

ANNUAL REPORT:

September 1, 1976 - September 30, 1977

Marine Environmental Sciences Consortium  
Dauphin Island Sea Lab  
Dauphin Island, Alabama 36528

Director's Preface:

This has been a year of transition in terms of leadership, and hopefully direction, for the consortium. A very real effort has been made to bring the existence of the MESC to the consciousness of the local community and the membership. The fruits of this labor will be weighed in Montgomery next spring.

A number of reorganizations and efforts to better structure management have been pursued and more are anticipated. The reaction has been largely favorable and the course of action will be pursued until some conclusion, positive or negative, can be reached.

I must express the great sorrow that the MESC community felt at the passing of Dr. George Armitage Rounsefell during the year. He was a fine scientist who dealt in resources of concern to the entire world. His early gloomy forecasts of world fishery productivity were unpopular and unprecedented in an era that spoke hopefully of "turning to the oceans" -- but he was incredibly accurate. His contributions were noted in one of the year's great achievements by MESC in the form of the first issue of Northeast Gulf Science. Papers contributed to the memorial issue reflect the high regard that the scientific community had for Dr. Rounsefell. The resulting quality was so exceptional that the marine community has commented very favorably on the journal. The future for the journal looks bright and even in passing, Dr. Rounsefell contributed again to the growth and success of MESC.

New directions are being pursued in the areas of teacher training and general public education. Alabama is a coastal state whose marine heritage and involvement far surpasses her length of coastline. All the people, regardless of educational

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## I. GENERAL STRUCTURE

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The administration of MESC affairs has been rearranged to better identify the component units. Dr. Robert Shipp was named Associate Director for Academic Affairs of MESC while Ms. Judy Stout was made Assistant Director of the Dauphin Island Sea Lab. It was felt that the distinction was occasionally important but frequently difficult to articulate. Dr. Susan Ivester serves as Coordinator of Graduate Studies and oversees the activities and performance of all graduate students working at the Sea Lab.

Within the support function, Ms. May Tillman is the Business Manager overseeing office functions, auxiliary enterprises and serving as Registrar. Mr. Fred Rees is the Manager of Facilities which includes Plant Operations, Vessel Operations and the Technical Support Shop.

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## II. PROGRAM DESCRIPTION

### A. Instruction:

The instructional element for MESC has two components, separated principally on chronology and secondarily on content. Almost all of the members participate in the Summer Activity which is oriented toward providing the "core" courses of a variety of degree programs. Most of these courses are at the advanced undergraduate/graduate level with two at the lower level.

The 1977 summer instructional program was marked by a number of positive developments. First, a much more beneficial distribution of students resulted from the improved advance deposit policy which enabled the registrar to know well in advance when an applicant became unable to attend. This reduced waiting lists rapidly, and ultimately resulted in almost every student attending the class of his or her first choice. In addition, no classes were overcrowded. Only Ocean Science showed a disappointing enrollment; on the other hand the 18 students in Marine Geology was a record and underscores the broadening base of interest at the Sea Lab. Coastal Climatology was the only new offering of the summer, but enrollment was adequate to guarantee its future. It is offered during both summer terms, and allows students an excellent alternative of "Wednesday only" courses to fill out their schedules.

Visiting summer faculty included Dr. Wayne Adams (Troy State, Ocean Science), Dr. Wayne Canis (Livingston State, Marine Geology), Dr. Robert Stiles (Samford, Marine Biology), Dr. Ron Taylor (Auburn, Recent Marine Sedimentation), and Dr. Aaron Williams (University of South Alabama, Coastal Climatology).

A summary of the summer enrollment is presented in Table 1. Comparison with preceding years indicates that a plateau may have been reached. Funding, space and available student population all are playing a role in limiting growth.

The Academic Year Activity is oriented toward graduate-level courses offered by the resident staff and a variety of mini-terms throughout the spring. This was

the first year that a winter term was offered and both fall and winter were

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successful (Table 2) in terms of graduate education and now extends our teaching effort to a year-round schedule.

An "academic participation" survey was attempted during the spring in an effort to quantitate each member's involvement with MESC activities. Liaison officers were queried as to campus affairs in the form of curricula, numbers of students and faculty interest. Sea Lab records of student enrollment and field trip activity were reviewed. The results are presented in Table 3. The fact that 210 students in the state are interested enough in marine science at the undergraduate level to participate at the Sea Lab is astounding. The consortium is a statewide academic unit serving all these students, though only a small percentage actually enter the field after graduation. Current graduate activities are in Appendix I.

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## B. Research:

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### 1. General

It is difficult to summarize the research activity in terms of cash flow because of shifting initiation dates. Table 4 summarizes all activities during fiscal 1976-77. Those designated as "terminated" did end during that period after some period of activity. There is value to comparing activities even on this crude scale. Table 5 breaks research activity out by agency and Table 6 by staff professional. It is immediately evident that the current year is significantly poorer than last in which most now terminating were current. Equally obvious is the attempt to recoup in the submitted proposals. The majority of these have a reasonable probability of funding. This year would be much more disastrous if the recent renewal of the BLM contracts had not occurred.

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### 2. Shelf/Slope Processes

Virtually the entire year was consumed in negotiating a renewal of the Bureau of Land Management MAFLA contract. This has been settled with approximately \$300,000 being awarded as sub-contracts to staff at the Dauphin Island Sea Lab. Details may be found under the Faculty Activities section.

A major effort toward NSF funding was turned down. This proposal involved most of the resident staff in a zoogeographic study of the De Soto Canyon. Papers presented during the year on this topic sparked such interest within the scientific community that discussions of both submersible and habitat work at the head of the Canyon are underway. The former possibility is via the Harbor Branch Foundation and the latter with the Manned Undersea Science and Technology Office (MUST) of NOAA.

The Sea Grant funds for the artificial reef study terminated during the year but successional studies on the reefs are continuing with available funds. Sea Grant support for the lobster project has funded three cruises with some success and the acquisition of an underwater TV camera system has broadened the observational capability considerably. Gravid females were obtained and several larval stages were successfully maintained by campus faculty.

### 3. Estuarine Processes

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The marsh projects are proceeding on schedule and renewal is anticipated on January 1, 1978 with Sea Grant funding carrying the load. Dr. Hopkins was supported by discretionary funds in mid-year to study the hydrographic parameters associated with oyster settling.

The Water Resources Research Institute provided the funds for Dr. Schroeder to move farther up the Bay and several proposals to the Corps of Engineers for work on the Theodore Channel may continue the upper Bay work. NASA has continued its support of the Bay work, but levels have been greatly reduced.

### 4. Organismic Processes

The wet lab facilities have been further improved and a Gilson respirometer added to the Dauphin Island Sea Lab equipment. Work on seasonal hormone variation in mullet is progressing well. Additional ties to both medical schools have been made. With Drs. Hawkins, Tate and Sarphie, Dr. Crozier is involved in a study of heavy metal accumulations with an intramural grant from the University of South Alabama College of Medicine. A major effort is being planned in the area of biomedical research with personnel from the University of Alabama in Birmingham and the University of South Alabama.



### C. Public Service:

Northeast Gulf Science has been well received by the scientific community and papers have been received for the second number. Dr. Robert Shipp is the editor of the journal.

The climatology station has continued to function as our best continuing example of public service. The group operating the station is headed by Dr. Schroeder. The system was "honored" this year by being elevated to incorporation into the main pipeline of data flowing directly to the National Weather Service.

A new activity was established during the summer within this element. The persistent request for tours of the laboratory was redirected in a most positive manner. Principally through a cooperative project with the Mobile Area Community Action Committee (MACAC), a program was initiated for exposing people from all walks of life to the resources and conflicts of the coastal environment. Approximately 250 children and adults visited the Sea Lab during July and August alone. The groups ranged from MACAC's disadvantaged youth to explorer posts and even a paid tour from Grayline Tours. This Public Environmental Awareness (PEA) project is likened to the fable of "the princess and the pea" in that it is subliminal in approach but hopefully will touch those segments of the population who would not otherwise appreciate the problems of the coastal zone.

### D. Library:

The library has grown significantly and has been recognized by the major marine lab libraries because of the unique cooperative nature of the Repository. In addition, a grant of \$3,400 was received from HEW under Title II. This will be used to further upgrade the holdings and begin binding of back issues.

## E. Academic Support:

The Technical Support Shop has continued to provide those functions and capabilities somehow peculiar to marine stations. The scientific diving activity has been concentrated on the reef project, but there has been renewed discussion of habitat involvement with the MUST office. The Museum has become a physical reality during the year, but the level-funding anticipated for the next fiscal period will prevent any further development in this area and major cuts are anticipated for the next fiscal year.

### The Herbarium/Invertebrate Repository:

1. Overview: This facility has been constructed in Marine Science Hall under the instrument lab/staff illustrator space. After a small amount of partition and ceiling construction, we were able to develop about 750 square feet into a well-lighted efficiently designed facility equipped with benches, tables and some 121 running feet of free standing shelf units. In addition to the two herbarium cabinets on hand, two new herbarium cabinets are on order. In addition to the curatory bench, there is microscopy space for two visiting investigators. A policy guide is in preparation and should be finalized before this year is out.

2. Herbarium: The herbarium will house over 200 species of algae from the eastern Gulf of Mexico and approximately 500 plant species from coastal Alabama.

3. The Invertebrate Repository: At the present time, we are organizing the invertebrate collections on the shelves. The collections can be roughly estimated at:

Porifera = 200 species	Mollusca = 250 species
Coelenterata = 60 species	Decapod Crustacea = 200 species
Polychaeta = 400 species	Echinodermata = 100 species

The major change in Academic Support is the addition of Vessel Operations which was originally set up in auxiliary enterprises. The boats are used totally in support of either research or education and the objectives of a trip are reasonably well defined, so the shift was effected during this year. The budget recap does not reflect the change but the 1977-78 budget does. The vessel utilization is summarized in Table 7.

F. Student Services:

The functions of registrar, admissions and records, etc., have continued to evolve and the paper flow seems to have become acceptable to the membership and reasonably uniform. The Alabama Commission on Higher Education has reviewed our procedures and now receives our input directly. It was generally agreed that MESC should not be subject to the formula calculations.

G. Institutional Support:

The most significant development within this management element has been the reduction of the original \$100,000+ budget to less than \$50,000.

H. Plant Operations:

The failure of air conditioning and sewage treatment systems in the spring threatened summer school but adequate repairs to the septic tanks relieved that problem temporarily. The cooperative attitude and patience of the students got us all through the summer and most of the air conditioning was functional by the end of the summer session.

Rising power costs remain the most significant area of concern for the facility. The original installation was not energy-conscious and it is most evident now. The sharing of the power system with the U. S. Coast Guard has cost MESC far more than originally anticipated but the relationship is scheduled to terminate in January.

I. Auxiliary Enterprises:

The major concern of the auxiliaries is the cafeteria. Ms. Tillman took over the management in May and reported balanced books at the end of the summer.

### III. STAFF ACTIVITIES

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A great deal of effort this year went into the nebulous and frustrating role of contract/grant proposal and negotiation. Few changes were made other than the creation of the position Research Associate for the Sea Lab. These are unfunded positions which allow talented professionals a platform from which to operate. Ms. Linda P. Shipp is currently the only so-titled individual. These activities are summarized in Table 8.

Several personnel changes are anticipated since resignations have been received from Tom Walker, director of the high school program, and Dr. Barry Vittor, Associate Professor of Biology, University of Alabama in Birmingham.

Staff publications are presented in Appendix I.

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#### IV. FINANCIAL STATEMENT

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An accurate financial report cannot be prepared until mid to late September. The projections of the enrollment and income were reasonably accurate and a six-month projection indicated that the consortium might operate within the year's budget. These projections do not include any reduction of the deficits carried over from 1975-76 fiscal year. An accurate accounting will be prepared as soon as possible and forwarded as an appendix when available.

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Table 1: Summer Enrollments (Students)

<u>Year</u>	<u>First Session</u>	<u>Second Session</u>	<u>Total</u>
1972	54	50	71
1973	60	46	75
1974	74	70	89
1975	97	70	106
1976	98	77	115
1977	91	81	109

Table 2: Academic Year Enrollment, 1977  
(with credit hour production)

<u>School</u>	<u>Fall</u>	<u>Mini-Term</u>	<u>Winter</u>
USA	5 (26 hrs.)		10 (48 hrs.)
UA	5 (45 hrs.)		2 (8 hrs.)
UAB	3 (21 hrs.)	41 (82 hrs.)	1 (4 hrs.)
Totals:	13 (92 hrs.)	41 (82 hrs.)	13 (60 hrs.)

Table 3: Results of MESC Academic Survey

	Students Summer '76	Students Summer '77	Field Trips	Total Students (2) '76-'77	Teaching Faculty	Research Faculty	Advisory Committee	Marine UG Major	Marine UG Minor (1)	No. Students	Grad. Degrees	No. Students	Mini-Term Periods
Alabama State	1	2	0	2	0	0	+		X(Biol.)	3			Fall
Auburn Univ.	6	16	1	46	9	6	+	X(Biol.)	X(Geol.)	60			
Auburn U., Mont.	0	1	0	1	1	2	nr						
Birmingham-Southern	2	1	2	32	1		-						January
Livingston College	0	0	0	0			nr						January
Jacksonville State	5	10	0	10			+						May
Livingston Univ.	3	3	1	25	2		nr	X(Biol.)					May
Mobile College	0	0	1	24	1		-						
Samford University	2	3	1	16	2	2	+		X(Biol.)	5			January
Spring Hill College	1	2	1	8	2	2	-		X(Biol.)	10			
Troy State Univ.	13	12	1	42	2	1	nr		X(Biol.)	12			May
Tuskegee Institute	0	0	0	0	3	4	-						
Univ. of Alabama	26	20	4	86	4	4	+	X(M Sci.)	-	35	X	10	May
Univ. of Alabama	8	5	1	84	7	12	+					4	Sept., Feb., Dec.
Univ. of Alabama	1	3	1	13	2		nr						
Univ. of Montevallo	3	0	2	21	2	1	-						
Univ. of North AL	8	8	0	8	4	10	-	X		15			February
Univ. of South AL	36	27	1	68	4	6	-	X		70			

"minor" should be interpreted as "option", "emphasis", "program", "track", or "concentration"

nr = no response

total = summer + field trips + mini-terms + academic year courses

Table 4: Activities During Fiscal 1976-77

Agency	Project	PI	Extramural	Terminated	Current	Proposed
ASGC	Marsh Inventory	Stout	\$ 13,333	X		
OE	Plant Monitoring	Stout	\$ 34,750	X		
ASA	Ground Truth	Crozier	\$ 27,514	X		
ASA	Data Collection	Schroeder	\$ 10,000		X	
ASA	Ground Truth	Schroeder	\$ 12,000		X	
us Foun	Scientific Diving	Crozier	\$ 10,000	X		
RRI	Bay-River Hydrogra.	Schroeder	\$ 9,985		X	
ASGC	Marsh Evaluation	Stout	\$ 15,800 <sup>10422</sup>		X	
ASGC	Marsh Evaluation	Stout	\$ 20,659			X
ASGC	Marsh Evaluation	Ivester	\$ 22,864		X	
ASGC	Marsh Evaluation	Ivester	\$ 17,811			X
ASGC	Atlas	Schroeder	\$ 28,000	X		
ASGC	Atlas	Schroeder	\$ 8,978		X	
ASGC	O <sub>2</sub> Depletion	Schroeder	\$ 28,892			X
ASGC	Lobster	Crozier/Vittor	\$ 10,874		X	
ASGC	Lobster	Crozier	\$ 11,000			X
ASGC	Lobster	Shipp, R.	\$ 11,582		X	
ASGC	Lobster	Shipp, R.	\$ 15,400			X
ASGC	Reef Studies	Crozier	\$ 25,148	X		
ASGC	Reef Studies	Shipp, R.	\$ 15,000	X		
ASGC	Oyster Settling	Hopkins	\$ 9,000		X	
LM	Epifauna	Hopkins	\$118,709		X	
LM	Meiofauna	Ivester	\$144,831		X	
LM	Crustacea	Heard	\$ 22,088			X
ASGC	Handbook	Heard	\$ 9,880			X
SP	Crustacea	Heard	\$ 25,605			X
LM	Demersal Fishes	Shipp, R.	\$ 31,124		X	
OE	Theodore Channel					
	-management	Crozier/Schroeder	\$ 11,500			X
	-turbidity	Crozier	\$ 7,200			X
	-hydrography	Schroeder	\$ 50,400			X
	-sedimentology	Brett	\$ 10,400			X
	-benthic quality	Pamatmat	\$ 15,600			X
	-macroinfauna	Hopkins/Vittor	\$ 9,000			X
	-demersal fauna	Shipp/Hopkins	\$ 8,400			X
	-submersed grasses	Stout	\$ 5,100			X
ASGC	Decapod Larvae	Shipp, L.	\$ 8,222			X
AB	PEA Program	Crozier	\$ 12,862			X
IH	Coliform Sampling	Crozier	\$ 42,000			X

MASGC = Mississippi-Alabama Sea Grant Consortium  
 NASA = National Aeronautics & Space Administration  
 COE = Corps of Engineers  
 BLM = Bureau of Land Management  
 CAB = Coastal Area Board



Table 5: Analysis of Research by Funding Agency

<u>Agency</u>	<u>Terminated</u>	<u>Current</u>	<u>Proposed</u>
COE	\$ 34,750	--	\$ 91,600
NASA	\$ 27,514	\$ 22,000	--
Russell Foundation	\$ 10,000	--	--
WRI	--	\$ 9,985	--
BLM	--	\$294,664	\$ 22,083
MASGC	\$ 81,481	\$ 79,098	\$111,864
NSF	--	--	\$ 25,605
CAB	--	--	\$ 12,862
NIH	--	--	\$ 42,000
Totals:	\$153,745	\$405,747	\$306,014

Table 6: 1976-77 Funding Level by MESC Professional Staff

<u>Principal Investigator</u>	<u>Terminated</u>	<u>Current</u>	<u>Proposed</u>
Crozier	\$ 62,662	\$ 5,437	\$ 78,812
Heard	--	--	\$ 57,568
Hopkins	--	\$127,709	\$ 8,700
Ivester	--	\$167,695	\$ 17,811
Schroeder	\$ 28,000	\$ 40,963	\$ 85,042
Shipp, R.	\$ 15,000	\$ 42,706	\$ 29,600
Shipp, L.	--	--	\$ 8,222
Stout	\$ 48,083	\$ 15,800	\$ 25,759
Vittor	--	\$ 5,437	\$ 4,500
Totals:	\$153,745	\$405,747	\$306,014

Table 7: Research Vessel Report Totals  
(October 1976-August 1977)

	<u>R/V G. A. Rounsefell</u>	<u>R/V Pisces</u>
Cruises	81	7
Participants	1,255	23
Days at Sea	107	11
Nautical Miles Steamed	3,886	172
Cruises for Scientific Research	32	7
Cruises for Education - College Level	32	0
Cruises for Education - High School Level	14	0
Other (i.e., Audubon, Media Workshop, etc.)	3	0

Table 8: MESC Professional Staff Activities  
(October 1976-September 1977)

	<u>Administrative</u>	<u>Instructional</u>	<u>Professional</u>
ozier, G. F.	Director, MSP; Associate Director, MESC Director, MESC (3-1-77) Advisor, MASGC  Committees: Diving Control Board** Library Affairs UNOLS Coastal Vessel Design Group	Physiology of Marine Animals* (7) Introduction to Coastal Marine Environments* (22)  Graduate Committees: 9	P.I.-MASGC/Artificial Reef Program (terminating) P.I.-NASA/Bay Turbidity Studies (terminating) Assoc. P.I.-MASGC/Lobster Studies (current/renewal proposed) Assoc.-NIH/Data Collection (proposed) Co-P.I.-COE/Theodore Channel Baseline (proposed)
ard, R. W.	Curator, DISL Museum	Marine Invert. I & II* (24 & 8) Participated in: Estuarine Biology Intro. to Coastal Environ. Marine Resource Div. Workshop Graduate Committees: 3 (12 hours independent research)	Trips to USNM, TAMU invertebrate collection, Florida Dept. of Natural Resources Museum P.I.-MASGC/Estuarine Invert. Handbook (proposed) P.I.-BLM/Benthic Decapods (proposed) P.I.-NSF/BLM Decapods (proposed)
pkins, T. S.	Director, DISL Museum Diving Officer, DISL Committees: Library Affairs Facilities & Development Vessel Operations Diving Control Board	Physiology Marine Animals* (7) Participated in: Estuarine Biology Scientific Data Management Oceanology of Gulf of Mexico Intro. to Coastal Environment Marine Invert. I & II Graduate Committees: 16 (8 as chairman)	P.I.-MASGC/Oyster Studies (current) P.I.-BLM/Epifauna, MAFLA (new) Assoc.-COE/Theodore Channel Baseline (proposed) Assoc.-MASGC/O <sub>2</sub> levels in Mobile Bay (proposed)

Table 8, continued (page 2)

	<u>Administrative</u>	<u>Instructional</u>	<u>Professional</u>
ster, M. S.	Coordinator, Graduate	Marsh Ecology* (12)	P.I.-MASGC/Marsh Studies (new)



Administrative

ipp, L. P. Research Associate, DISL  
  
out, J. P. Assistant Director, DISL  
Director, DISL Marine  
Repository  
Committees: Library  
Affairs\*\*  
Information & Public  
Service\*\*

Instructional

Marsh Ecology\* (12)  
Marine Botany\* (19)  
Participated in:  
Estuarine Biology  
Intro. to Coastal Environ.  
Mar. Res. Div. Workshop  
Audubon Workshop

ttor, B. A. Committees: Facilities &  
Development\*\*  
Coastal Research\*\*  
Coordinating

Benthic Community Structure\* (4)  
Scientific Data Management\* (6)  
Nat'l. Hist. of Commercial  
Marine Invertebrates\* (7)  
Seminar\* (28)  
Marine Ecology\* (15)  
Participated in: Oceanol. Gulf  
of Mex.; Audubon Workshop  
Graduate Committees: 10 (5 as  
chairman)

lker, T. H. Director, Discovery Hall  
Project

Four High School Spring Classes (80)  
Participated in:  
Commercial Marine Fisheries of AL  
Three Summer Institutes (46)

Professional

P. I.-MASGC/Larval Decapods in Marsh  
Systems (proposed)  
R. A.-BLM/Melofauna

P. I.-COE/Spoil Monitoring  
(terminating)  
P. I.-MASGC/Marsh Assess. (terminating)  
P. I.-MASGC/Marsh Studies (current)  
P. I.-MASGC/Marsh Studies (proposed)  
Assoc.-COE/Theodore Channel (proposed)  
Attended: Gulf Estuarine Res. Soc  
Marsh Value Symposium  
E. Coast Librarian Association

P. I.-BLM/MAFLA Studies (terminating)  
P. I.-MASGC/Lobster Studies (current)  
Assoc.-COE/Theodore Channel (proposed)

Attended Marine Education Association  
Meeting  
Visited 15 high schools/counseled up  
to 1,000 students

\*Principal Responsibility  
\*\*Chairman

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status and background, are therefore targets for the MESC effort, and I would like  

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