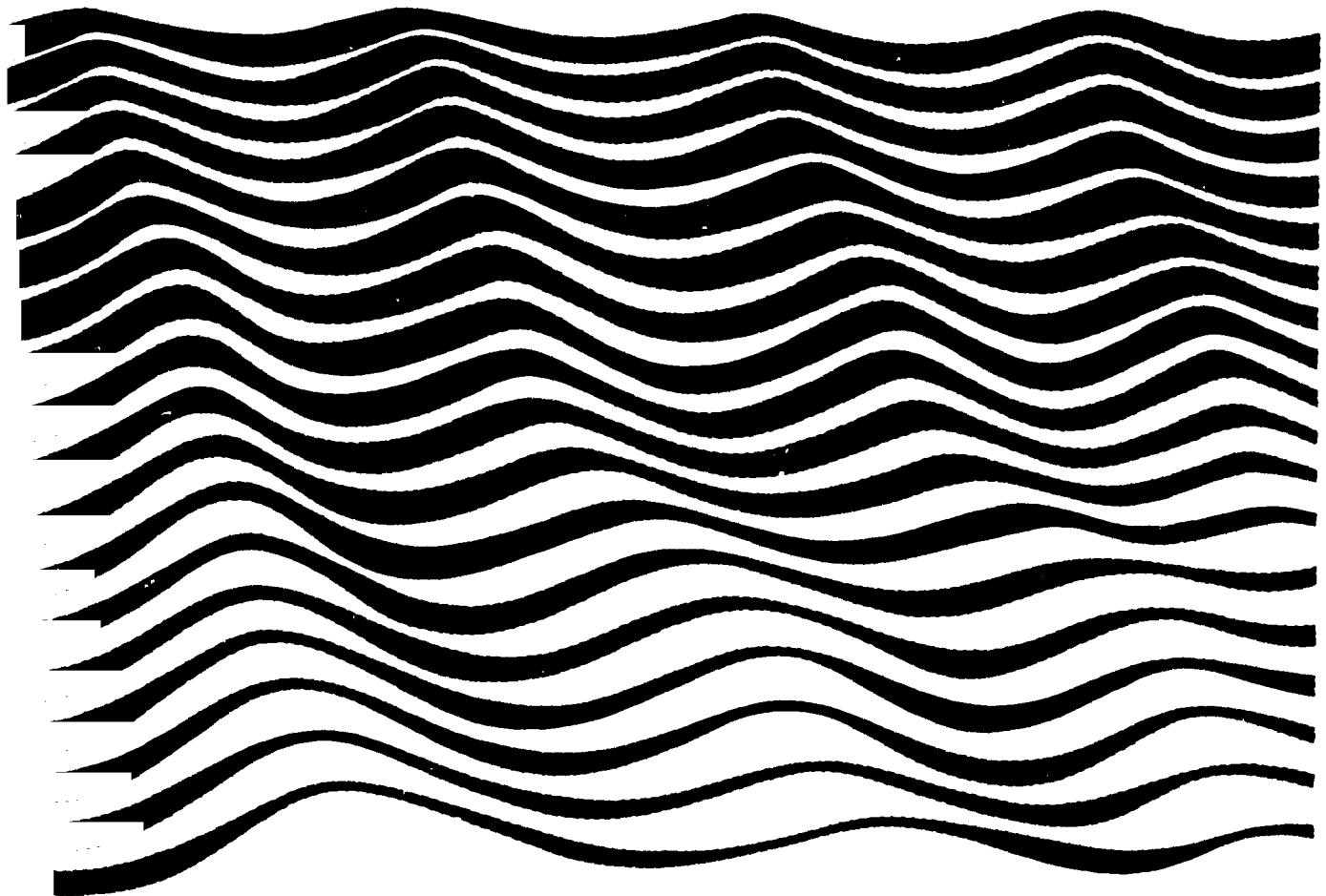


Coastal lagoon survey
Etudes sur les lagunes côtières
Encuesta sobre lagunas costeras

Prepared by the SCOR/Unesco *ad hoc*
Advisory Panel on Coastal Lagoons,
1976-1978

Enquete réalisée par le Groupe
consultatif *ad hoc* SCOR/Unesco sur
les lagunes côtières, 1976-1978

Preparada por el Grupo consultativo
especial SCOR/Unesco sobre lagunas
costeras, 1976-1978



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17	An intercomparison of some current meters, report on an experiment of Research Vessel Akademik Kurchatov, March-April 1970, by the Working Group on Current Velocity Measurements; sponsored by SCOR, IAPSO, Unesco	1974	WG 21
19	Marine Science Teaching at the University Level. Report of the Unesco Workshop on University Curricula - Available in French, Spanish and Arabic	1974	—
20	Ichthyoplankton. Report of the CICAR Ichthyoplankton Workshop Also published in Spanish	1975	—
21	An intercomparison of open sea tidal pressure sensors. Report of SCOR Working Group 27: "Tides of the open sea"	1975	WG 27
22	European sub-regional co-operation in oceanography. Report of a working group sponsored by the Unesco Scientific Co-operation Bureau for Europe and the Division of Marine Sciences	1975	—
23	An intercomparison of some current meters, III. Report on an experiment carried out from the Research Vessel Atlantis II, August-September 1972, by the Working Group on Continuous Velocity Measurements: sponsored by SCOR, IAPSO and Unesco	1975	WG 21
24	Seventh report of the joint panel on oceanographic tables and standards, Grenoble, 2-5 September 1975; sponsored by Unesco, ICES, SCOR, IAPSO	1976	WG 10
25	Marine science programme for the Red Sea: Recommendations of the workshop held in Bremerhaven, FRG, 22-23 October 1974; sponsored by the Deutsche Forschungsgemeinschaft and Unesco	1976	—
26	Marine sciences in the Gulf area - Report of a consultative meeting, Paris, 11-14 November 1975	1976	—
27	Collected reports of the joint panel on oceanographic tables and standards, 1964-1969	1976	WG 10
28	Eighth report of the joint panel on oceanographic tables and standards, Woods Hole, U.S.A., sponsored by Unesco, ICES, SCOR, IAPSO	1978	WG 10
29	Committee for the preparation of CLOFETA - Report of the first meeting, Paris, 16-18 janvier 1978	1979	—
30	Ninth report of the joint panel on oceanographic tables and standards, Unesco, Paris, 11-13 September 1978	1979	—

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PREFACE

This series, the *Unesco Technical Papers in Marine Science*, is produced by the Unesco Division of Marine Sciences as a means of informing the scientific community of recent developments in oceanographic research and marine science affairs.

Many of the texts published within the series result from research activities of the Scientific Committee on Oceanic Research (SCOR) and are submitted to Unesco for printing following final approval by SCOR of the relevant working group report.

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PREFACIO

La colección *Documentos Técnicos de la Unesco sobre Ciencias del Mar* es producción de la División de Ciencias del Mar de la Unesco y se propone informar a la comunidad científica internacional sobre los progresos recientes en la investigación oceanográfica, así como sobre cuestiones de actualidad en la esfera de las ciencias del mar.

La mayoría de los textos publicados en esta colección son resultado de las actividades del Comité Científico de Investigaciones Oceanográficas (SCOR) y han sido presentados a la Unesco para su publicación después de haber dado SCOR su aprobación a los informes de los pertinentes grupos de trabajo.

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PREFACE

Cette collection de *Documents techniques de l'Unesco sur les sciences de la mer* produite par la Division des sciences de la mer de l'Unesco, a pour objet d'informer la communauté scientifique de l'évolution récente de la recherche océanographique et des sciences de la mer.

De nombreux textes publiés dans cette collection sont le fruit des travaux de recherche du Comité scientifique pour les recherches océaniques (SCOR) et sont soumis à l'Unesco pour impression une fois que ce Comité a définitivement approuvé le rapport du Groupe de travail intéressé.

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Guía des Investigadores

1. INTRODUCTION

Coastal lagoons and delta systems are transitional littoral zones between the sea and the mainland brought about by the operation of complex physical laws. These environments are unique, primarily due to the peculiar conditions of their hydrodynamics and sedimentation. They are places of active accumulation and provide shelter situations, the effects of which are noticeable in the geochemical properties and nature of the sediments and their vast potential wealth of biological resources.

A general description of a coastal lagoon is a semi-enclosed body of water connected with the open sea by inlets through a system of barriers (physical, chemical, hydrodynamical). Coastal lagoons are among the most fertile littoral systems. They are encountered on the banks of estuaries, along coasts, in blind gulfs or in bays, under tropical, temperate and cold latitudes. Their diversity is shown in the wide-range of terms used to denote the geographical location of the studies included in the directory.

Water and material fluxes may be trapped within the lagoon or may flow into the open ocean, a major estuary or bay. These lagoon runoffs can significantly influence the local and regional environment and, together with current patterns and onshore fluxes of nutrients, help to determine the local offshore productivity.

While supporting many indigenous species of economic importance, coastal lagoons also provide spawning and nursery grounds for migratory species. A great number of species of fish, crustaceans and molluscs pass through coastal lagoons in the course of their life cycles. In many areas, lagoons offer very adequate conditions for the development of controlled production of marine organisms.

Lagoon deposits are often accessible sources for industrial use of basic materials such as salts and chemicals. When deep enough, lagoons provide protected areas for harbours and navigation channels. These facilities may contribute indirectly to the establishment of population centres and urbanization. In more remote areas, coastal lagoons can be valuable as ecological sanctuaries, or for tourism and recreation.

Historically, coastal lagoons have been used for fishing and breeding larval and adult forms of fishes, molluscs and crustaceans. Such human uses frequently have been very harmoniously integrated into traditional socio-economic contexts, for example in South East Asia.

In recent years, the justifiable desire to make intensive use of the living products and the non-living resources of these systems has given rise to many projects for the exploitation of coastal lagoons.

The scientific community concurs in stressing that in too many instances these projects are likely to do serious and lasting harm to a type of coastal environment which is essential to preserve. In many cases, rational exploitation of these often polluted zones can only be undertaken in concert with safeguarding operations designed to restore them to their pristine state. For instance, oyster, mussel and fish-farming cannot develop properly unless the environment is preserved from chemical contamination. Projects for economic development should be encouraged only when the natural ecological balance of the environment and its production potential are well understood and protected.

2. PURPOSE OF THE SURVEY

In 1974, at the request of the Unesco Division of Marine Sciences, the Scientific Committee on Oceanic Research (SCOR) set up a SCOR/Unesco ad hoc Advisory Panel on Coastal Lagoons⁽¹⁾ which was made responsible for examining the state of knowledge on lagoon systems in temperate and tropical regions. One of their recommendations was that a compilation of existing coastal lagoon research programmes was essential to development of a framework upon which future activities could be planned.

During the following two years, this Panel conducted a survey of the research programmes being carried out in laboratories and specialized institutions all over the world. Nearly 200 programmes - an unexpected result - were sent in and reviewed. Response to the survey is a clear indication of the expanding interest in coastal lagoon research.

The goal of the Panel's inquiry is to provide a compilation and evaluation of this interest, on the basis of information obtained by distribution of two documents: "SCOR/Unesco SCE/9/Circ.5" (forms I to III) and "SCOR/Unesco SCE/9/Circ.9" (form IV), samples of which are found in Annex I⁽²⁾. The first document listed major disciplines and 93 specific topics and asked project leaders to indicate those on which they were working. Space was also provided for other information, such as the name of the lagoon(s), a short description of the research, geographic location and major bibliographic references.

The first document was widely distributed between June 1976 and July 1977 to more than 400 research institutions, scientists and administrations, using a mailing list based on a directory of names and addresses prepared by the Panel.

A draft of a second letter covering the second document (form IV) was approved in February 1977 for distribution to all persons who had sent a reply. It was also sent as a reminder to those addresses who had not replied. Form IV requested more specific information on the geographic location of the coastal lagoon(s), including latitude, longitude and surface, scientific papers and reports available, as well as information on university-level training programmes. Recipients were asked to respond to the following question: What should be the mandate of a working group on coastal lagoon research and/or a working group on coastal lagoon management?

The SCOR/Unesco ad hoc Advisory Panel on Coastal Lagoons feels strongly that a primary objective of the survey should be to facilitate the exchange of information between scientists in different geographical locations who are engaged in similar and complementary research. For this reason, the research programmes and their scientific leaders have been included in this document. An attempt has been made to list in the directory all the professional staff cited in the responses received.

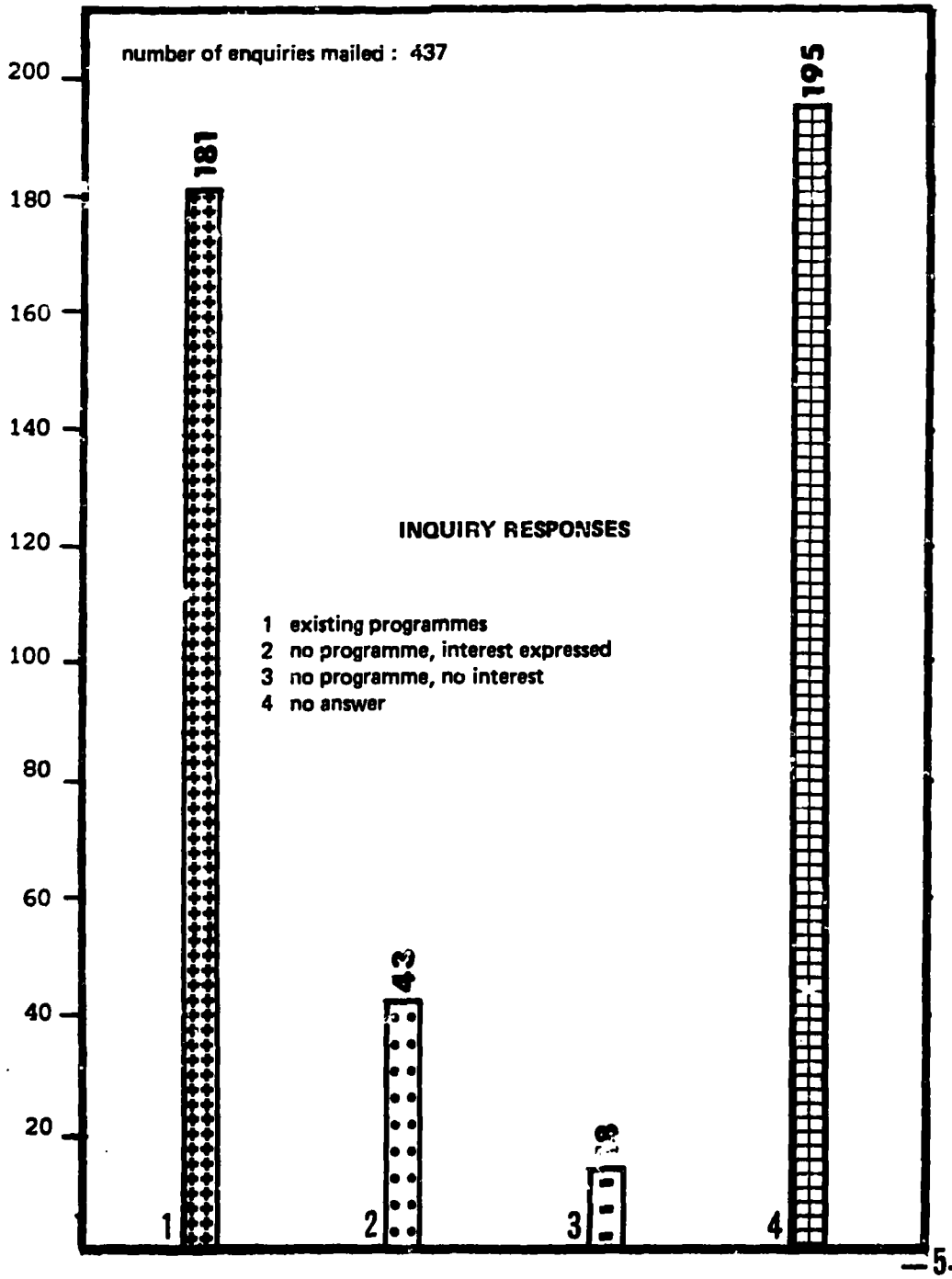
3. RESPONSES AND DISTRIBUTION (Figure 1)

A total number of 437 questionnaires were sent. By mid-May 1978, 242 had been returned. Of the responses received, 224 (92.6%) indicated research interest, with 181 (74.8%) ongoing programmes, and 43 (30.9%) responses indicated no programme for the present, but expressed interest in the topic. Eighteen (7.4%) of the responses were negative (no programme, no interest).

(1) Members of the Panel are as follows: A. Ayala-Castañares, B. D'Arglejan, P. Lasserre, C.I.O. Olaniyan and F.B. Phleger.

(2) See pages 30-41.

Figure 1



4. SUPPORTING BODY

The research programmes and projects on coastal lagoons are supported principally by public funds. A significant percentage of research is developed in academic institutions: universities and affiliated bodies. Most of this research is supported by governmental funds. Approximately 6% of the total number of research projects are developed under bilateral and multilateral co-operation. (See Figure 2.)

Figure 2: SUPPORTING BODY

Intergovernmental (both bi- and multilateral)	5.8%
Governmental (excluding academic institutions)	54.2%
Academic (governmental and private)	36.7%
Private firms, foundations	3.2%
Unclassified	0.6%

5. WORLD INTEREST AND LOGISTIC IMPLICATIONS

The development of research programmes throughout the world is dependent largely on existing educational infrastructures. The accompanying directory lists 181 coastal lagoon research programmes/projects under institutions and organizations with which they are associated. Fields of interest and status of the project leaders are also identified. Thus, the directory provides a measure of the amount and type of expertise available in the 52 countries represented in the survey. Analysis of the replies was based on the following areas:

- (A) Africa (excluding the Mediterranean and Red Sea).
- (B) Asia, South East Asia and the Pacific.
- (C) Europe (including the Mediterranean, Caspian Sea, Black Sea and Red Sea).
- (D) Latin America and the Caribbean.
- (E) North America.

The limits of the geographic regions mentioned above were chosen to correspond to major lagoon areas at different latitudes. The replies describing active lagoon research programmes (Figure 3) are distributed as follows:

Region A:	11 programmes (6.1%)
Region B:	30 programmes (16.7%)
Region C:	64 programmes (35.6%)
Region D:	49 programmes (27.2%)
Region E:	27 programmes (15.0%)

Developing countries are, as a group, beginning to establish research programmes with long-term interest. Some countries have treated the lagoon systems as a unit for planning comprehensive research programmes. Mexico, for example, is one of the most active. Seminars on coastal lagoons have been organized by the

Universidad Nacional Autonoma de Mexico (UNAM) in 1967 and 1977. This country (22 ongoing programmes included in this directory) has evolved a well-developed educational infrastructure for marine science, in support of coastal research.

Subregional workshops on marine sciences in the eastern Mediterranean, the Gulf area, the western Mediterranean, the South East Asia region, have all included coastal lagoons in their recommendations.

The nature of the scientific problems mentioned in this report calls for further research on the physics, geology, chemistry and biology of the coastal lagoons. Some of these problems could be solved in a relatively short time (e.g. two to three years), especially if they were approached on a co-ordinated international basis. Other programmes must be regarded as continuing indefinitely - e.g. the comparative ecology of similar paired lagoons at different latitudes. Thus the time scales involved ought not to be underestimated, if one takes into account the long-term interests and the relative lack in some countries of a well-developed educational infrastructure.

Replies to the SCOR/Unesco survey on coastal lagoons show that there is a sufficient nucleus of laboratories with a wide geographical spread to operate a minimum field programme. Other laboratories may be equipped to deal with narrowly specialized but important topics within the general objectives of the programmes. Another positive factor is that there already exists in the five regions active research schools and an undergraduate curriculum in which lagoon research training can be received.

The multidisciplinary seminar held under the auspices of Unesco, International Association of Biological Oceanography (IABO) and Duke University (Beaufort, N.C., U.S.A., 28 August-2 September 1978) exemplifies one of the ways to produce guidelines for future research within a framework of regional co-operation, as planned by Unesco. The report of this seminar will be issued as Unesco Technical Paper in Marine Science No.32 and distributed to all recipients of the present survey.

6. PROPOSALS FOR INTERNATIONAL CO-OPERATION

A majority of responses to form IV (see Annex I) reflects the opinion that working groups on coastal lagoon research and coastal lagoon management are highly desirable.

To the question "What should, in your view, be the mandate of:

- (a) A working group on coastal lagoon research?
- (b) A working group on coastal lagoon management"?

the general trend of responses is exemplified by that of S.W. Nixon (U.S.A.):

(a) Working group of coastal lagoon research

- "1. Apply the techniques of ecological systems analysis including numerical modelling to lagoon environments.
2. Emphasize the interactions of hydrographical, morphological and geological features of lagoons in influencing the ecological systems that have emerged.
3. Develop methods for carrying out experimental ecosystem research in replicate sections of lagoons or in paired natural lagoons - can useful lagoon microcosms be developed?"

(b) Working group on coastal lagoon management

- "1. Is it possible to analyse historical changes in lagoon ecology in terms of changes in land use within the lagoon watershed?
2. Use of lagoon microcosms to carry out experiments documenting the response of lagoon systems to various types of perturbations.
3. Examine the aquaculture potential of natural lagoon system."

Figure 3: Responses to questionnaire by country

EXISTING COASTAL LAGOON RESEARCH PROGRAMMES				INTEREST EXPRESSED	
Australia	13	Malaysia	1	Algeria	
Belgium	2	Mexico	22	Argentina	
Benin	3	Netherlands	7	Greece	
Bermuda	1	Netherland Antilles	1	Iran	
Brazil	6	New Zealand	4	Korea, Rep.	
Canada	1	Nicaragua	1	Libya	
Colombia	5	Nigeria	3	Morocco	
Costa Rica	5	Norway	2	Peru	
Denmark	3	Panama	1	San Domingo	
Ecuador	2	Papua New Guinea	1	Senegal	
Egypt	2	Philippines	1	Syria	
El Salvador	1	Portugal	1	Trinidad	
Finland	1	Romania	1	United Arab Emirates	
France	9	Saudi Arabia	1	Uruguay	
Germany, Fed. Rep.	3	South Africa	2	Viet Nam	
Guatemala	1	Spain	1	Yugoslavia	
Honduras	1	Sri Lanka	1		
India	4	Sweden	1		
Indonesia	1	Tanzania	2		
Ireland	5	Thailand	3		
Israel	3	Tunisia	3		
Italy	8	Turkey	1		
Ivory Coast	2	United Kingdom	8		
Jamaica	2	U.S.A.	25		
Japan	1	Venezuela	4		
Kenya	1				

It is worth while to note that 92.0% of the project leaders who responded to form IV are interested in presenting one or several papers at an International Conference on Coastal Lagoons to be organized under the sponsorship of Unesco in 1980 or 1981.

7. TRENDS IN RESEARCH

A list of keywords describing ten major disciplines and 93 research topics was given in the original forms I and II (see Annex I). A specific classification: "general survey" (G.S.) was given by the reviewers to characterize replies dealing with descriptive site studies and giving environmental data (e.g. the "psysico-chemical parameters" measured by the biologists).

(a) Subject fields of experience (Figure 4)

For the 181 replies reviewed, "biology" is the most frequently cited major discipline with percentages ranging from 19.5% (Africa) to 28.0% (North America), and followed in decreasing order by: "G.S." (13.7%), chemistry (12.5%), aquaculture (10.5%), conservation (8.1%), geology (7.9%), modelling (6.5%), fisheries (5.7%), geography (2.6%) and engineering (1.4%). One should note that the low percentages found for "fisheries", "geography" and "engineering" do not represent the potential interest in these fields. The three last disciplines were not well-sampled in the inquiry.

Percentages of major disciplines (mean value)

General survey	G.S.	13.7%
Geography	I	2.6%
Physics	II	6.3%
Geology	III	7.9%
Chemistry	IV	12.5%
Biology	V	24.8%
Aquaculture	VI	10.5%
Fisheries	VII	5.7%
Modelling	VIII	6.5%
Engineering	IX	1.4%
Conservation	X	8.1%

(b) Interrelationship between the ten major disciplines

Keywords defining one or two major disciplines were frequently selected by project leaders with other major disciplines. For example, the ecologists who indicated "biology" and "aquaculture" as major research interest had generally ticked other disciplines such as "chemistry", "physics", "modelling", etc. These interactions between major disciplines are tabulated in Figure 5. Interaction between major disciplines reflects the multidisciplinary nature of the problems involved in coastal lagoon research.

(c) Interrelationship within major disciplines: research topics

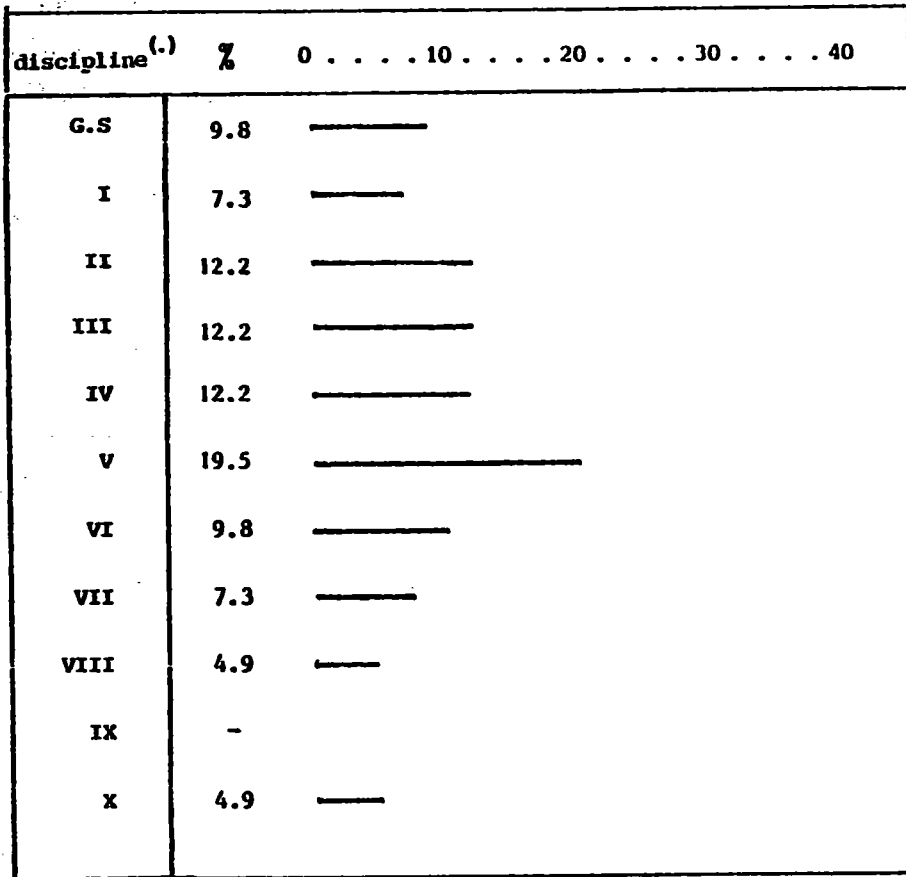
Project leaders selected research topics from a list totalling 93 keywords. The analysis of the selected topics is useful since it further documents the major research tendencies.

As an example, a review of research topics has been made when "biology" was the main research discipline listed. Thirty-six topics have been analysed (Figure 6). These research subjects included (1) organisms studied, (2) descriptive topics, and (3) systemic topics, including ecosystem modelling. The results are summarized in Figures 7-9.

Figure 4a :

Subject fields of experience

AFRICA (excluding the Mediterranean and Red Sea)



Number of inquiries received: 13

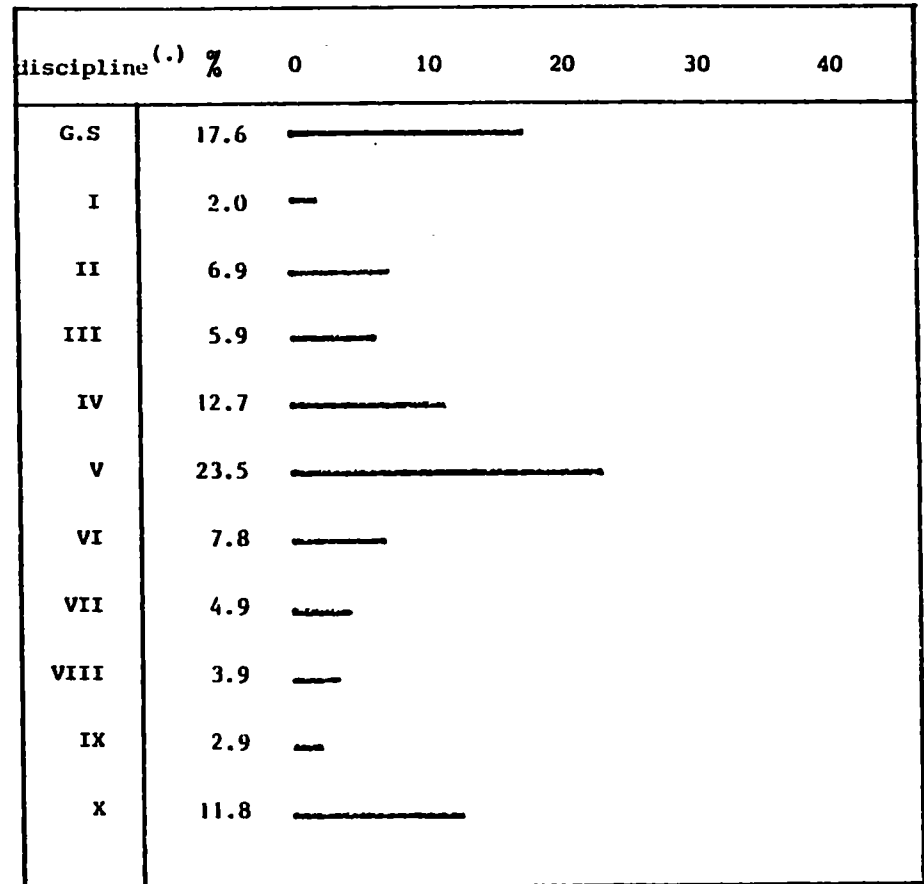
Countries:

Popular Republic of Benin (3), Ivory Coast (2), Kenya (1), Nigeria (3), South Africa (2), Tanzania (2).

Figure 4b :

Subject fields of experience

ASIA, S-E ASIA, THE PACIFIC



Number of inquiries received: 30

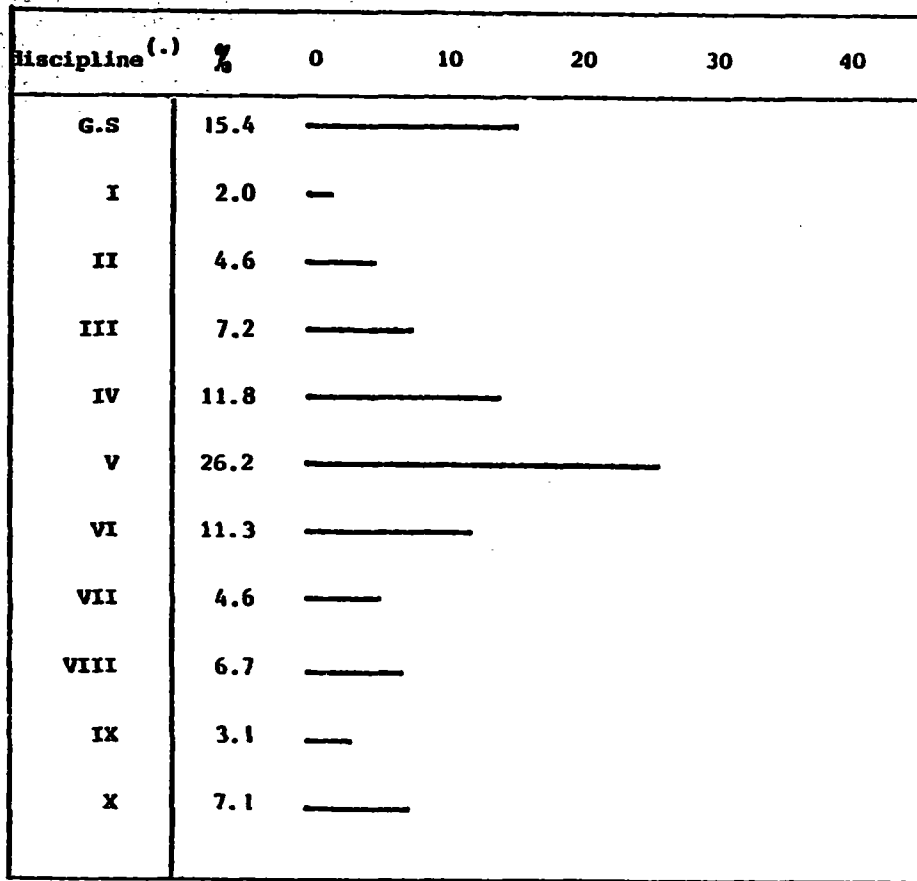
Countries:

Australia (13), India (4), Indonesia (1), Japan (1), Malaysia (1), New Zealand (4), Papua New Guinea (1), Philippines (1), Sri Lanka (1), Thailand (3)

Figure 4c :

Subject fields of experience

EUROPE (including the Mediterranean, Caspian Sea, Black Sea and Red Sea)



Number of inquiries received: 62

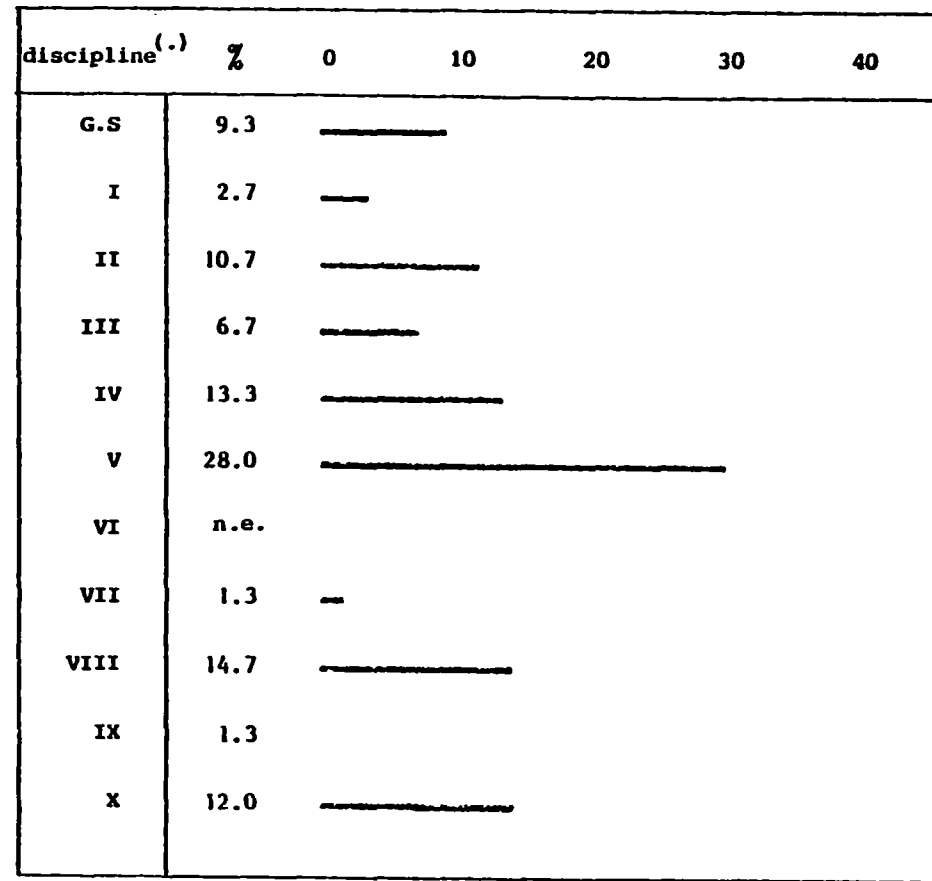
Countries:

Belgium (2), Denmark (3), Egypt (2), Finland (1), France (9), Germany, Fed. Rep. (3), Ireland (5), Israel (3), Italy (8), Netherlands (7), Norway (2), Portugal (1), Romania (1), Saudi Arabia (1), Spain (1), Sweden (1), Tunisia (3), Turkey (1), United Kingdom (8).

Figure 4d :

Subject fields of experience

NORTH AMERICA



Number of inquiries:

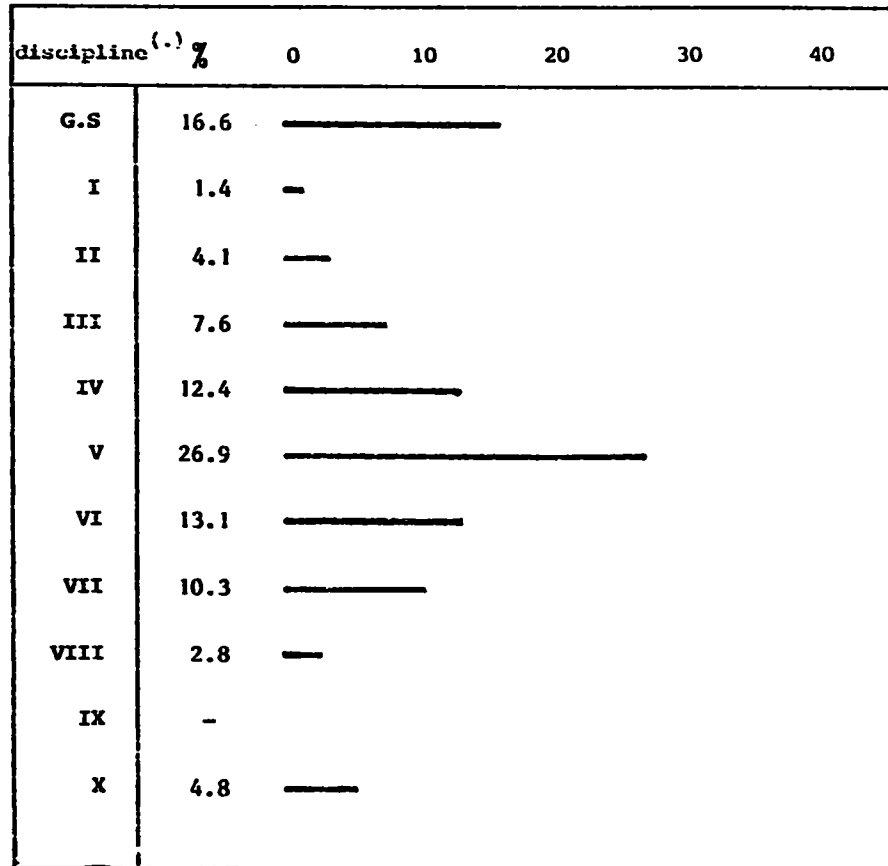
Countries:

Bermuda (1), Canada (1), U.S.A. (25).

Figure 4e :

Subject fields of experience

LATIN AMERICA & THE CARIBBEAN



Number of inquiries received: 49

Countries:

Brazil (6), Costa Rica (2), Colombia (5), Ecuador (2),
El Salvador (1), Guatemala (1), Honduras (1), Jamaica (2),
Mexico (22), Netherland Antilles (1), Nicaragua (1),
Panama (1), Venezuela (4).

Figure 5a: Interrelationship between ten major disciplines and "general survey" for Europe

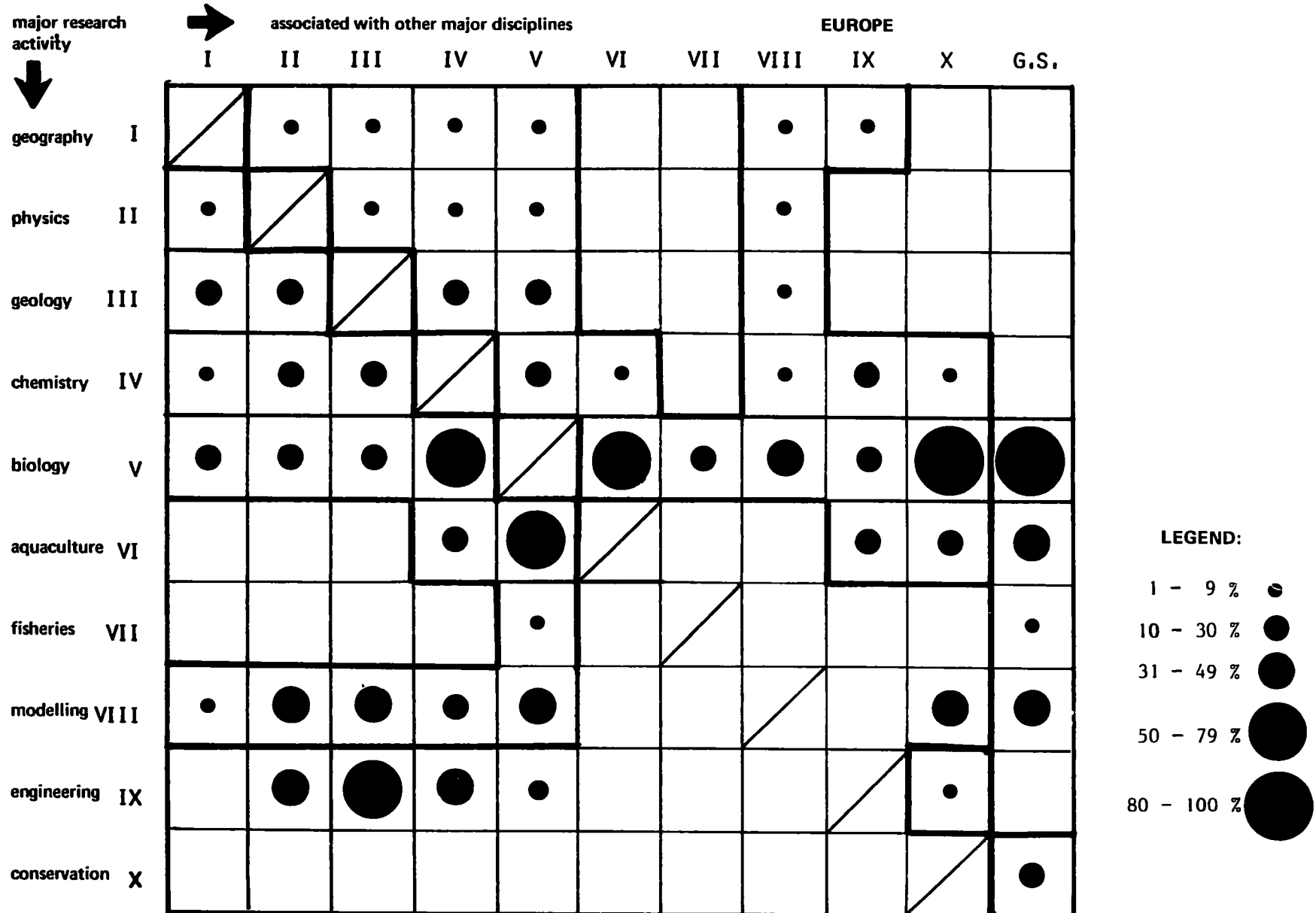


Figure 5b : Interrelationship between ten major disciplines and "general survey" for North America

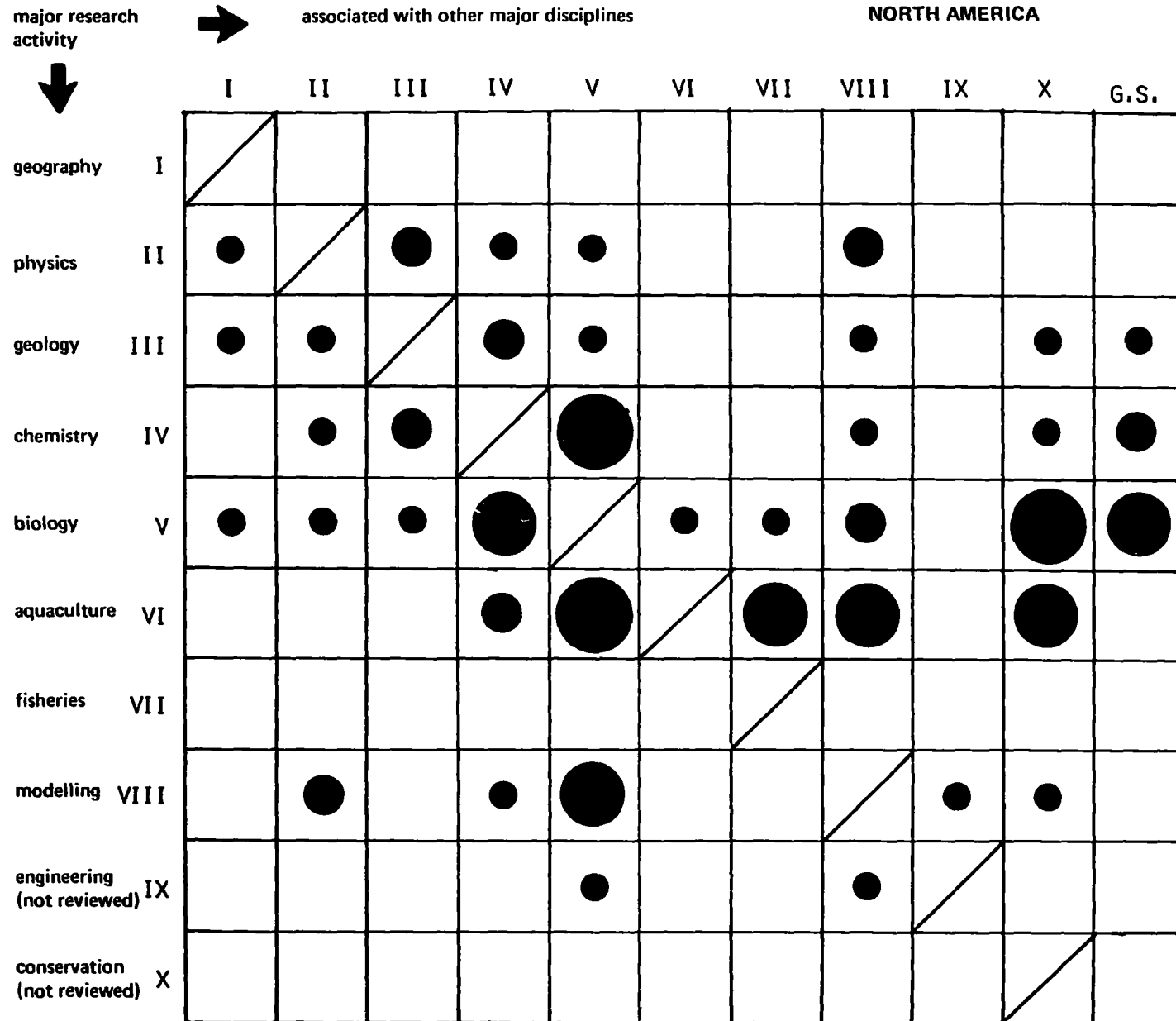


Figure 5c : Interrrelationship between ten major disciplines and "general survey" for Asia - S.E. Asia - Pacific

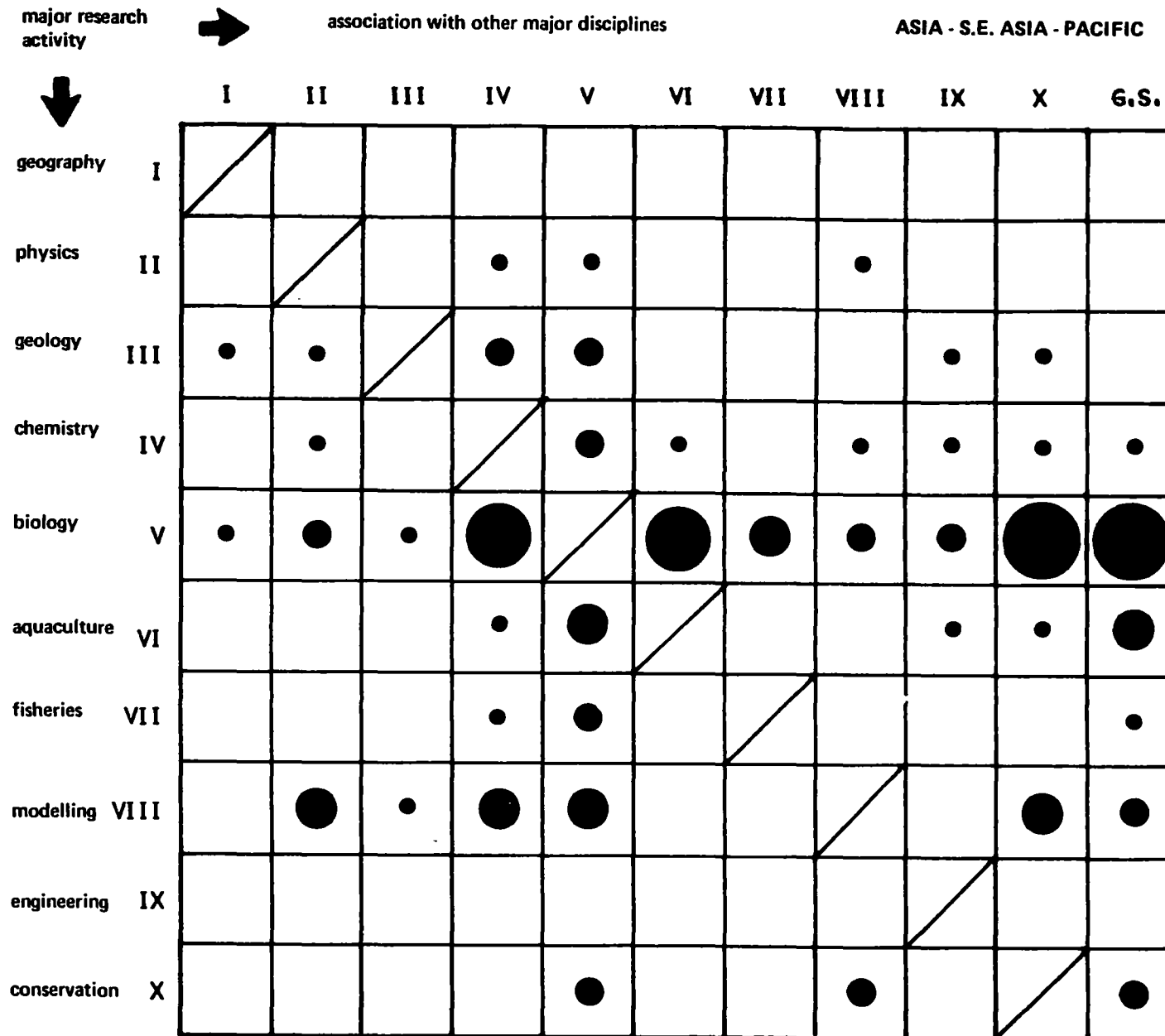


Figure 5d: Interrelationship between ten major disciplines and "general survey" for Latin America & Caribbean

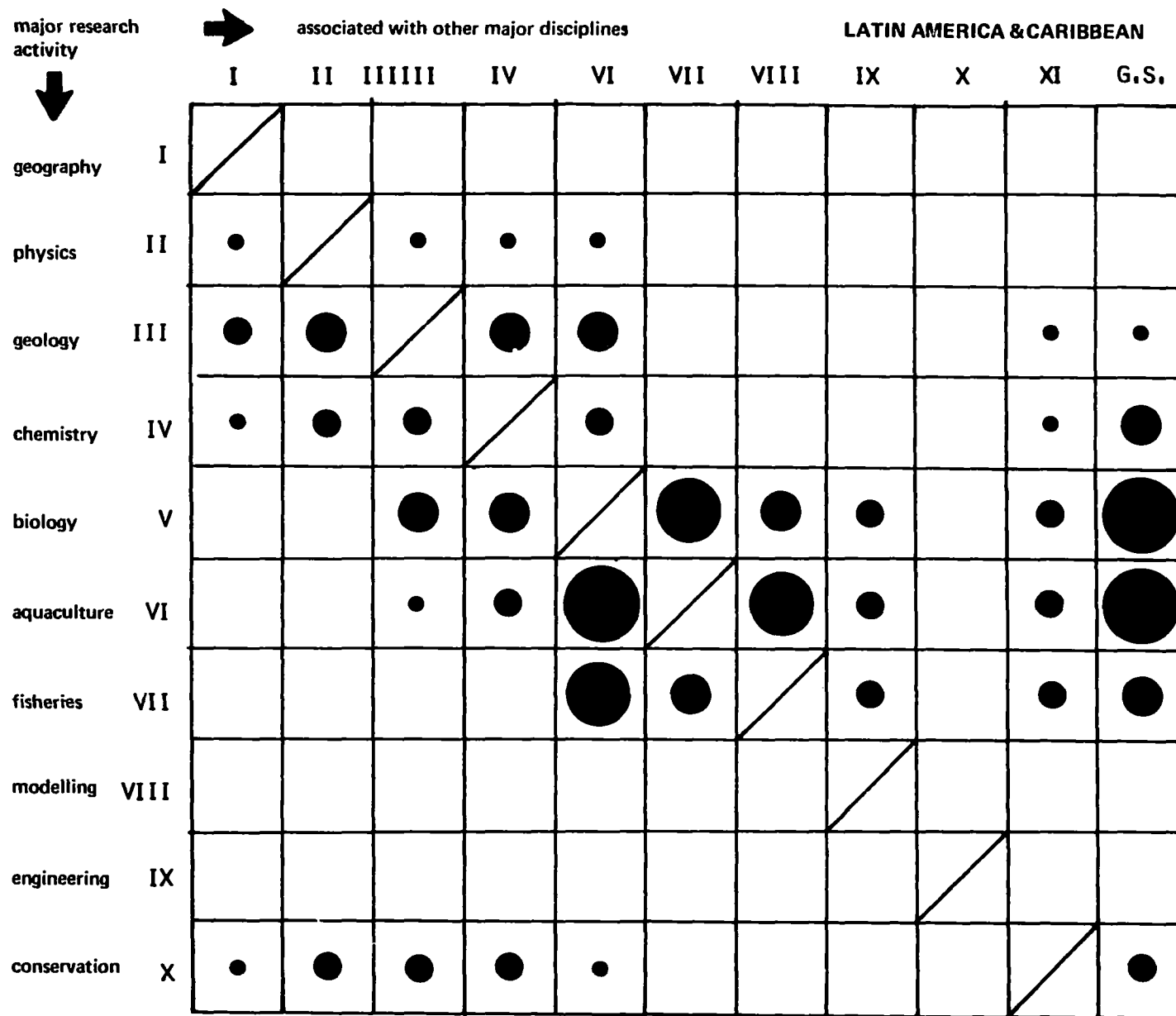


Figure 5e: Interrelationship between ten major disciplines and "general survey" for Africa

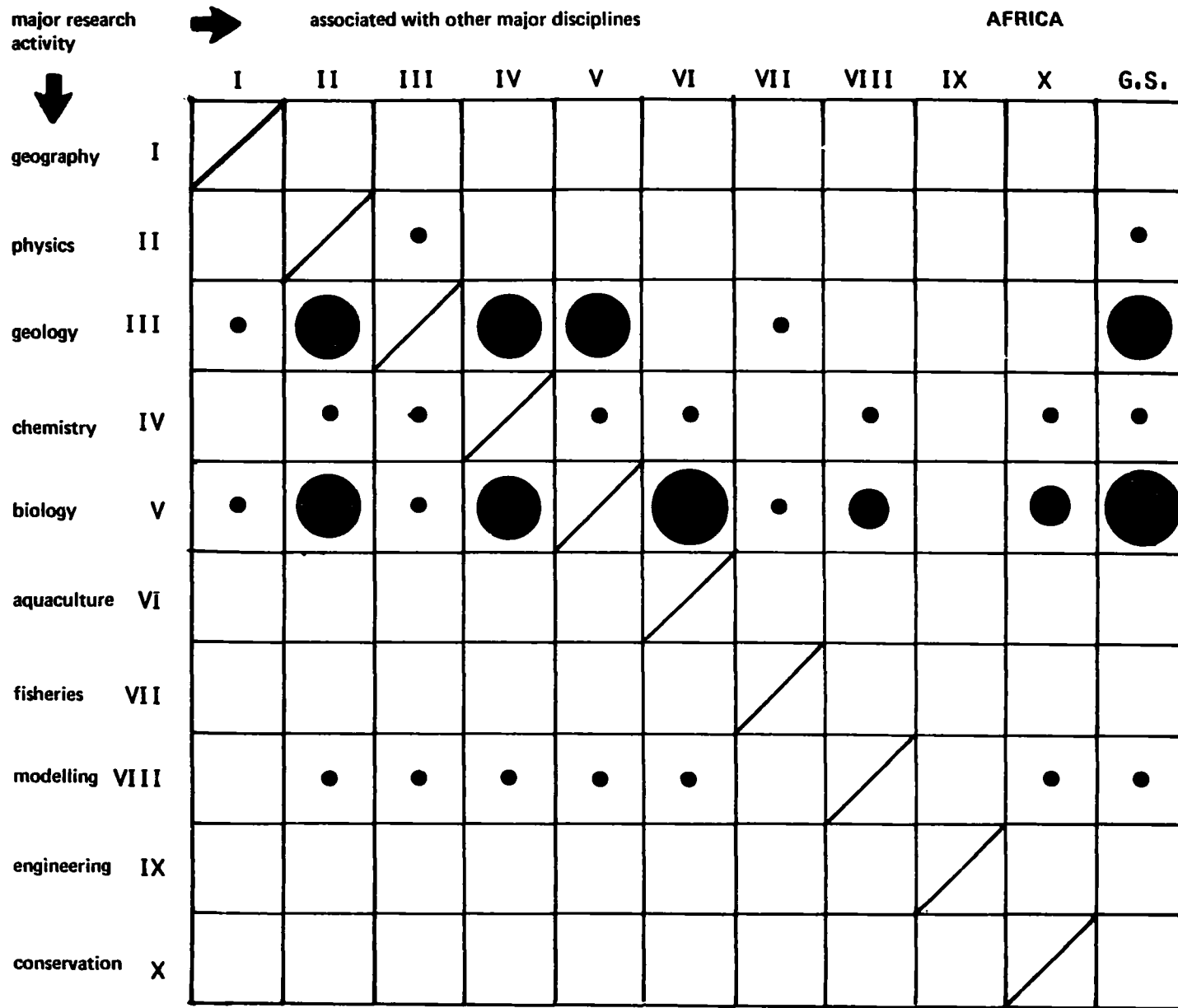


Figure 6 : A review of research topics included in the main research discipline "Biology"

<u>List of topics in the major discipline "Biology"</u>		
<u>group 1 :</u>	<u>group 2 :</u>	<u>group 3 :</u>
<u>type of organisms</u>	<u>descriptive topics</u>	<u>systemic topics</u>
phytoplankton	taxonomy	endocrinology
zooplankton	life history	genetics
meroplankton	embryology	population dynamics
microbenthos	serology	community structure
meiobenthos	pathology	food webs
macrobenthos	parasitology	physiological ecology
fishes	animal/sediment rel.	physiol. & biochemistry
bacteria	indicator species	nutrient cycling
microflora	standing crop	utilization organic mat.
halophytes	microbiology	metabolism
	detritus production	energy budgets
		productivity
		eutrophication
		effects of pollutants
		modelling

The top-ranked topics (frequency ranging from 100 - 60 %) in the three groups are the following:

group 1 : type of organisms

Africa	Asia	Pacific	Europe	Latin America	North America
<ul style="list-style-type: none"> •macrobenthos •fishes 	<ul style="list-style-type: none"> •phytopl. •zoopl. 	<ul style="list-style-type: none"> •phytopl. •macrobenth. •halophytes •fishes 	<ul style="list-style-type: none"> •macrob. •fishes •zoopl. •phytopl. •meiob. 	<ul style="list-style-type: none"> •phytopl. •zoopl. •macrob. 	<ul style="list-style-type: none"> •macrob. •phytopl. •zoopl. •bacteria

group 2 : descriptive topics

Africa	Asia	Pacific	Europe	Latin America	North America
<ul style="list-style-type: none"> •stand.crop 	<ul style="list-style-type: none"> •stand.crop 	<ul style="list-style-type: none"> •indic.sp. •stand.cr. •an./sed.r 	<ul style="list-style-type: none"> •an./sed.r. •stand. cr. •life hist. •indic. sp. 	<ul style="list-style-type: none"> •stand.cr. •life hist. 	<ul style="list-style-type: none"> •detritus •stand.cr. •an./sed.r •indic.sp.

group 3 : systemic topics

Africa	Asia	Pacific	Europe	Latin America	North America
<ul style="list-style-type: none"> •food webs 	<ul style="list-style-type: none"> •prod. •pop.dyn. •food.web 	<ul style="list-style-type: none"> •pop.dyn. •com.str. •prod. 	<ul style="list-style-type: none"> •pop.dyn. •com. str. •phys.ecol. •energy bud •utiliz. Q.M. 	<ul style="list-style-type: none"> •pop.dyn. •pred. •food web 	<ul style="list-style-type: none"> •com. str. •prod. •nutr. cycl. •utiliz.O.M. •pop. dyn. •phys. ecol.

Figure 7 : - Selected research topics within the major discipline "Biology": type of organisms

(numbers of programmes reviewed in parentheses)

	(5)	(10)	(10)	(27)	(17)	(16)
frequency (per cent)	AFRICA	ASIA	PACIFIC	EUROPE	LATIN AMERICA	NORTH AMERICA
100 - 60 %	. macrobenthos . fishes	. phytoplankton . zooplankton	. phytoplankton . macrobenthos . halophytes . fishes	. macrobenthos . fishes . zooplankton . phytoplankton . meiobenthos	. phytoplankton . zooplankton . macrobenthos	. macrobenthos . phytoplankton . zooplankton . meiobenthos . bacteria
59 - 40 %	. zooplankton . meroplankton . bacteria	. macrobenthos . halophytes . fishes . bacteria	. zooplankton . bacteria . microflora . meiobenthos	. bacteria . microbenthos . microflora . halophytes	. fishes	. halophytes . fishes . microflora . microbenthos . meroplankton
39 - 20 %	. phytoplankton . meiobenthos	. meroplankton . meiobenthos	. meroplankton . microbenthos	. meroplankton	. microbenthos . halophytes	
inf. 20 %	. halophytes . microflora . microbenthos	. microbenthos . microflora			. meroplankton . microflora . bacteria . meiobenthos	

Figure 8 : - Selected research topics within the major discipline "Biology" : descriptive topics

(numbers of programmes reviewed in parentheses)

	(5)	(10)	(10)	(27)	(17)	(16)
frequency (per cent)	AFRICA	ASIA	PACIFIC	EUROPE	LATIN AMERICA	NORTH AMERICA
100 - 60 %	. standing crop	. standing crop	. indicator sp. . standing crop . anim./sed.rel.	. anim./sed.rel. . standing crop . life history . indic. spec.	. standing crop . life history	. detritus prod. . standing crop . anim./sed.rel. . indicator sp.
59 - 40 %	. anim./sed.rel. . indicator sp. . detritus prod.	. microbiology . detritus prod.	. microbiology . detritus prod.	. taxonomy . detritus prod. . microbiology	. taxonomy . anim./sed.rel. . detritus prod.	. microbiology . life history
39 - 20 %	. microbiology . life history	. taxonomy . life history . anim./sed.rel. . parasitology . serology/hem.	. taxonomy . life history	. embryology	. microbiology	. embryology . taxonomy
inf. 20 %	. taxonomy	. embryology . pathology	. embryology . pathology	. parasitology . pathology . serology/hem.	. embryology . pathology . parasitology . serol./hem.	. parasitology . pathology . serol./hem.

Figure 9 : Selected research topics within the major discipline "Biology" : systemic topics

(numbers of programmes reviewed in parentheses)

	(5)	(10)	(10)	(27)	(17)	(16)
frequency (percent)	AFRICA	ASIA	PACIFIC	EUROPE	LATIN AMERICA	NORTH AMERICA
100 - 60 %		. productivity . popul.dynamics . food webs	. popul.dynamics . community str. . productivity . food webs	. popul.dynamics . community str. . physiol.ecology . energy budget . productivity	. productivity . popul.dynamics . food webs	. community str. . productivity . nutrient cycling . utiliz.org. matter . physiol.ecology . food webs
59 - 40 %	. nutrient cycl. . energy budget . pollutants . food webs	. community str. . nutrient cycl. . eutrophication . physiol.ecology	. modelling . nutrient cycl.	. food webs . nutrient cycl. . eutrophication . pollutants . modelling	. nutrient cycl. . utilization OM . community str. . eutrophication	. eutrophication . popul. dynamics . metabolism . pollutants . modelling
39 - 20 %	. popul.dynamics . commun. struc. . utilization OM . eutrophication	. utilization OM . pollutants . modelling . physio.& bioch.	. utilization OM . pollutants . eutrophication . metabolism . physiol.ecology	. metabolism . genetics . physio.& bioch. . endocrinology	. physiol.ecology . energy budgets . pollutants	. energy budgets . genetics . physiol.& bioch. . endocrinology
inf. 20 %	. modelling	. energy budgets . metabolism . endocrinology	. energy budgets		. physio.& bioch. . modelling	

(d) Affinity between topics (discipline "biology")

Trellis-diagrams (Figures 10-11) give, as an example, the affinity between: (a) the type of organisms studied; (b) the descriptive topics; and (c) the systemic topics.

Remark. Descriptive topics are considered here as structural parameters and systemic topics are considered as parameters of functioning.

In a newly developed programme, groups (a), (b) and (c) are loosely correlated. Conversely, the three groups are highly correlated in the most advanced programmes.

8. CONCLUDING REMARKS

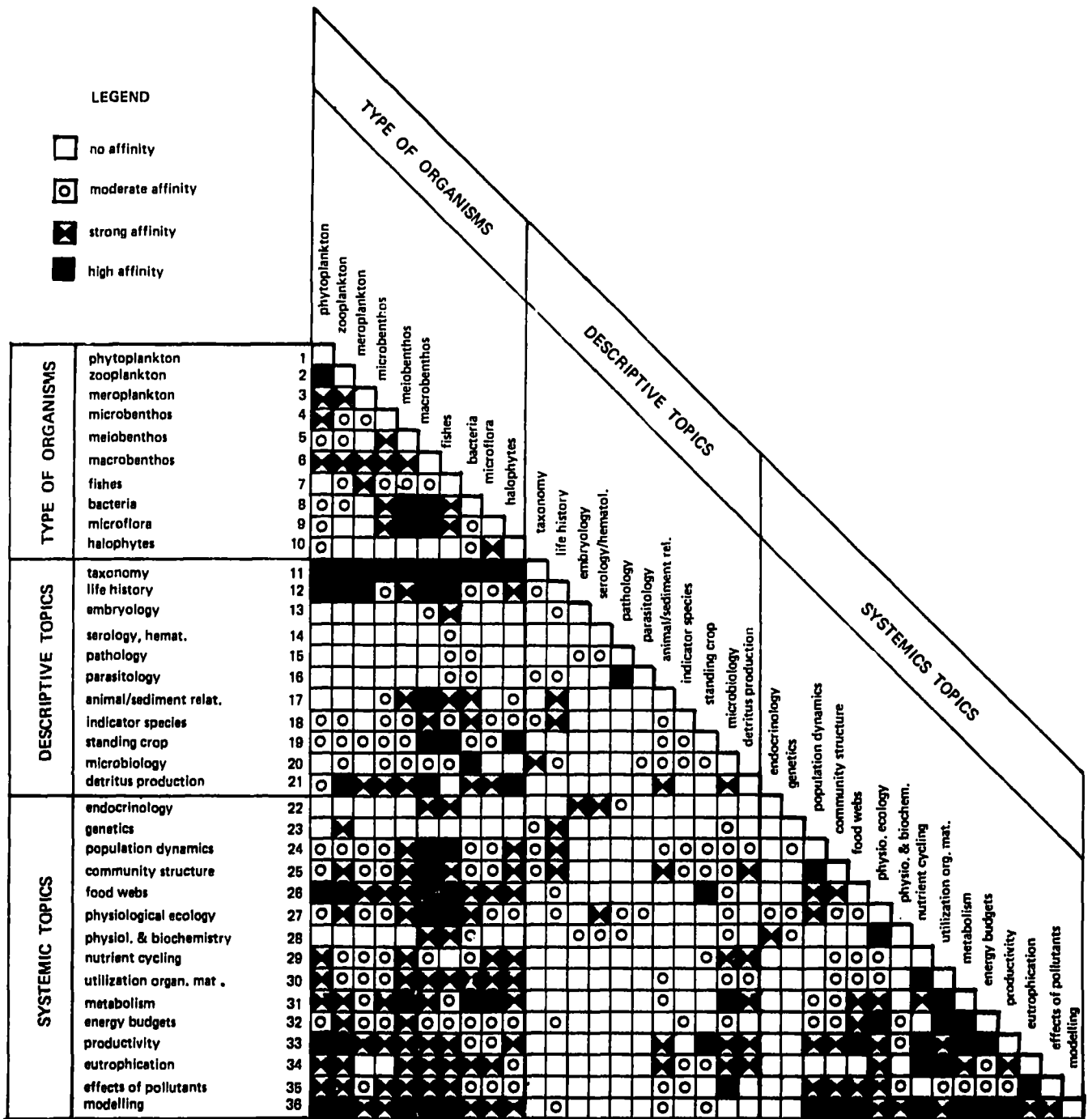
In recent years, concern for preservation of the wet coastal ecosystems has caused a reappraisal of the value and resources of this environment which includes delta areas, coastal lagoons and estuaries (see for example, Project 5 of the Man and the Biosphere Programme).⁽¹⁾ The value of coastal lagoons as valuable sites for fisheries and mariculture is now widely recognized.

One of the major conclusions to be drawn from this coastal lagoon survey is that co-operation in research is indeed feasible given the scientific support available in many countries concerned. A general opinion, expressed in the survey by project leaders, is that our information on lagoon systems is not as good as it should be. It was also proposed that a central theme of future research should be the study of seasonal variations and, through international co-operation, the comparative analysis of spatial variations of lagoon ecosystems functioning.

A general aim of co-ordinated research programmes on coastal lagoons should be to arrive at a comprehensive outline taking into account as much information as possible. Emphasis could be placed on the flux of materials across the lagoons, the nature and properties of the sediments and the mechanisms of living productions as well as the demographic and adaptive features of the species. This calls for an emphasis on multidisciplinary consideration of coastal lagoons as ecological systems. There is a need to compare production, consumption and recycling of dissolved and particulate materials across system boundaries.

(1) Programme on Man and the Biosphere (MAB). International Working Group on Project 5. Ecological effects of human activities on the value and resources of lakes, marshes, rivers, deltas, estuaries and coastal zones. Final Report. MAB report series No.21. Unesco, 1975. 80 pp.

Fig. 10 Affinity between topics, within the major discipline "Biology" (trellis-diagram). Example of advanced research programme.



SCOR/Unesco Advisory Panel on Coastal Lagoons

INQUIRY ON EXISTING LAGOON^{*} RESEARCH PROGRAMMES

Geographical areas:

- AFRICA (excluding the Mediterranean and Red Sea)
 - ASIA, SOUTHEAST ASIA AND THE PACIFIC
 - EUROPE (including the Mediterranean, Caspian Sea,
Black Sea and Red Sea)
 - LATIN AMERICA
 - NORTH AMERICA
 - East Coast
 - West Coast
-

Institution or employer:

Address:

Name of Director:

Supporting or funding body:

* Excluding coral reefs and atolls

PROJECT LEADER :

Name:

Title of position:

Professional address:

Key-words defining your major activities:
(Up to three key-words may be selected)

Geography

Physics

Geology/Geophysics

Chemistry/Geochemistry

Biology

Aquaculture

Fisheries

Modelling

Engineering

Conservation/Resources/Legislation

PROGRAMME/PROJECT

Title of Programme/Project:

Name(s) of Lagoon(s) :

Geographic Location :

Synthetic description of Lagoon System(s) :

Significant references :

Starting date of the Programme/Project:

Duration:

Sponsoring body(ies):

Other institutions co-operating in the Programme/Project:

Brief Description of your Programme/Project²
(Use additional sheets if necessary)

(By filling in FORM II, you will help us in processing your reply)

² In case your programme comprises several distinct sub-projects,
please fill in or circulate FORM III.

SCOR/Unesco Advisory Panel on Coastal Lagoons
(Inquiry on Existing Lagoon Research Programmes)

SUBJECT FIELDS OF EXPERIENCE

Select as many key-words as necessary

GEOGRAPHY

- Cartography
- Morphology
- Climatology
- Demography
- Other (specify)

PHYSICS

- Meteorology
- Hydrodynamics
- Salinity/Temperature/Density variations
- Circulation and mixing relations
- Dynamics of turbulent boundary layers
- Radiation, light
- Interface energy exchange
- Optics
- Acoustics
- Mechanics
- Radioactivity, radionuclides
- Other (specify)

GEOLOGY AND GEOPHYSICS

- Cartography
- Geomorphology
- Geochronology
- Paleoenvironment
- Sediment transport and deposition
- Labelled tracers
- Radioactive tracers
- Nephelometry
- Seismic

- Mineralogy
- Other (specify)

CHEMISTRY AND GEOCHEMISTRY

- Composition of waters, water quality analysis
- Transport of sediments
- Sediment-water exchanges
- Cycling of metals
- Biodegradation
- Nutrient cycling
- Diagenesis of dissolved constituents
- Radioactive decay
- Radioelements
- Cycling of pollutants (specify)
- Other (specify)

BIOLOGY

Type of organisms

- Phytoplankton (specify) :
- Zooplankton " :
- Meroplankton " :
- Microbenthos " :
- Meiobenthos " :
- Macrobenthos " :
- Fishes " :
- Bacteria " :
- Microflora " :
- Halophytes " :
- Other groups " :

Topics

- Taxonomy
- Life history
- Embryology
- Endocrinology
- Serology, hematology
- Pathology
- Parasitology
- Genetics
- Population dynamics
- Ecology

- Community structure, maintenance and distribution
- Animal/sediment relationships
- Indicator species (water masses, pollution, etc.)
- Standing crop
- Food webs
- Physiological ecology (strategies of adaptation)
- Physiology and biochemistry (mechanisms of adaptation)
- Microbiology
- Nutrient cycling
- Detritus production
- Transfer and utilization of organic matter
- Metabolism
- Energy budgets
- Productivity
- Eutrophication
- Effects of pollutants (specify)
- Other (specify)

MODELLING

- Ecosystem models
- Other mathematical models (specify)

AQUACULTURE

Types of organisms

- Algae (specify) :
- Molluscs " :
- Crustaceans " :
- Fishes " :
- Other " :
- Production (Kg/ha) :

Culture methods

- Total surface
- Open systems (no feeding, no fertilization)
- Retention of young and adults in semi-enclosed lagoons

- Release and rearing in fertilized enclosures
- Stocking and rearing with fertilization and feeding
- Intensive cultivation with feeding
- Hatchery or pond siting and construction
- Pollutants and contaminants
- Other (specify)

ENGINEERING

- Barrier island stabilization
- Lagoon systems creation
- Management/Rehabilitation/Pollution
- Other (specify)

CONSERVATION/RESOURCES/LEGISLATION

- Laws and economics
- Resources and population
- Protection
- Recreation
- Other (specify)

SCOR/Unesco Advisory Panel on Coastal Lagoons
(Inquiry on Existing Lagoon Research Programmes)

SUB-PROJECT

TITLE OF SUB-PROJECT

Brief Description of Sub-Project

Major References

STAFF-IN CHARGE

Name :

Position:.....

Address:

.....

.....

Name :

Position:.....

Address:

.....

.....

Name :

Position:.....

Address:

.....

.....

Name :

Position:.....

Address:

.....

.....

Please use additional sheets if necessary

Other information :

What should, in your view, be the mandate of :

a) a Working Group on Coastal Lagoon Research ?

b) a Working Group on Coastal Lagoon Management ?

Would you be interested in presenting a paper at an
International Conference on Coastal Lagoons, organized
under the sponsorship of Unesco and SCOR, in 1978 or 1979?

YES NO

Please send your reply to :

.....

With copy to : Division of Marine Sciences
Unesco
Place de Fontenoy
75700 Paris, France

1. INTRODUCTION

Les lagunes côtières et les deltas sont des zones littorales de transition entre la mer et la terre ferme, dont la formation est due à l'action de lois physiques complexes. Ce sont des milieux très particuliers, essentiellement en raison des conditions originales dans lesquelles s'y produisent les phénomènes d'hydrodynamique et de sédimentation. L'accumulation y est très active et il s'y crée des milieux protégés, d'où des effets sur les propriétés et la nature géochimique des sédiments et une très grande richesse potentielle en ressources biologiques.

Une lagune côtière est d'une manière générale une étendue d'eau semi-fermée et communiquant avec la mer libre par des passes ouvertes dans un ensemble de barrières (physiques, chimiques, hydrodynamiques). Les lagunes côtières comptent parmi les systèmes littoraux les plus fertiles. Elles se forment sur le rivage des estuaires, le long des côtes, dans les golfes fermés ou les baies, aussi bien sous les climats tropicaux que tempérés ou froids. La grande variété des termes utilisés pour désigner la situation géographique des systèmes lagunaires qui ont fait l'objet des études recensées dans le répertoire des programmes de recherches témoigne de leur diversité.

A leur arrivée dans la lagune, les courants d'eau et les flux d'alluvions peuvent, soit y stagner, soit s'écouler dans l'océan, un grand estuaire ou un golfe. Ces écoulements lagunaires peuvent influencer de manière sensible sur l'environnement local et régional et, en venant s'ajouter à l'action des courants marins et aux flux côtiers de substances nutritives, contribuer à déterminer la productivité littorale.

Les lagunes côtières qui abritent de nombreuses espèces indigènes économiquement importantes servent aussi de frayères et de zones de développement des larves à des espèces migratrices. De nombreuses espèces de poissons, de crustacés et de mollusques traversent les lagunes côtières au cours de leur cycle biologique. Dans un grand nombre de régions, les lagunes se prêtent tout à fait au développement d'une production contrôlée d'organismes marins.

Les dépôts sédimentaires du fond des lagunes contiennent souvent des matières premières de base telles que des sels ou des produits chimiques d'accès facile pour l'industrie. Lorsque leur profondeur est suffisante, les lagunes forment des zones abritées propices aux ports et aux chenaux de navigation. Ces facteurs peuvent être indirectement favorables à la création de centres de peuplement et à l'urbanisation. Dans les régions plus reculées, les lagunes côtières peuvent se prêter à la création de réserves écologiques ou d'activités de tourisme et de loisirs.

Au cours de l'histoire, les lagunes côtières ont été utilisées pour la pêche, ainsi que pour l'élevage et la culture des poissons, des mollusques et des crustacés. Ces formes d'exploitation étaient fréquemment intégrées de façon tout à fait harmonieuse au contexte socio-économique traditionnel, par exemple dans le Sud-Est asiatique.

Dans les années récentes, le désir justifié d'exploiter de manière intensive les produits biologiques et les ressources non biologiques de ces systèmes a donné naissance à de nombreux projets de mise en valeur des lagunes côtières.

Les milieux scientifiques s'accordent pour souligner que dans de trop nombreux cas, ces projets sont de nature à causer des dommages sérieux et durables à un type de milieu côtier dont la conservation est indispensable. Dans un grand nombre de ces zones - souvent polluées - une exploitation rationnelle doit s'accompagner de

l'application parallèle de mesures de sauvegarde destinées à les rétablir dans leur état primitif. C'est ainsi que l'ostréiculture, la mytiliculture et la pisciculture ne pourront se développer de manière satisfaisante que si l'environnement est protégé contre la contamination chimique. L'on ne devrait encourager les projets de développement économique que lorsque l'équilibre écologique naturel de l'environnement et son potentiel de production auront été bien compris et bien protégés.

2. BUT DE L'ETUDE

En 1974, à la demande de la Division des sciences de la mer de l'Unesco, le Comité scientifique de la recherche océanique (SCOR) a créé un Groupe consultatif ad hoc SCOR/Unesco sur les lagunes côtières/¹ chargé de faire le point des connaissances relatives aux systèmes lagunaires dans les régions tempérées et tropicales. Dans l'une de ses recommandations, ce Groupe avait jugé indispensable d'effectuer un recensement des programmes de recherches en cours sur les lagunes côtières avant de définir un cadre général dans lequel inscrire les activités à prévoir.

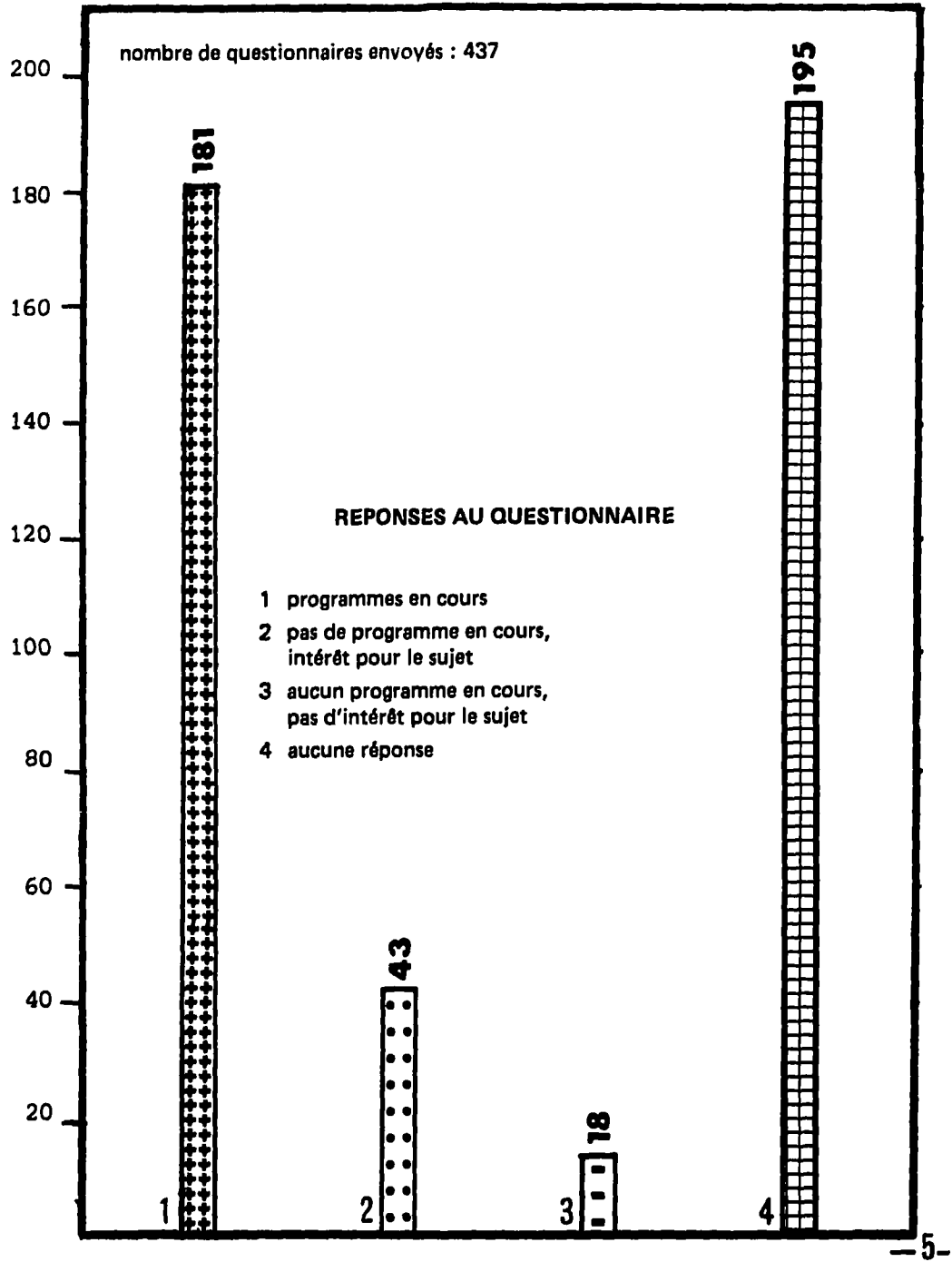
Dans les deux années qui suivirent, le Groupe procéda à une enquête sur les programmes de recherche entrepris par des laboratoires et des organismes spécialisés du monde entier. Près de 200 programmes - un résultat inattendu - furent ainsi recensés et examinés, et le nombre des réponses à cette enquête montre clairement l'intérêt croissant qui se manifeste pour la recherche sur les lagunes côtières.

L'étude menée par le Groupe a pour but de rassembler et d'évaluer ces marques d'intérêt, en prenant pour base les informations recueillies en réponse à deux questionnaires : "SCOR/Unesco SCE/9/Circ. 5" (formules I à III) et "SCOR/Unesco SCE/9/Circ. 9" (formule IV), dont le texte figure à l'Annexe I/². Dans le premier questionnaire, il était demandé aux directeurs de projets de cocher sur une liste de 93 thèmes d'étude répartis en grandes rubriques, celles sur lesquelles portent leurs travaux. Un espace était également laissé pour d'autres informations, telles que le nom de la (ou des) lagune(s), une brève description des recherches, la situation géographique et les principales références bibliographiques. Ce premier document fut largement diffusé entre juin 1976 et juillet 1977 à plus de 400 organismes de recherches, personnalités scientifiques et administrations figurant sur une liste d'envoi correspondant à un répertoire de noms et d'adresses établi par le Groupe.

Le texte de la lettre de couverture du second document (formule IV) destiné à être envoyé à toutes les personnes ayant répondu au premier questionnaire, mais adressé aussi à titre de rappel aux destinataires de ce premier document n'y ayant pas répondu, fut approuvé en février 1977. Dans cette formule IV, le Groupe demandait de plus amples informations sur la situation géographique de la ou des lagune(s), notamment sa latitude, sa longitude et sa superficie, sur les études et rapports scientifiques disponibles ainsi que sur les programmes de formation de niveau universitaire sur le sujet. Les destinataires étaient invités à répondre à la question suivante : quel devrait être le mandat d'un groupe de travail chargé de mener des recherches sur les lagunes côtières et/ou d'un groupe de travail sur l'aménagement des lagunes côtières ?

-
1. La composition de ce Comité est la suivante : A. Ayala-Castañares, B. D'Arglejan, P. Lasserre, C.I.O. Olaniyan et F.B. Phleger.
 2. Voir pages 30-41.

Figure 1



Le Groupe consultatif ad hoc SCOR/Unesco sur les lagunes côtières a pleinement conscience que l'un des objectifs essentiels de l'étude doit être de faciliter les échanges d'informations entre scientifiques de lieux différents, effectuant des recherches analogues et complémentaires. C'est pourquoi il a dressé dans le présent document la liste des programmes de recherches et de leurs directeurs scientifiques, tout en s'efforçant aussi d'y faire figurer les noms de tous les chercheurs cités dans les réponses reçues.

3. CONTENU ET REPARTITION PAR PAYS DES REPONSES AU QUESTIONNAIRE (Figure 1)

Un total de 437 questionnaires a été envoyé. A la mi-mai 1978, 242 questionnaires remplis avaient été retournés par les destinataires. Un intérêt pour ces recherches était manifesté dans 224 (92,6 %) réponses, intérêt non concrétisé dans 30,9 % des cas (43 réponses) et concrétisé par des programmes en cours dans 74,8 % des cas (181 réponses). Le nombre des réponses négatives s'élevait à 18 (7,4 %) (aucun programme en cours, pas d'intérêt pour ces recherches).

4. FINANCEMENT

Le financement des programmes et projets de recherches concernant les lagunes côtières est principalement public. Un pourcentage non négligeable des recherches est effectué dans des établissements d'enseignement : universités et instituts universitaires et leur financement est dans la plupart des cas assuré par l'Etat. Environ 6 % du nombre total des projets de recherches relèvent d'accords de coopération bilatéraux et multilatéraux (voir Figure 2).

Figure 2 : FINANCEMENT

organisme intergouvernemental (coopération bilatérale et multilatérale)	5,8 %
organisme public (à l'exclusion des établissements universitaires)	54,2 %
établissements universitaires (publics et privés)	36,7 %
sociétés privées, fondations	3,2 %
divers	0,6 %

5. INTERET DANS LE MONDE ET INCIDENCES LOGISTIQUES

Que des programmes de recherches soient entrepris dans le monde dépend dans une large mesure de la présence d'infrastructures universitaires. Le répertoire joint recense 181 programmes/projets de recherches relatifs aux lagunes côtières avec, en regard, les institutions et organismes dont ils relèvent. Les domaines d'intérêt particuliers et la situation professionnelle des directeurs de projets sont également indiqués. Ce répertoire donne ainsi une vue d'ensemble du nombre et du type de spécialistes que comptent les 52 pays couverts par l'enquête. Les réponses ont été analysées sur la base de la répartition suivante en zones géographiques :

- (A) Afrique (à l'exclusion de la Méditerranée et de la mer Rouge)
- (B) Asie, Asie du Sud-Est et Pacifique
- (C) Europe (y compris la Méditerranée, la mer Caspienne, la mer Noire et la mer Rouge)

- (D) Amérique latine et Caraïbes
- (E) Amérique du Nord

Ces zones géographiques ci-dessus ont été délimitées de manière à ce que chacune corresponde à une des grandes zones lagunaires existant sous les diverses latitudes. Les réponses faisant état de programmes de recherches actifs sur les lagunes (Figure 3) se répartissent comme suit :

- région A : 11 programmes (6,1 %)
- région B : 30 programmes (16,7 %)
- région C : 64 programmes (35,6 %)
- région D : 49 programmes (27,2 %)
- région E : 27 programmes (15,0 %)

Dans l'ensemble, les pays en développement commencent à entreprendre des programmes de recherches dans une perspective à long terme. Dans certains pays, les systèmes lagunaires sont devenus un poste inscrit dans la planification des programmes généraux de recherche. Le Mexique est, en la matière, un des pays les plus actifs et l'Universidad Nacional Autonoma de Mexico (UNAM) a organisé des séminaires sur les lagunes côtières en 1967 et 1977. Ce pays (qui a 22 programmes en cours figurant dans le répertoire) a établi, dans le domaine des sciences de la mer, une infrastructure d'enseignement bien étoffée dont bénéficie la recherche sur les zones côtières.

Des réunions de travail sur les sciences de la mer se sont tenues à l'échelon subrégional dans les zones de la Méditerranée orientale, du Golfe, de la Méditerranée occidentale, et du Sud-Est asiatique et, chaque fois, des recommandations concernant les lagunes côtières ont été approuvées.

De par leur caractère, les problèmes scientifiques soulevés dans le présent rapport exigent des recherches plus approfondies sur la physique, la géologie, la chimie et la biologie des lagunes côtières. Certains pourront être résolus en un laps de temps relativement court (de l'ordre de deux à trois ans), en particulier si leur étude est abordée sur la base d'une action coordonnée au niveau international. D'autres programmes, comme l'étude écologique comparée de deux lagunes semblables situées sous des latitudes différentes, devront en revanche se poursuivre indéfiniment. Il convient donc de ne pas sous-estimer la longueur des délais qui seront nécessaires, notamment si l'on tient compte du fait que l'intérêt pour cette question est parfois une perspective à long terme et que certains pays ne disposent que d'une infrastructure d'enseignement relativement insuffisante.

Les réponses à l'enquête SCOR/Unesco sur les lagunes côtières montrent qu'il existe assez de laboratoires suffisamment bien répartis dans le monde pour mener à bien un programme minimum de recherches sur le terrain. D'autres laboratoires pourraient être équipés pour traiter de sujets plus étroitement spécialisés mais néanmoins importants entrant dans le cadre général des objectifs du programme. Un autre facteur positif est qu'il existe déjà, dans les cinq régions, des établissements de recherches en activité ainsi qu'un programme d'études universitaires du premier cycle au titre duquel une formation dans le domaine de la recherche sur la lagune peut être impartie.

Le séminaire multidisciplinaire qui s'est tenu sous les auspices de l'Unesco, de l'Association internationale d'océanographie biologique (AIOB) et de la Duke University (Beaufort, N.C., Etats-Unis d'Amérique) du 28 août au 2 septembre 1978,

a montré comment peuvent notamment être élaborés des principes directeurs concernant les recherches à mener dans le cadre d'une coopération régionale, telles que les conçoit l'Unesco. Le compte rendu de ce séminaire sera publié dans la série des Documents techniques de l'Unesco sur les sciences de la mer sous le n° 32 et diffusé à toutes les personnes consultées lors de la présente enquête.

6. PROPOSITIONS EN VUE D'UNE COOPERATION INTERNATIONALE

Les réponses au questionnaire IV (voir Annexe 1) montrent que la création de groupes de travail sur les recherches relatives aux lagunes côtières et sur l'aménagement des lagunes côtières est, de l'avis de la majorité, hautement souhaitable.

A la question : "Quel devrait être, à votre avis, le mandat :

- (a) d'un groupe de travail sur les recherches relatives aux lagunes côtières ?
- (b) d'un groupe de travail sur l'aménagement des lagunes côtières ?"

les intéressés ont tendance à donner une réponse analogue à celle de S.W. Nixon (Etats-Unis) :

(a) Groupe de travail sur les recherches relatives aux lagunes côtières

- "1. Appliquer aux environnements lagunaires les techniques d'analyse des systèmes écologiques, y compris l'établissement de modèles numériques ;
2. Mettre en évidence l'influence des interactions des caractéristiques hydrographiques, morphologiques et géologiques des lagunes sur les systèmes écologiques ainsi créés.
3. Mettre au point des méthodes de recherche expérimentale sur les écosystèmes qui seront appliquées à des reproductions de parties de lagunes ou à un groupe de deux lagunes naturelles - est-il possible de créer des microcosmes lagunaires à cet effet ?"

(b) Groupe de travail sur l'aménagement des lagunes

- "1. Est-il possible d'analyser les variations dans le temps de l'écologie des lagunes à partir des changements intervenus dans le mode d'exploitation des terres à l'intérieur du bassin versant des lagunes ?
2. Utiliser des microcosmes lagunaires pour effectuer des expériences destinées à mettre en évidence la réaction des systèmes lagunaires à divers types de perturbations.
3. Etudier le potentiel des systèmes lagunaires naturels dans le domaine de l'aquaculture."

On remarquera que 92,0 % des directeurs de projets ayant répondu au questionnaire IV sont disposés à présenter une ou plusieurs communications lors d'une Conférence internationale sur les lagunes côtières qui serait organisée sous les auspices de l'Unesco en 1980 ou 1981.

Figure 3 : REPARTITION PAR PAYS DES REponses AU QUESTIONNAIRE

PAYS AYANT ENTREPRIS DES PROGRAMMES DE RECHERCHES
SUR LES LAGUNES COTIERES

Afrique du Sud	2	Israël	3
Allemagne, Rép. féd. d'	3	Italie	8
Antilles néerlandaises	1	Jamaïque	2
Arabie saoudite	1	Japon	1
Australie	13	Kenya	1
Belgique	2	Malaisie	1
Bénin	3	Mexique	22
Bermudes	1	Nicaragua	1
Brésil	6	Nigéria	3
Canada	1	Norvège	2
Colombie	5	Nouvelle-Zélande	4
Costa Rica	5	Panama	1
Côte d'Ivoire	2	Papouasie-Nouvelle- Guinée	1
Danemark	3	Pays-Bas	7
Egypte	2	Philippines	1
El Salvador	1	Portugal	1
Equateur	2	Roumanie	1
Espagne	1	Royaume-Uni	8
Etats-Unis d'Amérique	25	Sri Lanka	1
Finlande	1	Suède	1
France	9	République-Unie de Tanzanie	2
Guatemala	1	Thaïlande	3
Honduras	1	Tunisie	3
Inde	4	Turquie	1
Indonésie	1	Venezuela	4
Irlande	5		

PAYS AYANT EXPRIME UN INTERET POUR CES RECHERCHES

Algérie
Argentine
Corée, Rép. de
République dominicaine
Emirats arabes unis
Grèce
Iran
Libye
Maroc
Pérou
Sénégal
Syrie
Trinité-et-Tobago
Uruguay
Viet Nam
Yougoslavie

7. TENDANCES DE LA RECHERCHE

Une liste de mots clés répartissant 93 thèmes d'étude en 10 grandes disciplines figurait dans les formules I et II (voir Annexe I). A cette liste, les responsables de l'analyse des réponses ont ajouté une rubrique spéciale : "étude générale" (EG) dans laquelle ils ont classé les réponses dont le sujet était limité à une étude descriptive des sites et à l'envoi de données sur l'environnement (par exemple, les "paramètres physico-chimiques" mesurés par les biologistes).

(a) Choix des sujets d'étude (Figure 4)

Dans les 181 réponses examinées, la discipline la plus fréquemment citée est la "biologie" - avec des pourcentages allant de 19,5 % (Afrique) à 28,0 % (Amérique du Nord) - suivie, par ordre décroissant, de l'"étude générale" (EG) (13,7 %), la chimie (12,5 %), l'aquaculture (10,5 %), la conservation (8,1 %), la géologie (7,9 %), la construction de modèle (6,5 %), la pêche (5,7 %), la géographie (2,6 %) et les sciences de l'ingénieur (1,4 %). Il convient de noter que les faibles pourcentages relevés pour la pêche, la géographie et les sciences de l'ingénieur ne reflètent pas l'intérêt potentiel réel pour ces domaines d'étude, ces trois dernières disciplines ayant été insuffisamment détaillées dans le questionnaire.

Pourcentages correspondant aux disciplines principales (valeurs moyennes)

Etude générale	E.G.	13,7 %
Géographie	I	2,6 %
Physique	II	6,3 %
Géologie	III	7,9 %
Chimie	IV	12,5 %
Biologie	V	24,8 %
Aquaculture	VI	10,5 %
Pêche	VII	5,7 %
Construction de modèles	VIII	6,5 %
Sciences de l'ingénieur	IX	1,4 %
Conservation	X	8,1 %

(b) Interrelations entre les dix disciplines principales

Les directeurs de projets ne se sont généralement pas contentés de cocher les mots clés figurant dans une ou deux des grandes rubriques. Ainsi, les écologistes qui ont indiqué que la "biologie" et l'"aquaculture" étaient leurs thèmes de recherche principaux ont généralement aussi coché les cases relevant d'autres disciplines telles que la "chimie", la "physique", la "construction de modèles", etc. Un tableau (Figure 5) illustre ces interactions entre les disciplines principales, lesquelles témoignent du caractère multidisciplinaire des problèmes que pose la recherche sur les lagunes côtières.

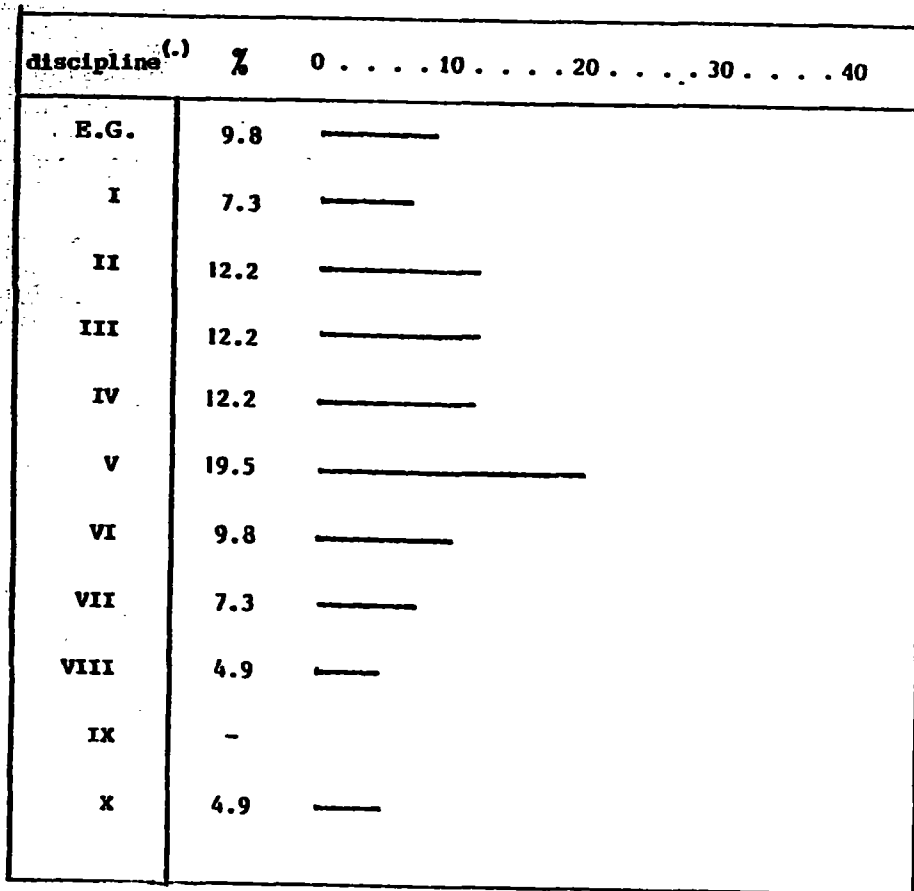
(c) Interrelations au sein des disciplines principales : thèmes de recherches

Les directeurs de projets avaient à choisir entre 93 mots clés. L'analyse de leur choix est instructive, car elle renseigne sur les grandes tendances de la recherche.

Figure 4a :

Sujets d'étude

AFRIQUE (à l'exclusion de la Méditerranée et de la mer Rouge)



51

Nombre de réponses reçues : 13

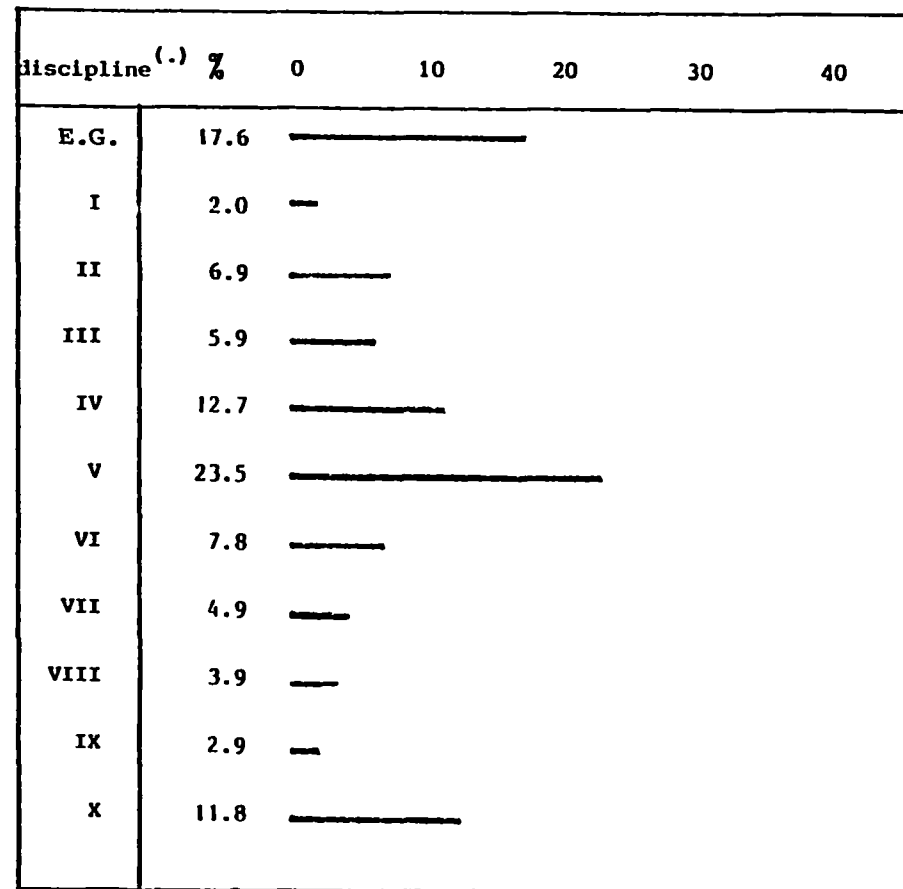
Pays :

Afrique du Sud (2), Bénin, Rép. pop. du (3), Côte d'Ivoire (2), Kenya (1), Nigéria (3), Tanzanie (2).

Figure 4b :

Sujets d'étude

ASIE, ASIE DU SUD-EST, PACIFIQUE



Nombre de réponses reçues : 30

Pays :

Australie (13), Inde (4), Indonésie (1), Malaisie (1), Nouvelle-Zélande (4), Papouasie-Nouvelle-Guinée (1), Philippines (1), Sri Lanka (1), Thaïlande (3).

Figure 4c :

Sujets d'étude

EUROPE (y compris la Méditerranée, la mer Caspienne, la mer Noire et la mer Rouge)

discipline (.)	%	0	10	20	30	40
E.G.	15.4	_____				
I	2.0	—				
II	4.6	_____				
III	7.2	_____				
IV	11.8	_____				
V	26.2	_____				
VI	11.3	_____				
VII	4.6	_____				
VIII	6.7	_____				
IX	3.1	—				
X	7.1	_____				

52

Figure 4d :

Sujets d'étude

AMERIQUE DU NORD

discipline (.)	%	0	10	20	30	40
E.G.	9.3	_____				
I	2.7	—				
II	10.7	_____				
III	6.7	_____				
IV	13.3	_____				
V	28.0	_____				
VI	n.e.					
VII	1.3	—				
VIII	14.7	_____				
IX	1.3					
X	12.0	_____				

Nombre de réponses reçues : 62

Pays :

Allemagne, Rép. féd. d' (3), Arabie saoudite (1), Belgique (2), Danemark (3), Egypte (2), Espagne (1), Finlande (1), France (9), Irlande (5), Israël (3), Italie (8), Norvège (2), Pays-Bas (7), Portugal (1), Roumanie (1), Royaume-Uni (8), Suède (1), Tunisie (3), Turquie (1).

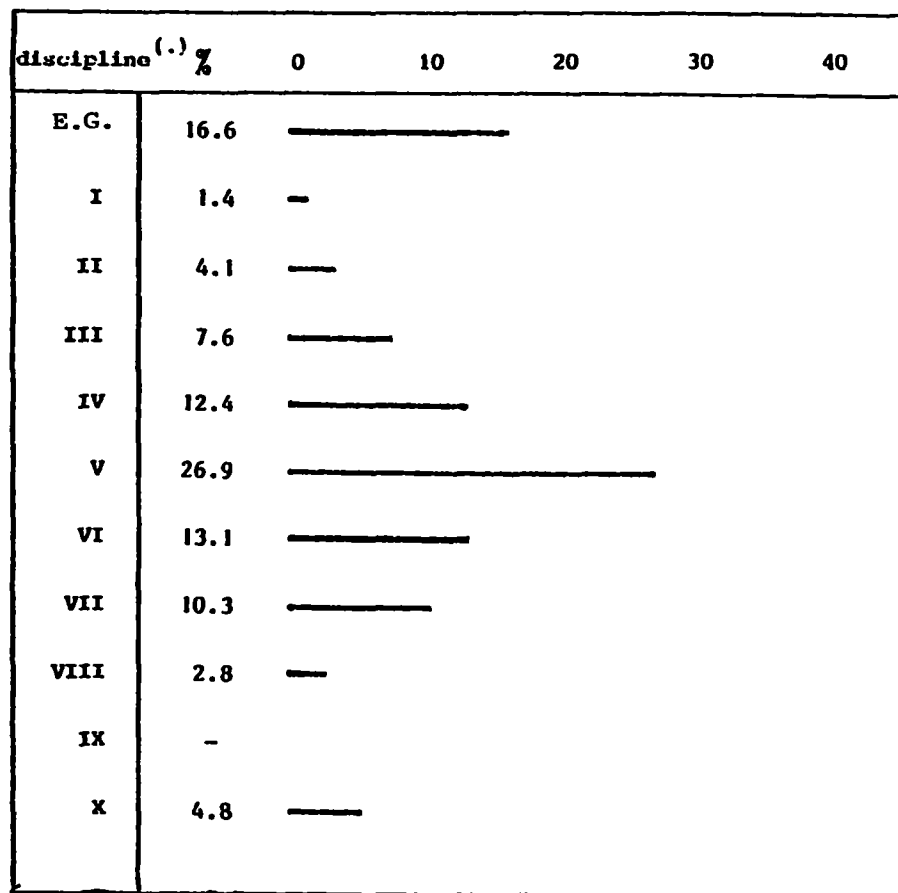
Nombre de réponses reçues : 27

Pays :

Bermudes (1), Canada (1), Etats-Unis d'Amérique (25).

Figure 4e :

Sujets d'étude
AMERIQUE LATINE ET CARAIBES



Nombre de réponses reçues : 49

Pays :

Antilles néerlandaises (1), Brésil (6), Colombie (5),
Costa Rica (2), El Salvador (1), Equateur (2), Guatemala (1),
Honduras (1), Jamaïque (2), Mexique (22), Nicaragua (1),
Panama (1), Venezuela(4).

Figure 5a : Interrelations entre les dix disciplines principales et l'“étude générale” pour l'Europe

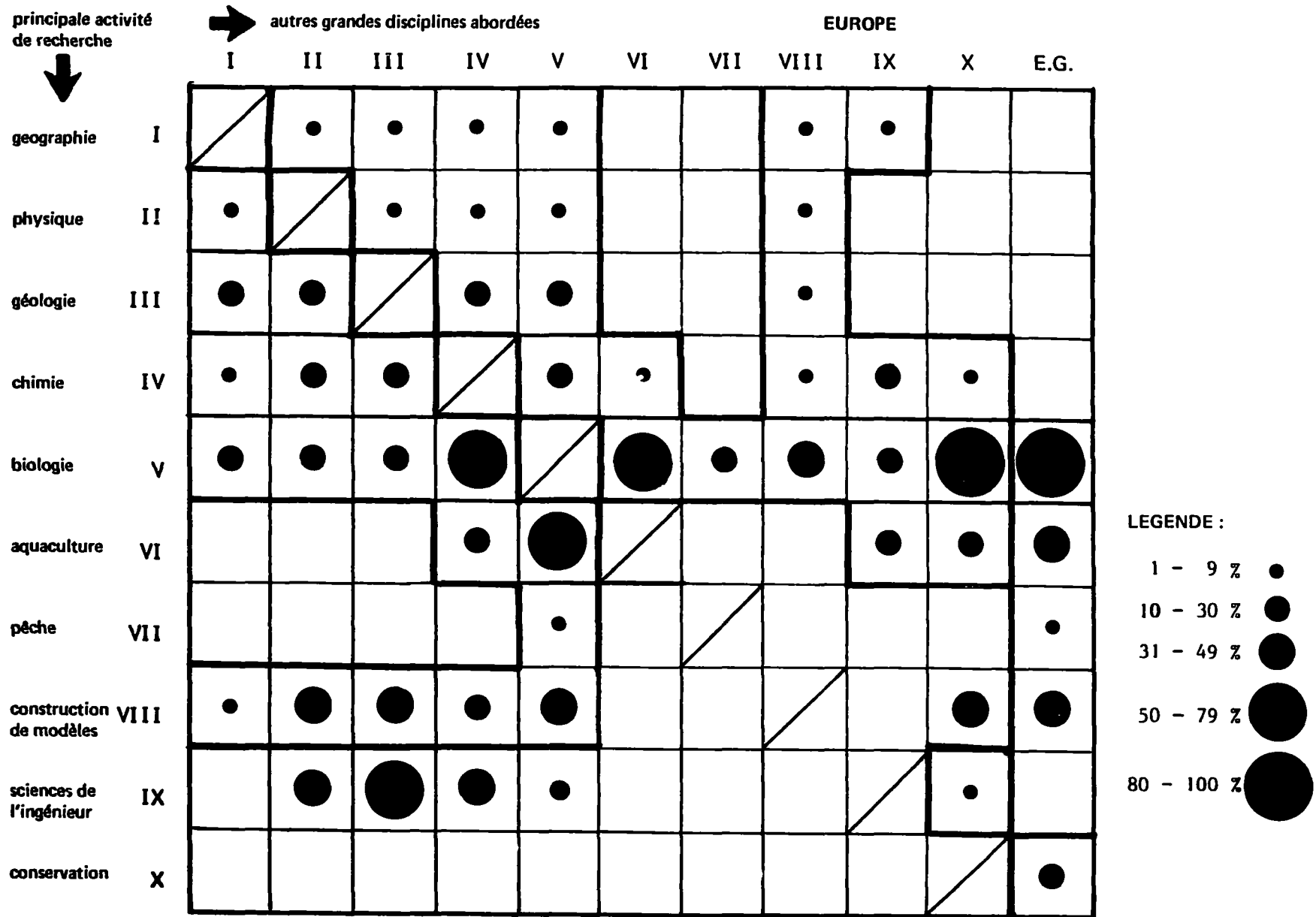


Figure 5b : Interrelations entre les dix disciplines principales et l' "étude générale" pour l'Amérique du Nord

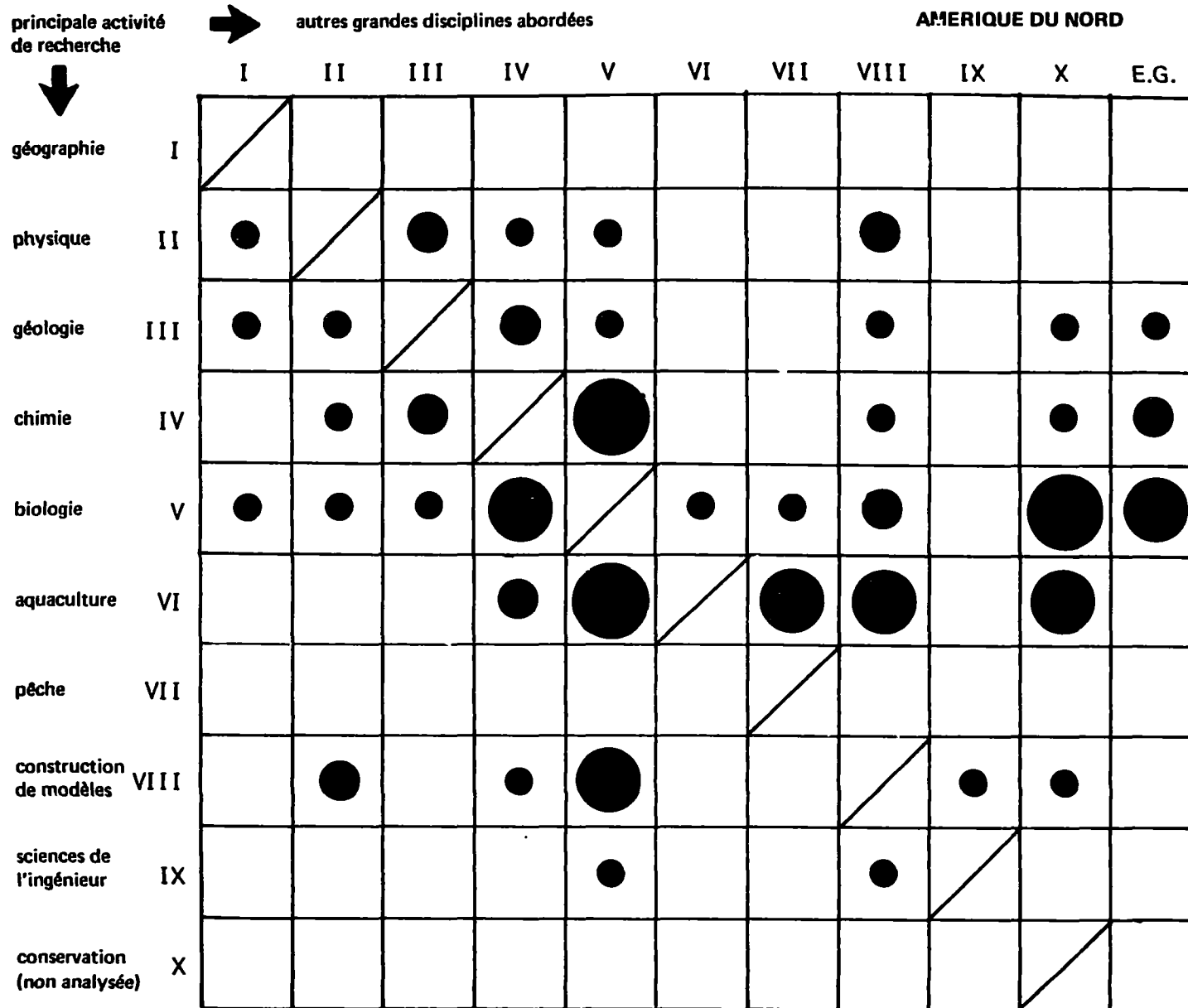


Figure 5c : Interrelations entre les dix disciplines principales et l' "étude générale" pour l'Asie, l'Asie du Sud-Est et le Pacifique

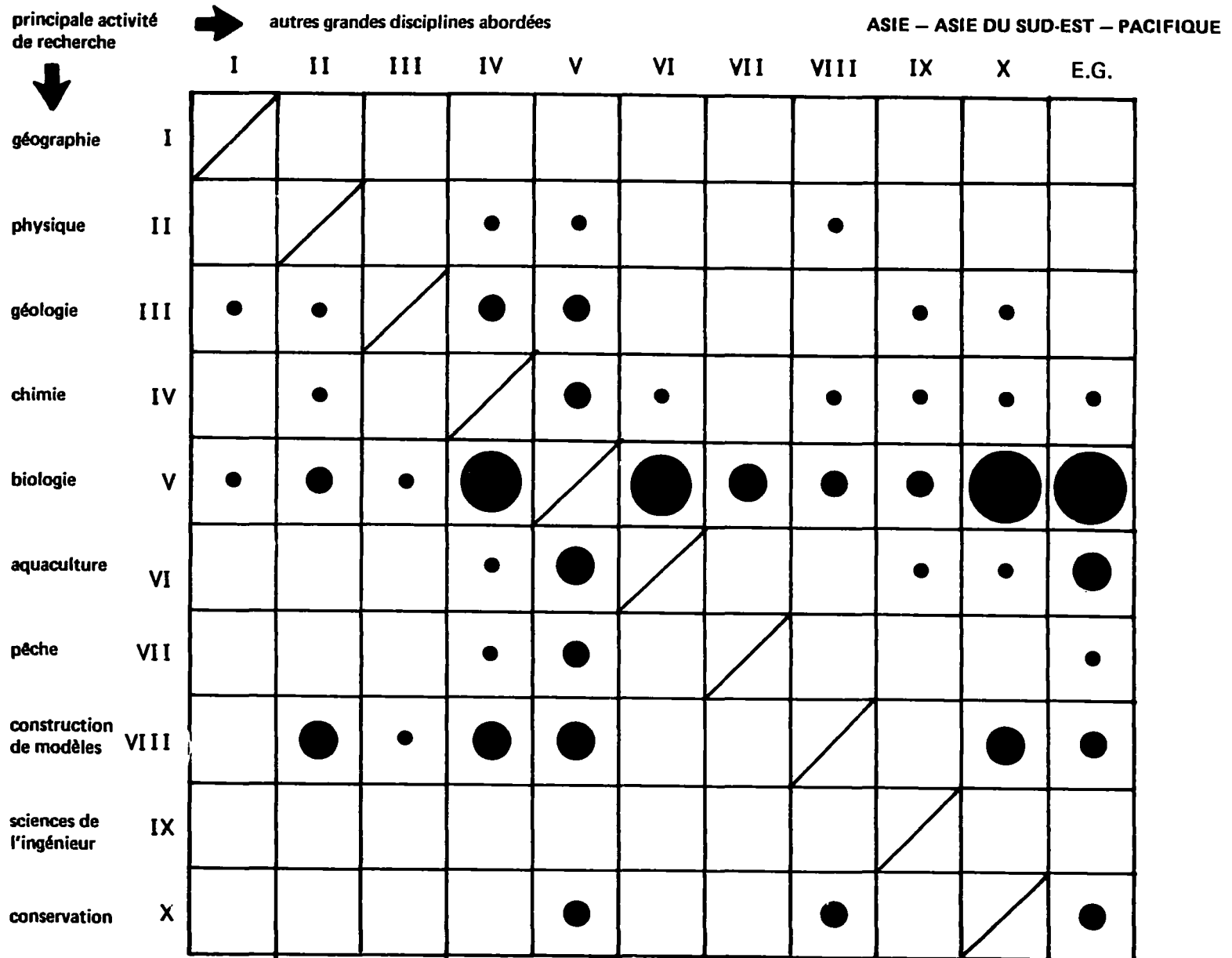


Figure 5d : Interrelations entre les dix disciplines principales et l' "étude générale" pour l'Amérique latine et les Caraïbes

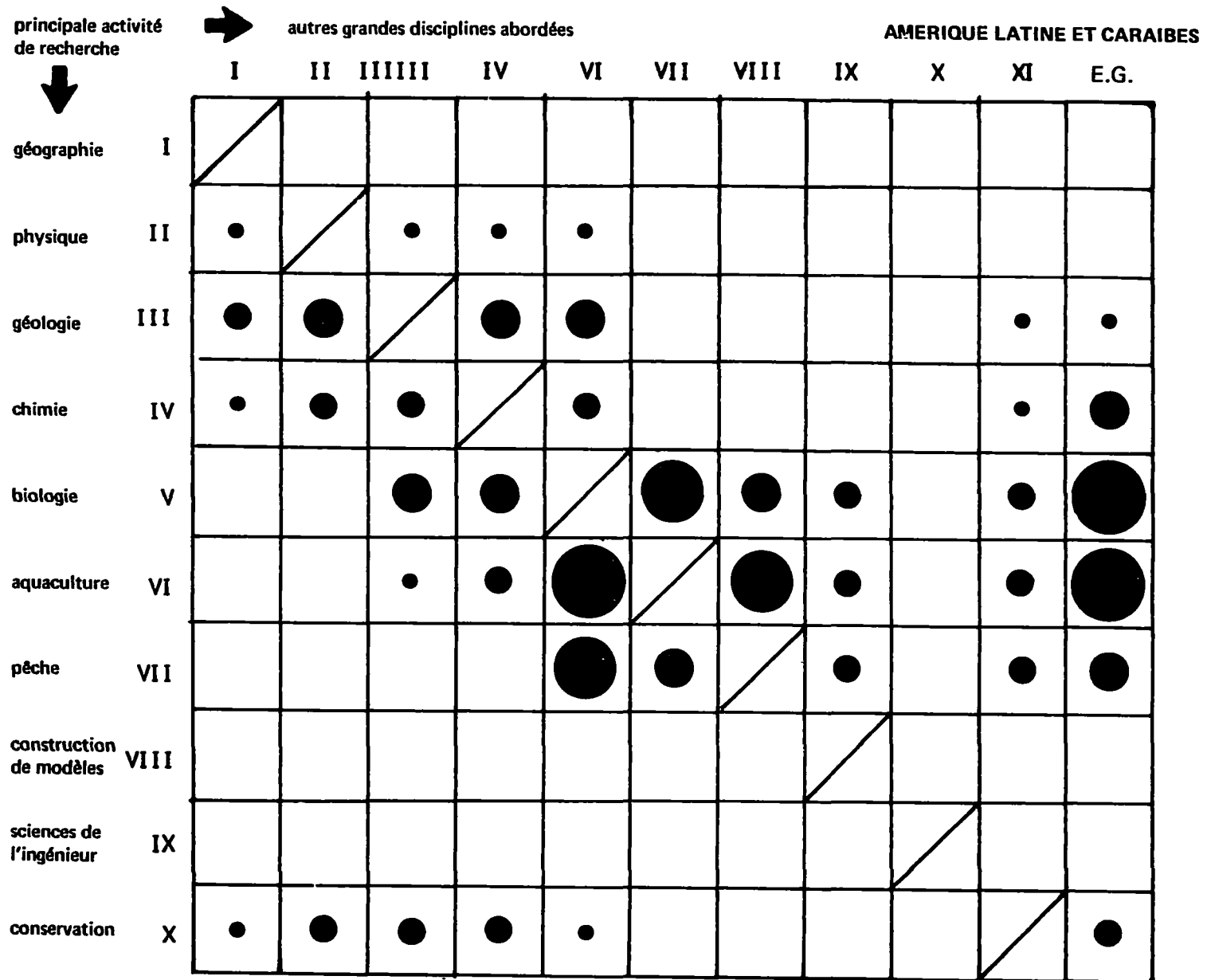


Figure 5a : Interrelations entre les dix disciplines principales et l'“étude générale” pour l'Afrique

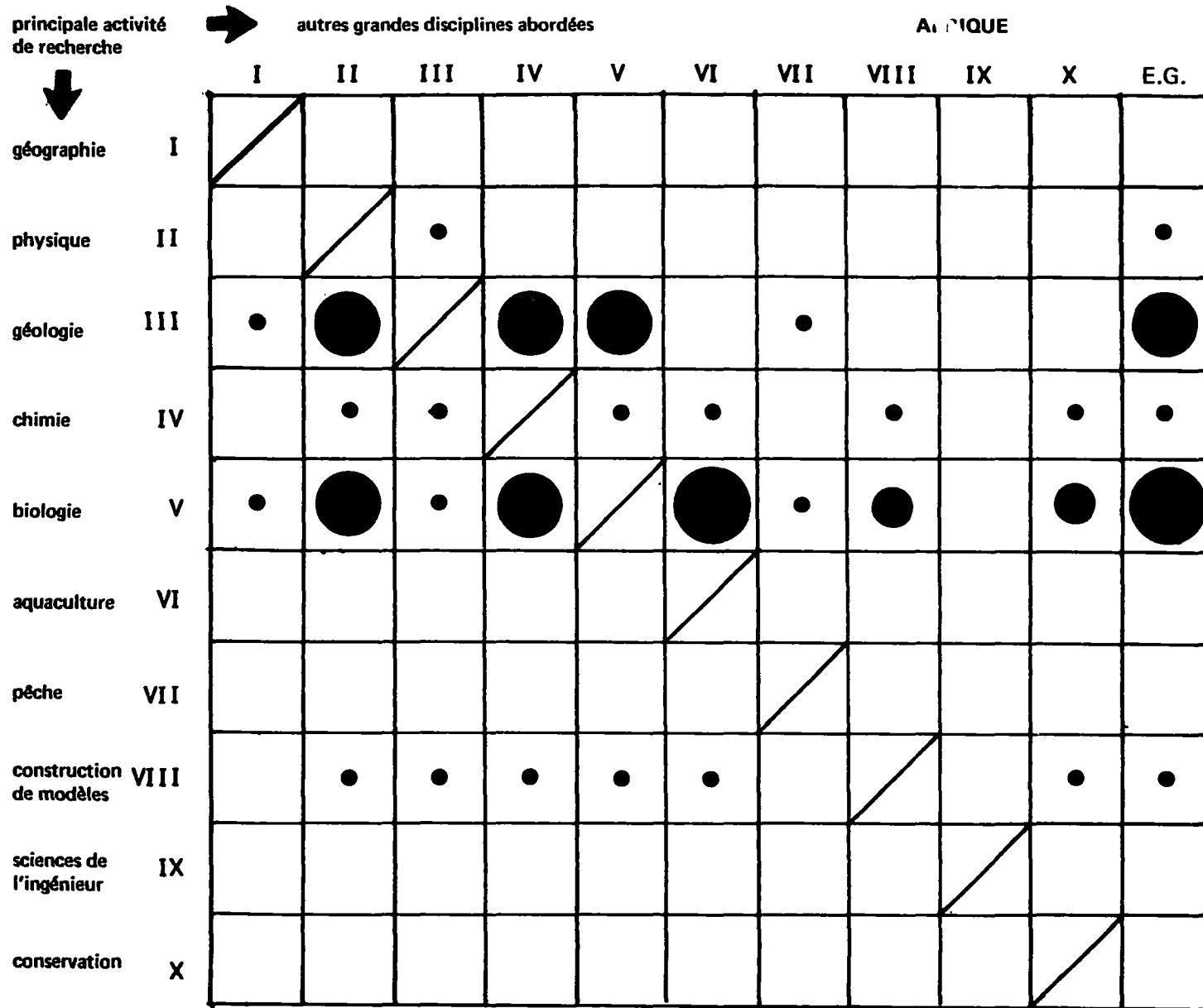


Figure 6 : Récapitulation des thèmes de recherche figurant sous la rubrique "biologie"

Liste des sujets d'étude figurant sous la rubrique "biologie"

<u>groupe 1 :</u>	<u>groupe 2 :</u>	<u>groupe 3 :</u>
<u>études d'organismes</u>	<u>études descriptives</u>	<u>études de systèmes</u>
phytoplancton	taxonomie	endocrinologie
zooplancton	cycle biologique	génétique
meroplancton	embryologie	dynamique des populations
microbenthos	sérologie	structure des communautés
meiobenthos	pathologie	chaînes alimentaires
macrobenthos	parasitologie	écologie physiologique
poissons	relations animaux-sédiments	physiologie et biochimie
bactéries	espèces indicatrices	cycle des substances nutritives
microflore	biomasse	utilisation des matières organiques
halophytes	microbiologie	métabolisme
	production de matières détritiques	bilan énergétique
		productivité
		eutrophisation
		effets des polluants
		construction de modèles

Les sujets les plus fréquemment cités (fréquence de 100 à 60 %) dans les trois groupes sont les suivants :

groupe 1 : études d'organismes

AFRIQUE	ASIE	PACIFIQUE	EUROPE	AMERIQUE LATINE	AMERIQUE DU NORD
macrobenthos poissons	phytoplancton zooplancton	phytoplancton macrobenthos halophytes poissons	macro- benthos poissons zooplancton phyto- plancton meiobenthos	phytoplancton cycle bio- logique macrobenthos	macrobenthos phytoplancton zooplancton bactéries

groupe 2 : études descriptives

AFRIQUE	ASIE	PACIFIQUE	EUROPE	AMERIQUE LATINE	AMERIQUE DU NORD
biomasse	biomasse	espèces indicat. biomasse rel. anim.- sédim.	rel. anim.- sédim. biomasse cycle bio- logique espèces indicat.	biomasse cycle bio- logique	matières détritiques biomasse rel. anim.- sédim. espèces indicatrices

groupe 3 : études de systèmes

AFRIQUE	ASIE	PACIFIQUE	EUROPE	AMERIQUE LATINE	AMERIQUE DU NORD
chaînes alimentaires	productivité dynamique des popu- lations	dynamique des populations structure des communautés productivité	dynamique des popu- lations structure des com- munautés écologie physio- logique bilan énergé- tique utilisation des mat. organiques	dynamique des populations productivité chaînes ali- mentaires	structure des communautés productivité cycle des substances nutritives utilisation des matières orga- niques dynamique des populations écologie physio- logique

A titre d'exemple, on a analysé les thèmes de recherches choisis lorsque le domaine d'étude principal indiqué était "la biologie". Cette analyse a porté sur 36 thèmes de recherche (Figure 6) répartis en trois groupes : (1) les organismes étudiés, (2) les études descriptives et (3) les études de systématiques, y compris la construction de modèles d'écosystèmes. Les résultats de cette analyse sont résumés dans les Figures 7 à 9.

(d) Affinités entre les thèmes de recherches (discipline "biologie")

Les diagrammes en treillis des Figures 10 et 11 montrent, à titre d'exemple, les rapports d'affinité existant entre (a) l'étude des types d'organismes, (b) les études descriptives et (c) les études de systématiques.

Remarque. Les études descriptives sont considérées ici comme des paramètres décrivant la structure et les études de systèmes comme des paramètres décrivant le fonctionnement.

La corrélation entre les groupes a), b) et c) est faible dans le cas des programmes nouvellement mis en place ; elle est au contraire forte dans le cas des programmes les plus anciens.

8. CONCLUSIONS

Durant ces dernières années, le souci de préserver les écosystèmes côtiers humides a amené à reconsidérer la valeur et les ressources de ces milieux parmi lesquels on range les zones de deltas, les lagunes côtières et les estuaires (voir, par exemple, le Projet 5 du Programme sur l'homme et la biosphère¹), et l'intérêt des lagunes côtières pour la pêche et la mariculture est maintenant largement reconnu.

L'une des principales conclusions à tirer de l'enquête menée sur les lagunes côtières est que l'infrastructure scientifique dont disposent un grand nombre des pays intéressés devrait leur permettre de coopérer à des recherches dans ce domaine. Toutefois, de l'avis général des directeurs de projets ayant répondu à l'enquête, la connaissance des lagunes côtières n'est pas aussi complète qu'elle devrait l'être. Par ailleurs, il a été proposé de retenir pour thèmes essentiels de recherches futures l'étude des variations saisonnières et l'analyse comparée des variations dans l'espace du fonctionnement global des écosystèmes lagunaires, analyse qui devrait faire l'objet d'une coopération internationale.

Les programmes de recherches coordonnés sur les lagunes côtières devrait notamment avoir pour but d'en donner une description générale, qui tienne compte du plus grand nombre possible d'informations. On s'attacherait par exemple à étudier les flux d'alluvions traversant les lagunes, la nature et les propriétés des sédiments, les mécanismes de productions biologiques ainsi que les caractéristiques démographiques et adaptatives des espèces. Il faudrait à cet effet aborder l'étude des lagunes côtières considérées comme des systèmes écologiques sous un angle multidisciplinaire et comparer la production, la consommation et le recyclage des matières dissoutes et des particules en suspension d'un système à l'autre.

1. Programme sur l'homme et la biosphère (MAB). Groupe de travail international sur le Projet 5 : Effets écologiques des activités humaines sur la valeur et les ressources des lacs, marais, cours d'eau, deltas, estuaires et zones côtières. Rapport final. Rapport n° 21, série des rapports du MAB. Unesco, 1975. 88 pages.

Figure 7 : Thèmes de recherche choisis figurant sous la rubrique "biologie" : études d'organismes
 (le chiffre entre parenthèses indique le nombre de programmes analysés)

	(5)	(10)	(10)	(27)	(17)	(16)
fréquence (en pour- centage)	AFRIQUE	ASIE	PACIFIQUE	EUROPE	AMERIQUE LATINE	AMERIQUE DU NORD
100-60 %	macrobenthos poissons	phytoplancton zooplancton	phytoplancton macrobenthos halophytes poissons	macrobenthos poissons zooplancton phytoplancton meiobenthos	phytoplancton zooplancton macrobenthos	macrobenthos phytoplancton zooplancton meiobenthos bactéries
59-40 %	zooplancton meroplancton bactéries	macrobenthos halophytes poissons bactéries	zooplancton bactéries microflore meiobenthos	bactéries microbenthos microflore halophytes	poissons	halophytes poissons microflore microbenthos meroplancton
39-20 %	phytoplancton meiobenthos	meroplancton meiobenthos	meroplancton microbenthos	meroplancton	microbenthos halophytes	
moins de 20 %	halophytes microflore microbenthos	microbenthos microflore			meroplancton microflore bactéries meiobenthos	

Figure 8 : Thèmes de recherche figurant sous la rubrique "biologie" : études descriptives

(le chiffre entre parenthèses indique le nombre de programmes analysés)

	(5)	(10)	(10)	(27)	(17)	(16)
fréquence (en pour- centage)	AFRIQUE	ASIE	PACIFIQUE	EUROPE	AMERIQUE LATINE	AMERIQUE DU NORD
100-60 %	biomasse	biomasse	espèces indicat. biomasse rel. anim.-sédim.	rel. anim.-sédim. biomasse cycle biologique espèces indicat.	biomasse cycle biologique	production de matières détritiques biomasse rel. anim.-sédim. espèces indicat.
59-40 %	rel. anim.-sédim. espèces indicat. production de matières détritiques	microbiologie production de matières détritiques	microbiologie production de matières détritiques	taxonomie production de matières détritiques microbiologie	taxonomie rel. anim.-sédim. production de matières détritiques	microbiologie cycle biologique
39-20 %	microbiologie cycle biologique	taxonomie cycle bio- logique rel. anim.- sédim. parasitologie sérologie- hématologie	taxonomie cycle bio- logique	embryologie	microbiologie	embryologie taxonomie
moins de 20 %	taxonomie	embryologie pathologie	embryologie pathologie	parasitologie pathologie sérologie- hématologie	embryologie pathologie parasitologie sérologie- hématologie	parasitologie pathologie sérologie- hématologie

Figure 9 : Thèmes de recherche figurant sous la rubrique "biologie" : études de systèmes
 (le chiffre entre parenthèses indique le nombre de programmes analysés)

	(5)	(10)	(10)	(27)	(17)	(16)
fréquence (en pour- centage)	AFRIQUE	ASIE	PACIFIQUE	EUROPE	AMERIQUE LATINE	AMERIQUE DU NORD
100-60 %		productivité dynamique des populations chaînes ali- mentaires	dynamique des populations structure des communautés productivité chaînes ali- mentaires	dynamique des populations structure des communautés écologie physio- logique bilan éner- gétique productivité	productivité dynamique des populations chaînes ali- mentaires	structure des communautés productivité cycle des subst. nutritives utilisation des mat. organiques écologie physio- logiques chaînes ali- mentaires
59-40 %	cycle des subst. nutritives bilan énergétique polluants chaînes alimen- taires	structure des communautés cycle des subst. nutritives eutrophisation écologie physiologique	construction de modèles cycle des subst. nutritives	chaînes ali- mentaires cycle des subst. nutritives eutrophisation polluants construction de modèles	cycle des subst. nutritives utilisation des mat. organiques structure des communautés eutrophisation	eutrophisation dynamique des populations métabolisme polluants construction de modèles
39-20 %	dynamique des populations structure des communautés utilisation des mat. organiques eutrophisation	utilisation des mat. organiques polluants construction de modèles physiologie et biochimie	utilisation des mat. organiques polluants eutrophisation métabolisme écologie physio- logique	métabolisme génétique physiologie et biochimie endocrinologie	écologie physio- logique bilan énergétique polluants	bilan énergétique génétique physiologie et biochimie endocrinologie
moins de 20 %	construction de modèles	bilan énergé- tique métabolisme endocrinologie	bilan énergé- tique		physiologie et biochimie construction de modèles	

Fig. 10 : Affinités entre les thèmes de recherche relevant de la rubrique "biologie" (diagramme en treillis). Exemple d'un programme de recherches approfondies.

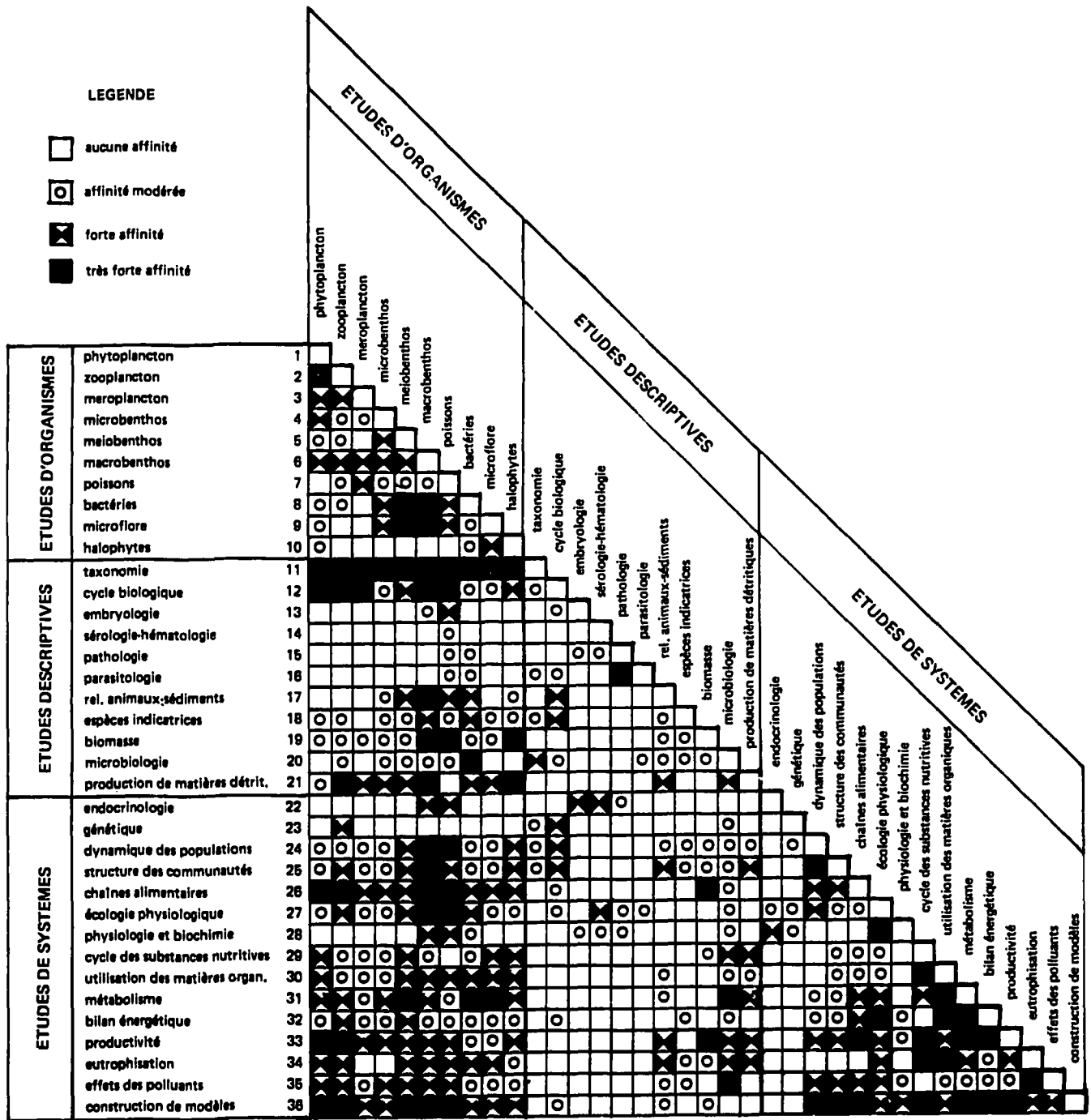
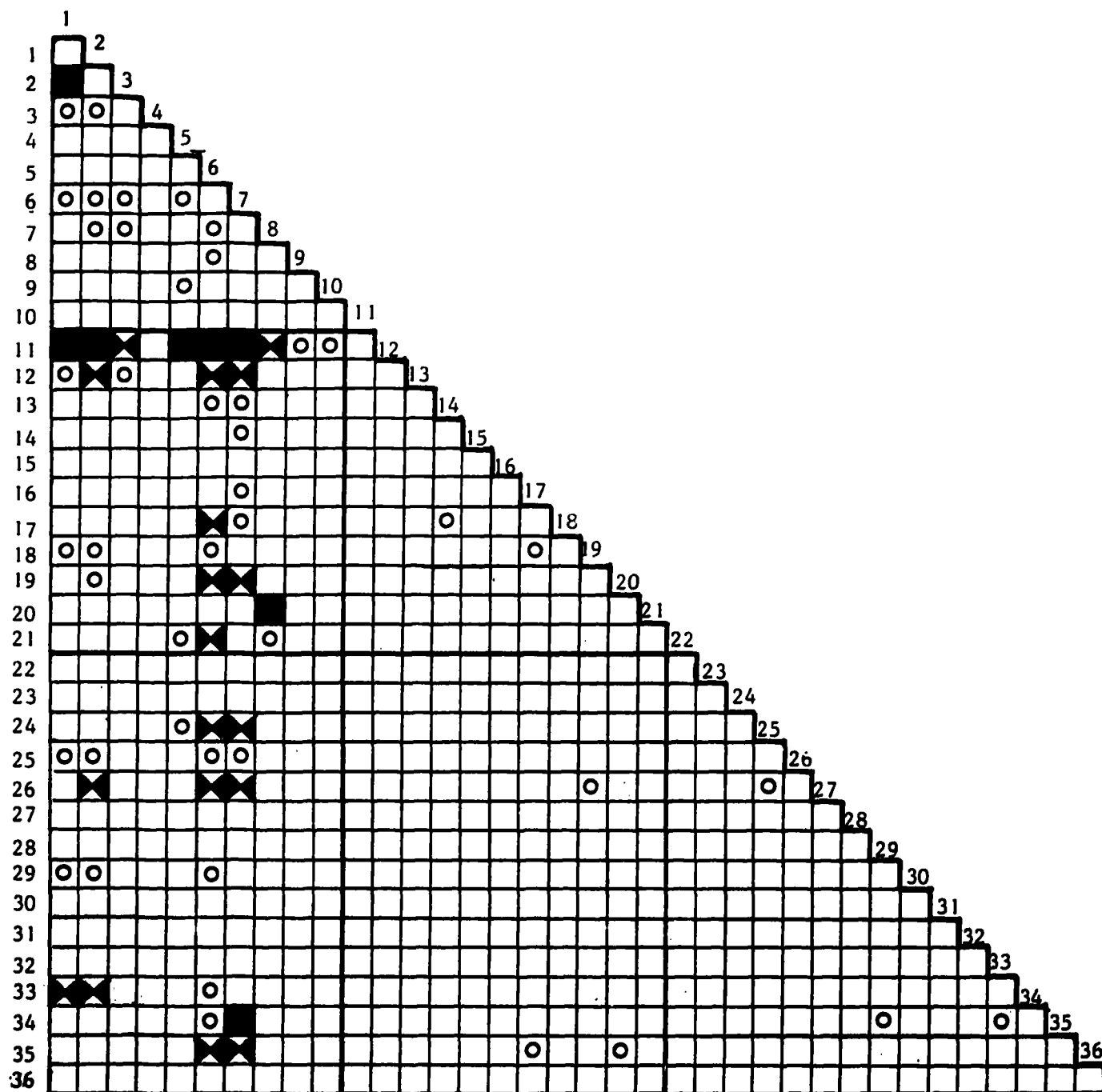


Fig. 11 : Affinités entre les thèmes de recherche relevant de la rubrique "biologie"
 (diagramme en treillis). Exemple d'un programme de recherches nouveaux.



1. INTRODUCCION

Las lagunas costeras y los deltas constituyen zonas de transición del litoral entre el mar y la tierra firme que obedecen a la acción de complejas leyes físicas. Cada uno de ellos constituye un medio ambiente único, sobre todo en virtud de las condiciones especiales de su hidrodinámica y sedimentación. Son lugares de acumulación activa y presentan situaciones de abrigo, cuyos efectos se perciben en las propiedades geoquímicas y la naturaleza de los sedimentos y en su elevada riqueza potencial de recursos biológicos.

En una descripción general, una laguna costera es una masa de agua semicerrada y conectada con el mar abierto por entradas a través de un sistema de barreras (físicas, químicas, hidrodinámicas). Las lagunas costeras figuran entre los sistemas litorales más fértiles. Se las encuentra en la ribera de los estuarios, a lo largo de las costas, en los golfos ciegos o en las bahías, en latitudes tropicales templadas y frías. Puede apreciarse su diversidad por la cantidad de términos que se usan para denotar la ubicación geográfica de los estudios que figuran en el directorio.

El agua y los materiales aluviales pueden quedar atrapados en la laguna o salir a las aguas abiertas del océano, de un estuario importante, o de una bahía. Las escorrentías de una laguna pueden influir de manera importante en el medio ambiente local y regional y junto con los sistemas de corrientes y los flujos costeros de nutrientes contribuyen a determinar la productividad local de las aguas costeras.

Las lagunas costeras albergan muchas especies locales de importancia económica y también sirven como lugares de desove y cría para las especies migratorias. En su ciclo vital, muchas especies de peces, crustáceos y moluscos pasan por las lagunas costeras. En muchas zonas las lagunas proporcionan condiciones muy propicias para desarrollar la producción controlada de organismos marinos.

Los depósitos de las lagunas constituyen a menudo, fuentes accesibles de materiales básicos (sales y otros productos químicos) para uso industrial. Cuando tienen la profundidad suficiente, las lagunas pueden albergar puertos y canales navegables. Por estas circunstancias, pueden contribuir en forma indirecta al asentamiento de centros de población y urbanización. En las zonas remotas, las lagunas costeras pueden constituir santuarios ecológicos o servir para el turismo y el recreo.

Desde hace muchos siglos se emplean las lagunas costeras para la pesca y la cría de formas larvales y adultas de peces, moluscos y crustáceos. Dichos usos humanos se han integrado a menudo en forma sumamente armoniosa con los contextos tradicionales socioeconómicos, por ejemplo, en el Asia sudoriental.

En los últimos años, el deseo justificado de explotar de manera intensiva los productos vivos y recursos no vivientes de dichos sistemas ha dado origen a muchos proyectos de explotación de las lagunas costeras.

La comunidad científica ha señalado en forma unánime que muchas veces dichos proyectos podrían ocasionar daños graves y permanentes a un tipo de medio ambiente costero que es indispensable preservar. Muchas veces, la explotación racional de estas zonas a menudo contaminadas sólo puede llevarse a cabo si se ejecutan al mismo tiempo operaciones de salvaguardia destinadas a restaurar su estado original. Por ejemplo, la cría de ostras, mejillones y peces no se puede desarrollar en forma adecuada, si no se preserva el medio ambiente de la contaminación química. Los proyectos de desarrollo económico deberían iniciarse sólo cuando el equilibrio natural ecológico del medio ambiente y su potencial de producción se comprenden y protegen en forma adecuada.

2. OBJETO DEL ESTUDIO

En 1974, a petición de la División de Ciencias del Mar de la Unesco, el Comité Científico de Investigaciones Oceánicas (SCOR) estableció un grupo consultivo especial SCOR/Unesco sobre lagunas costeras¹⁾ al que se confió la tarea de examinar el estado de los conocimientos relativos a los sistemas de lagunas en las regiones templadas y tropicales. Entre otras, el Grupo recibió la recomendación de compilar los programas existentes de investigación de lagunas costeras como paso esencial para desarrollar el marco en el que pudieran planificarse las futuras actividades.

En los dos años que siguieron, el Grupo examinó los programas de investigación que se llevaban a cabo en los laboratorios e instituciones especializadas de todo el mundo. Hecho sorprendente, se recibieron cerca de 200 programas para su estudio. Este resultado constituye un claro indicio del creciente interés que se manifiesta por la investigación de las lagunas costeras.

La encuesta que llevó a cabo el Grupo tiene por objeto compilar y evaluar este interés sobre la base de la información recogida por medio de los documentos: "SCOR/Unesco SCE/9/Circ.5" (formularios I a III) y "SCOR/Unesco SCE/9/Circ.9" (form. IV), que figuran en el Anexo I²⁾. El primer documento enumeró las disciplinas principales y 93 temas específicos, pidiendo a los directores de los proyectos que indicaran en cuáles temas y disciplinas estaban trabajando. También se requirieron otras informaciones, como el nombre de la(s) laguna(s), una breve descripción de la investigación, la ubicación geográfica y las principales referencias bibliográficas. El primer documento fue enviado entre junio de 1976 y julio de 1977 a más de 400 instituciones de investigación, científicos y administraciones sobre la base de una lista de nombres y direcciones preparada por el Grupo.

En febrero de 1977 se aprobó el segundo documento (formulario IV) y se envió a todas las personas que habían respondido, y también a las que no habían respondido, como recordatorio. El formulario IV pedía informaciones más específicas sobre la ubicación geográfica de las lagunas costeras, incluyendo latitud y longitud, superficie, referencias de los documentos e informes científicos disponibles, así como datos relativos a los programas de formación de nivel universitario. También se pedía que se respondiera a la siguiente pregunta: ¿Cuál debería ser el mandato de un grupo de trabajo de investigación de lagunas costeras y/o de un grupo de trabajo sobre el ordenamiento de lagunas costeras?

El Grupo consultivo especial SCOR/Unesco sobre lagunas costeras, estima que uno de los resultados fundamentales del presente estudio debe ser el incremento de la circulación de informaciones entre los científicos que en diversos lugares llevan a cabo investigaciones análogas y complementarias. Por este motivo han sido incluidos en este documento los programas de investigación y sus directores científicos. Se ha procurado incluir en el directorio a todo el personal profesional mencionado en las respuestas recibidas.

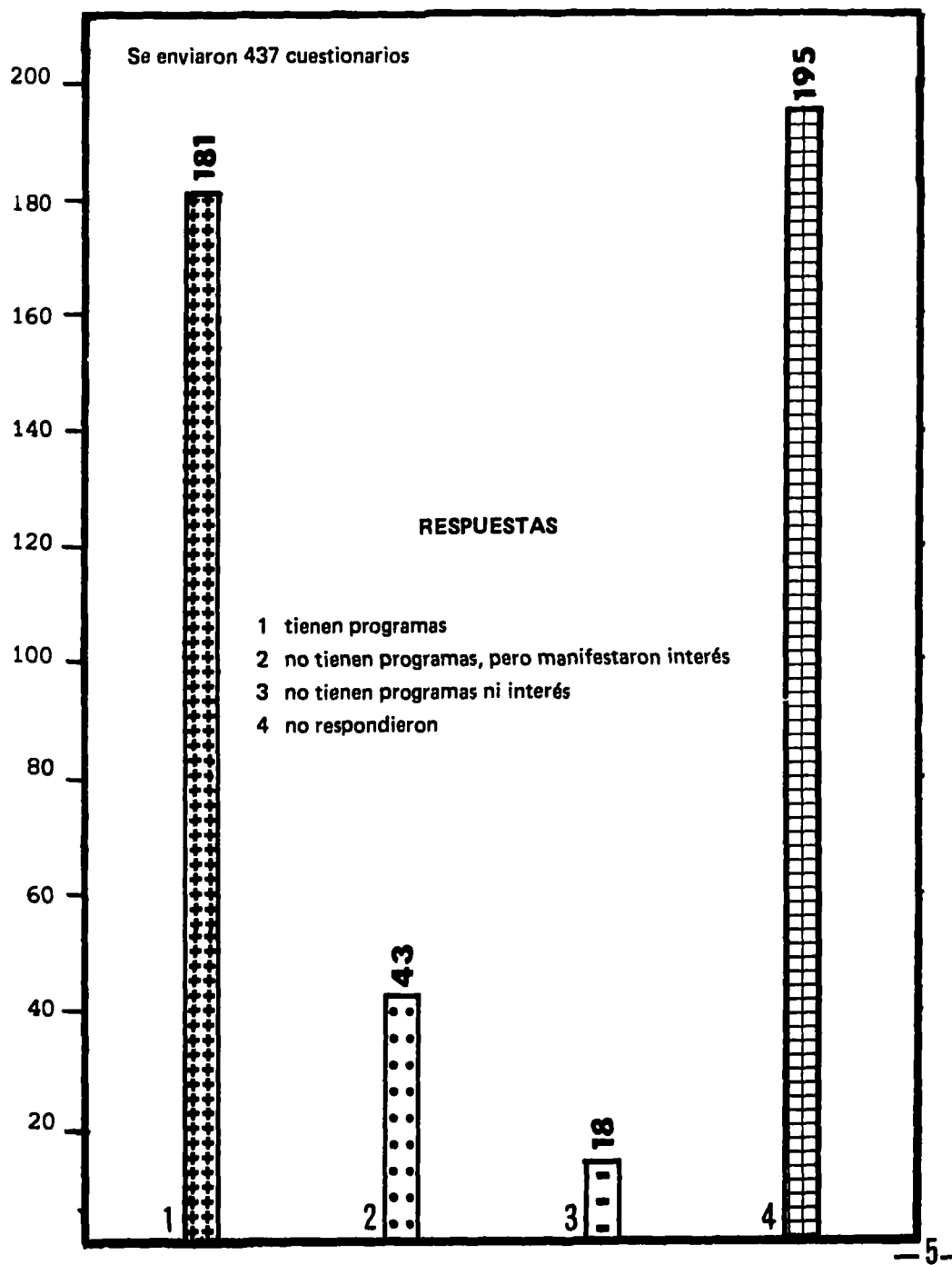
3. RESPUESTAS Y DISTRIBUCION (Figura 1)

Se enviaron en total 437 cuestionarios. A mediados de mayo de 1978 se habían recibido de vuelta 242 de los cuales 224 (92,6%) indicaban interés en la investigación: (74,8%) tenían programas en curso y 43 (30,9%) no los tenían, pero expresaban su interés por el tema. Las restantes 18 respuestas (7,4%) eran negativas (no tenían programas en curso ni interés).

1) Son miembros del Grupo: A. Ayala-Castañares, B. D'Arglejan, P. Lasserre, C.I.O. Olaniyan y F.B. Phleger.

2) Ver páginas 30-41.

Figura 1



4. ORIGEN DE LOS FONDOS

Los programas y proyectos de investigación de lagunas costeras se financian sobre todo con fondos públicos. Un porcentaje considerable de las investigaciones se llevan a cabo en las instituciones universitarias y sus órganos afiliados y reciben en su mayoría fondos gubernamentales. Un 6% aproximadamente de los proyectos de investigación se llevan a cabo sobre la base de una cooperación bilateral o multilateral (véase la Figura 2).

Figura 2: ORIGEN DE LOS FONDOS

Organo intergubernamental (bi o multilateral)	5,8%
Organo gubernamental (excluidas las universidades)	54,2%
Universidades (estatales y privadas)	36,7%
Firmas privadas, fundaciones	3,2%
Organo no especificado	0,6%

5. INTERES MUNDIAL E IMPLICACIONES LOGISTICAS

El desarrollo de los programas de investigación en el mundo depende en gran medida de las infraestructuras educativas existentes. El directorio anexo incluye 181 programas/proyectos de investigación de lagunas costeras, clasificándolos de acuerdo con las instituciones y organizaciones a las que están asociados. También se mencionan los temas de interés y la jerarquía de los directores de los proyectos. De este modo, el directorio pone en evidencia el nivel y tipo de conocimientos técnicos que poseen los 52 países estudiados. Las respuestas fueron analizadas sobre la base de la siguiente distribución regional:

- A) Africa (excluidos el Mediterráneo y el Mar Rojo).
- B) Asia, Asia sudoriental y el Pacífico.
- C) Europa (incluyendo los mares Mediterráneo, Caspio, Negro y Rojo).
- D) América Latina y el Caribe.
- E) América del Norte.

Las mencionadas regiones geográficas fueron establecidas de manera que correspondieran a las principales zonas de lagunas de las diferentes latitudes. Las respuestas relativas a los programas activos de investigación de lagunas (Figura 3) se distribuyen de la siguiente manera:

Región A : 11 programas (6,1%)
Región B : 30 programas (16,7%)
Región C : 64 programas (35,6%)
Región D : 49 programas (27,2%)
Región E : 27 programas (15,0%)

Como grupo, los países en desarrollo comienzan a establecer programas de investigación con un interés a largo plazo. Algunos países consideran los sistemas de lagunas como una unidad de planeamiento de programas globales de investigación.

México, por ejemplo, es uno de los más activos. La Universidad Nacional Autónoma de México (UNAM) organizó en 1967 y en 1977 sendos seminarios sobre las lagunas costeras. Dicho país (con 22 programas en curso que figuran en el presente directorio) ha desarrollado una amplia infraestructura educativa de ciencias del mar en apoyo de las investigaciones costeras.

Los seminarios subregionales de ciencias del mar en el Mediterráneo oriental, la zona del Golfo, el Mediterráneo occidental y la región del Asia sudoriental, se han ocupado todos en sus recomendaciones de las lagunas costeras.

La índole de los problemas científicos mencionados en el presente informe requiere una investigación adicional en torno a la física, la geología, la química y la biología de las lagunas costeras. Algunos de estos problemas podrían resolverse en un tiempo relativamente corto (por ejemplo, en dos o tres años), sobre todo si se estudiaran en forma internacionalmente coordinada. En cambio, se debe considerar que otros programas tienen una duración indefinida: por ejemplo, la ecología comparada de dos lagunas similares en latitudes diferentes. Por este motivo, no habría que descuidar el factor cronológico, ya que se trata de intereses a largo plazo y que muchos países carecen de una infraestructura educativa bien desarrollada.

Las respuestas enviadas al cuestionario SCOR/Unesco sobre lagunas costeras ponen en evidencia que se cuenta con un núcleo suficiente de laboratorios geográficamente bien distribuidos para llevar a cabo un programa mínimo sobre el terreno. Se podrían equipar otros laboratorios que se ocuparían de cuestiones especializadas -pero importantes- que contribuyen a los objetivos generales de los programas. Otro aspecto positivo es que ya existen en las cinco regiones escuelas de investigación y programas de estudios universitarios que permiten obtener la formación necesaria para la investigación de las lagunas.

El seminario multidisciplinario celebrado bajo los auspicios de la Unesco, la Asociación Internacional de Oceanografía Biológica (AIOB) y la Universidad de Duke (Beaufort, N.C., Estados Unidos de América, 28 de agosto - 2 de septiembre de 1978) pone de manifiesto cómo se pueden establecer las directrices de las investigaciones futuras en el marco de una cooperación regional de acuerdo con los planes de la Unesco. El informe del seminario se publicará en la serie Documentos Técnicos de la Unesco sobre Ciencias del Mar con el Nº 32 y se enviará a todos los destinatarios del presente estudio.

6. PROPUESTAS DE COOPERACION INTERNACIONAL

La mayoría de las respuestas al formulario IV (véase el Anexo I) son muy favorables a la creación de grupos de trabajo sobre la investigación y el ordenamiento de las lagunas costeras.

A la pregunta, "¿Cuál debería ser a su juicio el mandato de:

- a) un grupo de trabajo de investigación de lagunas costeras?,
- b) un grupo de trabajo sobre ordenamiento de lagunas costeras?",

se recibieron respuestas cuyo tenor puede ejemplificarse en las siguientes palabras de S.W. Nixon (Estados Unidos de América):

a) Grupo de trabajo de investigación de lagunas costeras

- "1. Aplicar al estudio del medio ambiente de las lagunas las técnicas de análisis de los sistemas ecológicos, incluyendo modelos numéricos.
2. Ocuparse especialmente de la interacción de los factores hidrográficos, morfológicos y geológicos en la formación de los sistemas ecológicos de las lagunas.

3. Elaborar métodos para realizar investigaciones experimentales de los ecosistemas en secciones controladas de las lagunas, o en lagunas naturales análogas; ¿se pueden preparar microcosmos de lagunas que sean de utilidad?"

b) Grupo de trabajo sobre ordenamiento de lagunas costeras

- "1. ¿Se pueden estudiar los cambios históricos de la ecología de las lagunas a través de las diversas formas de utilización del terreno en la cuenca?
2. Utilizar microcosmos de lagunas para realizar experimentos que ilustren la respuesta de los sistemas de lagunas a los diversos tipos de perturbaciones.
3. Estudiar el potencial de acuicultura en los sistemas naturales de lagunas."

Figura 3: RESPUESTAS AL CUESTIONARIO, POR PAISES¹⁾

<u>Programas en curso</u>		<u>Expresaron interés</u>		
<u>para la investigación de las lagunas costeras</u>				
Australia	13	Malasia	1	Argelia
Bélgica	2	México	22	Argentina
Benín	3	Países Bajos	7	Grecia
Bermudas	1	Antillas Neerlandesas	1	Irán
Brasil	6	Nueva Zelanda	4	República de Corea
Canadá	1	Nicaragua	1	Libia
Colombia	5	Nigeria	3	Marruecos
Costa Rica	5	Noruega	2	Perú
Dinamarca	3	Panamá	1	República Dominicana
Ecuador	2	Papua Nueva Guinea	1	Senegal
Egipto	2	Filipinas	1	Siria
El Salvador	1	Portugal	1	Trinidad y Tabago
Finlandia	1	Rumanía	1	Emiratos Arabes Unidos
Francia	9	Arabia Saudita	1	Uruguay
Alemania, Rep. Fed.	3	Sudáfrica	2	Viet Nam
Guatemala	1	España	1	Yugoslavia
Honduras	1	Sri Lanka	1	
India	4	Suecia	1	
Indonesia	1	Tanzania	2	
Irlanda	5	Tailandia	3	
Israel	3	Túnez	3	
Italia	8	Turquía	1	
Costa de Marfil	2	Reino Unido	8	
Jamaica	2	EE.UU.	25	
Japón	1	Venezuela	4	
Kenya	1			

1) Por razones prácticas, se mantiene el orden alfabético del original inglés.

Cabe señalar que el 92% de los directores de proyectos que respondieron al formulario IV están interesados en presentar uno o más documentos a la Conferencia Internacional sobre Lagunas Costeras que se celebrará en 1980 ó 1981 bajo los auspicios de la Unesco.

7. TENDENCIAS DE LAS INVESTIGACIONES

En los formularios originales I y II (véase el Anexo I) se presentó una lista de palabras clave relativas a diez clases o disciplinas principales y 93 temas específicos de investigación. Al examinar las respuestas, se creó una clase más: "estudio general" (GS), en la que se incluyeron los estudios descriptivos de lugares y de obtención de datos ambientales (por ejemplo, los "parámetros fisicoquímicos" medidos por los biólogos).

a) Esferas temáticas experimentales (Figura 4)

En las 181 respuestas examinadas, la biología es la disciplina principal citada con mayor frecuencia, con porcentajes que van de 19,5% (Africa) a 28,0% (América del Norte); en orden decreciente le siguen: G.S. (13,7%), química (12,5%), acuicultura (10,5%), conservación (8,1%), geología (7,9%), elaboración de modelos (6,5%), pesca (5,7%), geografía (2,6%) e ingeniería (1,4%). Las cifras obtenidas para la pesca, la geografía y la ingeniería no representan el interés potencial que existe por estas materias, ya que la encuesta no llevó a cabo un muestreo adecuado de estas tres disciplinas.

Disciplinas principales (porcentajes medios)		
Estudio general	G.S.	13,7%
Geografía	I	2,6%
Física	II	6,3%
Geología	III	7,9%
Química	IV	12,5%
Biología	V	24,8%
Acuicultura	VI	10,5%
Pesca	VII	5,7%
Elaboración de modelos	VIII	6,5%
Ingeniería	IX	1,4%
Conservación	X	8,1%

b) Interrelación entre las diez principales disciplinas

Al elegir palabras clave para definir una o dos disciplinas principales, los directores de los proyectos indicaron también con frecuencia otros temas de interés. Así, los ecólogos cuya investigación tiene como interés principal la "biología" y la "acuicultura", marcaron también otros temas como "química", "física", "elaboración de modelos", etc. Las interacciones entre las disciplinas principales se presentan en la figura 5; reflejan la índole multidisciplinaria de los problemas de investigación de las lagunas costeras.

c) Interrelaciones dentro de las disciplinas principales: temas específicos de investigación

Los directores de los proyectos utilizaron la lista de 93 palabras clave que designan los temas específicos de investigación. El análisis de las respuestas permite conocer más a fondo las principales tendencias de la investigación en el mundo.

Como ejemplo, se presenta en la Figura 6 un análisis de los temas específicos marcados bajo el tema principal "biología". Fueron analizados 36 temas específicos, que se clasifican según: 1) los organismos estudiados, 2) los temas descriptivos, y 3) los temas sistémicos, incluyendo la elaboración de modelos de ecosistemas. Los resultados se resumen en las Figuras 7-9.

d) Afinidad entre los temas específicos

En diagramas de Trellis, las Figuras 10 y 11 muestran, como ejemplo, para la disciplina "biología", las afinidades existentes entre: a) el tipo de organismo estudiado, b) los temas descriptivos, y c) los temas sistémicos.

Observación - Los temas descriptivos se consideran aquí como parámetros estructurales y los temas sistémicos se consideran como parámetros de funcionamiento.

En la etapa inicial de un programa, los grupos a), b) y c) presentan escasa correlación. En los programas más avanzados, los tres grupos presentan mayor correlación.

8. OBSERVACIONES FINALES

En los últimos años, el deseo de preservar los ecosistemas húmedos costeros ha despertado un interés nuevo por los valores y recursos de dicho medio ambiente que comprende los deltas, las lagunas costeras y los estuarios (véase, por ejemplo, el Proyecto 5 del Programa sobre El Hombre y la Biosfera¹). En la actualidad se reconoce ampliamente el valor de las lagunas costeras para la pesca y la maricultura.

El estudio de las lagunas costeras permite sacar una conclusión importante: que se pueden llevar a cabo investigaciones cooperativas sobre la base de los recursos científicos disponibles en muchos países interesados. En la encuesta, la mayoría de los directores de los proyectos estimó que cabe mejorar la información relativa a las lagunas costeras. Propusieron, además, como tema central de las investigaciones futuras, estudiar las variaciones estacionales, y llevar a cabo, mediante la cooperación internacional, un análisis comparado de la variación espacial de los ecosistemas de lagunas en pleno funcionamiento.

Los programas de investigación coordinada de las lagunas costeras deberían lograr un enfoque global que tenga en cuenta la mayor cantidad de informaciones. Se deberían investigar en especial el flujo de materiales en las lagunas, la naturaleza y propiedades de los sedimentos y los mecanismos de la producción de seres vivos, así como los rasgos demográficos y adaptativos de las especies. Para ello, hace falta un enfoque multidisciplinario de las lagunas costeras como sistemas ecológicos. También se deberían comparar la producción, el consumo y la circulación de las partículas y los materiales disueltos en relación con los límites de los diversos sistemas.

1) Programa sobre el Hombre y la Biosfera (MAB). Grupo Internacional de trabajo sobre el Proyecto 5. Informe Final: "Ecological effects of human activities on the value and resources of lakes, marshes, rivers, deltas, estuaries and coastal zones". "Effets écologiques des activités humaines sur la valeur et les ressources des lacs, marais, cours d'eau, deltas, estuaires et zones côtières". Serie de informes del MAB No 21. Unesco, 1975, 80 p.

Figura 4a :

Esferas temáticas

AFRICA (excluyendo los mares Mediterráneo y Rojo)

disciplina (.)	%	0	10	20	30	40
G.S	9.8	_____				
I	7.3	_____				
II	12.2	_____				
III	12.2	_____				
IV	12.2	_____				
V	19.5	_____				
VI	9.8	_____				
VII	7.3	_____				
VIII	4.9	_____				
IX	-					
X	4.9	_____				

Número de respuestas recibidas : 13

Países :

República Popular de Benin (3), Costa de Marfil (2), Kenya (1), Nigeria (3), Sudáfrica (2), Tanzania (2).

Figura 4b :

Esferas temáticas

ASIA, ASIA SUDORIENTAL, OCEANO PACIFICO

disciplina (.)	%	0	10	20	30	40
G.S	17.6	_____				
I	2.0	_____				
II	6.9	_____				
III	5.9	_____				
IV	12.7	_____				
V	23.5	_____				
VI	7.8	_____				
VII	4.9	_____				
VIII	1.9	_____				
IX	2.9	_____				
X	11.8	_____				

Número de respuestas recibidas : 30

Países :

Australia (13), India (4), Indonesia (1), Japón (1), Malasia (1), Nueva Zelandia (4), Papua Nueva Guinea (1), Filipinas (1), Sri Lanka (1), Tailandia (3).

Figura 4c :

Esferas temáticas

EUROPA (incluyendo los mares Mediterráneo, Caspio, Negro y Rojo)

disciplina (.)	%	0	10	20	30	40
G.S	15.4	_____				
I	2.0	—				
II	4.6	_____				
III	7.2	_____				
IV	11.8	_____				
V	26.2	_____				
VI	11.3	_____				
VII	4.6	_____				
VIII	6.7	_____				
IX	3.1	_____				
X	7.1	_____				

Número de respuestas recibidas : 62

Países :

Bélgica (2), Dinamarca (3), Egipto (2), Finlandia (1), Francia (9), Rep. Fed. de Alemania (3), Irlanda (5), Israel (3), Italia (8), Países Bajos (7), Noruega (2), Portugal (1), Rumanía (1), Arabia Saudita (1), España (1), Suecia (1), Túnez (3), Turquía (1), Reino Unido (8).

Figura 4d :

Esferas temáticas

AMERICA DEL NORTE

disciplina (.)	%	0	10	20	30	40
G.S	9.3	_____				
I	2.7	—				
II	10.7	_____				
III	6.7	_____				
IV	13.3	_____				
V	28.0	_____				
VI	n.e.					
VII	1.3	—				
VIII	14.7	_____				
IX	1.3	—				
X	12.0	_____				

Número de respuestas recibidas : 27

Países :

Bermudas (1), Canadá (1), Estados Unidos de América (25).

Figura 4e :

Esferas temáticas

AMERICA LATINA Y EL CARIBE

disciplina (.)	%	0	10	20	30	40
G.S	16.6	—————				
I	1.4	—				
II	4.1	———				
III	7.6	—————				
IV	12.4	—————				
V	26.9	—————				
VI	13.1	—————				
VII	10.3	—————				
VIII	2.8	———				
IX	-					
X	4.8	—————				

77

Número de respuestas recibidas : 49

Países :

Brasil (6), Costa Rica (2), Colombia (5), Ecuador (2), El Salvador (1), Guatemala (1), Honduras (1), Jamaica (2), México (22), Antillas Neerlandesas (1), Nicaragua (1), Panamá (1), Venezuela (4).

Figura 5a: Interrelaciones entre las diez disciplinas principales y el "estudio general", en los países de Europa

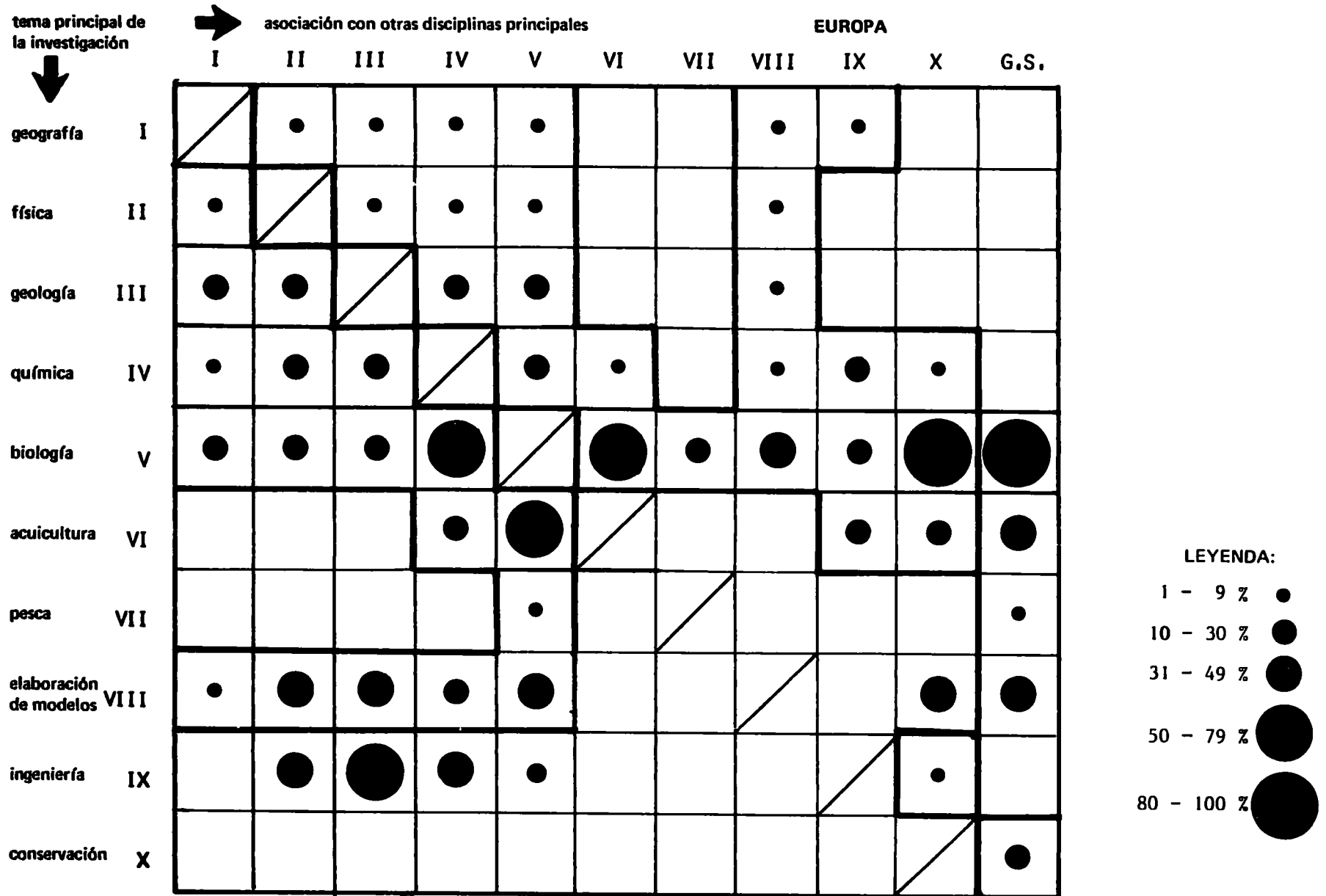


Figura 5b: Interrelaciones entre las diez disciplinas principales y el "estudio general", en los países de América del Norte

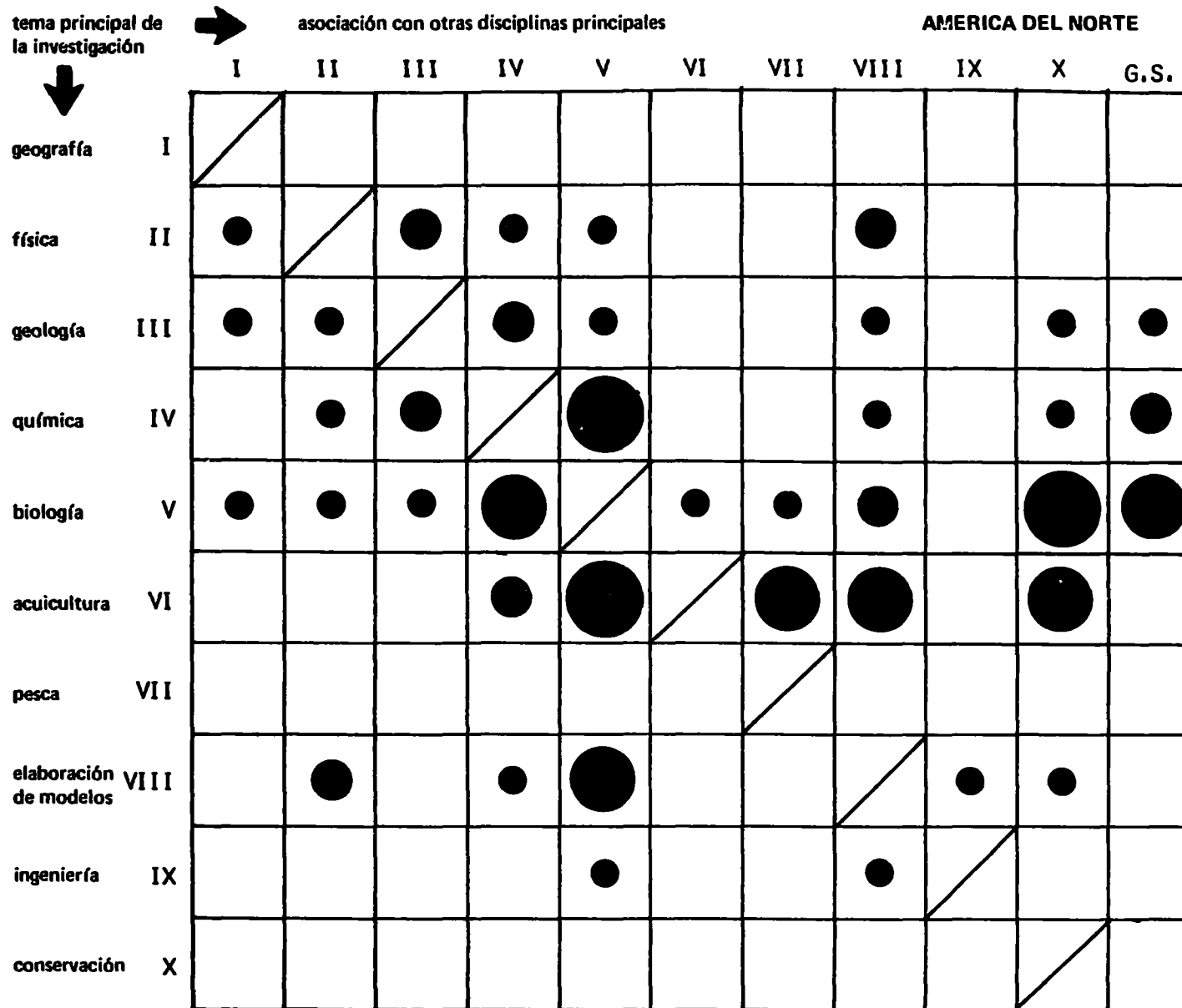


Figure 5c: Interrelaciones entre las diez disciplinas principales y el "estudio general", en los países de Asia, Asia sudoriental y el Océano Pacífico

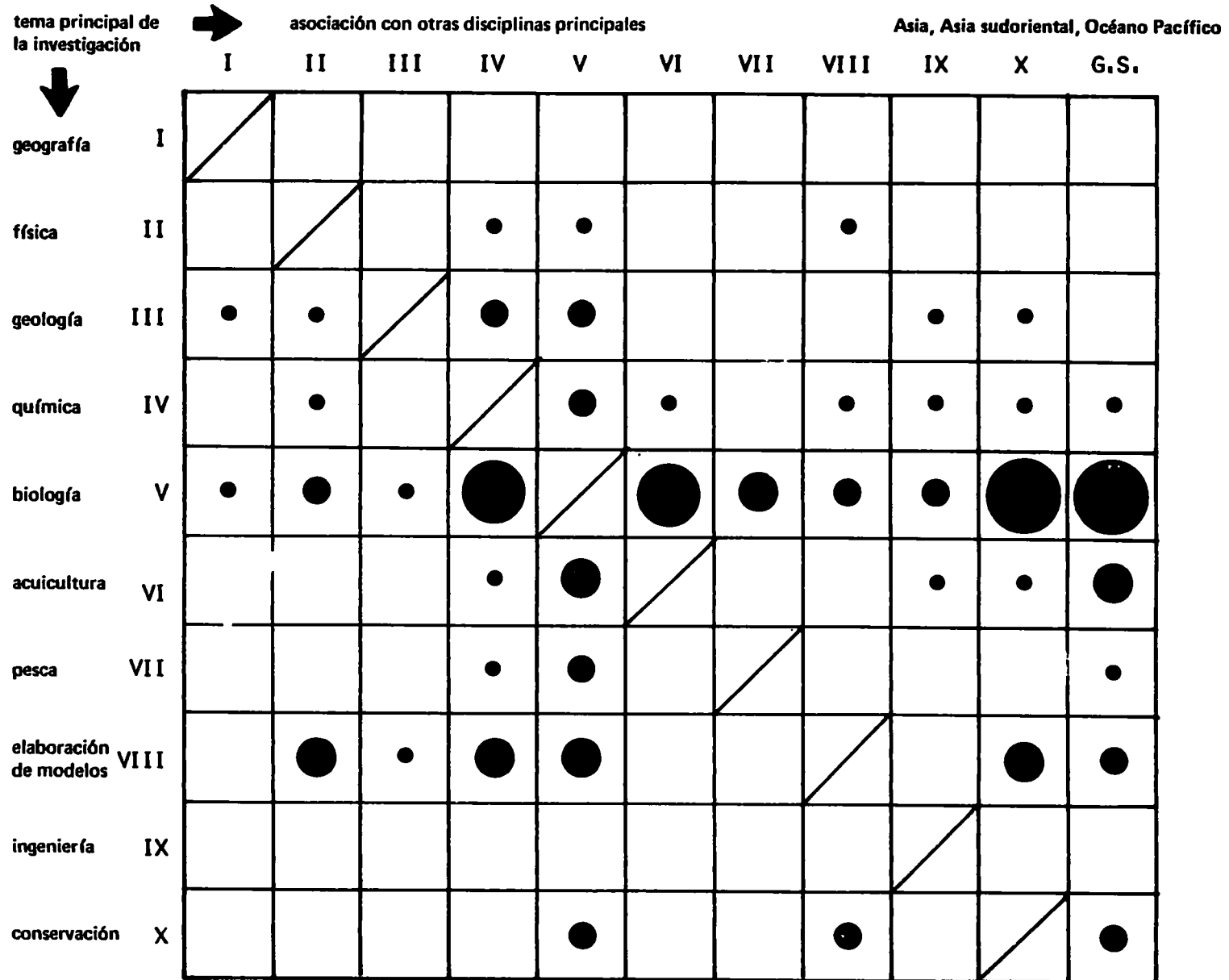


Figura 5d: Interrelaciones entre las diez disciplinas principales y el "estudio general", en los países de América Latina y el Caribe

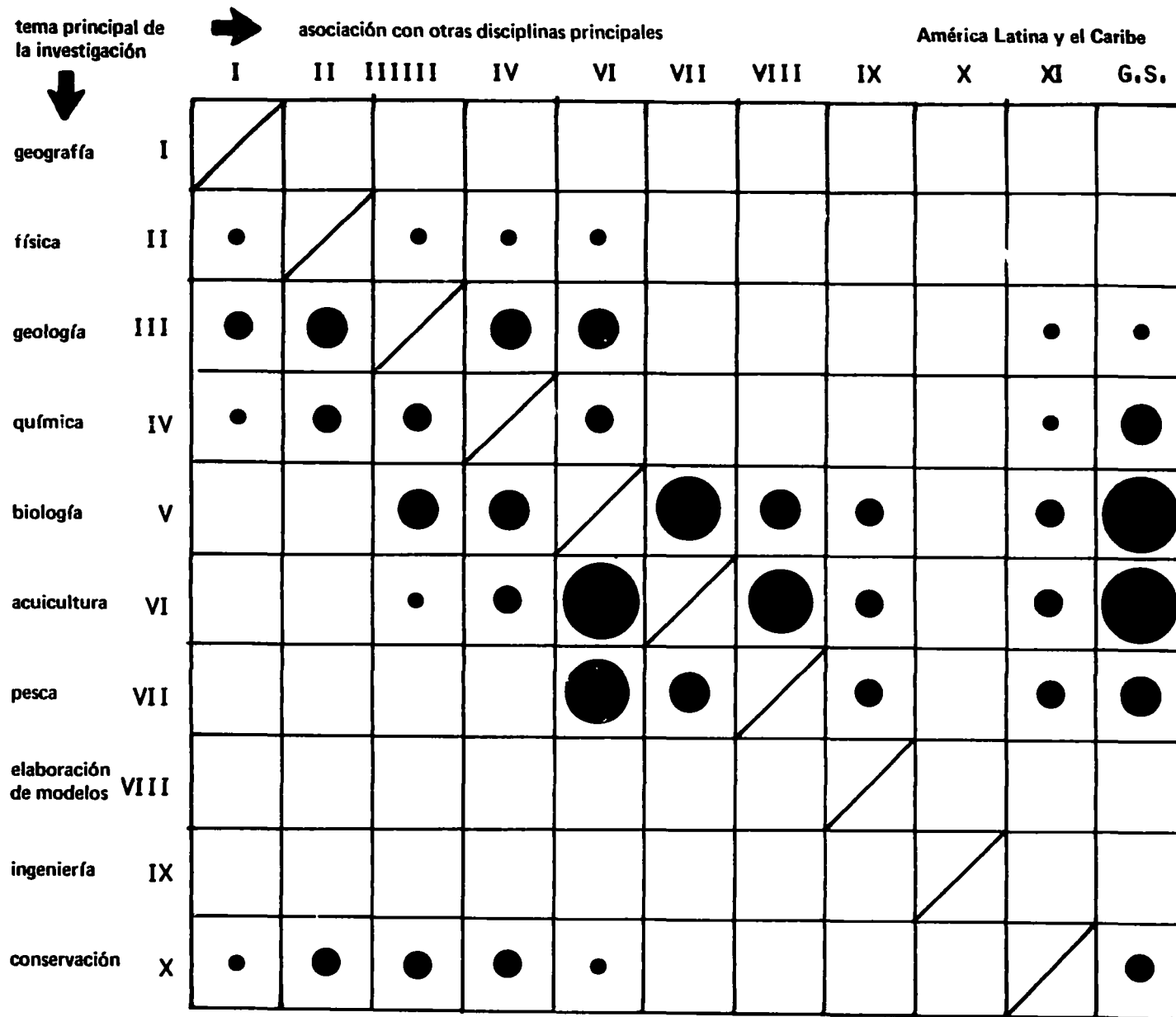


Figura 5a: Interrelaciones entre las diez disciplinas principales y el "estudio general", en los países de Africa

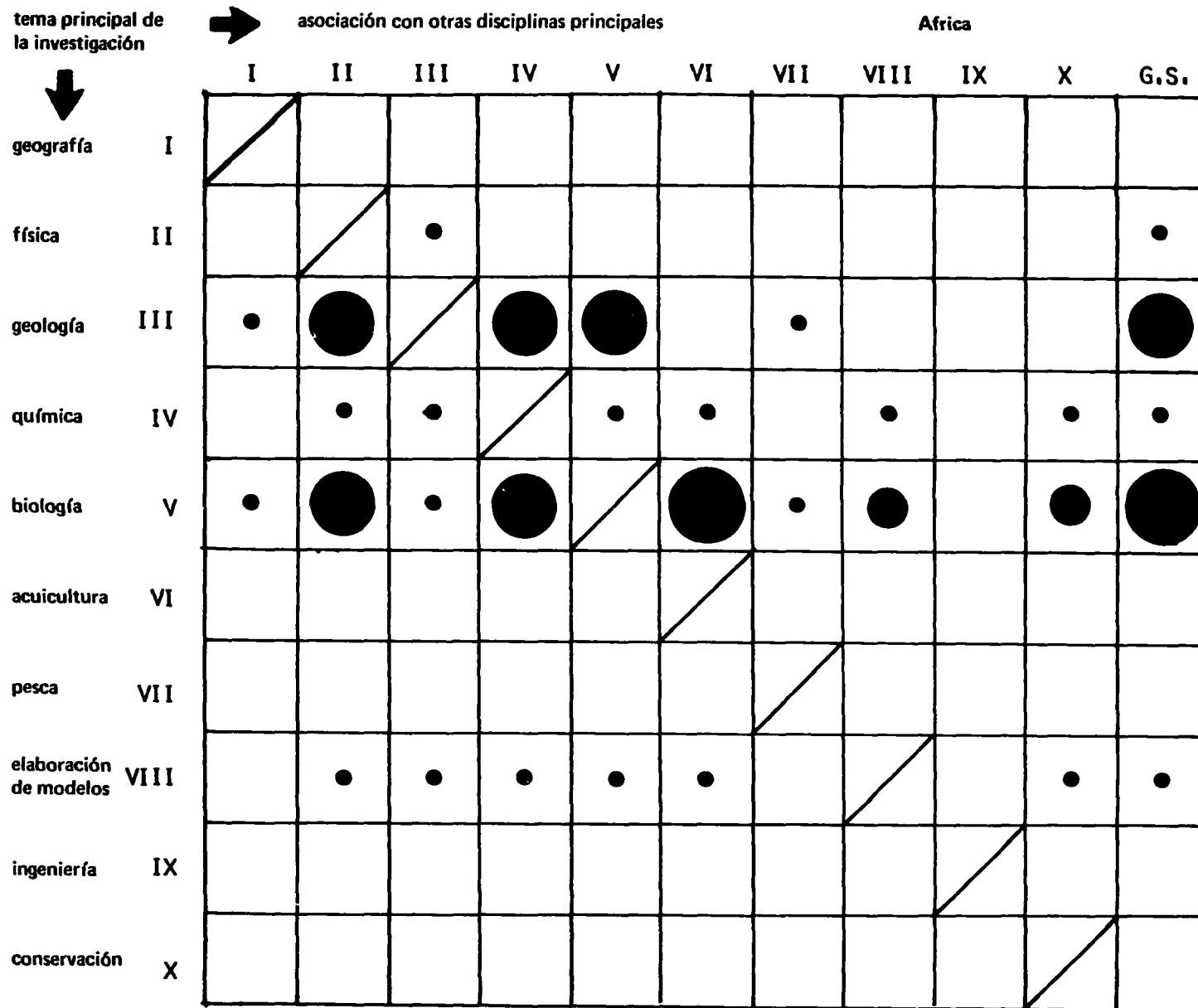


Figura 6: Reseña de los temas específicos de investigación comprendidos en la disciplina principal "biología"

Lista de temas comprendidos en la disciplina principal "biología"

<u>grupo 1:</u>	<u>grupo 2:</u>	<u>grupo: 3</u>
<u>tipos de organismos</u>	<u>temas descriptivos</u>	<u>temas sistémicos</u>
fitoplancton	taxonomía	endocrinología
zooplancton	historia vital	genética
meroplancton	embriología	dinámica de poblaciones
microbentos	serología	estructura de la comunidad
mesobentos	patología	redes alimentarias
macrobentos	parasitología	ecología fisiológica
peces	rel. animales/ sedimentos	fisiología y bioquímica
bacterias	especies indicadoras	ciclo de nutrientes
microflora	cosecha permanente	utilización de materia orgánica
halofitas	microbiología	metabolismo
	producción de detritus	balances energéticos
		productividad
		eutroficación
		efecto de los contaminantes
		elaboración de modelos

Temas prioritarios (frecuencia 100-60%) en cada uno de los tres grupos:

grupo 1: tipos de organismos

Africa	Asia	Pacifico	Europa	A.Latina	A.del Norte
macroben- tos peces	fitopl. zoopl.	fitopl. macroben- tos halofitas peces	macro- bentos peces zoopl. fitopl. mesoben- tos	fitopl. zoopl. macroben- tos	macrobentos fitopl. zoopl. bacterias

grupo 2: temas descriptivos

Africa	Asia	Pacifico	Europa	A.Latina	A.del Norte
cosecha per.	cosecha per.	especies indic. cosecha per. relación an/sed	relación an/sed cosecha per. hist. vital especies indic.	cosecha per. hist. vital	detritus cosecha per. rel. an/sed especies indic.

grupo 3: temas sistémicos

Africa	Asia	Pacifico	Europa	A.Latina	A.del Norte
redes alim.	produc- tiv. din.po- blacio- nes redes alim.	din.po- blación estr.co- munidad produc- tiv.	din.po- blación estr.co- munidad ecología ffs. balances energét. utiliza- ción m.o.	din.po- blación producti- vidad redes aliment.	estr.comuni- dad productivi- dad ciclo nutr. utilizac. m.o. din.pobla- ciones ecología fis.

Figura 7: Temas especiales de investigación elegidos dentro de la disciplina principal "Biología": tipos de organismos

(entre paréntesis, el número de programas revisados)

	(5)	(10)	(10)	(27)	(17)	(16)
Frecuencia (por ciento)	AFRICA	ASIA	PACIFICO	EUROPA	AMERICA LATINA	AMERICA DEL NORTE
100 - 60 %	macrobentos peces	fitoplancton zooplancton	fitoplancton macrobentos halofitas peces	macrobentos peces zooplancton fitoplancton mesobentos	fitoplancton zooplancton macrobentos	macrobentos fitoplancton zooplancton mesobentos bacterias
59 - 40 %	zooplancton meroplancton bacterias	macrobentos halofitas peces bacterias	zooplancton bacterias microflora mesobentos	bacterias microbentos microflora halofitas	peces	halofitas peces microflora microbentos meroplancton
39 - 20 %	fitoplancton mesobentos	meroplancton mesobentos	meroplancton microbentos	meroplancton	microbentos halofitas	
inf. 20 %	halofitas microflora microbentos	microbentos microflora			meroplancton microflora bacterias mesobentos	

Figura 8: Temas especiales de investigación elegidos dentro de la disciplina principal "Biología": temas descriptivos

(entre paréntesis, el número de programas revisados)

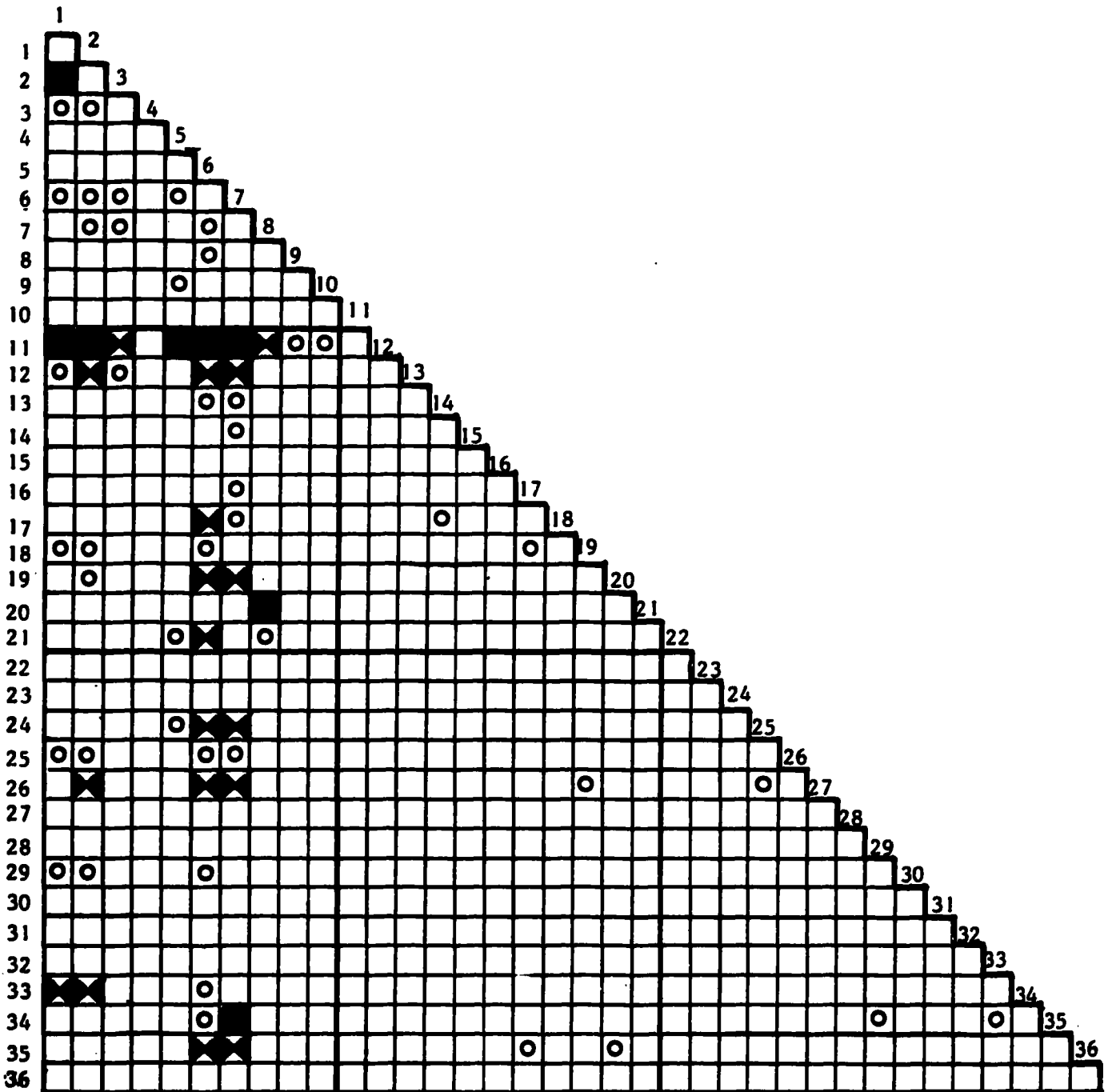
	(5)	(10)	(10)	(27)	(17)	(16)
Frecuencia (por ciento)	AFRICA	ASIA	PACIFICO	EUROPA	AMERICA LATINA	AMERICA DEL NORTE
100 - 60 %	cosecha perm.	cosecha perm.	especies indic. cosecha perm. rel. an/sed.	rel. an/sed. cosecha perm. historia vital especies indic.	cosecha perm. historia vital	prod. detritus cosecha perm. rel. an/sed. especies indic.
59 - 40 %	rel. an/sed. especies indic. prod. detritus	microbiología prod. detritus	microbiología prod. detritus	taxonomía prod. detritus microbiología	taxonomía rel. an/sed. prod. detritus	microbiología historia vital
39 - 20 %	microbiología historia vital	taxonomía historia vital rel. an/sed. parasitología serología/hem.	taxonomía historia vital	embriología	microbiología	embriología taxonomía
inf. 20 %	taxonomía	embriología patología	embriología patología	parasitología patología serología/hem.	embriología patología parasitología serología/hem.	parasitología patología serología/hem.

Figura 9: Temas especiales de investigación elegidos dentro de la disciplina principal
"Biología": temas sistémicos

(entre paréntesis, el número de programas revisados)

	(5)	(10)	(10)	(27)	(17)	(16)
Frecuencia (por ciento)	AFRICA	ASIA	PACIFICO	EUROPA	AMERICA LATINA	AMERICA DEL NORTE
100 - 60 %		productividad din. población redes aliment.	din. población estruc. comunidad productividad redes aliment.	din. población estruc. comunidad ecología fis. presup. energét. productividad	productividad din. población redes aliment.	estruc. comunidad productividad ciclo nutrientes utilización m.o. ecología fis. redes aliment.
59 - 40 %	ciclo nutrientes balances energét. contaminantes redes aliment.	estr. comunidad ciclo nutrientes eutroficación ecología fis.	elab. modelos ciclo nutrientes	redes aliment. ciclo nutrientes eutroficación contaminantes elab. modelos	ciclo nutrientes utilización m.o. estruc. comunidad eutroficación	eutroficación din. población metabolismo contaminantes elab. modelos
39 - 20 %	din. población estruc. comunidad utilización m.o. eutroficación	utilización m.o. contaminantes elab. modelos fisio. y bioquím.	utilización m.o. contaminantes eutroficación metabolismo ecología fis.	metabolismo genética fisio. y bioquím. endocrinología	ecología fis. balances energét. contaminantes	balances energét. genética fisio. y bioquím. endocrinología
inf. 20 %	elab. modelos	presup. energét. metabolismo endocrinología	balances energét.		fisio. y bioquím. elab. modelos	

Fig. 11. Relaciones de afinidad entre los temas, dentro de la disciplina principal "biología" (diagramme de Trellis), en el caso de un programa en sus comienzos.



DIRECTORY OF COASTAL LAGOON RESEARCH PROGRAMMES
REPERTOIRE DES PROGRAMMES DE RECHERCHES SUR LES LAGUNES COTIERES
DIRECTORIO DE LOS PROGRAMAS DE INVESTIGACION DE LAS LAGUNAS

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Australian Institute of Marine Science

Address : P.O. Box 1104,
Townsville, Queensland 4810,
Australia

Director : M. Gilmartin

Project leader(s) : J.S. Bunt

Address : Australian Institute of Marine Science,
P.O. Box 1104,
Townsville, Queensland 4810, Australia

Co-operating institution(s) : Australian Museum ;
Commonwealth Scientific and Industrial
Research Organization ;
University Researchers .

Supporting or funding body : Australian Government

Starting dates/duration of programme/project : June 1974/Indefinite

Name of lagoon(s) :

Geographic location lat. :
Various locations on East
Coast of Tropical Australia long. :

Code :
surface area : 60 km²

Australia

Title of programme : Inshore Productivity

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X					X	

Literature and/or reports available : in preparation

Existing training programme : no

Description and objectives of the programme/project (summarized) :

A study of the productivity of mangroves, seagrasses and macroalgae including consideration of environmental and biological influences affecting production.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Australian Institute of Marine Science

Address : P.O. Box 1104,
Townsville, Queensland 4810,
Australia

Director : M. Gilmarin

Project leader(s) : T. Ikeda

Address : P.O. Box 1104,
Townsville, Queensland 4810,
Australia

Co-operating institution(s) :

Supporting or funding body : Australian Government

Starting dates/duration of programme/project : January 1974/1977

Name of lagoon(s) : Great Barrier Reef Lagoon

Geographic location lat. :
Various locations near
Townsville, Queensland long. :

Code :
surface area :

Australia

Title of programme : Pelagic food webs

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						

Description and objectives of the programme/project (summarized) :

The main objectives were to evaluate the physiological activities of tropical zooplankton in detail in the laboratory, with field studies in the shallow coastal seas (lagoon) inside the Great Barrier Reef and in mangrove-controlled channels and bays. Feeding, respiration, excretion, growth rates and nutrient recycling were considered.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Australian Institute of Marine Science
 Address : P.O. Box 1104,
 Townsville, Queensland 4810,
 Australia
 Director : Mr. Gilmartin

Project leader(s) : G.L. Pickard

Address : Institute of Oceanography,
 University of British Columbia,
 Vancouver, B.C., Canada V6T 1W5

Co-operating institution(s) :

Supporting or funding body : Australian Institute of Marine Science

Starting dates/duration of programme/project : November 1975/Continuing

Name of lagoon(s) : Great Barrier Reef Lagoon

Geographic location	lat. :	Code :
Off Queensland	long. :	surface area :

Australia

Title of programme : Review of the Physical Oceanography of the Great Barrier Reef and the Western Coral Sea

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X									

Description and objectives of the programme/project (summarized) :

Programme involves review of published and available data on the subject area and preparation of plans for future studies of the area .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Commonwealth Scientific and Industrial Research Organization,
(CSIRO)
Address : P.O. Box 21,
Cronulla, NSW 2230,
Australia
Director : K.R. Allen

Project leader(s) : R. Parker

Address : Commonwealth Scientific and Industrial Research Organization (CSIRO)
P.O. Box 21,
Cronulla, NSW 2230,
Australia

Co-operating institution(s) : Australian Atomic Energy ;
University of Sydney ;
University of New South Wales ;
State Fisheries Department.

Supporting or funding body : CSIRO

Starting dates/duration of programme/project : 1974/Indefinite

Name of lagoon(s) : Southwest Arm of Port Hacking (currently)

Geographic location lat. :

Near Sydney long. :

Code :

surface area :

Australia

Title of programme : Estuarine Project

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X		X	X			X			

Literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

The objective of this ongoing study of Australian estuaries is an understanding of the physical, chemical and biological processes and their interactions. It is hoped that this systems analysis will enable the employment of a simulation model towards quantitative predictions of the consequences of man's perturbation of the estuarine environment.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Commonwealth Scientific and Industrial Research Organization,
Division of Applied Geomechanics
Address : P.O. Box 54,
Mount Waverly,
Victoria 3149,
Australia
Director : G.D. Atchison

Project leader(s) : Edmund D. Gill

Address : CSIRO, Division of Applied Geomechanics,
P.O. Box 54,
Mount Waverly,
Victoria 3149, Australia

Co-operating institution(s) :

Supporting or funding body : Australian Government

Starting dates/duration of programme/project : 1974/ Continuing

Name of lagoon(s) :

Geographic location	lat. :	Code :
	long. :	surface area :

Australia

Title of programme : Coasts of Australia

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X	X						X		

Description and objectives of the programme/project (summarized) :

Incidental to the study of coasts, lagoons are being investigated for evidence of coastal processes . For example, being areas of low energy, lagoons may preserve evidence of sea level changes not revealed by the open coast .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Environmental Studies
 Ministry for Conservation
 Address : 240 Victoria Parade
 East Melbourne, Victoria 3002
 Australia
 Director : T.L. Linton

Project leader(s) : Graham Frecker

Address : Port Phillip Bay Environmental Study
 240 Victoria Parade
 East Melbourne, Victoria 3002
 Australia

Co-operating institution(s) :

Melbourne and Metropolitan Board of Works;
 Fisheries and Wildlife Department, Ministry for Conservation;
 Port Phillip Authority;
 University of Melbourne;
 Monash University;
 Ministry of Transport;
 Environmental Protection Authority;
 Town and Country Planning Board; and
 Ports and Harbors Division; Public Works Department.

Supporting or funding body :

The Ministry for Conservation, State of Victoria.

Starting dates/duration of programme/project : 1967/ongoing

Name of lagoon(s) :

Port Phillip Bay

Geographic location : lat. : 38° 0' S
 long. : 144° 50' E

Code :
 maps : yes
 surface area : 1950 km²

Australia

Title of programme :

Port Phillip Bay Environmental Study

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X		X	X

Description and objectives of the programme/project (summarized) :

An interdisciplinary environmental study involving three lagoon systems and their associated watersheds. The central objective is to gain sufficient knowledge concerning the system functionings to be able to make responsible recommendations to policy makers regarding the management and use of these coastal systems.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Enviromental Studies
 Address : Ministry for Conservation
 240 Victoria Parade
 East Melbourne Victoria 3002
 Australia
 Director : T.L. Linton

Project leader(s) : Gary Mahon

Address : Westernport Bay Environmental Study
 240 Victoria Parade
 East Melbourne Victoria 3002
 Australia

Co-operating institution(s) :
 Fisheries and Wildlife Division, Ministry for Conservation;
 University of Melbourne, Department of Agriculture;
 CSIRO;
 Department of Health;
 Monash University;
 Department of Mines;
 Department of Public Works; Department of Minerals and Energy;
 Australian Department of Science; State Rivers and Water Supply; and
 National Museum of Victoria; Caulfield Institute of Technology.

Supporting or funding body :
 Ministry for Conservation, State of Victoria.

Starting dates/duration of programme/project : 1971/Ongoing

Name of lagoon(s) :
 Westernport Bay

Geographic location	lat. : 38°40' S	Code :
	long. : 145°20' E	maps : yes surface area : 680 km ²

Australia

Title of programme :

Westernport Bay Enviromental Study

I	II	III	IV	V	VI	VII	VIII	IX	X	C.S.
				X			X		X	X

Description and objectives of the programme/project (summarized) :

An interdisciplinary enviromental study involving three lagoon systems and their associated watersheds. The central objective is to gain sufficient knowledge concerning the system functionings to be able to make responsible recommendations to policy makers regarding the management and use of these coastal systems.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Environmental Studies
 Ministry for Conservation
Address : 240 Victoria Parade
 East Melbourne Victoria 3002
 Australia
Director : T.L. Linton

Project leader(s) : Brian Newell

Address : Environmental Studies
 Ministry for Conservation
 240 Victoria Parade
 East Melbourne Victoria 3002
 Australia

Co-operating institution(s) :
 University of Melbourne;
 Latrobe Valley Water Sewage Board;
 Fisheries and Wildlife Service;
 Ministry for Conservation;
 State Rivers and Water Supply Commission;
 Ports and Harbors Division, Department of Public Works;
 State Electricity Commission;
 Snowy Mountain Hydroelectric Commission;
 Bureau of Meteorology;
 Mines Department; and National Museum.

Supporting or funding body :
 Ministry for Conservation, State of Victoria.

Starting dates/duration of programme/project : 1975/at least 1980

Name of lagoon(s) :
 Gippsland Lakes, Lake Wellington, Lake Victoria,
 Jones Bay, King Lake, Lake Reeve.

Geographic location lat. : 38° S Code :
 long. : 147°30' E map : yes
 surface area :

Australia

Title of programme :
 Gippsland Lakes Regional Environmental Study

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X		X	X

Description and objectives of the programme/project (summarized) :

An interdisciplinary environmental study involving three lagoon systems and their associated watersheds. The central objective is to gain sufficient knowledge concerning the system functionings to be able to make responsible recommendations to policy makers regarding the management and use of these coastal systems.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Flinders University, School of Earth Sciences Address : Bedford Park, South Australia, Australia Director : Chris von der Borch	
Project leader(s) : Chris von der Borch Address : Flinders University, School of Earth Sciences, Bedford Park, South Australia, Australia	
Co-operating institution(s) : Bureau of Mineral Resources; Australian National University; Adelaide University, School of Geology	
Supporting or funding body : Australian Research Grants Committee; Flinders University Research Grants	
Starting dates/duration of programme/project : 1972/continuing	
Name of lagoon(s) : Coorong Lagoon ; Marion Lake	
Geographic location South Australia	lat. : long. : Code : surface area :

Australia										
Title of programme : Quaternary stratigraphy of lagoons and coastal lakes of Southern Australia, with particular emphasis on : 1) carbonate sedimentation (NB dolomite), 2) regional hydrology, 3) paleoclimatology, 4) evaporites, 5) sea level changes, 6) modern stromatolites										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X							
Literature and/or reports available : Yes										
Description and objectives of the programme/project (summarized) : This ongoing project involves the collection and interpretation of stratigraphic information from : 1) the Coorong Lagoon and associated coastal lake systems ; from 2) pleistocene stranded lagoon-barrier systems now on the coastal plain ; and from 3) the gypsum-carbonate-stromatolite bearing Marion Lake . Stratigraphy of these systems is being studied for input into such problems as paleoclimatology, sea level changes and carbonate (particularly dolomite) genesis.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Ministry for Conservation
 Address : 250 Victoria Parade,
 East Melbourne,
 Victoria 3002,
 Australia
 Director : B.S. Newell

Project leader(s) : B.S. Newell

Address : Ministry for Conservation
 250 Victoria Parade,
 East Melbourne,
 Victoria 3002, Australia

Co-operating institution(s) : Several Victorian Government Departments
 and Agencies together with some universities and polytechnics

Supporting or funding body : Victorian Government

Starting dates/duration of programme/project : 1977/5 years

Name of lagoon(s) : Gippsland Lakes

Geographic location lat. :
 Eastern Victoria long. :

Code :
 surface area :

Australia

Title of programme : Gippsland Regional Environmental Study

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
									X	X

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : University of Adelaide, Department of Zoology Address : P.O. Box 498, G.P.O., Adelaide, South Australia 5001, Australia Director : W.P. Williams	
Project leader(s) : A.J. Butler Address : University of Adelaide, Department of Zoology, Box 498, G.P.O., Adelaide, South Australia 5001, Australia	
Co-operating institution(s) :	
Supporting or funding body : Australian Government	
Starting dates/duration of programme/project : ongoing	
Name of lagoon(s) : Gulf of St. Vincent (mainly Port Adelaide)	
Geographic location South Australia	lat. : long. :
Code :	surface area :

Australia										
Title of programme : Several PhD projects associated with mangrove and tidal flat habitats in sheltered parts of South Australian coast										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					
Description and objectives of the programme/project (summarized) : Subprojects include : Ecology of razor-shells, <u>Pinna dolobrata</u> ; Feeding behaviour of <u>Cephiella vinosa</u> ; and biology of the Western King prawn, <u>Panaeus latisulcatus</u> .										

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : University of Western Australia, Department of Geology Address : Nedlands, Western Australia 6'009, Australia Director :		
Project leader(s) : R.G. Brown and B.W. Logan Address : University of Western Australia, Department of Geology, Nedlands, Western Australia 6009, Australia		
Co-operating institution(s) :		
Supporting or funding body : Australian Research Grants Committee ; University of Western Australia		
Starting dates/duration of programme/project : September 1972/1978		
Name of lagoon(s) : Exmouth Gulf		
Geographic location West coast of Australia	lat. : long. :	Code : surface area :

Australia										
Title of programme : Carbonate and ferrigenous sedimentation, Exmouth Gulf, Western Australia										
I	II	III X	IV	V	VI	VII	VIII	IX	X	G.S.
Description and objectives of the programme/project (summarized) : The six-year study was designed with three objectives : 1) determination of the nature and distribution of carbonate and ferrigenous sediments in Exmouth Gulf; 2) determination of stratigraphic relationships and elucidation of sedimentation history in the quaternary sequence; 3) assessment of the roles of organic and physical agents in the formation of lithofacies . These objectives are being investigated in the following manner : 1) collection and examination of surface grab samples and vibro-cores in offshore and tidal flat terrains; 2) normal stratigraphic analysis of on-shore sections; 3) determination of hydrological parameters in gulf-waters and shallow ground-waters of marginal tidal flats										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Department of Geology

Address : University of Western Australia,
Nedlands, Western Australia 6007,
Australia

Director : P.C. Harris

Project leader(s) : Brian W. Logan

Address : Department of Geology,
University of Western Australia,
Nedlands, Western Australia 6007,
Australia

Co-operating institution(s) :

Supporting or funding body : Australian Research Grants Committee ;
University of Western Australia

Starting dates/duration of programme/project : 1973/probably 6 years

Name of lagoon(s) : Lake MacLeod

Geographic location	lat. : 25°S	Code :
	long. : 114°E	surface area : 2,000 km ²

Australia

Title of programme : Holocene Carbonate and Evaporite Sedimentation,
MacLeod Evaporite Basin, Western Australia

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X	X						

Description and objectives of the programme/project (summarized) :

The investigation has five related aims : 1) Development of an actualistic model of evaporite basin hydrodynamics for use in interpretation of ancient evaporites; 2) documentation of sedimentary features in recent evaporites and determination of processes involved in evaporite deposition; 3) delineation of stratigraphic relations between evaporites, marine carbonate and ferrigenous red-bed facies; 4) documentation of diagenesis in marine carbonates that are interstratified with evaporites; 5) reconstruction of the sedimentation history of the basin

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Laboratorium voor Morfologie en Systematiek Instituut voor Dierkunde - Rijksuniversiteit Gent Address : Ledeganckstraat 35 B - 9000 Gent Belgium Director : L. DeConinck	
Project leader(s) : Carlo Heip Address : Ledeganckstraat 35 B - 9000 Gent Belgium	
Co-operating institution(s) : Instituut voor Zeewetenschappelijk Onderzoek	
Supporting or funding body : Nationaal Fonds voor Wetenschappelijk Onderzoek; Fonds voor Kollektief Fundamenteel Onderzoek; Instituut voor Wetenschappelijk Onderzoek in Landbouw en Nijverheid.	
Starting dates/duration of programme/project : (i)1976/1978 (ii)1968/1976	
Name of lagoon(s) : (i) Spuikom (ii) Dievangat	
Geographic location	lat. : (i) 51°12' N (ii) 51°20' N long. : (i) 2°56' W (ii) 30°22' W Code : surface area : (i) 0.8 km ² (ii) 0.015 km ²

Belgium										
Title of programme : (i) A study of the benthos of the Sluice Dock of Ostend; (ii) Ecology of the meiobenthos in a shallow brackish water habitat										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X			
literature and/or reports available: yes										
existing training programme: no										
Description and objectives of the programme/project (summarized) : (i) This project involves a survey of the evolution of the standing crop during one year. The purpose is to evaluate production, mainly of the meiobenthos, and to incorporate the benthos in an existing energy flow scheme. (ii) This study was on the community and population ecology of dominant meiobenthic groups (Ostracoda, Copepoda, Harpacticoida and Nematoda) and considered the importance of competition and predation, production of the important species, and life-cycles of the individual species.										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Vrije Universiteit Brussel Address : Laboratorium voor Ekologie en Systematick Pleinlaan 2 B - 1050 Brussels, Belgium Director : P. Polk	
Project leader(s) : P. Polk Address : Vrije Universiteit Brussel Laboratorium voor Ekologie en Systematick Pleinlaan 2 B - 1050 Brussels, Belgium	
Co-operating institution(s) : I.Z.W.O. (Bredene); - Institut Mathématique (Liege)	
Supporting or funding body : I.C.W.B.; Scientific Services Prime Minister, Belgium.	
Starting dates/duration of programme/project : 1970/at least 1981	
Name of lagoon(s) : Sluice Dock	
Geographic location	lat. : long. : Code : surface area : 0.9 km ²

Belgium										
Title of programme : Cometabolism of a shallow marine lagoon										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X			
Description and objectives of the programme/project (summarized) : The main objectives are the establishment and understanding of the cometabolism of marine biotypes in the North Sea, taking into account primary production (nutrients, excretion and respiration of phytoplankton); secondary production (grazing by zooplankton, excretion; respiration; population dynamics); planktonic bacteria (activity, respiration); and benthic bacteria (activity, respiration, seasonal and annual budgets).										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Direction des Pêches
Address : B.P. 383
 Cotonou, République Populaire du Bénin
Director : A. Th. Loko

Project leader(s) : Direction des Pêches
Address : same as above

Co-operating institution(s) :

Supporting or funding body :
 Ministère du Développement Rural et de l'Action Coopérative
 Fond Européen de Développement (FED)

Starting dates/duration of programme/project : 1978

Name of lagoon(s) : Nohoué lake
 Porto Novo lagoon
 Ouidah lagoon

Geographic location lat. : 6°30' N Code :
 long. : 2°40' E surface area :

Benin

Title of programme :

Organization and development of agriculture in the Popular Republic of Benin.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X		X	X	X	X				X

Description and objectives of the programme/project (summarized) :

The project is quite recent. One of the main efforts will be devoted to an increase of the natural production of fish (mullet, Tilapia) in fish ponds.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Institut de Géologie du Bassin d'Aquitaine (IGBA)
 Université de Bordeaux I
 Address : 351 cours de la Libération
 33405 Talence, France

Director : M. Vigneaux

Project leader(s) : A. Klingebiel

Address : as above

Co-operating institution(s) :

Université Nationale de la République Populaire du Bénin
 Laboratoire de Géologie

Supporting or funding body :

French Ministry of the Universities
 C.N.R.S. (France)

Starting dates/duration of programme/project : 1975

Name of lagoon(s) : Porto Novo lagoon

Geographic location lat. : 6°30 N
 long. : 2°47 E

Code :
 surface area : 4 00 km²

Benin

Title of programme :
 Sedimentation evolution in the Porto Novo lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X	X	X							

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

The project includes five main topics : hydrology, hydrodynamical influence from Ouémé river, sedimentation processes, composition of particulate matter.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Université Nationale du Bénin
Faculté des Sciences et Techniques,
Address : Section Géologie
 B.P. 526 Cotonou, République Populaire du Bénin

Director : M. le Recteur

Project leader(s) : Jacques Lang

Address : Université Nationale du Bénin
 Faculté des Sciences et Techniques
 Section de Géologie
 B.P. 526 Cotonou, Républ. Pop. du Bénin

Co-operating institution(s) :
 Direction des Pêches
 Direction de la Marine Marchande
 Ministère de l'Environnement
 Laboratoire de Zoologie, Univ. Nationale du Bénin

Supporting or funding body :
 Governmental

Starting dates/duration of programme/project : 1975

Name of lagoon(s) : Porto Novo
 Cotonou
 Nokoué
 Ahémé

Geographic location

lat. : 6°24'-6°30' N	Code :
long. : 2°31'-2°47' E	surface area :

Benin

Title of programme :
 Hydrosedimentology and hydrobiology in coastal lagoons of Bénin

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X	X	X	X		X				X

literature and/or reports available: yes

existing training programme: yes

Description and objectives of the programme/project (summarized) :

This programme is concerned with hydrosedimentology and hydrology. A descriptive analysis of the lagoons related with sedimentation during the Quaternary has been made. Historical sedimentology, stratigraphy, and geo-dynamical evolution of the recent Quaternary have also been studied. Physico-chemical parametres have been considered, and work has been done on fish and on mollusks.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Bermuda Biological Station Address : St. Georges West, Bermuda Director : W.E. Sterrer	
Project leader(s) : Byron F. Morris Address : Bermuda Biological Station, St. Georges West, Bermuda	
Co-operating institution(s) :	
Supporting or funding body : Bermuda Government	
Starting dates/duration of programme/project : 1976/1981	
Name of lagoon(s) : Harrington Sound, Great Sound, Castle Harbour, St. George Harbour	
Geographic location	lat. : long. :
Code : Map surface area :	: : Yes :

Bermuda										
Title of programme : Bermuda Inshore Waters Investigators										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X			X			X
Existing training programme : yes										
Description and objectives of the programme/project (summarized) : The initial phase of this five-year current project is to complete a descriptive survey of fundamental parameters of the inshore environment of Bermuda (as a multidisciplinary environmental study, aspects of geography, physics, geology, chemistry-geochemistry and biology are included). The threat of cultural entrophication of the inshore waters is being assessed as well as circulation of the inshore waters, residence time and renewal rates; and the annual cycles and seasonal variations of hydrographic and water quality parameters. It is hoped that ultimately the data acquired by the project will allow sufficient understanding of the ecological processes of the inshore environment so that fundamental ecosystem modeling will be feasible, and can be used as a predictive tool for any future need.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Base Oceanográfica Atlântica, Fundação de Rio Grande

Address : Rua Luis Lorea 261,
Cx. Postal 474,
96200 - Rio Grande - RS
Brazil

Director : Euripides Falcão Vieira

Project leader(s) : Jorge Pablo Castello

Address : Núcleo de Avaliação Pesqueira
Base Oceanográfica Atlântica,
Rua Luis Lorea, 261, Cx. Postal 474,
96200 - Rio Grande - RS. Brazil

Co-operating institution(s) :

Supporting or funding body : Fundo Investimento Ensino e Pesquisa,
Ministry of Education and Culture;
Fundação Universidade do Rio Grande

Starting dates/duration of programme/project : 1975/1977

Name of lagoon(s) : Lagoa dos Patos

Geographic location	lat. : 30° - 32° S	Code :	
Rio Grande City	long. : 50° - 52° W	surface area :	11,000 km ²

Brazil

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X		X		X				X

Description and objectives of the programme/project (summarized) :

The programme of research was primarily aimed at attaining a descriptive picture of the estuary . The main aspects of this lagoon project were : to study the community structure and its environmental relations; to study the shrimp resources (*Penaeus paulensis*) by analyzing its spatial and temporal distributions, structure and dynamics of its population, penetration and development of the postlarvae; to identify and study the main species of fishes that breed and use the lagoon estuary as a nursery ground; to study the sediment characteristics of the bottom; and to assess the possibility of introducing regulatory measures into the artisanal fisheries .

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Centro de Estudos de Geologia Costeira e Oceânica Address : CECO/UFERS Praça Argentina S/n, 90.000 Porto Alegre, RS, Brazil Director : Luiz Roberto Martins		
Project leader(s) : Luiz Roberto Martins and Jorge Alberto Villwock Address : CECO/UFERS, Praça Argentina S/n 90.000 Porto Alegre, RS, Brazil		
Co-operating institution(s) : Diretoria de Hidrografia e navegação; Companhia de Pesqui de Recursos Minerais; Porto do Brasil; Departamento Estadual de Postos, Rios e Canais; Departamento Nacional de Aguas e Energia Eletrica .		
Supporting or funding body : Universidade Federal do Rio Grande do Sul		
Starting dates/duration of programme/project : 1975/1980		
Name of lagoon(s) : Lagoa dos Patos		
Geographic location Rio Grande do Sul State, South Brasil	lat. : 30° - 32° S long. : 50° - 52° W	Code : surface area : 11,000 km ²

Brazil										
Title of programme : Geology, circulation and sedimentology of Lagoa dos Patos										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X							X	X
Literature and/or reports available : Yes										
Existing training programme : no										
Description and objectives of the programme/project (summarized) : The basic purpose of this programme is to investigate the geological evolution of lagoon-barrier complex, as well as studies on the circulation, sedimentation, source areas, marine influence, biology, mineral resources, recreational areas, ports and other aspects important to coastal lagoon management .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Coastal Studies Institute
Address : Louisiana State University
 Baton Rouge, Louisiana 70803
 USA
Director : James M. Coleman

Project leader(s) : James M. Coleman

Address : Coastal Studies Institute
 Louisiana State University
 Baton Rouge, Louisiana 70803
 USA

Co-operating institution(s) :

Supporting or funding body :

Office of Naval Research.

Starting dates/duration of programme/project :

Name of lagoon(s) :

Suape Lagoon

Geographic location lat. :

northern coast of Brazil long. :

Code :

surface area :

Brazil

Title of programme :

Wave and tidal circulation in Suape Lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X							

Description and objectives of the programme/project (summarized) :

Stone barriers off the Brazil coast form lagoons which are valuable as recreation areas. Wave distribution and current and sediment movement have been studied.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Instituto de Biologia Marinha

Address : Praia de Mãe Luiza SN
Natal - RN
Brazil

Director :

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

Geographic location

lat. : 5° 30' S

Code :

long. : 35° 15' W

surface area :

Brazil

Title of programme :

I	II	III x	IV	V x	VI	VII	VIII	IX	X	G.S.
---	----	----------	----	--------	----	-----	------	----	---	------

Existing training programme : yes

Description and objectives of the programme/project (summarized) :

Work involved with primary production and sediments .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Instituto de Pesquisas da Marinha
Address : Rua Ipirá, s/n,
 Ilha do Governador,
 Rio de Janeiro,
 Brazil
Director : Paulo de Castro Moreira da Silva

Project leader(s) : Paulo de Castro Moreira da Silva
Address : Rua Ipirá, s/n,
 Ilha do Governador,
 Rio de Janeiro,
 Brazil

Co-operating institution(s) :

Supporting or funding body : Secretaria do Planejamento,
 Ministério da Marinha .

Starting dates/duration of programme/project : 1974/continuing

Name of lagoon(s) : Lagoa de Araruama

Geographic location	lat. :	Code :
Cabo Frio (Rio de Janeiro)	long. :	Map(s) : Yes
		Surface area :

Brazil

Title of programme : Studies of the dynamics and ecology of Araruama Lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					X

Description and objectives of the programme/project (summarized) :

The main purpose of the programme is to investigate the possibility of mariculture in the Araruama, with the following considerations under study : the actual residence time of water in the lagoon, its algae and shrimp population, and measures for obtaining a better sea water exchange through the narrow channel .

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Research and Development Centre, Petrobras/Cenpes Address : Ilha do Fundão, Quadra 7, Rio de Janeiro, 20.000, Brazil Director : Antonio Seabra Maggi	
Project leader(s) : Helio Roncarate Address : Ilha do Fundão, Quadra 7, Rio de Janeiro 20.000, Brazil	
Co-operating institution(s) :	
Supporting or funding body : Petroleo Brasileiro - Petrobras	
Starting dates/duration of programme/project : 1970/	
Name of lagoon(s) : Lagoa de Jacarepagua, Lagoa de Camorim, Lagoa da Tijuca; Lagoa de Marapendi	
Geographic location	lat. : 23° 00' S long. : 43° 23' W
	Code : surface area :

Brazil										
Title of programme : Sedimentation models after the study of the recent Jacarepagua Project										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X							
Literature and/or reports available : yes										
Description and objectives of the programme/project (summarized) : This programme is aimed at the establishment of sedimentation models .										

SCOR/Unesco enquiry on existing lagoon research programmes

Canada

Institution : Institute of Oceanography
 Address : The University of British Columbia,
 Vancouver, B.C., Canada, VGT IW5
 Director : G.L. Pickard

Title of programme : Fjord Inlet Study

Project leader(s) : G.L. Pickard

Address : Institute of Oceanography,
 The University of British Columbia,
 Vancouver, B.C., Canada VGT IW5

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X									

literature and/or reports available : yes

Co-operating institution(s) :

Description and objectives of the programme/project (summarized) :

The programme involves studies on the distribution of water characteristics and of the circulation in these bodies of water

Supporting or funding body : University of British Columbia;
 National Research Council of Canada

Starting dates/duration of programme/project : 1949/continuing

Name of lagoon(s) :

Geographic location lat. :
 British Columbia
 (also Alaska, USA and Chile) long. :

Code :
 surface area :

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Instituto de Investigaciones Marinas Address : AA. 1016, Sta. Marta, Colombia Director : Gabriel Roldán Pérez		
Project leader(s) : Heberthard Wedler Address : AA. 1016, Sta. Marta, Colombia SA,		
Co-operating institution(s) :		
Supporting or funding body : Cooperative project between Colombian and German Governments		
Starting dates/duration of programme/project : 1976/1979		
Name of lagoon(s) : Ciénaga Grande de Sta. Marta		
Geographic location 45 Km South of Sta. Marta	lat. : 11° N long. : 74° 30 W	Code : Map(s) : yes surface area :

Colombia										
Title of programme : Programme of oyster culture (<u>Crassostrea rhizophorae</u>) in Ciénaga Grande										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					
Description and objectives of the programme/project (summarized) : Maintening and increasing the efficiency of the oyster cultures (<u>Crassostrea rhizophorae</u>) are the most important objectives of this two-year programme . This will involve investigating the annual cycle of salinity in the lagoon, establishing the salinity regime required for the growth of oysters, and experimenting with growing oysters in boxes and floating rafts .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Instituto Nacional de los Recursos Naturales y del Ambiente

Address : Apartado Aero 13458,
Bogota, Colombia

Director : Orlando Mora Lara

Project leader(s) : German Riveros Celis

Address : Instituto Nacional de Recursos Naturales
y del Ambiente,
Apartado Aero 13458,
Bogota, Colombia

Co-operating institution(s) :
Several government and private research centres

Supporting or funding body : United Nations Environment Programme (UNEP);
Colombian Government Funds

Starting dates/duration of programme/project : 1977/1979

Name of lagoon(s) : Ciénaga Grande of Santa Marta

Geographic location lat. : 10° 30' N

long. : 74° 75' W

Code :

surface area : 450 Km2

Colombia

Title of programme : Ecodevelopment project - Ciénaga Grande of Santa Marta

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				*

Literature and/or reports available : yes

Existing training programme : yes

Description and objectives of the programme/project (summarized) :

This two-year project is aimed at recovering the former oyster grounds of the Ciénaga Grande Lagoon, which was the main oyster producing water body of Colombia before a highway was built between the lagoon barrier and the sea. The following action has been planned : hydrological studies (to learn how to obtain the proper salinities to grow oysters and brackish water fish populations); studies of different oyster cultivation systems (to increase efficiency of the oyster grounds); mangrove research (to give different management alternatives); and a programme in fish management (including studies of fish population and a seasonal inventory).

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Université de Bordeaux I
 Institut de Géologie d'Aquitaine (IGBA)
 Address : 351 cours de la Libération
 33405 Talence , France

Director : M. Vigneaux

Project leader(s) : A. Klingebiel

Address : same as above

Co-operating institution(s) :

- Centro de Investigaciones Hidrolical y Oceanograficas, Escuela Naval,
- Cartagena, Colombia
- Universidad Jorge Tadeo Lozano, Bogota, Colombia

Supporting or funding body :

C.N.R.S. (France)
 Ambassade de France en Colombie

Starting dates/duration of programme/project : 1975

Name of lagoon(s) : Cartagena bay ("Bahia de -)
 Barbacoas bay ("Bahia de -)

Geographic location lat. : 10°30' N
 Colombia long. : 75°30' W

Code :
 maps : yes
 surface area : 400 Km²

Colombia

Title of programme :

COTECOL

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X	X					X	

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

The project is a hydrological survey of the system including water mass movements and sedimentation processes in relation with the development of mangroves and corals. Paleogeographic evolution of the system.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Ministerio de Agricultura Dirección General de Pesca, INDERENA Address : Avenida Caracas n°25A-66 Bogotá, Colombia, S.A. Director :	
Project leader(s) : Jorge E. Mercado Address : Centro de Investigaciones Pesqueras INDERENA - A.A. 2459 Cartagena, Colombia	
Co-operating institution(s) :	
Supporting or funding body : Ministry of Agriculture	
Starting dates/duration of programme/project :	
Name of lagoon(s) :	
Geographic location lat. : 10°40' N long. : 75°14' W	Code : surface area : 21 km ²

Colombia											
Title of programme :											
	I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X	X	X			X	X
literature and/or reports available : yes											
Description and objectives of the programme/project (summarized) :											
<p>Biological cycles of fish (<u>Megalops</u>, <u>Mugil</u>); possibilities of aquaculture.</p>											

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad del Valle
 Dept. of Biology
 Address : Apartado Aero 2188
 Cali, Colombia

Director : F. Pineda Polo

Project leader(s) : F. Pineda Polo

Address : same as above

Co-operating institution(s) :

Centro Internacional para Investigaciones del Desarrollo (Canada) :IDRC

Supporting or funding body :

Fondo de Investigaciones de la Division de Ciencias, Universidad del Valle

Starting dates/duration of programme/project : 1977

Name of lagoon(s) : Magdalena bay ("Bahia de -")

Geographic location
 lat. : 4° N
 long. : 77° W

Code :
 surface area :

Colombia

Title of programme :

Reproductive biology of Callinectes toxotes and C. arcuatus in
 Magdalena Bay.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					

Description and objectives of the programme/project (summarized) :

The project include studies on larval development, distribution of larval stages in the lagoon, population dynamics of the populations of Callinectes and the possibilities of harvesting the species.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Departamento de Acuicultura, Pesca Continental y Vida Silvestre
Address : Ministerio de Agricultura y Ganaderia,
 San José,
 Costa Rica
Director : Eduardo Bravo

Project leader(s) : Herbert Manie Echandi

Address : Ministerio de Agricultura y Ganaderia,
 San José,
 Costa Rica

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) : Lagunas de Tortuguero

Geographic location lat. : 10° 30' N
 long. : 83° 30' W

Code :
surface area :

Costa Rica

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				

Existing training programme : no

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Copenhagen
 Institute of Physical Oceanography
 Address : Haraldsgade 6
 2200 Copenhagen N
 Denmark

Director : N.G. Jerlov

Project leader(s) : G. Kullenberg

Address : University of Copenhagen
 Institute of Physical Oceanography
 Haraldsgade 6
 2200 Copenhagen N
 Denmark

Co-operating institution(s) :

Geophysical Institute; Bergen University, Norway;
 several institutes in Denmark.

Supporting or funding body :

Nordic University Group for Physical Oceanography;
 Environmental Protection Agency;
 Research Council.

Starting dates/duration of programme/project : (i) October 1976
 (ii) October 1974/1977

Name of lagoon(s) :
 (i) Arnavägen; Norway (Bergen)
 (ii) Danish Sounds

Geographic location	lat. :	Code :
	long. :	surface area :

Denmark

Title of programme :

- (i) Fjord mixing
- (ii) Mixing in Danish Sounds and Bays

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X						X			

Description and objectives of the programme/project (summarized) :

Internal mixing has been studied using dye (rhodamine B) and in situ instruments. Currents, density layering and waves have all been studied, as has meteorological conditions.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Copenhagen
 Geographical Institute
 Geomorphological Laboratory
 Address : Haraldsgade 68
 2100 Copenhagen Ø
 Denmark

Director :

Project leader(s) : Niels Nielsen
 University of Copenhagen
 Geographical Institute
 Address : Geomorphological Laboratory
 Haraldsgade 68
 2100 Copenhagen Ø
 Denmark

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :
 1966/1976

Name of lagoon(s) :
 Ruk Lagoone; Disko

Geographic location lat. : 69°39'N
 long. : 51°52'W
 Code :
 surface area : 2 km²

Denmark

Title of programme :
 Arctic coasts coastal geomorphology

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X	X								

existing training programme: no

Description and objectives of the programme/project (summarized) :

The coastal development during the thawing period; coastal morphology and dynamics in an arctic environment have all been studied.

SCOR/unesco enquiry on existing lagoon research programmes

Institution : Copenhagen University
 Institute of Plant Ecology
 Address : Ø. Farimagsgade 2 D
 DK - 1353 Copenhagen
 Denmark
 Director : Mogens Køje

Project leader(s) : Peter Vestergaard
 Address : Copenhagen University
 Institute of Plant Ecology
 Ø. Farimagsgade 2 D
 DK - 1353 Copenhagen
 Denmark

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project : 1976

Name of lagoon(s) :
 (i) Olsemagle lagoon
 (ii) Korevle lagoon

Geographic location	lat. : (i) 55°30'N (ii) 55°54'N	Code :
	long. : (i) 12°12'E (ii) 11°32'E	Map surface area : yes : (i) 4 km ² (ii) 2 km ²

Denmark

Title of programme :
 Relations between uptake and translocation of metals
 in the substrate, with special reference to two
 Danish coastal lagoons which differ in loading of
 heavy metals

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						

literature and/or reports available: yes

existing training programme: no

Description and objectives of the programme/project (summarized) :

Soil cores and salt marsh plants (especially Aster tripolium)
 from coastal lagoons are analyzed for metals, including Cu, Zn,
 Ni, Pb and Cr.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Instituto Nacional de Pesca
Address : Letamendi 102 y la Ria,
 Casilla 5918,
 Guyaquil,
 Ecuador
Director : Blanca Reinoso de Aveiga

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

Geographic location

lat. :

long. :

Code :

surface area :

Ecuador

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				*						

Description and objectives of the programme/project (summarized) :

Work done on carcinology (Panaeus) and freshwater phytoplankton .

SCOR/Unesco enquiry on existing lagoon research programmes

Ecuador

Institution : Instituto Nacional de Pesca

Address : Casilla de Correo 5918,
Guayaquil,
Ecuador

Director :

Project leader(s) : Jaime Barragan

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

Geographic location lat. :

long. :

Code :

surface area :

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						

Description and objectives of the programme/project (summarized) :

Work done with juvenile populations of crustaceans Penaeidea and Caridea .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Institute of Oceanography and Fisheries
Mediterranean Branch
Address : Kayet Bay
Alexandria, Egypt

Director :

Project leader(s) : A. El-Agamy

Address : Institute of Oceanography and Fisheries
Mediterranean Branch
Kayet Bay
Alexandria, Egypt

Co-operating institution(s) :

Supporting or funding body :

Academy of Scientific Research

Starting dates/duration of programme/project : 1975/1978

Name of lagoon(s) :
Lake Manzala

Geographic location lat. :
northeast of Nile delta long. :

Code :
surface area :

Egypt

Title of programme :

Hydrographical and fishery survey in Lake Manzala

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X		X				X

Description and objectives of the programme/project (summarized) :

Project covers seasonal investigations of the commercial catch; fish and fishery biology of the economic species; quantitative and qualitative estimation of phyto and zooplankton and the bottom fauna; and water analysis for nutrients, salinity and oxygen content.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Mansoura University Address : Faculty of Science Botany Department Mansoura, Egypt Director : A.E. Younis	
Project leader(s) : M.A. Zahran Address : Mansoura University Faculty of Science Botany Department Mansoura, Egypt	
Co-operating institution(s) :	
Supporting or funding body :	
Starting dates/duration of programme/project : 1977/1982	
Name of lagoon(s) : El-Manzala, El-Borollus, Edku and Mariut.	
Geographic location	lat. : 30° N long. : 29° - 33° E
Code :	map : yes surface area :

Egypt										
Title of programme : Ecological studies of the northern lakes of Egypt										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X			X	X						X
Description and objectives of the programme/project (summarized) : The programme on the northern lakes of Egypt will include studies on: geomorphology; local climate; synecology of the vegetation inhabiting the water (Hydrophytes), the islands and the shores (Halophytes); algal life; bacterial life; physio-chemical characteristics of the water; the pollutants and contaminants of the water; salinity; and sedimentation.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Unidad de Parques Nacionales y Vida Silvestre
Address : Servicio Forestal y de Fauna
 Dirección General de Recursos Naturales Renovables,
 Ministerio de Agricultura y Ganadería,
 Cantón El Matasano,
Director : Soyapango, San Salvador, El Salvador
 Joaquín A. Guevara Morán

Project leader(s) : Francisco Serrano

Address : Servicio Forestal y de Fauna,
 Dirección General de Recursos Naturales Renovables,
 Ministerio de Agricultura y Ganadería,
 Cantón El Matasano, Soyapango, San Salvador, El Salvador

Co-operating institution(s) : Department of Biology, University of El Salvador

Supporting or funding body : Not yet defined (project is in final stages of design) .

Starting dates/duration of programme/project : expected 1978/1983

Name of lagoon(s) : Not yet selected

Geographic location lat. : Code :
Pacific coast of Central America long. : surface area :

El Salvador

Title of programme : Compartment structure, function and importance in a neotropical mangrove ecosystem .

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Finland

Institution : Nature Conservation Office
Address : Ministry of Forestry and Agriculture,
 Hallituskatu 3 A,
 SF - 00170 HELSINKI 17
 Finland
Director :

Title of programme :

Project leader(s) :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
									X	

Address :

Co-operating institution(s) : University of Helsinki,
 Tvärminne Zoological Station;
 University of Turku,
 Archipelago Research Institute;
 University of Oulu,
 Bothrian Bay Research Station;

Description and objectives of the programme/project (summarized) :

Conservation project for scientific and other purposes .

Supporting or funding body :

Starting dates/duration of programme/project : To end of 1976

Name of lagoon(s) : numerous

Geographic location lat. :
 along the Baltic Sea,
 coast of Finland long. :

Code :
 surface area :

SCOR/Unesco enquiry on existing lagoon research programmes

France

Institution : Faculté des Sciences
Centre Universitaire
Address : Laboratoire de Biologie Marine
66025 Perpignan , France

Title of programme :

Comparative study of fish populations in coastal lagoons of
Salses, Leucate and Canet (Roussillon)

Director : J. Bruslé

Project leader(s) : J. Bruslé

Address : same as above

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					X

Co-operating institution(s) :

Description and objectives of the programme/project (summarized) :

The project is based on a comparative study of teleosts living in
lagoons of the Mediterranean. The project is a general survey including
some aspects of population dynamics and reproductive physiology.

Supporting or funding body :

Ministry of the Universities

Starting dates/duration of programme/project : 1976

Name of lagoon(s) : Salses and Leucate ("étangs")

Geographic location lat. : 42° 50' N

Code :

long. : 3° 00' E

surface area : 58 km²

SCOR/Unesco enquiry on existing lagoon research programmes

France

Institution : Laboratoire Central d'Hydraulique de France
 10, rue Eugène Renault
 Address : 94700 Maisons-Alfort
 France

Director : Pierre Prudhomme

Project leader(s) : Claude Migniot

Address : Laboratoire Central d'Hydraulique de France
 10, rue Eugène Renault
 94700 Maisons-Alfort
 France

Co-operating institution(s) :
 University of Perpignan.

Supporting or funding body :
 private firm
 Maritime Service for Languedoc-Roussillon

Starting dates/duration of programme/project : September 1976/February 1977

Name of lagoon(s) :
 Bages - Sigean

Geographic location lat. :
 South of France - long. :
 Mediterranean Sea

Code :
 surface area :

Title of programme :

Study of sedimentation in the lagoon of Bages - Sigean

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X					X	X		

Description and objectives of the programme/project (summarized) :

This five month project consisted of the measurement, analysis and synthesis (including flow models) of various physical parameters (hydrodynamics, sediment transport and deposition, hydrogeology) of the Bages-Sigean lagoon.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Ministry of Agriculture (CTGREF) Division Aménagements littoraux et aquaculture Address : 50 avenue de Verdun Gazinet 33610 Cestas , France Director : P. Ferlin	
Project leader(s) : O. Ledoux Address : CTGREF rue Jules Guesde - Celleneuve 34000 Montpellier	
Co-operating institution(s) : Office national des Forêts	
Supporting or funding body : Ministry of Agriculture	
Starting dates/duration of programme/project : 1975	
Name of lagoon(s) : Mediterranean lagoons : Thau notably	
Geographic location lat. : 43° N long. : 5° E	Code : surface area :

France										
Title of programme : Conservation and management in coastal lagoons of the Mediterranean coast										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X			X	X	X
existing research programme : no										
reports available : yes										
Description and objectives of the programme/project (summarized) : This program is based on a general survey on coastal lagoons of the french Mediterranean coast. The main fields investigated are biological productivity and hydrology in the form of a general survey.										

SCOR/Unesco enquiry on existing lagoon research programmes

France

Institution : Université d'Aix Marseille II
 Address : Station Marine d'Endoume et Centre d'Océanographie
 rue Batterie des Lions
 13007 Marseille, France
 Director : J.M. Peres

Title of programme :

Hydrochemistry, primary productivity; benthos production in the Berre lagoon.

Project leader(s) : J.M. Peres

Address : as above

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X					X	

literature and/or reports available : yes

existing training programme : yes

Co-operating institution(s) :

Description and objectives of the programme/project (summarized) :

The following fields are investigated : dynamics of hydrochemistry and primary productivity; and dynamics of the benthic community in relation with a) the pollution level (domestic and industrial) and b) the more or less regular freshwater input (due to a hydroelectric plant).

Supporting or funding body :
 Ministry of the Universities
 CNRS, CNEXO

Starting dates/duration of programme/project : about 20 years ago

Name of lagoon(s) : Berre (étang de Berre)

Geographic location	lat. : 43°27' N	Code	:
W Marseille	long. : 5°05' E	maps	: yes
		surface area	:

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Université de Bordeaux I
 Institut de Biologie Marine
 Address : 2 rue du Professeur Jolyet
 33120 Arcachon , France

Director : J. Boisseau

Project leader(s) : P. Lasserre

Address : same as above

Co-operating institution(s) :

Université des Sciences et Techniques du Languedoc (Laboratoire
 d'Hydrobiologie marine);
 Centre Océanologique de Bretagne (COB), Brest

Supporting or funding body :

Ministry of the Universities
 C.N.R.S.
 C.N.E.X.O.
 D.G.R.S.T.

Starting dates/duration of programme/project : 1974

Name of lagoon(s) : Arcachon
 Marennes-Oléron

Geographic location lat. : 44°-46° N

S.W. Atlantic coast long. : 1°10' W

Code :
 maps : yes
 surface area : 200 km²

France

Title of programme :

Mechanisms of production and environmental adaptation in lagoon
 ecosystems.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X		X		X	

literature and/or reports available : yes

existing training programme : yes

Description and objectives of the programme/project (summarized) :

The following fields are investigated :
 - metabolic processes in eutrophic ecosystems, notably at the
 water/sediment interface; the rôle played by bacteria and meiofauna
 are considered;
 - environmental adaptation and stress;

This approach is directed towards a better understanding of extensive
 and semi-intensive aquaculture in lagoonal impoundments. Fishes and molluscs
 are harvested in 1000 ha of fish ponds replenished during peaks of spring
 tides through a system of sea sluice gates.

SCOR/Unesco enquiry on existing lagoon research programmes

France

Institution : Université de Bordeaux I
 Institut de Géologie d'Aquitaine (IGBA)
 Address : 351 cour de la Libération
 33405 Talence, France

Director : M. Vigneaux

Project leader(s) : M. Vigneaux

Address : same as above

Co-operating institution(s) :

Supporting or funding body :

Ministry of the Universities
 C.N.R.S.

Starting dates/duration of programme/project : 1972

Name of lagoon(s) : Maremes-Oléron
 Bonne Anse
 Arcachon

Geographic location	lat. : 44°-46° N	Code :
S.W. Atlantic coast	long. : 1°10'-1°50' W	maps : yes
		surface area : 200 Km ²

Title of programme :

Sedimentation processes in coastal lagoons of the S.W. Atlantic coast (Aquitaine, Charente-Poitoux)

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X							

literature and/or reports available : yes

existing training programme : yes

Description and objectives of the programme/project (summarized) :

The programme include 3 main fields : hydrological and sedimentological relationships between lagoons and the ocean, movements of sand bar from the ocean, sedimentation rates as a function of water inputs.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Université de Paris VI Laboratoire Arago Address : 66650 Banyuls-sur-Mer, France Director : J. Soyer		
Project leader(s) : G. Cahet Address : same as above		
Co-operating institution(s) :		
Supporting or funding body : Ministry of the Universities CNRS		
Starting dates/duration of programme/project : 1974		
Name of lagoon(s) : Bages - Sigean and Canet		
Geographic location Mediterranean	lat. : 43°07' N long. : 3°00' E	Code : maps : yes surface area :

France										
Title of programme : Utilization of organic matter in lagoonal sediments										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						
literature and/or reports available: yes										
existing training programme: yes										
Description and objectives of the programme/project (summarized) : The following field is investigated : biogeochemical functioning of lagoonal sediments in highly eutrophied systems, including heterotrophy potential due to microorganisms.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Université des Sciences et Techniques du Languedoc
 Laboratoire d'Hydrobiologie Marine
Address : Place E. Bataillon
 34060 Montpellier, France
Director : M. Amanieu

Project leader(s) : M. Amanieu
Address : same as above

Co-operating institution(s) :
 Institut de Biologie Marine, Université de Bordeaux I, Arcachon

Supporting or funding body :
 Ministry of Universities
 CNRS, DGBST, CNERO

Starting dates/duration of programme/project : 1974

Name of lagoon(s) : Thau, Maguelone, Palavas

Geographic location lat. : 43°20'-43°40'N
 long. : 3°40'- 4°20'E
Code :
maps : yes
surface area :

France

Title of programme :
 Population dynamics in the coastal lagoons of the Languedoc

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X	X			

literature and/or reports available : yes

existing training programme : yes

Description and objectives of the programme/project (summarized) :

Studies on population dynamics and ecology of fish and crustaceans.
 Ecology of bacteria and benthic macrofauna.
 Applied aspects are also considered.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Biologische Anstalt Helgoland
 Address : Zentrale Hamburg-Altona
 Palmalle no. 9
 2000 Hamburg 50
 Federal Republic of Germany
 Director : O. Kinne

Project leader(s) : H. Kessler
 Address : Biologische Anstalt Helgoland
 Litoralstation List
 Hafenstrasse
 2282 List auf Sylt
 Federal Republic of Germany

Co-operating institution(s) :

Supporting or funding body :
 Federal Ministry of Research and Technology

Starting dates/duration of programme/project : indefinite

Name of lagoon(s) :
 North Sylt Lagoon

Geographic location	lat. : 54°58'	Code :
	long. : 8°27'	map : yes
		surface area :

Germany, Federal Republic of

Title of programme :
 Ecological Research on the North Sylt Lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						X

existing training programme: no

Description and objectives of the programme/project (summarized) :

The aim of the investigations is to study the present composition of the benthic and planktonic fauna and flora of the lagoon, and to observe the seasonal fluctuations and long term variations of the species. The results will be correlated with hydrographic and meteorological data.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Universität Kiel Address : Geologisch-Paläontologisches Institut und Museum Oshausenstrasse 40/60 2300 Kiel, Federal Republic of Germany Director : E. Seibold	
Project leader(s) : Address :	
Co-operating institution(s) :	
Supporting or funding body : DE-2 : Deutsche Forschungsgemeinschaft	
Starting dates/duration of programme/project :	
Name of lagoon(s) : lagoons in the Baltic	
Geographic location	lat. : long. :
	Code : surface area :

Germany, Federal Republic of											
Title of programme : Special Research Project 95											
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.	
X	X	X	X	X		X				X	
Description and objectives of the programme/project (summarized) : Multidisciplinary programme on the sea/seafloor interaction with special emphasis on the Western Baltic.											

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Oldenburg
Postfach 943
Address : D - 2900
Federal Republic of Germany

Director : M.E. Krumbein

Project leader(s) : M.E. Krumbein
M. Shilo

Address : University of Oldenburg
Postfach 943
D - 2900
Federal Republic of Germany

Co-operating institution(s) :

Hebrew University of Israel (Departments of Life Science,
and Microbiology and Marine Biological Laboratory, Elat);
Senckenberg am Meer Wilhelmshaven.

Supporting or funding body :

Niedersachsen Landesregierung
Deutsche Forschungsgemeinschaft
Bundesministerium für Forschung und Technologie

Starting dates/duration of programme/project :
1970/1979

Name of lagoon(s) :
Lagoonal environments and sea-marginal pools of the Gulf
of Aqaba (the Solar Lake) and the Wadden Sea

Geographic location	lat. :	Code :
	long. :	surface area :

Germany, Federal Republic of

Title of programme :

Geomicrobiology and biogeochemistry of intertidal and
lagoonal environments

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X	X						

literature and/or reports available: yes

existing training programme: yes

Description and objectives of the programme/project (summarized) :

The project is mainly concerned with the mutual exchange between marine and hypersaline or brackish waters with respect to the development of the biota typical of extreme and fluctuating environments. Various subprojects are designed to study: pollution and successions of populations of bacteria and cyanobacteria under certain geochemical and sedimentological conditions; mass cultivation of anoxygenic cyanobacteria as protein sources, or food for animals, or as simple biological energy sources; the possibility that cyanobacteria and algal mats are indicators of pollution, or if their activity and species distribution and diversity is indicative of environmental pollution.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad de San Carlos de Guatemala
 Address : Ciudad Universitaria, Zona 12,
 Guatemala
 Director : Roberto Morales Juárez

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

Geographic location lat. : 14° 20' N
 long. : 90° 30' W

Code :
 surface area : 30 km²

Guatemala

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						X

literature and/or reports available : in preparation

existing training programme : yes

Description and objectives of the programme/project (summarized) :

Work has been done on primary productivity and mangrove ecosystems .

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Direccion General de Recursos Naturales Renovables Address : Edificio Jimenez Talavera 8a. Ave., 11 y 12 calles Comayagua, D.C., Honduras Director : Humberto Caballero		
Project leader(s) : Gustavo A. Cruz Address : same as above		
Co-operating institution(s) : Corporacion Hondurena de Desarrollo Forestal (COHDEFOR)		
Supporting or funding body : Governmental		
Starting dates/duration of programme/project : 1977		
Name of lagoon(s) : Guaymoreto lagoon		
Geographic location	lat. :16°00' N long. :85°50' W	Code : surface area :

Honduras										
Title of programme : Determination of the chemical, physical and biological parameters in the Guaymoreto lagoon system.										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X		X			X	X
Description and objectives of the programme/project (summarized) : The project objective is to make a general survey of the lagoon environment to determine the effects of pollution in Trujillo Bay.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Centre of Advanced Studies in Marine Biology

Address : Annamalai University,
Parangipettai, Tamil Nadu 608502,
India

Director : K. Krishnamurthy

Project leader(s) : R. Natarajan

Address : Annamalai University,
Centre of Advanced Study in Marine Biology,
Parangipettai,
Tamil Nadu 608502, India

Co-operating institution(s) :

Supporting or funding body : Mainly the University Grants Commission,
New Delhi; Tamil Nadu State Government;
Madras and Annamalai University .

Starting dates/duration of programme/project : Ongoing

Name of lagoon(s) : Parangipettai Killain, Pichavaram region

Geographic location lat. : 11° 29' N
Tamil Nadu, Coromandel Coast,
Bay of Bengal seabord long. : 79° 48' E

Code :
surface area : 5 km²

India

Title of programme : Tropical Ecosystems : Tidal Pools, Mangroves,
Mangrove Lagoons, Backwater Lagoons .

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X				X	X	X	X	Y	X	X

Literature and/or reports available : yes

Existing training programme : yes

Description and objectives of the programme/project (summarized) :

A comparative assessment of the marine biology of the plankton, shell fish and fishery resources in four biotypes (neritic, estuary, backwater and mangrove) is in process . A project on prawn aquaculture is also designed .

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : National Institute of Oceanography Address : NIO. P.O 403 004 Dona Paula, Panaji, Goa, India Director : S.Z. Qasim		
Project leader(s) : S.Z. Qasim Address : National Institute of Oceanography, NIO PO 403 004 Dona Paula, Panaji, Goa, India		
Co-operating institution(s) :		
Supporting or funding body : Council of Scientific and Industrial Research, Department of Science and Technology, Government of India		
Starting dates/duration of programme/project : 1) 1966/continuing 2) 1970/continuing		
Name of lagoon(s) : 1) Cochin Backwater and Vembanad Lake 2) Mandoui, Cumbarjua Canal and Zuary Estuarine System of Goa (a monsoonal lagoon) .		
Geographic location	lat. : 1) 9°45'N 2) 15°25'N long. : 1) 76°20'E 2) 74°50'E	Code : Maps : yes surface area :

India										
Title of programme : 1) Studies on Primary, Secondary and Tertiary Levels of the Food Chains . 2) Marine Environmental Monitoring .										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X	X			X	X	X
Description and objectives of the programme/project (summarized) : The project aims at studying the physical, chemical, geological and biological characteristics for developing an understanding of the environmental changes which will help in the assessment of resources and also in developing measures for the protection of the environment . Subprojects emphasis the biochemical and physical changes and their effects on the living resources and on aquaculture .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Department of Aquatic Biology and Fisheries
Address : University of Kerala,
 Aquarium Campus,
 Trivandrum - 695007, South India,
 India
Director : Balakrishnan Nair

Project leader(s) : Balakrishnan Nair

Address : University of Kerala,
 Department of Aquatic Biology and Fisheries,
 Aquarium Campus,
 Trivandrum - 695007, South India, India

Co-operating institution(s) :

Supporting or funding body : University of Kerala, University Grants Commission,
 New Delhi; Council of Science on Industrial
 Research, New Delhi; International Foundation
 for Science, Stockholm .

Starting dates/duration of programme/project : 1972/ongoing

Name of lagoon(s) : Veli Lake, Kadinankulam Lake, Anjuthengu Lake,
 Edava-Nadayara Lake, Paravoor Lake, Ashtamudi Lake,
 Vembanad Lake, Kayankulam Lake, Kodungalloor Kayal .

Geographic location

lat. : 8° 13' N

long. : 75° 77' E

Code :

Maps : yes

surface area : 500 km²

India

Title of programme : 1) Biology and Culture of Cyprinid Fishes of Kerala;
 2) Ecology and biology of mysids of Veli Lake, Trivandrum;
 3) Ecology of the retting grounds in the back water
 systems of Kerala .

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				X

Literature and/or reports available : yes

existing training programme : yes

Description and objectives of the programme/project (summarized) :

In addition to ecological studies that have been made on specific estuarine littoral animals (e.g. Cyprinid Fishes, mysids), a more comprehensive investigation is proposed on the dynamics, composition and energy flow in certain estuarine and littoral ecosystems . It is hoped that the work will be able to be practically applied towards aquaculture .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Geology-Paleontology

Address : Institut and Museum of the University of Kiel,
Olshausenstrasse 40/60,
D - 2300 Kiel,
Federal Republic of Germany

Director : Ilse Seibold

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) : Lagoon of Cochin

Geographic location

lat. : 10° 10' N

long. : 76° 15' E

Code :

surface area : 240 km²

India

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X		X						

Literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

Work has involved comparison of foraminifera between the Lagoon of Cochin and the open shelf, and transport of material into and out the Lagoon of Cochin .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Madras
 Department of Zoology
 Address : Madras - 5, India

Director : K. Ramalingam

Project leader(s) : Jeyapaul Azariah

Address : University of Madras
 Department of Zoology
 Madras - 600005, India

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

- (i) Glaxea lagoon of Krusadi
- (ii) Sundarmadian lagoon (near Mandapam Camp)
- (iii) Kavarthi lagoc..

Geographic location	lat. (i) 9°N	Code :
	(ii) 9°N	
	(iii) 11°N	
long. (i) 79°E	surface area :	
(ii) 79°E		
(iii) 72°E		

India

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					X

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : National Institute of Oceanology,
Indonesian Institute of Sciences
Address : J/n Akvarium, Sunda Kelapa,
P.O. Box 580/DAK,
Jakarta Barat,
Indonesia
Director : Aprilani Soegiartu

Project leader(s) : Atjep Suwartana

Address : Stasiun Penelitian Ambon,
Poka, Ambon, P.O. Box 44,
Indonesia

Co-operating institution(s) :

Supporting or funding body : Government of Indonesia

Starting dates/duration of programme/project : April 1974/1979

Name of lagoon(s) : Ambon Bay

Geographic location

lat. :

long. :

Code :

surface area :

Indonesia

Title of programme : Maluku Shallow Water Research

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X		X	X	X					X

Description and objectives of the programme/project (summarized) :

The study is aimed at providing hydrological and biological data of the bay to support the study of the biology of the life-bait fish, mainly Stolepborus. The study includes chemical and physical oceanography, biological oceanography (planktonology) and fish taxonomy.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Department of Fisheries Abbotstown, Castleknock Address : County Dublin, Ireland Director : F.A. Gibson	
Project leader(s) : Dan Minchin Address : Department of Fisheries Abbotstown, Castleknock County Dublin, Ireland	
Co-operating institution(s) :	
Supporting or funding body : Department of Agriculture and Fisheries, Fisheries Division	
Starting dates/duration of programme/project : 1975/ on going	
Name of lagoon(s) : Lough Ine	
Geographic location	lat. : long. :
west Cork (S.W. coast of Ireland)	Code : map : yes surface area :

Ireland										
Title of programme : Development of techniques to maximize the collection of <u>Pecten maximus</u> L. spat for subsequent culture and reseedling										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X		X		
literature and/or reports available: yes										
Description and objectives of the programme/project (summarized) : The nature of the research is to study and attempt to establish a technique for the development of farming the scallop (<u>Pecten maximus</u>).										

SCOR/Unesco enquiry on existing lagoon research programmes

Ireland

Institution : University College Dublin
 Zoology Department
 Address : Belfield
 Dublin 4, Ireland

Title of programme :
 Productivity studies on Ladys Island Lake

Director :

Project leader(s) : Brenda Healy

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X		X			X	X

Address : University College Dublin
 Zoology Department
 Belfield
 Dublin 4, Ireland

Co-operating institution(s) :

University College Dublin;
 Electricity Supply Board.

Description and objectives of the programme/project (summarized) :

The project aims to investigate aspects of primary and secondary productivity and to show the effects of seasonal fluctuations in temperature, nutrient levels and productivity. Seasonal and spatial variations in densities, reproductive cycles and growth patterns are being examined in the dominant species. The trophic relationships of the animal community are being considered. Quantitative sampling of benthos and macrophytes and semi-quantitative sampling of pelagic species is being carried out.

Supporting or funding body :

Department of Fisheries.

Starting dates/duration of programme/project : 1976/1980

Name of lagoon(s) :
 Ladys Island Lake

Geographic location lat. : Code :
 long. : surface area :

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Trinity College Zoology Department Address : University of Dublin Dublin 2, Ireland Director :	
Project leader(s) : Miles Parker Address : Department of Agriculture and Fisheries Fisheries Division Abbotstown, Castleknock County Dublin, Ireland	
Co-operating institution(s) :	
Supporting or funding body : Salmon Research Trust of Ireland; Zoology Department, Trinity College.	
Starting dates/duration of programme/project : 1973/1975	
Name of lagoon(s) : Lough Furnace	
Geographic location	lat. : 53°55' N long. : 9° 35' W
Code :	map : yes surface area : 1.5 km ²

Ireland										
Title of programme :										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X			.		X	
literature and/or reports available: yes										
existing training programme: no										
Description and objectives of the programme/project (summarized) : The programme consisted of three phases: 1) the hydrography of the system was examined through repeated sampling of salinity, temperature and oxygen. Information on tides and their effects was gathered; 2) sampling of particulate organic matter was carried out at the same time with an attempt made to estimate the relative distribution of organic material in particulate, colloidal and dissolved form; and 3) a population of <u>Neomysis integer</u> was analyzed and information gathered on its biomass and on behaviour and feeding behaviour:										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : University College Galway Shellfish Research Laboratory Address : Carna, County Galway Ireland Director : P.J. O'Ceidigh	
Project leader(s) : J.K. Partridge Address : University College Galway Shellfish Research Laboratory Carna, County Galway Ireland	
Co-operating institution(s) :	
Supporting or funding body : National Science Council, Department of Education	
Starting dates/duration of programme/project : 1974/1976	
Name of lagoon(s) : Lough Ruisin and North Quay	
Geographic location Galway Bay	lat. : long. : Code : surface area : 0.6 km ²

Ireland										
Title of programme : Ecology and reproduction of <u>Tapes decussatus</u> populations occurring in the outflow of seawater										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						X
literature and/or reports available: yes										
Description and objectives of the programme/project (summarized) : The project focused more on the outflow area than on the lagoon itself, where there were dense populations of <u>Tapes decussatus</u> . The physical environment has been investigated, including current, salinity, temperature, and chlorophyll monitoring. The reproductive cycle of <u>T. decussatus</u> was determined over a one year period, and conclusions drawn relating the cycle to environmental factors.										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : University College Galway Shellfish Research Laboratory Address : Carna, County Galway Ireland Director : P. O'Ceidigh	
Project leader(s) : John Mercer Address : University College Galway Shellfish Research Laboratory Carna, County Galway Ireland	
Co-operating institution(s) : University College of Galway - Departments of Botany, Zoology, Microbiology, and Oceanography.	
Supporting or funding body : National Science Council of Ireland; Gael Lin (private industry).	
Starting dates/duration of programme/project : 1974/ on going	
Name of lagoon(s) : Kilkieran and Bertraghbay Bays	
Geographic location west coast of Ireland	lat. : 53° 19' N long. : 9° 51' W Code : surface area : 0.03 km ²

Ireland										
Title of programme : Experimental oyster development project										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X					X
Description and objectives of the programme/project (summarized) : The first phase of the project was to assess the present state of oyster stocks in the two bays (where a locally important oyster culture was located about 1900) and suitability of the bay for oyster culture, including studies on: oyster stocks, density and distribution; growth of oysters in the area; annual cycle of phytopigment levels and temperature of water; annual cycle of nutrient levels and temperature of water; hydrography; concentration and distribution of oyster larvae during summer months. Having established that the area shows some potential for oyster culture, particularly for seed production, a programme was established to define areas of good settlement, and to design a suitable spat collecting technique for the area.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Hebrew University of Jerusalem
 Department of Zoology
 Address : Jerusalem, Israel

Director : F.D. Por

Project leader(s) : F.D. Por

Address : Hebrew University of Jerusalem
 Department of Zoology
 Jerusalem, Israel

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

Solar Lake, Di Zahav, Nobq Mangroves

Geographic location

lat. :

Code :

Senai

long. :

surface area :

Israel

Title of programme :

- (i) Near shore seepage pools of Sinai
- (ii) Mangroves of Sinai
- (iii) Foodchains in oligohaline aquaculture

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					X

Description and objectives of the programme/project (summarized) :

This general investigation includes studies on the major environmental parameters, the main community patterns, and the food webs of the lagoons.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Hebrew University of Israel
 Address : Department of Zoology
 Jerusalem, Israel

Director :

Project leader(s) : Adam Ben-Tuvia

Address : Hebrew University of Israel
 Department of Zoology
 Jerusalem, Israel

Co-operating institution(s) :

Israel Oceanographic and Limnological Research Company.

Supporting or funding body :

Ministry of Agriculture and Civil Rule Authority.

Starting dates/duration of programme/project : 1970/1977

Name of lagoon(s) :

Bardawil Lagoon

Geographic location lat. : 31° 10' N

Mediterranean coast of Sinai long. : 33° 10' E

Code :

surface area : 650 km²

Israel

Title of programme :

Fisheries biology of the Bardawil Lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X		X			X	X

Description and objectives of the programme/project (summarized) :

Studies were conducted on the hydrographic conditions of the lagoon and on the biology (growth, reproduction and feeding habits) of the main commercial species found in the lagoon (Sparus aurata, Mugilidae spp. and Dicentrarchus labrax).

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Tel-Aviv University
 Address : Tel-Aviv, Israel

Director :

Project leader(s) : L. Fishelson

Address : Tel-Aviv University
 Department of Zoology, Marine Biology
 Tel-Aviv, Israel

Co-operating institution(s) :

Supporting or funding body :
 Tel-Aviv University.

Starting dates/duration of programme/project : 1970/ongoing

Name of lagoon(s) :
 Mediterranean and Red Sea littoral lagoons

Geographic location	lat. :	Code :
	long. :	surface area :

Israel

Title of programme :
 Epiphytic animal communities on macroalgae found
 along the Mediterranean and Red Sea littoral
 of Israel.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X		X			X	

existing training programme: yes

Description and objectives of the programme/project (summarized) :

Along the lagoonal waters of the littoral of Israel (Mediterranean and Red Sea) macrophytic algae of the genus Cystoseira, Sargassum, Pterocladia, Jania and others form seasonal growths that usually grow during winter and disappear in summer. Each of these algae was found to be populated by a typical invertebrate community. The aim of this programme is to investigate the annual developments of such communities and to compare them found in polluted and non-polluted areas.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Ente Siciliano per la Promozione Industriale (ESPI)
 Sezione per la pesca
 Address : Corso Garibaldi, 136
 98100 Messina, Sicily, Italy
 Director : P. Arena

Project leader(s) : P. Arena
 Address : same as above

Co-operating institution(s) :
 Istituto di Zoologia, Università di Messina
 Istituto di Idrobiologia, "
 Istituto Sperimentale Talassografico di Messina

Supporting or funding body :
 Ente Siciliano per la Promozione Industriale (ESPI)
 Cassa per il Mezzogiorno di Roma

Starting dates/duration of programme/project : 1975

Name of lagoon(s) : Marsala lagoon

Geographic location	lat. : 37°52' N	Code :
western corner of Sicily	long. : 12°27' E	surface area : 30 km ²

Italy

Title of programme :
 Hydrobiological research in the Marsala lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				X

literature and/or reports available : yes

existing training programme: no

Description and objectives of the programme/project (summarized) :

The project is centred mostly on hydrobiological conditions in the "stagnone" of Marsala. It includes a general survey with consideration on the possibilities of improving pond culture in the lagoon.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Istituto di Biologia del Mare, CNR, Address : Riva 7 Martiri 1364/A, Venice, Italy Director : Bruno Battaglia	
Project leader(s) : Bruno Battaglia Address : Istituto di Biologia del Mare, CNR, Riva 7 Martiri 1364/A Venice, Italy	
Co-operating institution(s) : EEC-FAO; UNEP; Istituto di Biologia Animale, University of Padua.	
Supporting or funding body : National Research Council of Italy	
Starting dates/duration of programme/project : 1962/ongoing	
Name of lagoon(s) : Lagoon of Venice	
Geographic location	lat. : 45°26'N long. : 12°33'E Code : surface area : 550 km ²

Italy										
Title of programme : Sedimentology, ecology and pollution in the lagoon of Venice										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X	X						X
literature and/or reports available : yes										
existing training programme : no										
Description and objectives of the programme/project (summarized) : The programme includes nine subprojects studying different aspects of lagoons: hydrological, planktonological and microbiological research; chemical pollution and carcinogenic danger; distribution of superficial sediments; genetics, ecology and embryology of Ascidiacea; biochemical genetics of <i>Tisbe</i> spp., <i>Gammarus</i> spp., <i>Mytilus</i> spp., <i>Anguilla anguilla</i> ; ecological genetics and speciation in the genus <i>Tisbe</i> ; short and long-term effects of some pollutants in Harpacticoid copepods of the genus <i>Tisbe</i> ; interaction of environmental and endocrine factors on the reproductive cycle of Teleost fish; and research on the fouling communities as an indicator of environmental quality.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Istituto di Idrobiologia e Piscicoltura
 Università di Messina
 Address : via dei Verdi 75
 Messina , Sicily
 Director : S. Genovese

Project leader(s) : F. Faranda
 Address : same as above

Co-operating institution(s) :
 Laboratorio per lo Sfruttamento delle lagune
 CNR di Lesina
 Ente Siciliano Promozione Industriale, Sezione ricerca
 pesca e prodotti del mare, Messina

Supporting or funding body :
 Ministero Pubblica Istruzione
 Consiglio Nazionale delle Ricerche

Starting dates/duration of programme/project : 1976

Name of lagoon(s) : Anselmo, Nubia ("salina")

Geographic location	lat. :	Code :
western Sicily	long. :	surface area :

Italy

Title of programme :

A pilot project on the commercial marketing of Penaeus kerathurus.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					X

literature and/or reports available : yes

existing training programme : no

Description and objectives of the programme/project (summarized) :

The project is a pilot project on culturing penaeid shrimps
 in lagoonal salt ponds.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Istituto Sperimentale Talassografico di Trieste Address : Viale Romolo Gessi n°2 I - 34123 Trieste , Italy Director : David Bregant		
Project leader(s) : David Bregant Address : Istituto Sperimentale Talassografico di Trieste Viale Romolo Gessi n°2 I - 34123 Trieste, Italy		
Co-operating institution(s) :		
Supporting or funding body : Ministero dell'Agricoltura e delle Foreste		
Starting dates/duration of programme/project : 1976/1977		
Name of lagoon(s) : Laguna di Grado		
Geographic location	lat. : 45°40'33" N 45°45'39" N	Code :
North Italy	long. : 13°05'08" E 13°25'08" E	surface area : 160 km ²

Italy											
Title of programme : Hydrology of the northern side of the Lagoon of Grado											
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.	
			X								
Literature and/or reports available: yes											
existing training programme: no											
Description and objectives of the programme/project (summarized) : This programme involved studies on the variations of temperature, salinity, oxygen, pH, nutrients and other parameters in relation to the high tide and the low tide at the northern mouth of the Lagoon of Grado.											

SCOR/Unesco enquiry on existing lagoon research programmes

Italy

Institution : 1) Museo Civico Storia Naturale - Laboratorio di Ecologia
Santa Croce 1730 Venezia, Italy

Address : Director - A. Giordani Soika

2) Istituto Bioclimatologico Ospedale al Mare
Lido di Venezia, Italy

Director : Director - A. Giordani Soika

3) Assessorato all'Ecologia
Comune di Venezia, Italy

Project leader(s) : Director - A. Cianciolo

as above

Address :

Co-operating institution(s) :

various Institutes of the Universities of Padua and Pavia.

Supporting or funding body :

Municipality of Venice.

Starting dates/duration of programme/project : several years

Name of lagoon(s) :

Lagoon of Venice

Geographic location lat. :

Adriatic Sea long. :

Code :

surface area :

Title of programme :

various research projects in the Lagoon of Venice

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X			X						

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Università di Ferrara
Istituto di Zoologia
Address : Via L. Borsari, 46
Ferrara

Director : G. Colombo

Project leader(s) : G. Colombo

Address : same as above

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project : 1976

Name of lagoon(s) : Comacchio

Geographic location lat. : 44°37' N
long. : 12° 9' E

Code :
surface area : 110 Km²

Italy

Title of programme :

Population dynamics on fish and community structure

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				X

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

This project started recently. A general survey has been done . Population dynamics on fish include eels and mullets. The program deals also with rearing of eel.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Università di Messina
 Istituto di Zoologia
 Address : Stazione di Biologia marina
 Via dei Verdi
 75 Messina, Italy
 Director : Arturo Bolognari

Project leader(s) : Guisepe Magazzù
 Address : same as above

Co-operating institution(s) :

Supporting or funding body :
 Consiglio Nazionale delle Ricerche

Starting dates/duration of programme/project : 1975

Name of lagoon(s) :
 Marsala

Geographic location	lat. : 37°52' N	Code :
	long. : 12°27' E	maps : yes 2
		surface area : 20 km ²

Italy

Title of programme :

Utilization of the lagoons of Marsala for agriculture

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					X

literature and/or reports available : yes

existing training programme : no

Description and objectives of the programme/project (summarized) :

This project is a general survey started in 1975 to give data on hydrological parameters, nutrients, primary production, plankton, benthos and level of pollution. The possibility to develop experimental aquaculture is envisaged.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution :	Università di Modena Istituto di Zoologia	
Address :	Centro Interuniversitario di Biologia marina Via Università 4 46100 Modena, Italy	
Director :	G. Cognetti	
Project leader(s) :	G. Cognetti P. Tongiorgi	
Address :	same address as above	
Co-operating institution(s) :	Centro Interuniversitario di Biologia marina Piazzale Mascagni 1, 51100 Livorno	
Supporting or funding body :	Università di Modena Amministrazione della città di Livorno Consiglio Nazionale Italiano delle Ricerche	
Starting dates/duration of programme/project :	1976	
Name of lagoon(s) :	Orbetello Burano Comacchio	
Geographic location	lat. : 42°24-27' N	Code :
Tuscany Province of	44°55' N	surface area : 15 0 km ²
Grosseto	long. : 11°14-55' E	
	12°25' E	

Italy										
Title of programme :										
Study of the ecological characteristics, environment protection and fisheries of the lagoons of Orbetello, Burano and Comacchio.										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X				X	X
literature and/or reports available: yes										
existing training programme : no										
Description and objectives of the programme/project (summarized) :										
This project is a general survey on the principal ecological features in different coastal lagoons of Tuscany, in the province of Grosseto. Environmental protection and fishery development are considered in the lagoons of Orbetello and Burano.										

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Institut de Géologie du Bassin d'Aquitaine (IGBA) Université de Bordeaux I Address : 351 cours de la Libération 33405 Talence , France Director : M. Vigneaux		
Project leader(s) : J.P. Tastet Address : same address as above		
Co-operating institution(s) : Département des Sciences de la Terre, Université d'Abidjan		
Supporting or funding body : C.N.R.S. (France)		
Starting dates/duration of programme/project : 1976		
Name of lagoon(s) : Ebrié lagoon		
Geographic location Ivory Coast	lat. : 4° N long. : 5° W	Code : maps : yes surface area : 5000 km ²

Ivory Coast											
Title of programme : Ebrié lagoon project											
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.	
	X	X	X							X	
literature and/or reports available : yes											
Description and objectives of the programme/project (summarized) : Hydrology and sedimentology of the lagoon											

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : O.R.S.T.O.M. Centre de Recherches Océanographiques Address : B.P. 18 Abidjan, Côte d'Ivoire Director : P. Le Loeuff		
Project leader(s) : L. Lemasson Address : same as above		
Co-operating institution(s) :		
Supporting or funding body : O.R.S.T.O.M., Paris		
Starting dates/duration of programme/project : 1974		
Name of lagoon(s) : Ebrié lagoon		
Geographic location Ivory Coast	lat. : 4° N long. : 5° W	Code : maps : yes surface area : 5000 km ²

Ivory Coast										
Title of programme : Ebrié lagoon Project										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X	X	X	X	X		X	X
literature and/or reports available : yes										
existing training programme : no										
Description and objectives of the programme/project (summarized) : The project in cooperation with the Ivory government has three main themes : a) a study of the water/sediment interface and lagoon/land interface, b) an inventory of pollutants, b) a study of the fishing resources.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Natural Resources Conservation Department

Address : 11 Masgrave Avenue,
Kingston 10,
Jamaica

Director : Richard Thewell

Project leader(s) : Peter Reeson

Address : Wetlands Branch,
Natural Resources Conservation Department,
4 Masgrave Avenue,
Kingston 10, Jamaica

Co-operating institution(s) : University of the West Indies (Mona)

Supporting or funding body : Government of Jamaica

Starting dates/duration of programme/project : 1967 - 1969

Name of lagoon(s) : Great Salt Pond

Geographic location lat. :
St. Catherine, Jamaica long. :

Code :
surface area :

Jamaica

Title of programme : An ecological Study of a Jamaican Coastal Lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	.					

Description and objectives of the programme/project (summarized) :

This ecological study was carried out with special consideration to the benthic, zooplanktonic and fish communities .

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : University of West Indies Address : Mona Kingston 70, Jamaica Director : Ivan Goodbody		
Project leader(s) : Barry Wadie Address : same as above		
Co-operating institution(s) :		
Supporting or funding body : University of the West Indies		
Starting dates/duration of programme/project : 1976/1978		
Name of lagoon(s) : Fort Rocky Lagoon		
Geographic location	lat. : 17° 57' N long. : 76° 48' W	Code : surface area :

Jamaica										
Title of programme : Ecological Study of Fort Rocky Lagoon and Port Royal Mangrove Lagoons										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					X
Description and objectives of the programme/project (summarized) : This two-year programme has two aspects : 1) a basic ecological study of lagoons (circulation, water quality, benthic and fish communities, fouling communities); and 2) investigations of the settlement and growth of oysters (<i>Crassostrea rhizophorae</i>) on various settlement surface in lagoons . This last includes a feasibility study for commercial oyster development .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Water Research Institute

Address : Nagoya University,
Furo-cho, Chikusa-ku,
Nagoya, Japan 464

Director : Kenji Tsono

Project leader(s) : Yasuchi Kitano

Address : Water Research Institute,
Nagoya University,
Furo-cho, Chikusa-ku,
Nagoya, Japan 464

Co-operating institution(s) The Institute of Hygiene of Nagoya City

Supporting or funding body : Ministry of Education in Japan

Starting dates/duration of programme/project : 1974/ongoing

Name of lagoon(s) : 1) Ise
and 2) Mikawa Bay

Geographic location lat. :

Central part of Japan long. :

Code :

surface area : 1) 1738 Km²
2) 604 Km²

Japan

Title of programme : River inputs to ocean system in Ise and Mikawa Bays

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X							

Description and objectives of the programme/project (summarized) :

Programme includes : 1) evaluation of the present state of knowledge in Ise and Mikawa Bay; 2) determination of chemical species found in the sea water, river water, various organisms and sediment and suspended matter; 3) analysis of possible inputs and outflows of chemical species (e.g. influx from river water in suspended and dissolved states and loss of CO₂ and H₂S to the atmosphere); 4) investigation of interaction of chemical species with suspended matter, sediment, organisms and atmosphere; 5) determination of dissolved states of chemical species for organisms; and 6) determination of partitioning of trace elements among various components of sediment .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University College of Swansea
 Address : Department of Oceanography,
 Singleton Park,
 Swansea SA2 8PP,
 UK
 Director : F.T. Banner

Project leader(s) : F.T. Banner

Address : University College of Swansea,
 Department of Oceanography,
 Singleton Park,
 Swansea SA2 8PP, UK

Co-operating institution(s) :

Supporting or funding body : Natural Environment Research Council

Starting dates/duration of programme/project : 1974/1977

Name of lagoon(s) : Unnamed

Geographic location lat. :
 Sublittoral between Mombassa
 and Mtwapa, Kenya long. :

Code :
 surface area :

Kenya

Title of programme : Carbonate Sediment Production, Transport and Composition

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X	X						

Description and objectives of the programme/project (summarized) :

The three-year programme studied the hydrodynamics of the channels and the lagoons (tidal, hydraulic and wave components) in the transport and dispersion of biogenic carbonate debris. Specific enquiry was made into : the sources of carbonate sand, silt and mud from disaggregated foraminiferal, coral and calcareous algal skeletons; the hydrodynamic winnowing, sorting, transport and deposition of the debris; the role of seagrasses as sediment traps; the characteristics of lagoonal and littoral sediments; the growth and maintenance of beaches; the contribution of terrestrial sediments; the lithification of carbonate deposits and the use of benthic foraminifera as indicators of sediment source area and transport paths.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : School of Biological Studies

Address : Universiti Sains Malaysia
Penang, Malaysia

Director : C.P. Ramachandran

Project leader(s) : Ong Jin Eong

Address : School of Biological Sciences
Universiti Sains Malaysia
Penang, Malaysia.

Co-operating institution(s) :

Supporting or funding body :

Universiti Sains Malaysia

Starting dates/duration of programme/project : 1974/1979

Name of lagoon(s) :

Pantai Krachut

Geographic location

lat. : 5° 28' N

Code :

long. : 100° 07' E

surface area : 2000 m²

Malaysia

Title of programme : Physico-Chemical and Biological Limnology and
a tropical meromictic lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X			X					X	

Literature and/or reports available: in preparation

Existing training programme: no

Description and objectives of the programme/project (summarized) :

The first part of the project was to investigate and describe the physico-chemical limnology of the lagoon. The second part is expected to study the physiological mechanism of adaptation by a species of gastropod and the plankton to the high temperature and variation of salinity in the lagoon.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Centro de Investigaciones Cientificas y de Educaci3n Superior de Ensenada, Address : Avenida Espinosa No. 843, Ensenada, Baja California, Mexico Director : Sa3l Alvarez Borrego		
Project leader(s) : Sa3l Alvarez Borrego Address : Centro de Investigaciones cientificas y de Educaci3n Superior de Ensenada, Avenida Espinosa No. 843, Ensenada, Baja California, Mexico		
Co-operating institution(s) : Unidad de Ciencias Marinas de la Universidad Aut3noma de Baja California; Unidad Xochimilco de la Universidad Aut3noma Metropolitana .		
Supporting or funding body : Federal Government of Mexico, Centro de Investigaciones Cientifica y de Educaci3n Superior de Enseuada, Baja California		
Starting dates/duration of programme/project : Oct. 1972/continuing		
Name of lagoon(s) : Punta Banda Estuary, San Quintin Bay, Magdalena Bay, "El Coyote" Estuary, San Ignacio Lagoon		
Geographic location Western coast of the Baja California Peninsula	lat. :24°50'-30°28'N long. :116° - 112°50'W	Code : surface area :

Mexico										
Title of programme : Mariculture in protected and semiprotected waters of Baja California										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X	X					X
Description and objectives of the programme/project (summarized) : This programme is a general survey; the main objectives being molluscs mariculture in semi-enclosed ecosystems of Baja California .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Centro de Investigaciones Cientificas y Tecnologicas de la Universidad de Sonora,
 Address : Rosales y Boulevard Transversal, Hermosillo, Sonora, Mexico
 Director : Xicotencatl Murrieta

Project leader(s) : Luis Rafael Martinez

Address : Centro de Investigaciones Cientificas y Tecnologicas de la Universidad de Sonora, Rosales y Boulevard Transversal, Hermosillo, Sonora, Mexico

Co-operating institution(s) :

Supporting or funding body : Secretaria de Recursos Hidraulicos

Starting dates/duration of programme/project : 1976/1978

Name of lagoon(s) : Estero de Santa Rosa

Geographic location : lat. : 28°58' N Code :
 Sonora State long. : 112°09'-112°10' W surface area :

Mexico

Title of programme : Restocking with postlarvae of penaid shrimp in Santa Rosa Inlet, Kino Bay, Sonora State .

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X					X

Description and objectives of the programme/project (summarized) :

The objective of this general survey is to give environmental data for mariculture of penaid shrimp in lagoon of Sonora State .

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	Departamento de Pesca
Address :	Dirección de Acuicultura, Avenida Juárez No.100-50, Piso Mexico 1, D.F.
Director :	Daniel Muñoz Ferreira
Project leader(s) :	Sonia Alejandra Perez-Gómez Alvarez
Address :	Departamento de Pesca, Dirección de Acuicultura, Avenida Juárez No. 100-50, Piso Mexico 1, D.F.
Co-operating institution(s) :	
Supporting or funding body :	Federal Government
Starting dates/duration of programme/project :	
Name of lagoon(s) :	
Geographic location	
lat. :	Code :
long. :	surface area :

Mexico										
Title of programme : Development of a Mathematical Model for Biological Investigations of Aquaculture and Fisheries .										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.3.
					X	X	X			
Description and objectives of the programme/project (summarized) :										
This programme is developing mathematical and statistical models for aquaculture and fisheries activities in the coastal lagoons of Mexico .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Departamento de Pesca
 Address : Dirección General de Acuicultura
 Avenida Juárez 100 - 60.piso
 Mexico 1, D.F.
 Director : Daniel Muñoz Ferreira

Project leader(s) : Martha Palacios Fest

Address : Departamento de Pesca,
 Dirección General de Acuicultura,
 Avenida Juárez 100 - 60. piso
 Mexico 1, D.F.

Co-operating institution(s) : Universidad de Baja California
 and Cooperativas pesqueras de la región

Supporting or funding body : Federal Government

Starting dates/duration of programme/project : 1974/1975

Name of lagoon(s) : Various lagoons, bays and estuaries in the States of
 Tamaulipas (Southern zone), Veracruz(North and Central zones), Tabasco (Western zone),
 Campeche (Western region), Yucatan (Western region), North and Southern Baja California,
 Sinaloa (Northern, Central and Southern zones) .

Geographic location	lat. :	Code :
	long. :	surface area :

Mexico

Title of programme : Mariculture of oysters, mussels and Strombus .

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				

Description and objectives of the programme/project (summarized) :

The project is considering resources in oysters (Crassostrea), mussels(Pinna, Rangia, Lyropecteu, Anadara) and Strombus in 16 coastal lagoons distributed along the Pacific and the Atlantic coasts .

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	Departamento de Pesca
Address :	Dirección General de Acuicultura Avenida Juárez 100-60. Piso Mexico 1, D.F.
Director :	Daniel Muñoz Ferreira
Project leader(s) :	Alma Araceli Orbe Mendoza Rita Sumano López
Address :	Departamento de Pesca, Dirección General de Acuicultura, Avenida Juárez 100-60. Piso Mexico 1, D.F.
Co-operating institution(s) :	
Supporting or funding body :	Federal Government
Starting dates/duration of programme/project :	1975 and 1976/1979
Name of lagoon(s) :	1) Estero de Santo Domingo, B.C. 2) Carrizal, Gro. 3) Laguna Oriental, Oaxaca 4) Puerto Ceiba, Tab. y Los Amates, Ver.
Geographic location	lat. : long. :
	Code : surface area :

Mexico											
Title of programme : 1) Work on cultivation and biology of Pámpano, <u>Trachinotus</u> spp. 2) Work on cultivation and biology of grey mullet, <u>Migil</u> spp. 3) Work on cultivation and biology of sabalote, <u>Chanos</u> , chanos 4) Work on cultivation and biology of robalo, <u>Centroponus</u> spp.											
	I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X	X					X
Description and objectives of the programme/project (summarized) :											
Aquaculture of species of euryhaline fish of commercial value in different coastal lagoons . Biological aspects (feeding, growth, reproduction) are considered .											

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Departamento de Pesca

Address : Dirección de Acuicultura,
Avenida Juárez No. 100,
60. piso Mexico 1, D.F.
Mexico

Director : Daniel Muñoz Ferreira

Project leader(s) : Hector Garduño Argüeta
Concepción Vázquez Córdoba

Address : Departamento de Pesca,
Dirección de Acuicultura,
Avenida Juárez No.100,
60.piso Mexico 1, D.F.

Co-operating institution(s) : El Centro de Investigaciones Científicas
y Tecnológicas de la Universidad de Sonora

Supporting or funding body : Federal Government

Starting dates/duration of programme/project : 1974/1984

Name of lagoon(s) : 1) Puerto Penasco, Sonora and El Puyegue, Sinaloa
2) Presa derivadora de Sala, Colima and Los Amates, Veracruz

Geographic location lat. :
long. :

Code :
surface area :

Mexico

Title of programme : Culture of Penaid shrimps

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				

Description and objectives of the programme/project (summarized) :

Mariculture of shrimps (*Penaeus* and *Macrobrachium*) including an estimation of natural resources and cycles of the investigated species .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Direccion General de Usos del Agua y Prevencion de la Contaminacion
Address : Reforma 107-1er. Piso
 Mexico, D.F., Mexico
Director : Eloy Urroz Jimenez

Project leader(s) : Hector R. Mendoza Marquez

Address : Control de la Contaminacion del Agua
 Reforma 107-8° Piso
 Mexico 4, D.F.
 Mexico

Co-operating institution(s) :
 Asesoría Técnica y Marítima, S.A.

Supporting or funding body :
 Secretaria de Agricultura y Recursos Hidraulicos

Starting dates/duration of programme/project : 1975/1985

Name of lagoon(s) Terminos lagoon

Geographic location lat. : 18°39' N
 long. : 91°52' W
Code :
Maps : yes
surface area : 200 Km²

Mexico

Title of programme :

Study of the water quality in the Terminos lagoon, Campeche

I	II	III	IV	V	VI	VII	VIII	IX	X	S.S.
								X	X	X

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Escuela Nacional de Ciencias Biologicas

Address : Carpo y Plan de Ayala,
Mexico 17, D.F.

Director : M. en C.Ma. Luisa Sevilla H.

Project leader(s) : Armando Lemos Pastrana

Address : Departamento de Microbiologia,
Escuela Nacional de Ciencias Biologicas,
Carpo y Plan de Ayala,
Mexico 17, D.F.

Co-operating institution(s) :

Supporting or funding body : CONACYT

Starting dates/duration of programme/project : June 1976/1979

Name of lagoon(s) : Tres Palos

Geographic location lat. : 16°45' N

long. : 99°50' W

Code :

surface area :

Mexico

Title of programme : Ecological Study of the Tres Palos Lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						X

Description and objectives of the programme/project (summarized) :

The project is a general survey of lagoon Tres Palos . A study of bacteria is developed .

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Escuela Nacional de Ciencias Biológicas Address : Plan de Ayala y Carpio, Mexico 17, D.F. Director : M. and C. Maria Luisa Sevilla	
Project leader(s) : Ernesto A. Chávez Address : Escuela Nacional de Ciencias Biológicas Laboratorio de Ecología Marina, Apartado postal 42-186, Mexico 17, D.F.	
Co-operating institution(s) :	
Supporting or funding body : Consejo Nacional de Ciencia y Tecnología	
Starting dates/duration of programme/project : October 1975/1977	
Name of lagoon(s) : Mandinga Tamiahua	
Geographic location Vera Cruz, Mexico	lat. : 21° N long. : 97°30'W Code : surface area :

Mexico										
Title of programme : Ecological Study on the Continental Shelf off of the State of Veracruz , with two subprojects on the corresponding lagoonal systems .										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X		X	X			X
Description and objectives of the programme/project (summarized) : The project is a general survey on the continental shelf of Veracruz State . Two subprojects are considering two lagoonal related systems (Mandinga and Tamiahua) . Their fish and crustacean resources are studied in more detail .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Université de Bordeaux I
 Institut Universitaire de Biologie Marine (IUBMB)
 Address : 2 rue du Professeur Jolyet
 33120 Arcachon, France

Director : J. Boisseau

Project leader(s) : P. Lasserre (IUBMB, Arcachon)
 A. Laguarda-Figueroas (UNAM/CCNL, Mexico)

Address : same as above

Co-operating institution(s) :

Universidad Nacional Autónoma de México (UNAM) :
 Centro de Ciencias del Mar y Limnología (C.C.M.L.)

Supporting or funding body :

University of Bordeaux
 French Embassy in Mexico
 CONTACT

Starting dates/duration of programme/project : 1979

Name of lagoon(s) : Terminos

Geographic location

lat. : 18°39' N

Code :

Mexico

long. : 91°52' W

surface area : 200 Km²

Mexico

Title of programme :

Mechanisms of production in coastal lagoons

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X		X			

Description and objectives of the programme/project (summarized) :

This project of cooperation between the marine institute of Bordeaux University, in Arcachon, France, and the marine center of the University of Mexico (UNAM) will have the following fields of investigation :

- trophic relationships between meiofauna and bacteria;
- oxydative metabolism at the water-sediment interface;
- ecophysiological adaptation of some species of economical interest.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Liverpool
 Address : Department of Marine Biology,
 Fort Erin,
 Isle of Man,
 England, United Kingdom
 Director : E. Waylor

Project leader(s) : B. Blake

Address : Estación de Investigaciones Marinas,
 Apartado postal 1238,
 Mazatlan,
 Sinaloa, Mexico

Co-operating institution(s) :

Supporting or funding body : Ministry of Overseas Development, London;
 Universidad Nacional Autonomia de Mexico;
 University of Liverpool, England

Starting dates/duration of programme/project : July 1973/September 1979

Name of lagoon(s) : Caimanero and Huizache

Geographic location
 50 km south of Mazatlan,
 Pacific coast of Sinaloa
 State, Mexico
 lat. : 23° N
 long. : 106° W

Code :
 surface area : 150 km² (wet)
 50 km² (dry season)

Mexico

Title of programme : Mexican Lagoons Research Project

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X			X	X

Description and objectives of the programme/project (summarized) :

The following fields are investigated : ecology and population dynamics of
 a) penaeid shrimp, b) fishes, c) crabs (Callinectes) . Environmental data
 are also collected on a year basis .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Liverpool University,
Address : Department of Oceanography,
 P.O. Box 147,
 Liverpool L69 3BX,
 England, United Kingdom
Director : K.F. Bowden

Project leader(s) : M.I. Abdullah
 L.D. Mee

Address : Liverpool University,
 Department of Oceanography,
 P.O. Box 147,
 Liverpool L69 3BX, England

Co-operating institution(s) : UNAM

Supporting or funding body : Natural Environment Research Council,
 Liverpool University

Starting dates/duration of programme/project : 1974/1977

Name of lagoon(s) : Mitla, Chautengo, Mazatlan and others

Geographic location lat. : 23° 11' N
West coast of Mexico long. : 106° 25' W

Code :
surface area :

Mexico

Title of programme : Chemistry and Productivity of Coastal Lagoons

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						

Description and objectives of the programme/project (summarized) :

The programme includes the following aspects : a) general hydrographic features, b) water chemistry, c) eutrophication process, d) seasonal cycle of dissolved chemical species, e) primary productivity, f) geochemistry of lagoon sediments .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autonoma de Mexico
Address : Sección de Hidrobiología,
 Universidad Nacional Autonoma de Mexico (UNAM)
 Centro de Ciencias del Mar y Limnología
 Apartado postal 70-305
 Mexico, D.F.
Director : Carlo Marquez

Project leader(s) : Virgilio Arenas Fuentes
 Guadalupe de la Lanza

Address : Instituto de Biología,
 Sección de Hidrobiología,
 Universidad Nacional Autonoma de Mexico (UNAM)
 Apartado postal 70-305 Mexico, D.F.

Co-operating institution(s) : Instituto de Geofísica (UNAM) and
 Sección de Agricultura y Recursos Hidráulicos

Supporting or funding body : UNAM

Starting dates/duration of programme/project : 1976/1981

Name of lagoon(s) : Huizache and Caimanero

Geographic location lat. : 22°5'-23°05'N **Code :**
Northwest long. : 105°55'-106°20'W **Surface area :**

Mexico

Title of programme : (1) Cycles of organic material and bacteria in littoral lagoons
 (2) Predictive model on the productivity in a lagoonal ecosystem

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X	X		X			

Description and objectives of the programme/project (summarized) :

The main objectives of the project are : (1) to relate cycles of organic material and bacteria ; (2) to give a model of the productivity in the two lagoons .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autonoma de Mexico (UNAM)
 Centro de Ciencias del Mar y Limnologia

Address : Apartado postal 70-305
 Mexico, D.F.

Director : A. Laguarda Figueras

Project leader(s) : L. Mee
 H. Fernandez

Address : same address as above

Co-operating institution(s) :
 Dept. of Oceanography, University of Liverpool, U.K.

Supporting or funding body :
 Comision del Rio Balsas
 C.C.M.L./UNAM

Starting dates/duration of programme/project : 1974 continuing

Name of lagoon(s) : Apozahualco and Chautengo

Geographic location	lat. :	Code	:	
Estado de Guerrero	long. :	maps	:	yes
		surface area	:	200 km ²

Mexico

Title of programme :
 Hydrology and Hydrochemistry of Apozahualco lagoon.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X							X

literature and/or reports available : yes

existing training programme : yes

Description and objectives of the programme/project (summarized) :
 The chemistry of the lagoon is studied in detail. A research project on primary productivity is planned.

SCOR/Unesco enquiry on existing lagoon research programmes

Mexico

Institution : Universidad Nacional Autonoma de Mexico (UNAM)
 Centro de Ciencias del Mar y Limnologia
 Address : Apartado postal 70-305
 Mexico, D.F. Mexico

Director : A. Laguarda Figueras

Project leader(s) : V. Botello
 H. Fernandez
 Address : E. Mandelli
 same as above

Co-operating institution(s) :
 Gulf Universities Research Cons., Texas, USA (in 1974)

Supporting or funding body :
 UNAM/ C.C.H.L.

Starting dates/duration of programme/project : 1974 continuing

Name of lagoon(s) : Terminos

Geographic location	lat. : 18°30' N	Code :
Estado de Campeche	long. : 91°45' W	maps : yes
		surface area : 2000 km ²

Title of programme :

Hydrology, chemistry and pollution in Terminos lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X							

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

The chemistry of the Terminos lagoon waters is investigated in terms of salinity regimes, nutrients, oxygen, alkalinity and temperature variations. Some studies on contaminants (insecticides, heavy metals in sediments and in organisms) will be developed.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Universidad Autonoma de Mexico (UNAM) Centro de Ciencias del Mar y Limnologia (UNAM) Address : Apartado postal 70-305 Mexico, D.F. , Mexico Director : A. Laguarda Figueras	
Project leader(s) : E. Mandelli L. Mee Address : same as above	
Co-operating institution(s) : Department of Oceanography, University of Liverpool, U.K.	
Supporting or funding body : Comision del Rio Balsas, Secretaria de Recursos Hidraulicos U N A M	
Starting dates/duration of programme/project : 1974, continuing	
Name of lagoon(s) : Mitla lagoon	
Geographic location State of Guerrero	lat. : 17° N long. : 100° W Code : maps : yes surface area : 36 0 km ²

Mexico										
Title of programme : Hydrology and Hydrodynamics in Mitla lagoon										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X							
literature and/or reports available : yes										
existing training programme : yes										
Description and objectives of the programme/project (summarized) : The project is a study of the chemistry of the lagoon; it will include a research investigation on nutrients and primary productivity.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autónoma de Mexico
Centro de Ciencias del Mar y Limnología

Address : Apartado postal 70-305
Mexico D.F. , Mexico

Director : A. Laguarda Figueras

Project leader(s) : A. Ayala Castañares

Address : same address

Co-operating institution(s) :

Supporting or funding body :
UNAM/ C.C.M.L.

Starting dates/duration of programme/project : 1964 - 1976

Name of lagoon(s) : Tamiahua lagoon

Geographic location	lat. : 21°06' and 22°05' N	Code :
Veracruz State	long. : 97°22' and 97°46' W	maps : yes
		surface area :

Mexico

Title of programme :
Ecology of the recent Foraminiferans in the Tamiahua lagoon,
Veracruz.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X		X						

literature and/or reports available : yes

existing training programme : yes

Description and objectives of the programme/project (summarized) :
The project has been a long term project on the recent foraminiferans
in the Tamiahua lagoon.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autonoma de Mexico (UNAM)
Centro de Ciencias del Mar y Limnologia

Address : Apartado postal 70-305
Mexico, D.F. • Mexico

Director : A. Laguarda Figueras

Project leader(s) : R. Cruz Orozco
Estacion de Investigaciones Marinas
Address : El Carmen, Ciudad del Carmen, Campeche
Av. Lopes Mateos
Playa norte, Campeche

Co-operating institution(s) :

Supporting or funding body :
CONACYT

Starting dates/duration of programme/project : 1975, continuing

Name of lagoon(s) : Terminos lagoon

Geographic location lat. : 18°30' N
Tabasco and Campeche States long. : 91°45' W

Code :
maps : yes
surface area :

Mexico

Title of programme :

Study of the complex river-lagoon-delta in the coastal region of
Campeche - Tabasco.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X	X	X						X	X

literature and/or reports available : yes

existing training programme : yes

Description and objectives of the programme/project (summarized) :

The programme is a geological, chemical and ecological survey of the complex river-lagoon-delta. Sedimentological aspects are developed in this research.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autonoma de Mexico
Centro de Ciencias del Mar y Limnologia

Address : Apartado postal 70-305
Mexico, D.F., Mexico

Director : A. Laguarda Figueras

Project leader(s) : E. Macias Regalado

Address : same as above

Co-operating institution(s) :

The University of Liverpool

Supporting or funding body :

Secretaria de Recursos Hidraulicos
UNAM
British Overseas Development Ministry

Starting dates/duration of programme/project : 1969, continuing

Name of lagoon(s) : Huizache - Caimanero

Geographic location

lat. : 22°50' and
23°05' N
long. : 105°55' and
106°20' W

Code :

surface area :

Mexico

Title of programme :

Research project on lagoon system of Huizache - Caimanero.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X		X	X					

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

The topics of this multidisciplinary project include geology hydrochemistry and biology . The ecology and aquaculture of penaeids and the blue crab (Callinectes) are developed.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autonoma de Mexico
 Centro de Ciencias del Mar y Limnologia
 Address : Apartado postal 70-305
 Mexico, D.F. : Mexico

Director : A. Laguarda Figueras

Project leader(s) : A.A. Ortega
 R.R. Stephenson
 Address : same address as above

Co-operating institution(s) :
 British Ministry of Overseas Development

Supporting or funding body :
 UNAM/C.C.M.L.

Starting dates/duration of programme/project : 1974/1976

Name of lagoon(s) : Huizache - Caimanero

Geographic location lat. : 22°5'-23°5' N Code :
 Sinaloa State long. : 105°55'-106° W maps : yes
 surface area :

Mexico

Title of programme :

Some aspects of the hydrography and hydrochemistry of the Huizache -
 Caimanero lagoon complex in Northwest Mexico.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X							X

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

This project has given information on the importance of dissolved
 nutrients and a general survey on the Huizache-Caimanero lagoon complex.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autonoma de Mexico
 Centro de Ciencias del Mar y Limnologia
 Address : Apartado postal 70-305
 Mexico, D.F. Mexico
 Director : A. Laguarda Figueras

Project leader(s) : M. Guzman Arroyo

Address : same as above

Co-operating institution(s) :

Supporting or funding body :
 Comision del Rio Balsas
 Secretaria de Recursos Hidraulicos

Starting dates/duration of programme/project : 1975 - 1977

Name of lagoon(s) : Mitla,
 Coyuca and Tres Palos

Geographic location	lat. : 17° N	Code :
	long. : 100° W	maps :. yes
		surface area :

Mexico

Title of programme :

Biology, ecology and fisheries of lagoon shrimp (Macrobranchium tenellum,
 Palemonidae) in Mitla, Coyuca and Tres Palos lagoons.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				X

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

The project includes a general survey of the lagoons and detailed studies on biological cycles and population dynamics of the shrimp Palemonidae, Macrobranchium tenellum.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Nacional Autonoma de Mexico (UNAM)
Centro de Ciencias del Mar y Limnologia

Address : Apartado postal 70-305
Mexico, D.F. , Mexico

Director : A. Laguarda Figueras

Project leader(s) : A.A. Ortega
R.R. Stephenson

Address : same as above

Co-operating institution(s) :

British Ministry of Overseas Development

Supporting or funding body :

UNAM/C.C.M.L.

Starting dates/duration of programme/project : 1974/1976

Name of lagoon(s) : Yavaros,
Moroncarit
Etchoropa

Geographic location lat. : 26°41' to
26°56' N

State of Sonora long. : 109°32' to
109°40' W

Code :
maps : yes
surface area :

Mexico

Title of programme :

Some aspects of the hydrography and hydrochemistry of the Yavaros lagoon complex in North-West Mexico.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X							X

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

This 2 year project has given information on the importance of dissolved nutrients and a general survey on the Yavaros, Moroncarit and Etchoropa lagoons.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Institut de Géologie du Bassin d'Aquitaine (IGBA)
 Address : Université de Bordeaux I
 351 cours de la Libération
 33405 Talence, France
 Director : M. Vigneaux

Project leader(s) : M. Vigneaux
 Address : same as above

Co-operating institution(s) :
 Université de Rabat
 Institut Scientifique Chérifien

Supporting or funding body :
 CNRS (France)

Starting dates/duration of programme/project : 1974

Name of lagoon(s) : Nador (Mediterranean)
 Moulay Bouselham (Atlantic)
 Mohammedia and Oualidia and Tarfaya (Atlantic)

Geographic location	lat. : 34°35' N	Code :
Marocco	long. : 6°20' W	surface area : 300 km ²

Morocco

Title of programme :

The sedimentary environment of coastal lagoons in Marocco.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X							

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

The project has two main fields : a) a detailed study of present sedimentation in lagoons as a function of environmental parameters of both continental and marine origin; b) a geomorphological study of the sedimentation during recent quaternary (Holocene).

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Delft Hydraulics Laboratory Address : Rotterdamweg 185, Delft, The Netherlands Director : J.E. Prins	
Project leader(s) : W. Salomons Address : Delft Hydraulics Laboratory Haren Branch, C/O Institute for Soil Fertility, Oosterweg 92, Haren (Gr.), The Netherlands	
Co-operating institution(s) : Institute for Soil Fertility	
Supporting or funding body :	
Starting dates/duration of programme/project : 1973/indefinite	
Name of lagoon(s) : Wadden Sea area	
Geographic location	lat. : 53°-53°30' N long. : 5-7° E
Code :	surface area : 3300 km ² (Dutch part)

Netherlands										
Title of programme : Origin, transport and geochemical behaviour of heavy metals and phosphorus										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X					X		
literature and/or reports available : yes										
existing training programme : no										
Description and objectives of the programme/project (summarized) : The aim of this research is to determine the contents of heavy metals and phosphorus in the four different forms found in the aquatic environment (dissolved metals in surface water, suspended matter, deposited sediment, interstitial water) and to study the various interactions. Interactions are studied by laboratory experiments (absorption-desorption) or by modelling the field data. The origin and distribution of the heavy metals attached to the suspended matter are studied with natural tracers (stable isotopes).										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Delta Institute for Hydrobiological Research Address : Vierstraat 28, Yerseke The Netherlands Director : K.F. Vaas	
Project leader(s) : P.H. Nienhuis Address : Delta Institute for Hydrobiological Research Vierstraat 28, Yerseke The Netherlands	
Co-operating institution(s) : State Department of Roads and Waterways.	
Supporting or funding body : Royal Dutch Academy of Sciences and Letters, Amsterdam.	
Starting dates/duration of programme/project : 1972/1980	
Name of lagoon(s) : Lake Grevelingen	
Geographic location Southwest Netherlands	lat. : long. : Code : surface area : 108 km ²

Netherlands										
Title of programme : Carbon cycle under different hydrological regimes (tidal estuarine, stagnant brackish)										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X			X			X
Description and objectives of the programme/project (summarized) : This programme is concerned with a quantified description and comparison of the carbon cycle in the various phases of the aquatic ecosystem of the Grevelingen: the tidal estuary, the salt water lake, and possible the fresh water lake. Emphasis is placed on the direct measurement of primary and secondary production and decomposition processes.										

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution :	Delta Institute for Hydrobiological Research	
Address :	Vierstraat 28 Yerseke, The Netherlands	
Director :	K.F. Vass E.K. Duursma	
Project leader(s) :	S. Parma	
Address :	Delta Institute for Hydrobiological Research Vierstraat 28 Yerseke, The Netherlands	
Co-operating institution(s) :		
Supporting or funding body :	Royal Society of Sciences; Delta Institute	
Starting dates/duration of programme/project :	1975/1980	
Name of lagoon(s) :	Inland waters (ditches, creeks, etc...) in Southwestern Netherlands	
Geographic location Southwestern Netherlands (Rhine, Meuse, Scheldt estuaries)	lat. : 51°40' N long. : 4°E	Code : surface area : 130 km ²

Netherlands											
Title of programme : Investigations on the structure of small instable brackish ecosystems											
	I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X		X	X						X
literature and/or reports available : yes											
existing training programme : no											
Description and objectives of the programme/project (summarized) :											
<p>The aim of the Institute is to study the impact of civil technical constructions (dykes, dams, etc...) on the estuarine ecosystem in the southwest part of the Netherlands. The research group is particularly interested in the initial phase of the new standing ecosystem shortly after the human impact. For this reason they study unstable brackish and saline inland water bodies, especially ditches, small creeks, canals. The three main topics are: quantification of the so-called instability of the physico-chemical characters; classification of the unstable water bodies, based on biological structure; and autecological investigation of the ability of animals to resist changes in the environment.</p>											

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	Netherlands Institute for Sea Research
Address :	P.O. Box 59, Texel, The Netherlands
Director :	H. Postma and J.J. Zijlstra
Project leader(s) :	J.J. Beukema
Address :	Netherlands Institute for Sea Research, P.O. Box 59, Texel, the Netherlands
Co-operating institution(s) :	
Supporting or funding body :	Dutch Government
Starting dates/duration of programme/project :	1968/1993
Name of lagoon(s) :	Dutch Wadden Sea
Geographic location	lat. :52°55'-53°30' N Code : long. :4°20'-6°00' E surface area :

Netherlands										
Title of programme : Production processes in the Wadden Sea										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X			
Description and objectives of the programme/project (summarized) :										
<p>The project is concerned with long-term measurements of primary and secondary production in the Wadden Sea . Emphasis is on the microphytobenthos, macrozoobenthos, flat-fish and birds of tidal flats . Another concern is the construction of energy- and carbon-budgets of the area, as well as modelling of the ecosystem of the Wadden Sea, both mathematically and by means of laboratory-scaled ecosystems .</p>										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Netherlands Institute for Sea Research Address : P.O. Box 59, Texel, The Netherlands Director : J.J. Zijlstra	
Project leader(s) : F. Creutzberg Address : Netherlands Institute for Sea Research P.O. Box 59, Texel, The Netherlands	
Co-operating institution(s) : VIVO; Various Universities	
Supporting or funding body : Government, Department of Education and Sciences	
Starting dates/duration of programme/project : 1972/1981	
Name of lagoon(s) : Dutch Western Wadden Sea	
Geographic location	lat. : 52°55'-53°30'N long. : 4°20'-6°00'E Code : surface area : 3000 km ²

Netherlands										
Title of programme : Influence of predatory populations in Wadden Sea ecosystems										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X			
literature and/or reports available : yes										
existing training programmes : yes										
Description and objectives of the programme/project (summarized) : The emphasis of this ecosystem is autecology, especially with regard to predators. Data is being collected on the population dynamics, migratory movements, individual growth, food demand and food conversion on the predators which play a significant role in the predation on the intertidal flat fauna, such as many bird species, fish (<u>Pleuronectes platessa</u> , <u>P. flesus</u> , <u>Pomatoschistus minutus</u> , <u>P. microps</u>), and crustaceans (<u>Crangon crangon</u> and <u>Carcinus maenas</u>). These data are being used to evaluate the predatory pressure exerted by these animals. Research is carried out in the field as well as at the laboratory.										

SCOR/Unesco enquiry on existing lagoon research programmes

Netherlands

Institution : Rijks Instituut voor Visseijonderzoek

Address : Haringkade 1,
IJmuiden,
The Netherlands

Director : P. Korriga

Title of programme : Wadden Sea Project

Project leader(s) : K.H. Postum

Address : Rijks Instituut voor Visseijonderzoek,
Haringkade 1,
IJmuiden,
The Netherlands

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X		X				

Co-operating institution(s) : German Institute for Fishery Research (Hamburg, FRG)
Belgian Institute for Fishery Research (Ostend, Belgium)

Description and objectives of the programme/project (summarized) :

The Dutch Wadden Sea project was set up to get an insight into the influence of closure of the Wadden Sea on the fisheries of the area, not only those fisheries operating in the Wadden Sea but also on the fisheries in the North Sea on species using the Wadden Sea as a nursery (e.g. sole, plaice, shrimps, herring). The working procedure involves : assessment of the density of commercially important fish species in the Wadden Sea and the coastal area by periodic surveys with a standard programme; initiation of migration studies of different species from the Wadden Sea to the open North Sea; assessment of the proportion supplied by the juvenile stocks growing up in the Wadden Sea to the adult stocks in the North Sea by tagging programmes and the research in the abnormal pigmentation in the juvenile stages of sole, plaice and flounder; and investigation of the extent changes in the open estuaries influence the populations of commercially important fish species, numbers and growth .

Supporting or funding body : Ministry of Agriculture and Fisheries

Starting dates/duration of programme/project : 1969/continuing

Name of lagoon(s) : Dutch Wadden Sea, Eastern/Western Scheldt,
German Walden Sea, Dutch and German and Danish coastal areas

Geographic location

lat. :

Code :

long. :

surface area :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Netherlands Institute for Sea Research
Address : P.O. Box 59,
 Texel,
 The Netherlands
Director : J.J. Zijlstra and H. Postma

Project leader(s) : H. Postma

Address : Netherlands Institute for Sea Research
 P.O. Box 59,
 Texel,
 The Netherlands

Co-operating institution(s) :

Supporting or funding body : Dutch Government

Starting dates/duration of programme/project : Continuous

Name of lagoon(s) : Wadden Sea area

Geographic location lat. : 52°55'-55°40'N Code :
 long. : 4°20'-9°00'E surface area :

Netherlands

Title of programme : Chemistry, geochemistry and sedimentology of Wadden Sea and other estuaries .

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X							

Description and objectives of the programme/project (summarized) :

The programme aims at understanding the cycle of several chemical species (e.g. nutrients, metals and pollutants) in the Wadden Sea and adjacent North Sea . It is supported by measurements of water movement and exchange with the North Sea, sedimentological and morphological investigations and processes . There are several sub-programmes under these topics .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Netherlands Institute for Sea Research
Address : P.O. Box 59
 Texel, the Netherlands
Director : J.J. Zijlstra

Project leader(s) : P.A.W.J. de Wilde

Address : Netherlands Institute for Sea Research
 P.O. Box 59
 Texel, the Netherlands

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) : a number of small sheltered lagoons on the
 Netherland Antilles

Geographic location lat. : 12° 00'

Netherland Antilles long. : 69° 00'

Code :

surface area :

Netherland Antilles

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
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X

Description and objectives of the programme/project (summarized) :

Studies have been made on the ecology of terrestrial hermit crab (water economy and osmoregulation).

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	Botany Department
Address :	University of Auckland Auckland, New Zealand
Director :	V.J. Chapman
Project leader(s) :	Paul Heuriques
Address :	Manukau Purification Works Mangere Auckland, New Zealand
Co-operating institution(s) :	Auckland University
Supporting or funding body :	Auckland Regional Authority
Starting dates/duration of programme/project :	1973/1977
Name of lagoon(s) :	Manukau Harbour
Geographic location West of city of Auckland, northern New Zealand	lat. : long. :
	Code : surface area :

New Zealand										
Title of programme :										
Selected Ecological Aspects of Manukau Harbour										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X		X			X	X
Literature and/or reports available: in preparation										
Existing training programme: no										
Description and objectives of the programme/project (summarized) :										
Studies were made on the following in the Manukau Harbour: vegetation map (distribution map and per cent cover for the dominant plants); the intertidal seaweed <i>Gracilaria</i> (effects of sewage oxidation ponds on the distribution of <i>Gracilaria</i> benthic fauna (benthic macrofaunal species diversity variations); water chemistry (nutrients, salinity, and dissolved oxygen); sedimentology (particle size distribution and sediment nutrient distribution); and bacteriology (comparison of temporal variation of coliform measurements in water and sediment).										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	University of Auckland
Address :	Marine Research Laboratory University of Auckland Leigh, New Zealand
Director :	F.J. Taylor
Project leader(s) :	F.J. Taylor
Address :	Marine Research Laboratory Leigh, New Zealand
Co-operating institution(s) :	
Supporting or funding body :	University of Auckland
Starting dates/duration of programme/project :	1969/indefinite
Name of lagoon(s) :	Whangateau Harbour
Geographic location	lat. : 36 ⁰ 20'S long. : 174 ⁰ 46'E
Code :	
surface area :	1.7 km ²

New Zealand										
Title of programme :										
Biological studies on the Whangateau Harbour, northern New Zealand.										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						X
Literature and/or reports available: in preparation										
Existing training programme: yes										
Description and objectives of the programme/project (summarized) :										
<p>Past and present research concerns in the Whangateau Harbour include: the hydrology, nutrients and phytoplankton; intertidal and subtidal distribution of animal communities; the growth and productivity of <i>Spartina townsendii</i>; the growth of the mangrove <i>Avicennia</i> and the decomposition of its tissues in the mud. It is anticipated that work on the chemistry of deposits will be included.</p>										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Department of Geology

Address : University of Auckland
Auckland, New Zealand

Director : R.N. Brothers

Project leader(s) : M.R. Gregory

Address : Department of Geology
University of Auckland
Auckland, New Zealand

Co-operating institution(s) :

Supporting or funding body :

Government of New Zealand, through New Zealand
University Grants Committee

Starting dates/duration of programme/project : 1975/indefinite

Name of lagoon(s) : (i) Parengarenga and (ii) Rangaunu Harbours

Northern-most
Geographic location
New Zealand

lat. (i) 34°30'S
(ii) 34°56'S

long. (i) 172°56'E
(ii) 173°15'E

Code : (i) Parengarenga
14.5 km²
surface area (ii) Rangaunu
Harbour 21.8 km²

New Zealand

Title of programme :

Geologic studies in Parengarenga and Rangaunu Harbours

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X		X					X	

Existing training programme: no

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution :	Portobello Marine Laboratory	
Address :	University of Otago Box 8 Portobello, New Zealand	
Director :	J.B. Jillett	
Project leader(s) :	J.B. Jillett and C.R. Boyden	
Address :	Portobello Marine Laboratory Box 8 Portobello, New Zealand	
Co-operating institution(s) :		
Supporting or funding body :	University of Otago, University Grants Committee; Ministry of Agriculture and Fisheries; Skeggs Food Ltd.	
Starting dates/duration of programme/project :	1970/continuing	
Name of lagoon(s) :	Otago Harbour and nearby sea inlets	
Geographic location	lat. :	Code :
Southeastern New Zealand	long. :	surface area :

New Zealand											
Title of programme :											
Biology of exploited species in local sea inlets											
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.	
				X	X	X				X	
Description and objectives of the programme/project (summarized) :											
<p>The first subproject is an investigation of growth, settlement, larval biology and survivorship of <i>Ostrea lutaria</i>, particularly as a potential subject for aquaculture. The second subproject is the study of seasonal and spatial distribution, breeding periodicity, trophic competition and niche separation, and assimilation efficiencies of three sibling species of the New Zealand Sole (<i>Peltorhamphus</i>) and two of flounder (<i>Rhombosolea</i>).</p>											

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Coastal Studies Institute
Louisiana State University
Address : Baton Rouge, Louisiana 70803
USA

Director : James M. Coleman

Project leader(s) : James M. Coleman

Address : Coastal Studies Institute
Louisiana State University
Baton Rouge, Louisiana 70803
USA

Co-operating institution(s) :

Supporting or funding body :

Office of Naval Research

Starting dates/duration of programme/project :

Name of lagoon(s) :

Pearl Lagoon

Geographic location lat. :

east coast of Nicaragua long. :

Code :

surface area :

Nicaragua

Title of programme :

Circulation in Pearl Lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X							

Description and objectives of the programme/project (summarized) :

Studies have been made on the renewal of lagoon waters by tidal mixing through inlets.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Nigerian Institute for Oceanography and Marine Research Address : P.M. B 12529, Lagos, Nigeria Director : Edward O. Bayagbona	
Project leader(s) : Edward O. Bayagbona Address : P.M. B 12529, Lagos, Nigeria	
Co-operating institution(s) : University of Lagos; University of Ife-Ife-Ife	
Supporting or funding body : Federal Military Government Funds	
Starting dates/duration of programme/project : 1975/continuous	
Name of lagoon(s) : Lagos Lagoon	
Geographic location Gulf of Guinea	lat. : 6° N long. : 3-4° E Code : surface area : 100 km ²

Nigeria										
Title of programme :										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X				X
literature and/or reports available : yes										
Description and objectives of the programme/project (summarized) :										
This programme includes studies of pollution (monitoring), shrimp migration, oyster culturing, the post larvae stage of penaeid shrimp, aquaculture and gillnet fisheries .										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : University of Lagos Faculty of Sciences Address : Department of Biological Sciences Lagos, Federal Republic of Nigeria Director :	
Project leader(s) : J.A. Ekindayo Address : same address	
Co-operating institution(s) : Nigerian Institute for Oceanography and Marine Research	
Supporting or funding body : University of Lagos	
Starting dates/duration of programme/project : ongoing	
Name of lagoon(s) : Lagos lagoon	
Geographic location	lat. : 6°27' N long. : 3°28' E
Code :	surface area :

Nigeria										
Title of programme : Microbiological studies in Lagos lagoon										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						
Description and objectives of the programme/project (summarized) : Main emphasis in this recent project has been given to bacterial pollution, with a subsequent extension of the project to coastal waters.										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : University of Lagos Faculty of Sciences Address : Department of Biological Sciences Lagos Nigeria Director :	
Project leader(s) : Caleb I.O. Olaniyan Address : same address	
Co-operating institution(s) : Nigerian Institute for Oceanography and Marine Research	
Supporting or funding body : University of Lagos	
Starting dates/duration of programme/project : 1974/ongoing	
Name of lagoon(s) : Niger delta area Lagos lagoon Lekki lagoon	
Geographic location	lat. : 4°50' N 6°22'-27' N long. : 6°00' N 3°28'- 4° E
Code :	surface area :

Nigeria											
Title of programme : Fishery activities in the nigerian lagoons											
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.	
				X	X	X					
Description and objectives of the programme/project (summarized) : The research programme concerns in the Lagos and Lekki lagoons include:brackish water fish culture, identification of the major fishery ressources.											

SCOR/Unesco enquiry on existing lagoon research programmes

Norway

Institution : Institute of Marine Research
 Address : P.O. Box 2906,
 H - 5011 Bergen-Mordnes,
 Norway
 Director : Gunnar Saetersdal

Title of programme : Seniculture-production of marine fish fry

Project leader(s) : Victor Øiestad

Address : Institute of Marine Research,
 P.O. Box 2906,
 H - 5011 Bergen-Mordnes,
 Norway

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X		X			

Co-operating institution(s) :

literature and/or reports available : yes

existing training programme : no

Supporting or funding body : Norwegian Council of Marine Research

Description and objectives of the programme/project (summarized) :

The main aim is a study of the early life history of fish, with special attention to the "critical period" aspect . For this experiment the basin is stocked with yellow-sac larvae, and close study is made on nutrition condition, diet, feeding success, growth and survival . Special interest is being paid to the cod in these experiments, as studies on this species are impossible beyond 20 days in the laboratory . It is hoped that it will be possible to produce a large number of 0-group fish in systems with few predators or competitors . The 0-group flat fish thus produced will be transferred for polyculture with salmonids, and the cod fry will be tagged and released in coastal waters near the biological station .

Starting dates/duration of programme/project : February 1975/feb.-Jul. every year

Name of lagoon(s) : Upper oyster basin

Geographic location : Near Arendal, southern Norway
 at Statens Biologiske Stasjon
 of Flødevigen

lat. : 58°24' N

long. : 8°43' E

Code :

surface area : 1.7 km²

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Bergen
Address : Marine Biology Station
 Espegrend, 5065 Blomsterdalen
 Norway
Director : Ulf Lie

Project leader(s) : Ulf Lie

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

Geographic location

lat. :

long. :

Code :

surface area :

Norway

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X		X	X			

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad de Panama
 Fac. de Ciencias Naturales
Address : Lab. de Biología Marina
 Estafeta Universitaria
 Panama
Director : Alfredo Soler

Project leader(s) : Luis D'Cross
 Victor Martinez
Address : Bogdan Kwiecinski
 same as above

Co-operating institution(s) :
 Direccion de Recursos Marinos
 Ministerio de Comercio e Industrias

Supporting or funding body :
 Universidad de Panama

Starting dates/duration of programme/project : 1974

Name of lagoon(s) : Lagoons of the Gulf of Panama

Geographic location lat. : 8°57' N
 Gulf of Panama long. : 79°30' W

Code :
surface area :

Panama

Title of programme :

Ecological studies on populations of fish and crustaceans in estuaries and lagoons of the Gulf of Panama.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X		X				X

literature and/or reports available : yes

existing training programme : no

Description and objectives of the programme/project (summarized) :

The programme includes studies on populations dynamics of fish and crustaceans (shrimps) of commercial interest and a general survey of the principal environmental factors.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution :	Bougainville Copper Limited	
Address :	Panguna, Bougainville, Papua New Guinea	
Director :	D.C. Vernon	
Project leader(s) :	P.J. Gilles	
Address :	Bougainville Copper Limited Panguna Bougainville Papua New Guinea	
Co-operating institution(s) :		
Supporting or funding body :	Bougainville Copper Limited	
Starting dates/duration of programme/project :	1975	
Name of lagoon(s) :	Anewa Bay	
Geographic location	lat. : 6°11'S	Code :
East coast of Bougainville Island, P.N.G.	long. : 155°33'E	Map(s) : yes
		surface area :

Papua New Guinea										
Title of programme :										
Effects of power generating plant effluent and mining flotation chemicals on fish and invertebrates.										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X		X	X					X	
Description and objectives of the programme/project (summarized) :										
A power generating station and filtering and drying plant, situated on the east coast of Bougainville Island, discharges effluents into the western edge of the lagoon (Anewa Bay). Investigations involve bathymetry of Anewa Bay, mapping of physiochemical parameters associated with the power station plume, and bioassays to determine acceptable concentrations of residual flotation chemicals in filter plant effluent.										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	University of San Carlos Marine Station
Address :	Cebu City Philippines
Director :	
Project leader(s) :	Ulrich Hörstmann Norbert Rau
Address :	University of San Carlos Marine Station Cebu City Philippines
Co-operating institution(s) :	
Supporting or funding body :	University of San Carlos; German Academic Exchange Program (DAAD)
Starting dates/duration of programme/project :	March 1976/1978
Name of lagoon(s) :	(i) Cebu Harbour, with Cebu Channel (ii) Hilutungan Channel with adjacent lagoons
Geographic location Cebu Island, Philippines	lat. : 10°19'N long. : 123°55'E
	Code : Map(s) : yes surface area : (i) 15 km ²

Philippines										
Title of programme : (i) Cebu Harbour Project (ii) Hilutungan Channel Project										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X	X			X	
Description and objectives of the programme/project (summarized) : The Cebu Harbour Program is designed to give an idea of the influences of industrial wastes and domestic sewage and to initiate a permanent pollution survey. Hydrographical and chemical data are being collected (e.g. temperature, salinity, current, turbidity, pH, oxygen, nitrates, nitrites, ammonia). Research is made on the productivity of the water, the phyto- and zooplankton distribution, the biological oxygen demand, the distribution of Meio- and Macro-benthos and that of demersal fish species. Algae and mussels are being cultured on a mobile floating station anchored in the harbour to determine the influence of nutrient enriched water on their growth rate. Other activities planned include the determination of phosphates, organic sediments and heavy metals.										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Universidade do Porto Instituto de Zoologia e Estacao de Zoologia Maritima Address : 'Dr. Augusto Nobre' Porto, Portugal Director : A. Mateus	
Project leader(s) : A. Mateus Address : same as above	
Co-operating institution(s) :	
Supporting or funding body : Instituto de Zoologia 'Dr. Augusto Nobre' Instituto Nacional de Investigacao Cientifica, Ministerio da Educacao e Investigacao Cientifica.	
Starting dates/duration of programme/project : 1976	
Name of lagoon(s) : Aveiro (Ria)	
Geographic location west coast, w. of Aveiro	lat. : 40° 39' N long. : 8° 53' W
Code :	surface area : 100 Km ²

Portugal										
Title of programme : Study of Amphipoda fauna.										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						X
literature and/or reports available : yes										
Description and objectives of the programme/project (summarized) : The amphipod fauna of the "ria de Aveiro" is studied in relation with pollution which is produced by industrial activity (paper-mill factory).										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Museum of Natural History
 Address : "Grigore Antipa" Bucarest
 71268-R-Bucarest
 Chaussée Kiseff 1,
 Romania
 Director : Mihai Bacescu

Project leader(s) : Mihailescu Nicolae

Address : Institute of Geology and Geophysics
 78344-R-Bucarest
 Caransebes 1
 Romania

Co-operating institution(s) :

Institute of Geology and Geophysics, Bucarest
 Museum of Natural History "Grigore Antipa"
 Geographical Research Laboratory "Stejarul" Pînzarati

Supporting or funding body :

Ministry of Education
 Ministry of Mining, Petroleum and Geology

Starting dates/duration of programme/project : 1971/1981

Name of lagoon(s) :

Rarelm, Golovitzs, Zineica, Sinoie

Geographic location

lat. : 45°01'-44°20'

long. : 28°30'-29°08'

Code :
 Map(s) : yes
 surface area : 860 km²

Romania

Title of programme :

The complex study of the Danube Delta and the littoral lagoons
 with a view to identifying certain concentrations of useful minerals

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
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		X	X	X						
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Existing training programme: no

Description and objectives of the programme/project (summarized) :

This ten year, on-going programme is aimed at an interdisciplinary study of lagoonal and nearby terrestrial sediments. The investigation involves geology, geophysics, chemistry, paleontology, zoology and microbiology.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution :	University College of North Wales, Bangor	
Address :	Department of Marine Biology, Marine Science Laboratories, Menai Bridge, Gwynedd, North Wales, UK	
Director :	David A. Jones	
Project leader(s) :	David A. Jones	
Address :	University College of North Wales, Bangor, Department of Marine Biology, Marine Science Laboratories, Menai Bridge, Gwynedd, North Wales, UK	
Co-operating institution(s) :	ARAMCO Marine Biology Unit, Dhahran, Saudi Arabia	
Supporting or funding body :	Joint Funds from University College of North Wales and Saudi Arabian Ministry of Agriculture and Water	
Starting dates/duration of programme/project :	1973/1975	
Name of lagoon(s) :	Dawhat as Sahr	
Geographic location	lat. : 27°00' N	Code :
	long. : 49°40' E	surface area :

Saudi Arabia										
Title of programme : Biological study of lagoons on the eastern seabord of Saudi Zrabia (Arabian Gulf) .										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X			X	X	X
Literature and/or reports available : yes										
Description and objectives of the programme/project (summarized) :										
<p>This biological study of a high saline lagoon system investigated the possibility of establishing a Penaid shrimp culture . Physical factors that were measured included temperature and salinity (annual cycle and daily regime); sediment analysis (both of beaches and benthos); primary and secondary productivity . A quantitative study was made of intertidal and sublittoral fauna and flora, and a qualitative net fishing survey was conducted . The conclusions of the study was that the salinity was probable too high for the postlarvae of the local commercial penaid shrimp (<i>Penaeus semisulcatus</i>), although the juvenile through adults would tolerate the salinite level . The temperatures are ideal; benthic productivity was high, but even so supplementary feeding would be required .</p>										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : South African Association for Marine Biological Research
 Address : P.O. Box 736,
 Durban, South Africa 4000
 Director : A.E.F. Heydorn

Project leader(s) : G.W. Begg

Address : South African Association for Marine Biological Research,
 P.O. Box 736,
 Durban, South Africa 4000

Co-operating institution(s) : Technical Advisory Group comprising various
 universities and Government departments

Supporting or funding body : Natal Town and Regional Planning Commission

Starting dates/duration of programme/project : 1976/1978

Name of lagoon(s) : Over 70 lagoons

Geographic location lat. : 26° 50' S to
 East coast of South Africa 31° 05' S
 long. : .

Code :
 Maps : yes
 surface area :

South Africa

Title of programme : A summary of the available information on Natal's
 estuaries and lagoons

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X				X					X	

Description and objectives of the programme/project (summarized) :

An assessment is being made of the present day knowledge of all Natal's estuaries and lagoons in the following manner : scrutiny of both published and unpublished information of Natal's estuaries ; consultation with Technical Advisory Group; consultation with local authorities concerned with estuaries; and interpretation of recent colour aerial photography (1:10,000) of Natal coast . This data will then begin the scientific basis upon which the management of these resources can be based .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Department of Zoology
 Address : University of Capetown,
 Rondebosch 7700,
 Capetown,
 South Africa
 Director : R.C. Newell

Project leader(s) : R.C. Newell

Address : University of Capetown,
 Department of Zoology,
 Rondebosch 7700,
 Capetown, South Africa

Co-operating institution(s) :

Supporting or funding body : University of Odense;
 University of Capetown.

Starting dates/duration of programme/project : 1975/at least 1980

Name of lagoon(s) : Lagoons near Port Victoria, Mahe and Seychelles

Geographic location lat. :
 long. :

Code :
 surface area :

South Africa

Title of programme : Energetic requirements and nutritional resources of
 suspension-feeding bivalves

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X		X			

existing training programme : yes

Description and objectives of the programme/project (summarized) :

The work has been designed to study the simultaneous effects of temperature and food availability on growth in suspension-feeding animals . It has been found that the balance between energy gain (the irrigation rate) and energy expenditure (metabolic rate) of various food concentrations can be adjusted to conform with local environmental temperatures and defines the potential for growth at each environmental temperature . It is hoped that earlier work will be extended to develop similar data for deposit-feeding and herbivorous species in the lagoons . The objective then will be to establish a standing crop of several non-competing organisms of commercial importance .

SCOR/Unesco enquiry on existing lagoon research programmes ⁴

Institution : University of Barcelona, Faculty of Sciences
Department of Ecology
Address : Pza. Universitaria
Barcelona 7, Spain

Director : R. Margalef

Project leader(s) : F. Comin
X. Ferrer
Address : same address as above

Co-operating institution(s) :

Supporting or funding body :
Instituto Nacional para la Conservacion de la Naturaleza (ICONA)
Ministerio de Agricultura
Universidad de Barcelona

Starting dates/duration of programme/project : 1976

Name of lagoon(s) : Ebro, la Encañizada

Geographic location	lat. : 41°42' N	Code :	
Delta of Rio Ebro (Tarragona province)	long. : 0° 50' E	maps :	yes
		surface area :	90 Km ²

Spain

Title of programme :
Ecological studies of the Encañizada lagoon.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X					X	

literature and/or reports available: yes

Description and objectives of the programme/project (summarized) :
The project is based on an annual study of nutrients and other physico-chemical factors. Biomass and production of plankton community, macrophytes and crustaceans are considered.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Sri Lanka
Address : University of Sri Lanka
 Department of Zoology
 Vidyalankara Campus
 Kelaniya, Sri Lanka
Director : S.S. de Silva

Project leader(s) : S.S. de Silva

Address : University of Sri Lanka
 Department of Zoology
 Vidyalankara Campus, Kelaniya, Sri Lanka.

Co-operating institution(s) :

Supporting or funding body :
 National Science Council of Sri Lanka;
 International Foundation for Science,
 Stockholm, Sweden

Starting dates/duration of programme/project : August 1976/1978

Name of lagoon(s) :
 Negombo Lagoon

Geographic location
 lat. : 7°10'N
 long. : 79°50'E
 Code :
 surface area : 40.9 km²

Sri Lanka

Title of programme :

Feasibility studies on mono and polyculture of grey mullet,
Mugil cephalus L. and a study of the hydrobiology of the Negombo Lagoon.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						X

Existing training programme: no

Description and objectives of the programme/project (summarized) :

The present project is an attempt to estimate the potential of fry availability and the hydrobiological characters which determine the availability and concentration of fry at different places in the lagoon. The project also involves large scale pond experiments to investigate the potential of mono and poly culture of Mugil cephalus L. and also to evaluate the optimum density, primary production and other parameters in the ponds.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	Institute of Zoology
Address :	Uppsala University Box 561, S-751 22 Uppsala, Sweden
Director :	K.G. Nyholm
Project leader(s) :	Svaite Eriksson
Address :	as above
Co-operating institution(s) :	The Research Station of the Swedish Atomic Agency
Supporting or funding body :	Swedish Natural Research Council Uppsala University
Starting dates/duration of programme/project :	1973/1979
Name of lagoon(s) :	Kvarnbukten Bay
Geographic location Gulmar Fjord	lat. : 58°15'N long. : 11°28'E
	Code : surface area :

Sweden											
Title of programme :											
Autecology, population dynamics and energy budget of dominating macrofauna species on a marine sandy bottom.											
	I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X		X			X	
Description and objectives of the programme/project (summarized) :											
The aim is to give a description of energy transformations and regulatory mechanisms within the <u>Macoma</u> community. As associated project studies the abundance and distribution of ciliates.											

SCOR/Unesco enquiry on existing lagoon research programmes

Tanzania

Institution : East African Marine Fisheries Research Organization

Address : P.O. Box 668,
Dar Es Salaam,
Tanzania

Director : George E.B. Kiraka

Project leader(s) : W. Kudhongania

Address : East African Marine Fisheries Research Organization
P.O. Box 668,
Dar es Salaam,
Tanzania

Co-operating institution(s) :

Supporting or funding body : East African Community (Kenya, Uganda and Tanzania)

Starting dates/duration of programme/project :

Name of lagoon(s) :

Geographic location

lat. :

Code :

long. :

surface area :

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
						X				

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Marine Biological Station of the University of Dar-es-Salaam
Address : P.O. Box 35064,
 Dar es Salaam,
 Tanzania
Director : A.S. Msangi

Project leader(s) : C. Sankarankutty

Address : Marine Biology Station of the University of Dar es Salaam,
 P.O.Box 35064,
 Dar es Salaam,
 Tanzania

Co-operating institution(s) :

Supporting or funding body : University of Dar es Salaam

Starting dates/duration of programme/project : 1077/1978

Name of lagoon(s) : Kunduchi Creek, Dar es Salaam

Geographic location lat. : 6° 40' S
 16 km North of
 Dar es Salaam long. : 39° 15' E

Code :
surface area :

Tanzania

Title of programme : Studies on zooplankton of Kunduchi Creek, Dar es Salaam,
 with special reference to diurnal changes and influence
 of tidal flow

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						

Description and objectives of the programme/project (summarized) :

The project currently under investigation is expected to give the following information : composition of plankton, diurnal changes in composition and inflow and outflow of zooplankton of the creek for a 24-hour cycle during both spring neap tide .

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	Faculty of Forestry, Kasetsart University
Address :	Faculty of Forestry Kasetsart University Bangkok 9, Thailand.
Director :	Chongrak Prichananda
Project leader(s) :	Sanit Aksornkoae
Address :	Faculty of Forestry Kasetsart University Bangkok 9, Thailand
Co-operating institution(s) :	Royal Thai Forest Department
Supporting or funding body :	Faculty of Forestry, Kasetsart University
Starting dates/duration of programme/project :	1974/1975
Name of lagoon(s) :	Melu
Geographic location	lat. : 12 ⁰ N long. : 102 ⁰ -103 ⁰ E.
Code :	surface area : 190 km ²

Thailand										
Title of programme :										
Structure, regeneration and productivity of mangroves in Thailand										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						
Literature and/or reports available: in preparation										
Existing training programme: no										
Description and objectives of the programme/project (summarized) :										
<p>The study of mangroves covered three parts: (1) mangrove community structure; (2) mangrove regeneration, and (3) mangrove plantation productivity. The first (study of mangrove community structure) was to describe the natural plant communities in terms of species zonation, species composition, species diversity and stem volume. The objectives of the mangrove regeneration study were to determine species suitability to site (clear-area), growth rates related to species and distances from the estuary edge to the land, and the time of year in which maximum growth occurs for each species. In regards to the mangrove plantation productivity study, the objectives were to explore possible correlation between (1) plantation age and plant component biomass, and (2) diameter and height measurement relationships with total biomass and stem volume.</p>										

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	Prince of Songkla University Lake Songkla Project
Address :	Haadyai, Thailand
Director :	Phasuk Kullavanich
Project leader(s) :	Danai Limpadanai
Address :	Prince of Songkla University Lake Songkla Project Haadyai, Thailand
Co-operating institution(s) :	National Environment Board, Department of Fisheries
Supporting or funding body :	Thai Government
Starting dates/duration of programme/project :	March 1976/1981
Name of lagoon(s) :	Lake Songkla
Geographic location	lat. : 100°4'N long. : 7°5'E
Code :	surface area : 1050 km ²

Thailand										
Title of programme :										
Lake Songkla Project										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X							X
Existing training programme: no										
Description and objectives of the programme/project (summarized) :										
<p>The following studies of the lake vicinity are being carried out: geomorphology, lake hydrology, ecology, exploitation of the lake's resources, and pollution. The programme of research and development includes basic data collection, monitoring technique and studies, particular scientific research, development of projects and programmes, and policy and programme guidelines.</p>										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Phuket Marine Biological Centre
Address : Phuket Marine Biological Centre
P.O. Box 60
Phuket, Thailand.
Director : Uruphun Boonprakah

Project leader(s) : Pensri Boonruang
Prawin Wootisdriapingo
Nansa Chansang
Address : Phuket Marine Biological Centre
P.O. Box 60
Phuket, Thailand

Co-operating institution(s) :

Supporting or funding body :
Department of Fishery;
Danish International Development Aid

Starting dates/duration of programme/project :

Name of lagoon(s) :
Ao Nam Bor Mangroves

Geographic location	lat. : 7°5'N	Code :
	long. : 97°25'E	surface area : 4 km ²

Thailand

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X	.					X

Literature and/or reports available: yes

Description and objectives of the programme/project (summarized) :

A one-year study was conducted on the phenology of the mangrove trees in Southern Thailand. In addition, a one-year cycle on the primary production in a mangrove area was studied, as well as the influence of the heavy metals copper and mercury on photosynthesis.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Institut National Agronomique
43 av. Charles Nicolle
Address : Tunis , Tunisia

Director : K. Belkodja

Project leader(s) : J. Zaousli

Address : same address as above

Co-operating institution(s) :

Office National des Pêches

Supporting or funding body :

Ministry of Agriculture

Starting dates/duration of programme/project : 1972

Name of lagoon(s) : Ichkeul lake, Bizerte lake, Tunis lake,
Kelbia lake, Bongara sea, Biban sea, Khiuss lake

Geographic location lat. : 37°-33' N

long. : 9°35'-11°30'E

Code :

surface area : appr.940 km²

Tunisia

Title of programme :

Lagoons and salt lakes of Tunisia. Ecology and productivity.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X	X	X	X				X

literature and/or reports available : yes

existing training programme : no

Description and objectives of the programme/project (summarized) :

The project is a general survey of the principal coastal lagoons of Tunisia. Geological, chemical and biological aspects are studied as well as fisheries resources and aquaculture.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Université Claude Bernard Lyon I
 Département des Sciences de la Terre
 Address : 15-43 Ed. du 11 novembre 1918
 69626 Villeurbanne , France

Director : L. David

Project leader(s) : G. Carbonnel

Address : same as above

Co-operating institution(s) :

Paleontologiska Institutionen Uppsala, Sweden

Supporting or funding body :

C.N.R.S.

Starting dates/duration of programme/project : 1978

Name of lagoon(s) : Boug-Eara, Sebha kalbia, Bibans sea

Geographic location lat. : 36°10'-30' N

Tunisia long. : 10°20'-11° E

Code :

surface area :

Tunisia

Title of programme :

Paleoecology studies

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X		X						

Description and objectives of the programme/project (summarized) :

The project is an attempt to describe the existing relationships between the physico-chemical characteristics of the waters and the shell morphology of different organisms. Paleocological interpretation.

SCOR/Unesco enquiry on existing lagoon research programmes

Tunisia

Institution : University of Tunis, Faculty of Sciences
 Biology Laboratory
 Address : Tunis Campus University
 El Menzah, Tunis, Tunisia

Title of programme :
 Ectoparasites of lagoonteleast fish.

Director : M. Fekih

Project leader(s) : K. Ben Hassine
 Ktari
 Address : same as above

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						X

Co-operating institution(s) :
 Office National des Pêches

literature and/or report available : yes

existing training programme : no

Supporting or funding body :
 Ministry of National Education

Description and objectives of the programme/project (summarized) :

The project is dealing with a general survey of different lagoons of Tunisia. Parasitic copepods of different species of fish are studied.

Starting dates/duration of programme/project : 1969

Name of lagoon(s) : Tunis, Bizerte, Ischkeul, Monastir, Kelibia, Bibans
 Porto Farina.

Geographic location lat. : 37°20'-33°10'N Code :
 long. : 9°35'-11°30'E surface area : approx.940 km²

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Ege University
Address : Faculty of Science
 Department of General Zoology
 Bornova
 Izmir, Turkey
Director : R. Geldiay

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :

Geographic location lat. :
 long. :

Code :
surface area :

Turkey

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X					

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Zoology Department

Address : Queen's University
Belfast
North Ireland , United Kingdom

Director : G. Owen

Project leader(s) : R. Seed

Address : Zoology Department
Queen's University
Belfast, Northern Ireland United Kingdom

Co-operating institution(s) :

Supporting or funding body :

Natural Environment Research Council

Starting dates/duration of programme/project : 1972/1977

Name of lagoon(s) : Strangford Lough
Belfast Lough

Geographic location	lat. :	Code :
	long. : *	surface area :

United Kingdom

Title of programme :

The ecology of Modiolus modiolus (L.) and Cerastoderma (= Cardium) edule (L.)
in Strangford Lough, Northern Ireland.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						

Literature and/or reports available: yes

Description and objectives of the programme/project (summarized) :

Some aspects of the reproduction, growth and mortality of the three common bivalve species found on the Irish coast, Cerastoderma edule, Mytilus edulis, and Modiolus modiolus. These data were used in an attempt to explain differences in their population ecology and to provide comparisons between them, particularly in the light of the environmental differences between their respective habitats.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution :	Marine Biology Station	
Address :	Portaferry County Down, BT22 1PF Northern Ireland	
Director :	P.J.S. Boaden	
Project leader(s) :	P.J.S. Boaden G. Savidge	
Address :	as above	
Co-operating institution(s) :		
Supporting or funding body :	The Queen's University of Belfast	
Starting dates/duration of programme/project :	open ended	
Name of lagoon(s) :	Strangford Lough	
Geographic location County Down, Northern Ireland	lat. : long. :	Code : surface area :

United Kingdom										
Title of programme :										
Studies of Strangford Lough										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X				X	
Literature and/or reports available: yes										
Description and objectives of the programme/project (summarized) :										
The projects being conducted in Strangford Lough are: (1) chemical and respiratory ecology of marine meiobenthos, particularly with anaerobic meiofauna on a sewage polluted beach; and (2) epifaunal ecology of intertidal algae, in particular an investigation of factors affecting community structure and composition of fauna associated with <u>Fucus serratus</u> in a small lagoon system.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Scottish Marine Biological Association
 Address : P.O. Box 3
 Oban,
 Argyll, Scotland.
 Director : R.I. Currie

Project leader(s) : A. Edwards
 Address : as above

Co-operating institution(s) :

Supporting or funding body :
 Natural Environment Research Council

Starting dates/duration of programme/project : 1971/ongoing

Name of lagoon(s) :
 Etive, Creran, Levein, Alfort and others

Geographic location : West coast of Scotland
 lat. : 56°30' N
 long. : 5°30' W
 Code :
 surface area :

United Kingdom

Title of programme :
 Scottish Loch Studies

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X			X	X					X

Literature and/or reports available: yes

Existing training programme: no

Description and objectives of the programme/project (summarized) :

This ongoing programme has two different aspects: (1) studies on the circulation of Scottish fjords, the influence of sills upon bottom sediments, the renewal of fjordic bottom water as a function of climate and tide, and modelling of the surface layers; and (2) fjords as aquaculture sites. The sub-project associated with this second aspect has the aim of quantifying the oxygen flow into stocked cages of fish and to make a model of oxygen concentration in the cages. The model is to be tested in a commercial farm.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University College of North Wales
Address : Marine Science Laboratories
 Menai Bridge,
 Gwynedd, U.K.
Director : G.E. Foggy

Project leader(s) : E.I.S. Rees
Address : as above

Co-operating institution(s) :
 Nature Conservancy Council
 North Wales Naturalist Trust

Supporting or funding body :

Starting dates/duration of programme/project : 1975/1976

Name of lagoon(s) : Cemlyn and Inland Sea, Holyhead

Geographic location Anglesey, N. Wales, UK	lat. :	Code :
	long. :	surface area :

United Kingdom

Title of programme :
 Ecological surveys of Gwynedd estuaries

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						X

Description and objectives of the programme/project (summarized) :

An ecological description and a survey of the semi-artificial lagoons was made to provide background data for management of the sites as nature reserves.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution :	University of Cambridge
Address :	Department of Zoology Downing Street Cambridge CB2 3EJ, UK
Director :	
Project leader(s) :	R.S.K. Barnes
Address :	as above
Co-operating institution(s) :	University of Bristol
Supporting or funding body :	
Starting dates/duration of programme/project :	1968/ongoing
Name of lagoon(s) :	Swanpool
Geographic location Falmouth, Cornwall Norfolk, Suffolk, Hampshire, etc.	lat. : 50°7'H long. : 5°4'W
Code :	
surface area :	

United Kingdom										
Title of programme :										
Biology of coastal lagoons										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						X
Literature and/or reports available:						yes				
Existing training programme:						no				
Description and objectives of the programme/project (summarized) :										
Work concerns the primary production of the phytoplankton, nutrient cycling, and the population dynamics of the detritus-feeding benthos.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : White Fish Authority
Sea Fisheries House
Address : 10 Yoing Street
Edinburgh EH2 4JQ . U.K.

Director : N.M. Kerr

Project leader(s) : S.J. Kingswell

Address : White Fish Authority
Marine Farming Unit
Ardtoe, Acharade, Argyll, PH36 4LD

Co-operating institution(s) :
Strathclyde University, Civil Engineering Dept.
Dept. of Agriculture and Fisheries, Fisheries Lab., Aberdeen
" " " " " Lowestoft

Supporting or funding body :
United Kingdom Government
Fishing Industry

Starting dates/duration of programme/project : 1965

Name of lagoon(s) : Ardtoe Pond

Geographic location	lat. : 54°46' N	Code :
	long. : 5°53' W	surface area : 0.02 km ²

United Kingdom

Title of programme :
Research and development of commercial farming of marine flat fish
and shellfish

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
					X					X

Literature and/or reports available : yes

existing training programme : no

Description and objectives of the programme/project (summarized) :
The project is considering the possibilities of improving fish farming
in an intertidal lagoon of 2 ha replenished during peak of spring tides through
a system of sluice valves.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Scottish Marine Biological Association

Address : P.O. Box 3
Oban
Argyll, Scotland

Director : R.I. Currie

Project leader(s) : Peter J. Landless

Address : Scottish Marine Biological Association
P.O. Box 3
Oban, Argyll, Scotland

Co-operating institution(s) :

Supporting or funding body :
Natural Environment Research Council

Starting dates/duration of programme/project : 1975/ongoing

Name of lagoon(s) :
various

Geographic location Argyll, Scotland	lat. :	Code :	
	long. :	surface area :	

United Kingdom

Title of programme :
Recall feeding in aquaculture
Acclimatization of trout to sea water

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X	X					

Literature and/or reports available: yes

Description and objectives of the programme/project (summarized) :

This programme has two phases: (1) Acclimitization: to reduce losses in the transfer of rainbow trout from fresh water to sea water, and to accomplish this at as small a fish size as possible; and (2) recall-feeding: to condition rainbow trout to associate a sound signal with food, and to use this conditioned response to attract the fish to a specific area for feeding and recapture.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Zoology Department
 Address : University of Manchester
 Oxford Road
 Manchester M13 9PL, UK
 Director : E.R. Trueman

Project leader(s) : E.R. Trueman
 Address : as above

Co-operating institution(s) :

Supporting or funding body :
 Natural Environment Research Council (NERC)

Starting dates/duration of programme/project : 1968/1977

Name of lagoon(s) : none specifically

Geographic location	lat. :	Code :
	long. :	surface area :

United Kingdom

Title of programme :

Effect of environmental variables on activity of marine invertebrates

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
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X

Description and objectives of the programme/project (summarized) :

This study was on patterns of activity of littoral and benthic molluscs, polychaetes and arthropods in their natural habitat, and the factors affecting them. Assessment was made of the energy requirements of marine benthic invertebrates during activity, such as burrowing, in different habitats.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Belle W. Baruch Institute for Marine Biology and Coastal Research
Address : University of South Carolina,
 Columbia, South Carolina 29208,
 USA
Director : F. John Vernberg

Project leader(s) : F. John Vernberg

Address : Belle W. Baruch Institute for Marine Biology and Coastal Research,
 University of South Carolina,
 Columbia, South Carolina 29208,
 USA

Co-operating institution(s) : Smithsonian Institute

Supporting or funding body : University of South Carolina;
 Baruch Foundation;
 Environmental Protection Agency;
 National Science Foundation;
 NASA.

Starting dates/duration of programme/project : 1970/indefinite

Name of lagoon(s) : North Inlet Estuary

Geographic location
 Near Georgetown,
 South Carolina

lat. :
 long. : °

Code :
 surface area :

USA

Title of programme : The Dynamics of the North Inlet Estuary

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X			X			X			

Description and objectives of the programme/project (summarized) :

The study consists of two separate but interrelated substudies :
 1) Macroecosystem study and 2) Microecosystem study . The macroecosystem was designed to study the dynamics of a relatively undisturbed marsh-estuarine ecosystem . There are two interrelated objectives of this study : 1) to establish baseline data for comparative study on a undisturbed estuary to provide a scientific basis for comparative studies on effects of various stresses of pollutants on other estuarine environments ; and 2) to develop models of an estuarine ecosystem which would predict probable effects of environmental perturbation . The prime objective of the microecosystem is to develop and test replicate experimental salt marsh units at the microecosystem level as diagnostic tools for the assessment of both long- and short-term pollution effects on the Spartina alterniflora salt marsh community .

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Center for Wetland Resources Address : Louisiana State University Baton Rouge, Louisiana 70803 USA Director : J. Van Lopik	
Project leader(s) : John Day Address : Center for Wetland Resources Louisiana State University Baton Rouge, Louisiana 70803 USA	
Co-operating institution(s) :	
Supporting or funding body : NOAA; Sea Grant; State of Louisiana; US Army Corp of Engineers; Environmental Protection Agency.	
Starting dates/duration of programme/project : 1976/ongoing	
Name of lagoon(s) : Barataria	
Geographic location	lat. : 30°N long. : 90°W Code : surface area : 6000 km ²

USA										
Title of programme : Water Resource Management in the Barataria Basin										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X		X	
literature and/or reports available: yes										
existing training programme: yes										
Description and objectives of the programme/project (summarized) : Primary production, water chemistry, soil chemistry of swamp forests under three different management practices, eutrophication of downstream receiving waters, and nursery functions of estuarine wetlands are the important elements of this current research.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : City College of City University of New York
 Marine Microbiological Ecology Laboratory
 Address : Convent Ave. at 138 st.
 New York, New York 10031, U.S.A.

Director : John Lee

Project leader(s) : John J. Lee
 John H. Tietjen

Address : Department of Biology
 City College of CUNY
 Convent Ave at 135 st
 New York, New York 10031, U.S.A.

Co-operating institution(s) :

Woods Hole Oceanographic Institution, Woods Hole, Mass.
 Marine Biological Laboratory, Woods Hole, Mass.

Supporting or funding body :

E.R.D.A.
 N.S.F.

Starting dates/duration of programme/project : 1958

Name of lagoon(s) :

Jamaica Bay;
 North Sea Harbor-Peconic bay L.I.;
 Buzzards Bay, Mass

Geographic location	lat. :	Code :
Long Island N.Y.		
Cape Cod Bay, Mass.	long. :	surface area :

USA

Title of programme :

Energetics and community structure in shoal benthic ecosystems.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X			

Description and objectives of the programme/project (summarized) .

The programme has two main aspects :
 - functional relationships underlying the energetics and community structure of organisms at lower intermediate steps of temperate marine shoal benthic food webs,
 - effects of environmental stress on the community structure and productivity on salt marsh epiphytic communities.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Coastal Studies Institute Address : Louisiana State University Baton Rouge, Louisiana 70803 USA Director : James M. Coleman		
Project leader(s) : James M. Coleman Address : Coastal Studies Institute Louisiana State University Baton Rouge, Louisiana 70803 USA		
Co-operating institution(s) :		
Supporting or funding body : Office of Naval Research.		
Starting dates/duration of programme/project : January 1973/ 1977		
Name of lagoon(s) : Santa Rosa Sound, Choctawhatchee Bay		
Geographic location Gulf Coast, USA	lat. : long. :	Code : surface area :

USA										
Title of programme : Circulation in Santa Rosa Sound and Choctawhatchee Bay, Gulf Coast										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X							
Description and objectives of the programme/project (summarized) : Interconnecting bays and lagoons have been studied for circulation and exchange patterns and how these relate to sediment transport in the bays and lagoons.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Coastal Studies Institute
 Louisiana State University
Address : Baton Rouge, Louisiana 70803
 USA
Director : James M. Coleman

Project leader(s) : James M. Coleman

Address : Coastal Studies Institute
 Louisiana State University
 Baton Rouge, Louisiana 70803
 USA

Co-operating institution(s) :

Supporting or funding body :
 Office of Naval Research.

Starting dates/duration of programme/project :
 January 1976/December 1977

Name of lagoon(s) :
 an arctic lagoon

Geographic location	lat. :	Code :
Peard Bay, Alaska	long. :°	surface area :

USA

Title of programme :

Oceanography of an Arctic lagoon, Peard Bay, Alaska

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X							

Description and objectives of the programme/project (summarized) :

Brine rejection by ice was found to be important in lagoonal water character.

SCOR/Unesco enquiry on existing lagoon research programmes		
Institution : Duke University Address : Marine Laboratory, Beaufort, North Carolina 28516, USA Director : John D. Costlow		
Project leader(s) : Richard T. Barber Address : Duke University, Marine Laboratory, Beaufort, North Carolina 28516, USA		
Co-operating institution(s) :		
Supporting or funding body : Water Resources Research Institute		
Starting dates/duration of programme/project : 1974/1976 (with some continuing work) .		
Name of lagoon(s) : South River Estuary		
Geographic location	lat. : long. :	Code : surface area :
Esta Coast of USA		

USA										
Title of programme : The Water Quality Ramifications of Converting Forest to Intensive Agriculture										
I	II	III	IV	V	VI	VII	VIII	IX	X	U.S.
			X	X						
Description and objectives of the programme/project (summarized) : A two-year study on the impact of converting swamp pine forest to intensive agriculture land on the water quality properties of South River estuary, especially changes in water quality that might affect the important economic character of this estuary . The basic research plan was to compare the water quality in two different headwaters of the estuary : one area that is surrounded by undeveloped land . Monitoring the water quality of water flowing from farmed land into the various estuarine headwaters is expected to continue . A study is also planned on the functioning of the water impoundment system constructed by a near-by farm, and a study of the fate of suspended sediments entering the estuary in farm runoff .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Duke University
Address : Duke Marine Laboratory
 Beaufort, North Carolina 28516,
 USA
Director : John D. Costlow

Project leader(s) : John P. Sutherland

Address : Duke University,
 Duke Marine Laboratory,
 Beaufort, North Carolina 28516,
 USA

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) : Beaufort Inlet, North Carolina
 (and also Euche Bay, Venezuela)

Geographic location	lat. :	Code :
	long. :	surface area :

USA

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						

Description and objectives of the programme/project (summarized) :

The study of the dynamics of fauling communities .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Florida State University

Address : Tallahassee,
Florida 32306,
USA

Director : Robert J. Livingston

Project leader(s) : Robert J. Livingston

Address : Florida State University,
Tallahassee,
Florida 32306,
USA

Co-operating institution(s) :

Supporting or funding body : Sea Grant (NOAA);
Environmental Protection Agency;

Starting dates/duration of programme/project : 1971/1977

Name of lagoon(s) : Apalachicola Bay, Apalachee Bay

Geographic location lat. :

North Florida, long. :
Gulf of Mexico

Code :

surface area :

USA

Title of programme : Studies of North Florida Estuaries

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X		X			X	

Description and objectives of the programme/project (summarized) :

The major thrust of this six-year study was to determine the responses of individual marine organisms and estuarine coastal communities to gradients of key forcing functions such as temperature, salinity, dissolved oxygen and various forms of aquatic pollution. An emphasis was placed on behavioural aspects of community response (behaviour ecology), and the development of new methods and techniques to allow quantitative collection of aquatic organisms and analytical examination of broad interdisciplinary data banks. Projects involved : a study on the possible effects of pesticides (DDT, DDE, Dieldrin, Mirex) and other forms of pollution on bay ecosystems, simulated marsh habitats and the behaviour and embryological development of specific estuarine organisms; a follow-up study of the ecological effects of pulp mill effluents to determine rate of recovery of water and sediment quality, benthic macrophytes, invertebrates and fishes; and a computer program aimed at developing new methods of analysis for the impact of various forms of gradients (natural and unnatural) on coastal assemblages.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Harbor Branch Foundation, Inc.

Address : RFD 1, Box 196,
Fort Pierce, FL.33450,
USA

Director : R.S. Jones

Project leader(s) : M. John Thompson

Address : Harbor Branch Foundation, Inc.
RFD 1, Box 196,
Fort Pierce, FL.33450,
USA

Co-operating institution(s) : Florida Institute of Technology;
Florida Solar Energy Centre;

Supporting or funding body : Harbor Branch Foundation, Inc.;
The Atlantic Foundation;

Starting dates/duration of programme/project : 1976/indefinite

Name of lagoon(s) : Indian River

Geographic location lat. :

Southeastern coast of
Florida long. :

Code :

surface area :

USA

Title of programme : Remote sensing

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X			X			X			

Literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

This research deals primary with the transfer of radiant energy in the hydrosphere, and problems related to absorption, transmission, and reflectance of light in turbid estuarine and lagoonal waters .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Harbor Branch Foundation, Inc.

Address : R.R.I. Box 186,
Fort Pierce, Florida 33450,
USA

Director : Robert S. Jones

Project leader(s) : Ned P. Smith

Address : R.R.I. Box 186,
Fort Pierce, Florida 33450
USA

Co-operating institution(s) :

Supporting or funding body : Harbor Branch Foundation, Inc.;
National Park Service;

Starting dates/duration of programme/project : 1) 1973/1977
2) 1977/continuing

Name of lagoon(s) : 1) Upper Laguna Madre, Texas
2) Indian River Lagoon, Florida

Geographic location lat. :
1) Central Gulf Coast of Texas
2) Central Atlantic Coast, long. :
Florida

Code :
surface area :

USA

Title of programme : 1) Tide and Temperature Study of Upper Laguna Madre, Texas
2) Tide and Temperature Study of the Indian River Lagoon, Florida

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X						X			

Description and objectives of the programme/project (summarized) :

Both the Laguna Madre and the Indian River studies were designed for the purpose of describing physical processes within, or which include intracoastal lagoons . Specific processes include : the tidal and long-period, meteorologically forced exchanges between the lagoon and the adjacent inner continental shelf; the internal circulation of the lagoon; and the energy exchange processes operating across the air-lagoon interface and producing temperature variations in lagoon waters . The ongoing Indian River study includes a hydrodynamic modeling of intracoastal tides and lagoon-shelf exchanges .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Island Resources Foundation
 Address : Box 4187
 St. Thomas
 US Virgin Islands 00801
 USA
 Director : Edward Towle

Project leader(s) : Maynard Nichols

Address : Box 254
 Gloucester, Virginia 23061
 USA

Co-operating institution(s) :

Supporting or funding body :

US Environmental Protection Agency;
 Government of the Virgin Islands:

Starting dates/duration of programme/project : 1976/1979

Name of lagoon(s) :
 The Mangrove Lagoon

Geographic location	lat. :	Code :
	long. :	map : yes
		surface area :

USA

Title of programme :

Ecological stress in a subtropical coastal lagoon

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X	X					X	X

Description and objectives of the programme/project (summarized) :

This is a broad study of many aspects of physical and chemical stress on the ecology of a sub-tropical lagoon with the aim to improve water quality and alleviate problems brought by development. The study emphasizes changes in the sediments, hydrography and biota during the last 8 years.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Island Resources Foundation
 Box 4187
 Address : St. Thomas
 US Virgin Islands 00801
 USA

Director : Edward Towle

Project leader(s) : Maynard Nichols
 Box 254
 Gloucester, Virginia 23061
 Address : USA

Co-operating institution(s) :

Supporting or funding body :
 US Environmental Agency;
 the Government of the Virgin Islands.

Starting dates/duration of programme/project : December 1977/February 1979

Name of lagoon(s) :
 efforts focused on St. Thomas Harbor, the Mangrove Lagoon and Perserverance Bay

Geographic location	lat. :	Code :
	long. : .	map : yes
		surface area :

USA

Title of programme :

Water pollution susceptibility of Virgin Island Bays: a tool
 for long-term monitoring and management

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X						X			

literature and/or reports available: in preparation

Description and objectives of the programme/project (summarized) :

This study consists of an analyses of circulation and flushing dynamics of a number of lagoons in the Virgin Islands. The modelling effort consists of development of a working scheme structured for use in different types of Virgin Island Bays. Assumptions are formulated and computational procedures developed for selected spatial and temporal scales. The model will be run for a variety of water quality parametres, different levels of pollutant discharge and lagoon configurations. Results emerging from the modelling effort are expected to provide guidelines for assessing the pollution potential of lagoons and to predict the effect of alternative wastewater management schemes.

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : Island Resources Foundation Address : Box 4187 St Thomas US Virgin Islands 00801 USA Director : Edward Towle	
Project leader(s) : Maynard Nichols Box 254 Address : Gloucester, Virginia USA	
Co-operating institution(s) :	
Supporting or funding body : US Environmental Protection Agency; Government of the Virgin Islands	
Starting dates/duration of programme/project : January 1978/July 1979	
Name of lagoon(s) : Altona Lagoon and Christiansted Harbor	
Geographic location	lat. : long. :
Code : map: yes surface area :	

USA										
Title of programme : Water quality, circulation and environmental resources of Altona Lagoon and Christiansted Harbor										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X	X					X	X
literature and/or reports available: yes										
Description and objectives of the programme/project (summarized) : The purpose of this investigation is to study the water quality, circulation biota and sediments in a lagoonal area where mans impact has been moderate to heavy. The lagoon waters are partly stagnant, sediments are anoxic and the mangroves are dying. The study consists mainly of field observations of existing conditions, a review of historical data and analyses of the circulation and flushing characteristics as provided by the tide, mass transport over the reef and by the wind. It is anticipated that recommendations will be offered on how the circulation can be modified to improve the water quality and to enhance productivity while providing for small boat recreation and fishing. An additional concern is on how the impact of growth and development in the watershed can be minimized by management and control.										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Marine Environmental Sciences Consortium
Address : P.O. Box 386,
 Dauphin Island,
 Alabama 36528,
 USA
Director : George F. Crozier

Project leader(s) : M. Susan Ivester and Judy Stout

Address : Dauphin Island Sea Laboratory,
 P.O. Box 386,
 Dauphin Island,
 Alabama 36528, USA

Co-operating institution(s) : Mississippi State University;
 University of South Alabama;
 University of Alabama (Birmingham and Tuscaloosa);
 Alabama Geological Survey;

Supporting or funding body : Mississippi - Alabama Sea Grant;
 Alabama Coastal Area Board;

Starting dates/duration of programme/project : 1975/continuing

Name of lagoon(s) : Mobile Bay and Mississippi Sound

Geographic location lat. : 30° N
 Gulf of Mexico
 Gulf of Alabama long. : 88° W

Code :
surface area :

USA

Title of programme : Biology and Ecology of Alabama Coastal Marshes

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X					X	X

Description and objectives of the programme/project (summarized) :

An ongoing study to inventory the distribution and composition of coastal brackish and salt marshes . This includes an investigation on the effect of various management techniques on the productive capabilities and faunal composition of selected dominant vegetation types .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : San Diego State University
 Biology Department
 Address : San Diego, California 92182
 USA

Director :

Project leader(s) : Joy B. Zedler and David A. Mauriello

Address : San Diego State University
 Biology Department
 San Diego, California 92182
 USA

Co-operating institution(s) :

Supporting or funding body :
 NOAA Sea Grant to University of California.

Starting dates/duration of programme/project : 1976/1979

Name of lagoon(s) :
 Tijuana Estuary

Geographic location	lat. : 32°34'	Code :
San Diego County, CA	long. : 117°07'	surface area : 0.9 km ²

USA

Title of programme :

Coastal wetlands management: effects of disturbance
 on estuarine function

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X		X	

literature and/or reports available: yes

Description and objectives of the programme/project (summarized) :

The initial work concentrated mainly on 1) the primary productivity of the major ecosystem "compartments" -- salt marsh vascular plants, salt marsh benthic algae, channel benthic algae, and phytoplankton; 2) the conversion of the plants to detritus; 3) the movements of the detritus within the estuary; and 4) the exchange of organic matter with the ocean, both import and export. The emphasis is then expected to shift to comparisons of estuaries having different types and degrees of disturbance, e.g., with studies of open vs. closed ocean entrances, dredged vs. undredged channels. Measured differences will be compared to predictions based on manipulation of a compartmental model for the Tijuana Estuary. The last phase is expected to be largely experimental, with field and laboratory investigations on the impact of various types of disturbances and sensitive ecosystem processes.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Texas A & M University
Address : Geology Department,
 College Station, Texas 77843,
 USA
Director : Roy W. Hamm

Project leader(s) : Wayne M. Ahr

Address : Texas A & M University,
 Geology Department,
 College Station, Texas 77843,
 USA

Co-operating institution(s) :

Supporting or funding body : NOAA Sea Grant

Starting dates/duration of programme/project : 1974/1976

Name of lagoon(s) : Galveston Bay, Matagorda Bay

Geographic location lat. :
 Upper Texas Gulf coast
 long. : .

Code :
surface area :

USA

Title of programme : Physical Processes : Upper Texas Coast

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X		X					X			

Description and objectives of the programme/project (summarized) :

The tasks of this two-year study were : compilation and analysis of data on waves, wind, storms, tides and stream sediment discharge; analysis and interpretation of wave data as they pertain to littoral drift; calculation of littoral drift rates (CERC method 3) and comparison with shore line change survey done by the Texas Bureau of Economic Geology (comparisons favourable at order of magnitude level); and interpretive comments about predictive models for shore line stability .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Alabama System
Address : Marine Science Programmes,
P.O. Box 386,
Dauphin Island, Alabama 36528,
USA
Director : G. Crozier

Project leader(s) : William W. Schroeder

Address : Marine Science Programmes,
P.O. Box 386,
Dauphin Island, Alabama 36528,
USA

Co-operating institution(s) : Dauphin Island Sea Cab

Supporting or funding body : State of Alabama;
Mississippi-Alabama Sea Grant Programme;
NASA-GC Marshall Space Flight Centre;
University of Alabama System;
Water Resources Research Institute;

Starting dates/duration of programme/project : 1973/indefinite

Name of lagoon(s) : Mobile Bay, Bon Secour Bay, East Mississippi Sound

Geographic location	lat. : 30°-31° N	Code :
Northeastern Gulf of Mexico	long. : 87°-88° 5' W	surface area :

USA

Title of programme : Descriptive Characterisation of Coastal Alabama :
Physical Environment

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
X	X									

Description and objectives of the programme/project (summarized) :

This programme is designed to descriptively characterize the circulation and hydrography of Mobile Bay, East Mississippi Sound and adjacent areas. The measurements include : basic meteorological observations; fixed position current speed and direction; drogue releases (surface to 1 - 2 Metres); time series temperature and salinity at fixed positions; vertical profiles of temperature, salinity and dissolved oxygen over 26 hour periods at fixed positions; and quasi-synoptic surveys of temperature, salinity and dissolved oxygen of preselected areas.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Texas,
 Address : Port Aransas Marine Laboratory,
 Marine Science Institute,
 Port Aransas, Texas 78373,
 USA
 Director : Oswald Roels

Project leader(s) : Warren Fulich, Jr.

Address : Port Aransas Marine Laboratory,
 Marine Science Institute,
 Port Aransas, Texas 78373,
 USA

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project : 1975/continuous

Name of lagoon(s) : Laguna Madre

Geographic location	lat. :	Code :
South Texas	long. : .	surface area :

USA

Title of programme : Studies of sea-grass growth and relationship to edaptic conditions, particularly trace minerals in sediments

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						

literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

Trace minerals requirements of seagrasses are being investigated through sediment and plant analysis, plant growth experiments in the laboratory and short-term uptake experiments in the laboratory under controlled conditions . Other sediment parameters such as grain size, porosity, shell (CaCO₃) content, interstitial water major nutrients and nitrogen cycle processes (e.g. N₂ fixation, nitrification, denitrification) are also examined or intended for investigation . These studies on mineral nutrition of sea-grasses are believed to be applicable to the problem of growth of terrestrial angiosperm plants on saline soils .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Puerto Rico
 Address : Department of Marine Science
 Mayaguez, Puerto Rico
 USA

Director : Thomas R. Tosteson

Project leader(s) : M.J. Cerame-Vivas

Address : Lund 85
 P.O. Box 173
 San German, Puerto Rico 00753
 USA

Co-operating institution(s) :

Supporting or funding body :
 M.J. Cerame-Vivas, Inc.

Starting dates/duration of programme/project : on going

Name of lagoon(s) :

Geographic location	lat. :	Code :
	long. :	surface area :

USA

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X					X	X

literature and/or reports available: yes

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Rhode Island
 Address : Kingston, Rhode Island 02881,
 USA
 Director :

Project leader(s) : Scott W. Nixon

Address : University of Rhode Island
 Graduate School of Oceanography
 Narragansett Bay Campus
 Kingston, R.I. 02881, U.S.A.

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :
 lagoon system on the western coast of Rhode Island State

Geographic location lat. : 41° 20' N
 long. : 71° 40' W
 Code :
 maps : yes
 surface area : 12 km²

USA

Title of programme :

Ecosystem analysis, nutrient cycling and energetics of coastal ecosystems.

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X			X			

Literature and/or reports available : yes

Description and objectives of the programme/project (summarized) :

Coupling of lagoons and offshore waters in terms of nutrient flux and particulate organic matter flux. Production consumption and recycling of materials.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Texas at Austin

Address : Austin, Texas 78712,
USA

Director :

Project leader(s) : Neal E. Armstrong

Address : University of Texas at Austin,
Department of Civil Engineering,
Austin, Texas 78712,
USA

Co-operating institution(s) :

Supporting or funding body : State of Texas

Starting dates/duration of programme/project : September 1974/August 1977

Name of lagoon(s) : Nueces Bay, San Antonio Bay, Lavace Bay,
Matagorda Bay, Trinity Bay

Geographic location lat. :

Texas coast long. :

Code :

surface area :

USA

Title of programme : Nutrient exchange in Texas marshes

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X			X	X		

Description and objectives of the programme/project (summarized) :

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : University of Texas Marine Science Institute
Address : Port Aransas Laboratory,
 Port Aransas, Texas 78373,
 USA
Director : C. Burk

Project leader(s) : Carl H. Oppenheimer

Address : University of Texas Marine Science Institute,
 Port Aransas Laboratory,
 Port Aransas, Texas 78373,
 USA

Co-operating institution(s) :

Supporting or funding body : Environmental Protection Agency;
 University of Texas;
 NATO;
 NOAA Sea Grant;

Starting dates/duration of programme/project : 1971/continuing

Name of lagoon(s) : Texas Estuary Systems, Galveston Bay, Matagorda Bay,
 San Antonio Bay, Aransas Bay, Corpus Christi Bay,
 Laguna Madre Systems

Geographic location	lat. :	Code :
Coast of Texas	long. :	surface area : 6070 km ²

USA

Title of programme : Systems Ecology of Coastal Environment

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						X

Description and objectives of the programme/project (summarized) :

This ongoing project was designed to classify coastal environments on a geographic-ecological basis with accompanying pertinent data . The data and subsequent information is used to provide a description of the varied estuarine environments. The system is currently being used to assess waste loading in the State of Texas . It is also being used to develop environmental impact statements for sewage treatment systems, industrial development and general coastal zone management .

SCOR/Unesco enquiry on existing lagoon research programmes	
Institution : University of Texas, Address : Port Aransas Marine Laboratory, Marine Science Institute, Port Aransas, Texas 78373, USA Director : O.A. Roels	
Project leader(s) : L. Parker Address : University of Texas, Port Aransas Marine Laboratory, Marine Science Institute, Port Aransas, Texas 78373, USA	
Co-operating institution(s) : University of Hawai; University of Alaska; University of Virginia; Florida State University; Farleigh Dickinson University.	
Supporting or funding body : National Science Foundation	
Starting dates/duration of programme/project : 1975/1980	
Name of lagoon(s) : Laguna Madre and other lagoons in Alaska and Florida	
Geographic location Texas, Alaska and St. Croix, Florida .	lat. : long. : Code : surface area :

288

USA										
Title of programme : C ¹³ as tracers in seagrass food webs										
I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
			X	X						
Lietrature and/or reports available : yes										
Description and objectives of the programme/project (summarized) : This current five-year programme is to study the stable carbon isotope chemistry of seagrass ecosystems . The flow webs will also be studied to determine the extent of seagrass carbon utilization (as measured by change in C ¹³). Comparative studies will be made by doing comparative studies with scientists from other regions of the globe . Experiments will be carried out to discover why seagrass have such unique C ¹³ /C ¹² ratios . The change in C ¹³ of the CO ₂ and change in O ₁₈ of the O ₂ held within the plant will be studied to evaluate their metabolic role and all their implications for productivity measurements .										

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Western Washington State College

Address : Bellingham, Washington 98225,
USA

Director : A.C. Broad

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body : National Oceanic and Atmospheric Administration
(Outer Continental Shelf Environmental Assessment Programme)

Starting dates/duration of programme/project : 1975/1981

Name of lagoon(s) : Beaufort, Kaktovik, Gwydyr Bay, Elson, Pearl Bay,
Wainwright Inlet, Kasegalok and Lopp Lagoon

Geographic location

lat. :

Code :

Lagoons on the Alaskan
coasts of the Beaufort
and Chukchi Seas

long. : °

surface area :

USA

Title of programme : Environmental Assessment of Selected Habitats in the
Beaufort and Chukchi Sea Littoral Systems

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X					X	X

Description and objectives of the programme/project (summarized) :

The first task of this five-year study was to delineate and describe the principal intertidal and littoral community types of the Beaufort and Chukchi Sea coasts. Representative and accessible sites will then be selected for more intensive study and description of ecological relationships and trophic communities of the Alaska arctic regions.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Centre de Ecologia
Address : Instituto Venezolano de Investigaciones Cientificas,
 Apartado 1827,
 Caracas,
 Venezuela
Director : Gilberto Rodriguez

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) : Laguna de Tacarigua

Geographic location

lat. : 10° 05' N

long. : 65° 50' W

Code :

surface area : 140 km²

Venezuela

Title of programme :

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
				X						

Existing training programme : yes

Description and objectives of the programme/project (summarized) :

Work has been done on Decapod crustacea .

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Fundacion la Salle de Ciencias Naturales
Address : Avda. Boyaca, Edif. Fundacion la Salle
 Aptdo. Correo 8150
 Caracas , Venezuela
Director : Hermano Ginez

Project leader(s) :

Address : Estacion de Investigaciones Marinas de Margarita
 Apdo. 144, Porlamar, Edo. N. Esparta , Venezuela

Co-operating institution(s) :

Supporting or funding body :

Fundacion la Salle de Ciencias Naturales

Starting dates/duration of programme/project : 1976

Name of lagoon(s) : Restinga lagoon

Geographic location lat. : 11°01' N
 Margarita Island long. : 63°54' W

Code :
surface area :

Venezuela

Title of programme :

Restinga lagoon project

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
		X	X	X	X					X

Description and objectives of the programme/project (summarized) :

The project is a general survey with a final objective of improving oyster and shrimp culture on a large scale.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad Central de Venezuela
 Instituto de Zoología Tropical
 Address : Apartado los Chaguarama 59058
 Caracas 104 , Venezuela

Director : J. Alberto Leon

Project leader(s) : Evelyn Zoppi de Roa

Address : same address

Co-operating institution(s) :

Oficina Nacional de Pesca (Dirección General de Desarrollo Pesquero),
 Ministerio de Agricultura y Cría

Supporting or funding body :

Universidad Central, Faculty of Sciences, Caracas

Starting dates/duration of programme/project : 1976

Name of lagoon(s) : Tacarigua lagoon

Geographic location

lat. : 10°12'-19' N

long. : 65°41'-56' W

Code :

maps : yes

surface area : 140 km²

Venezuela

Title of programme : Variations in the composition and distribution of
 zooplankton in the Laguna of Tacarigua

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X		X	X						

Reports and/or literature available : yes

Existing training programme : yes

Description and objectives of the programme/project (summarized) :

Studies on the plan ton communities.

SCOR/Unesco enquiry on existing lagoon research programmes

Institution : Universidad de Oriente
Instituto de Oceanografia

Address : Cumana, Sucre
Venezuela

Director :

Project leader(s) :

Address :

Co-operating institution(s) :

Supporting or funding body :

Starting dates/duration of programme/project :

Name of lagoon(s) :
 Tacarigua
 Unare
 Piritu

Geographic location	lat. : 10°16'-10°00 N	Code :	
	long. : 65°58'-65°23 W	surface area :	

Venezuela

Title of programme :

**Programme on lagoon systems of the eastern coast of
 Venezuela**

I	II	III	IV	V	VI	VII	VIII	IX	X	G.S.
	X	X	X	X	X	X				

Description and objectives of the programme/project (summarized) :

The topics of this multidisciplinary programme include geological, chemical and biological aspects as well as physics.

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8	Incorporated with Nos. 1, 4 and 14 in No. 27	1968	WG 10
9	Report on intercalibration measurements, Leningrad, 24-28 May 1966 and Copenhagen, September 1966; organized by ICES	1969	—
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