many contributions, which makes it difficult for the reader to pull things together. All the papers are in French (with English summaries) save for two in English and two in Italian.

Bill Carter
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Bassin d'Arcachon, Bulletin de l'Institut de Géologie du Bassin d'Aquitaine, No. 39. 1986. No price. 191pp., ISSN 0524-0832. (Available from Université de Bordeaux I, 351 cours de la Liberation, 33405 Talence, France.)

This publication focuses on the Holocene evolution and sediments of a unique macrotidal estuary/lagoon/delta on the southwest coast of France. Although a prominent feature and popular for recreation and oyster farming, the 'bassin' had not been investigated in detail until recent observations started in 1982. This monograph, all in French, includes six papers on the sediments, sea-level changes, geochemistry and deltas of the bassin d'Arcachon, plus two papers on the Holocene of the surrounding sandy plain (Les Landes), one paper on the Gironde Estuary (further north), and incongruously, a paper on shoreline deposits in Morocco. The monograph is in large format, well-illustrated and provides a useful contrast with the more widely known US estuary complexes.

Bill Carter
University of Ulster
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Association of State Floodplain Managers, Inc.

FLOODPLAIN HARMONY—NASHVILLE '88

The ASFPM's 12th Annual Conference titled "Floodplain Harmony, Note the Past—Tune the Future" will be held May 16–19, 1988 in Nashville, Tennessee, at the Vanderbilt Plaza Hotel. This year's conference provided a mixture of plenary and workshop sessions aimed at evaluating the effectiveness of the tools and strategies used by floodplain managers today and shaping the future direction for tomorrow's managers. More than 70 speakers from local, state, federal, private, foreign and academic sectors will share their ideas on the current and future directions of floodplain management as we move towards the twenty-first century.

The conference featured five plenary sessions and five workshop sessions (4-5 concurrent workshops per each session) on a wide array of floodplain topics. Each session had a moderator and a varying number of speakers and formats to stimulate and challenge the attendees. The audience had plenty of time to ask questions during the plenary and workshop sessions. The 1988 Program featured two and a half days of technical sessions coupled around a field trip in the Nashville area on Wednesday afternoon. The first day was devoted to evaluating the effectiveness of the current floodplain management tools and strategies. Wednesday morning and Thursday sessions were devoted to presentations directed at informing floodplain managers what the future will contain in areas of mapping, mitigation, watershed management, training/education and engineering technologies. Specific topics included the identification of hazardous waste sites in floodplains, the GIS Computer System, digital mapping, retrofitting behavior of flood victims, and the relationship between floodplain management and other natural hazards.

Key plenary speakers provided conference participants with insight into the future direction of floodplain management and the need for all constituency groups to work in harmony. These include Major General Henry H. Hatch, Director of Civil Works, Corps of Engineers; Galen S. Bridge, Deputy Chief of Programs, SCS; Thomas M. Bruns, Deputy Director, Indiana Department of Natural Resources; Harold T. Duryee, Federal Insurance Administrator; and Robert Ross, Jr., Vice President, Florida Association of Insurance Agents.

International Conference on Computer Modelling in Ocean Engineering—Problems and Solutions in Coastal and Offshore Systems

19–23 September 1988, Venice, Island of San Servolo, Italy

The main objective of this Conference is to bring together engineers and marine scientists with a common interest in using computer modelling for the solution of complex problems related to ocean engineering. The Organizing Committee welcomes and solicits submission of papers focusing on recent work in modelling of the following aspects: wind generated waves, including directionality; sea-level oscillations and associated currents; coastal erosion; dispersion of contaminants from sewage outfalls; coastal zone water quality; behaviour of towed, propulsed or drifting bodies and of new vessel types; fluid structure interaction; impact problems; marine geotechnical engineering problems; sound transmission and underwater communications.

For more information contact Professor B. A. Schrefler, Istituto di Scienza e Tecnica delle Costruzioni, Via Marzolo 9, 35131 Padova, Italy. Telephone (0429) 74260; Telex 430462 IEEUPDI.