
DAUPHIN ISLAND SEA LAB

SPECIAL REPORT



REPORT No.

**MARINE ENVIRONMENTAL
SCIENCES CONSORTIUM
ANNUAL REPORT
1981-1982**

**Dauphin Island Sea Lab
Dauphin Island, Alabama 36528**

**MARINE ENVIRONMENTAL
SCIENCES CONSORTIUM
ANNUAL REPORT
1981-1982**

TABLE OF CONTENTS

	PAGE
Director's Preface.....	1
I. INSTRUCTION.....	3
A. DISCOVERY HALL PROJECT.....	3
B. SUMMER SCHOOL.....	7
C. ACADEMIC YEAR.....	12
II. RESEARCH.....	14
A. CONTINENTAL SHELF/SLOPE PROCESSES.....	14
B. ESTUARINE PROCESSES.....	15
C. ORGANISMIC PROCESSES.....	15
D. SUMMARY OVERVIEW.....	16
III. PUBLIC SERVICE.....	18
A. NORTHEAST GULF SCIENCE.....	18
B. METEOROLOGICAL STATION.....	19
IV. LIBRARY.....	20
V. ACADEMIC SUPPORT.....	21
A. MUSEUM.....	21
B. TECHNICAL SUPPORT.....	22
C. SCIENTIFIC DIVING.....	23
D. COMPUTER CENTER.....	24
E. PLANT OPERATIONS.....	25
F. VESSEL OPERATIONS.....	26
G. FINANCIAL SUMMARY.....	27
H. FACULTY ACTIVITIES.....	27

APPENDIX I.

Contents of Northeast Gulf Science

APPENDIX II.

Physical Plant Utilization

APPENDIX III.

Faculty Publications

Director's Preface:

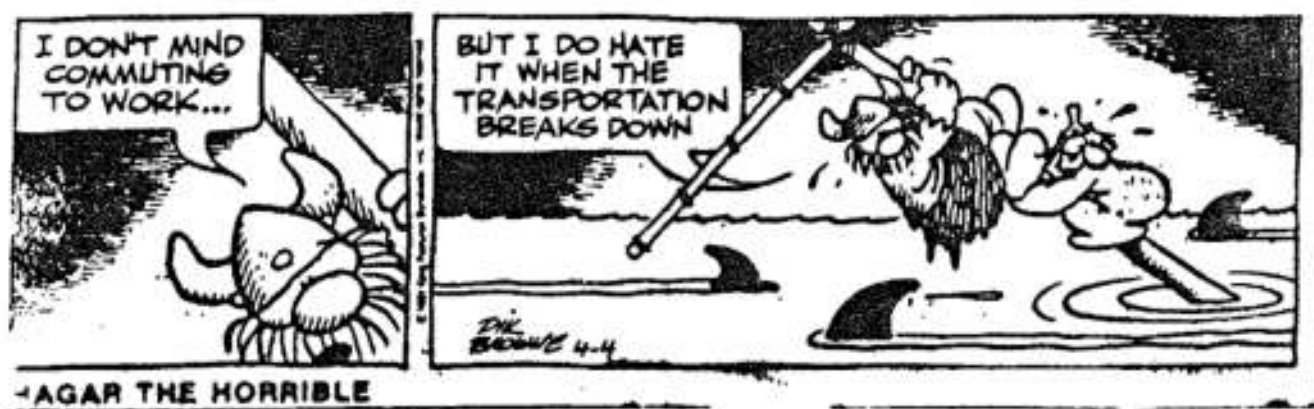
The opening of the new bridge to Dauphin Island provided a temporary high spot for the year. The end of summer school was marred by the departure of several devoted employees due to financial constraints. Johnny Booker, at least, left the Sea Lab on a positive note. He has moved to a program directorship in Florida and will be sorely missed, personally and professionally. Johnny is a product of the Sea Lab and will continue to bring credit to the institution wherever he goes.

Financial difficulties have also forced MESC to withdraw from the bi-state Sea Grant program literally on the eve of its achieving College status, reduce graduate student support at a time when the program could be re-established, and will prevent placing the replacement for the R/V G. A. Rounsefell in active service.

There have been achievements in the areas of education and the role of environmental "watchdog" of the coastal area, but these are so overshadowed by the trauma of programmatic reductions and staff layoffs as to be personally unrewarding. It is my fervent hope that the perseverance of faculty, staff and students will outlast the current trend of financial support.

The area of maximum contribution over the past year has clearly been that of service. Sea Lab personnel assisted Auburn Cooperative Extension Service specialists in ascertaining the location and extent of illegal dumping of rubble from the old Dauphin Island bridge. The Sea Lab was also deeply involved in

the state's suit of Mobil Oil Corp. for illegal discharges into Bay waters. The vital role of marine science in state affairs has been reaffirmed time and again, seemingly a contradiction to the funding trend.



1. INSTRUCTION

A. DISCOVERY HALL PROJECT

The past year has resulted in many changes within the framework of Discovery Hall. Undoubtedly, the most pleasant change was the completion of the new instructional building. A more positive change in enrollment was due to the expansion of the classroom visitation element.

A total of 3067 participants were enrolled in a variety of programs (Table 1). Over 80% of these were students from Alabama schools.

The shift in emphasis to a statewide visitation program is clearly indicated by the dramatic increase in students from counties other than Mobile (Table 1). It is an expressed goal of the Discovery Hall Program to achieve statewide effectiveness. This effort has been recognized by designation of Discovery Hall in the National Science Teachers Association "Search for Excellence in Science Education" program in three categories by the state of Alabama, Dept. of Education.

Table 1. DHP Participation Breakdown

INSTITUTION	NUMBER OF STUDENTS		PERCENT OF TOTAL	
	1980-81	1981-82	1980-81	1981-82
MESC	185	106	1	3.0
Other Colleges	83	78	3	2.5
Mobile County High Schools	1588	825	64	27.0
Other Alabama High Schools	172	1516	7	49.0
Out of State High Schools	120	140	5	4.5
PEA Program	304	400	12	13.0
Summer School	18	18	1	0.5
	<hr/>	<hr/>	<hr/>	<hr/>
	2470	3083	100	99.5

A breakdown of the program variety is illustrated (Table 2). The classroom visitation element provided the largest enrollment with 72% of the total participants enrolled in this program. During the academic year, Discovery Hall staff provided classroom experience for a total of 2175 participants. Twenty-four schools representing eight Alabama counties were presented 53 programs (Table 3).

Table 2. DHP Program Breakdown.

PROGRAM	STUDENT NO.
Classroom visits	2175
Field Trips	234
Short Courses	238
PEA Program	400
Summer School	18
	3067

Table 3. Classroom Visitation Breakdown.

SCHOOL	ALA. COUNTY	PARTICIPANTS
Shaw H.S.	Mobile	200
Baker H.S.	Mobile	151
Murphy H.S.	Mobile	263
Alba H.S.	Mobile	129
Davidson H.S.	Mobile	52
Montgomery H.S.	Mobile	30
Robertsdale H.S.	Baldwin	112
Jones Valley H.S.	Jefferson	136
Forest Hills School	Jefferson	94
Bessemer Academy	Jefferson	47
Huffman H.S.	Jefferson	149
Mt. Brook H.S.	Jefferson	70
Thompson H.S.	Shelby	30
Prattville H.S.	Shelby	130

A total of 238 students were enrolled in the spring short course series with 58% Alabama students. The Alabama counties represented were Jefferson, Limestone and Monroe county and Houston (Table 4). In the field trip series 234 students were enrolled (Table 5).

Table 4. Short Course Breakdown.

Louisville Collegiate, KY	25
Acad. Sared Heart, MI	23
Carbondale H.S., IL	27
Memphis Prep. School, TN	24
J.F. Shields H.S., Monroe Co., AL	34
Huffman H.S., Jefferson Co., AL	43
Athens M.S., Limestone Co., AL	32
Dothan H.S., Houston Co., AL	30
	238

Table 5. Field Trip Breakdown.

SCHOOL	NO. OF STUDENTS
Baker H.S., Mobile Co., AL	21
Murphy H.S., Mobile Co., AL	23
Isodore Newman, New Orleans, LA	16
Auburn University, AL	46
University of Alabama, Tuscaloosa, AL	41
Calhoun St.	65
UT. Martin	13
University of Alabama in Birmingham, B'ham, AL	2
Birmingham Southern, Birmingham, AL	17
	234

Summer Programs

Eighteen secondary-level students from three states including six Alabama counties were enrolled in the 1982 DHP Marine Biology Institute, each receiving credit in his/her respective school (Table 6). The four-week sessions were conducted from June 14 - July 9 and July 12 - August 6. Students from Lauderdale, Madison, Washington, Jefferson, Baldwin and Mobile counties in Alabama accounted for 78% of the total enrollment.

Table 6. Summer School Breakdown.

STATE	ALA. COUNTY	STUDENTS
Alabama	Lauderdale	1
Alabama	Madison	2
Alabama	Washington	1
Alabama	Jefferson	6
Alabama	Baldwin	2
Alabama	Mobile	2
Virginia		1
Florida		3
		<hr/> 18

B. SUMMER SCHOOL - 1982.

Summer school enrollment at the Dauphin Island Sea Lab started extremely slowly during the spring months, and the staff projections were for about 50 students during 1982.. The prolonged construction on the bridge, and continued uncertainty regarding its opening date accounted for delayed decisions by several students. However, May enrollment was higher than usual, and a final tally of 62 students was realized. Nevertheless, this is an unusually low number. Two principal reasons are offered in explanation. First, almost all marine labs are experiencing lowered summer school enrollment, some with greater percentage losses than at Dauphin Island. What factors have caused this, economy, slackened interest in marine biology, or other more subtle factors, are speculative. However, Sea Lab students suggest the absence of a large vessel accounts for much of our particular dearth.

Marine geology had the summer's largest enrollment. This is a marked change from previous years. Comparison of class enrollment during 1981 to 1982 are presented in Table 7, and are enlightening. Likewise a comparison of enrollment by schools is presented in Table 8.



Table 7. Comparison of class enrollment during 1981 and 1982.

CLASS	1981	1982
Marine Biology	17	7
Marine Invert. Zoology I	21	7
Marine Geology	9	16
Marine Botany	14	11
Marine Tech. Methods I	24	14
Commercial Marine Fisheries*	19	12
Marine Ecology	15	10
Introduction to Oceanography	5	5
Recent Marine Sedimentation	9	-
Marine Vertebrate Zoology	18	10
Marine Tech. Methods II	7	3
Marsh Ecology	4	2
Coastal Climatology	-	4
Invertebrate Zoology II	-	5
Paleoecology	-	6
Coastal Zone Management	-	4

*Both sessions total.

Table 8. Summer school enrollment comparison 1981 and 1982.

SCHOOL	1981	1982
Auburn University	7	4
Birmingham Southern College	3	1
Jacksonville State University	3	6
Livingston State University	3	1
Mobile College	-	1
Samford University	1	-
Spring Hill College	6	5
Talladega College	2	-
Troy State University	5	5
University of Alabama, Tuscaloosa	15	12
University of Alabama, Birmingham	4	3
University of Alabama, Huntsville	10	2
University of Montevallo	3	1
University of North Alabama	6	3
University of South Alabama	12	18
	—	—
TOTAL	80	62

The 1982 summer colloquium series was certainly an academic high point during the summer session. The superb setting provided by the Discovery Hall building combined with the outstanding program of speakers contributed to a diverse, spirited series of presentations, all of which were attended to near capacity. The final forum presented by Dr. Gareth Nelson of the American Museum of Natural History in New York, and entitled Creationism vs. Evolution, engendered an overflow audience, with numerous guests from the mainland. The discussion spilled over into the next day with a three hour impromptu discourse the final Tuesday of summer school. Speakers and their topics are presented in Table 9.

Student morale was tempered somewhat by more stringent regulations adopted after the unfortunate incidents of summer 1981. However, spirit improved steadily throughout the summer, and overall student attitude was remarkably positive.



Table 9. Colloquium Speakers and Topics.

- Dr. Scott Brande: University of Alabama at Birmingham. "Geologic Research on the Recent History of Mobile Bay, or, how I learned to love the mud."
- Dr. Richard Wallace: Auburn University. "Hydrolab & Isopods - Uses of an underwater laboratory."
- Dr. Steven Sikes: University of South Alabama. "Calcification - from sharks teeth to Urchin tests, and a few plants too."
- Dr. Douglas Jones: University of Alabama. "Aspects of Marine Paleocology."
- Dr. Paul Hamilton: University of West Florida. "Orientation of swimming in the Sea Hare, Aplysia."
- Dr. Kenneth Heck: Academy of Natural Science of Philadelphia. "Seagrass habitats: The roles of habitat complexity, competition and predation."
- Dr. Bill Wiseman: Louisiana State University. "Hydrography and circulation of continental shelf regions of the northern Gulf of Mexico."
- Dr. Gareth Nelson: American Museum of Natural History in New York. "Creationism vs. Evolution."

C. ACADEMIC YEAR - 1982.

With the improved accessibility provided by the bridge, the graduate program should begin a return to more normal levels. It is interesting to note that the ten-year history of graduate studies at the Sea Lab (Table 10) reveals a high level of

Table 10. Summary of the Dauphin Island Sea Lab Graduate Program 1972-1982.

Total Number of Students (75)

Ph.D. - 8	AU - 2
M.S. - 65	UAB - 9
	UAT - 37
	USA - 25

Number of Degrees (41)

<u>Ph.D.</u>	<u>M.S.</u>
UAB - 2	UAB - 3
UAT - 2	UAT - 18
	USA - 16

Number of Withdrawals (11)

<u>Ph.D.</u>	<u>M.S.</u>
UAT - 1	AU - 1
	UAB - 1
	UAT - 4
	USA - 4

Presently Active (21)

<u>Ph.D.</u>	<u>M.S.</u>
UAB - 1	AU - 1
UAT - 1	UAB - 2
	UAT - 10
	USA - 5

	<u>Total Program</u>	<u>Ph.D.</u>	<u>M.S.</u>	<u>Degree Production</u>
AU	3%	-	3%	N/A
UAB	12%	38%	9%	83%
UAT	51%	62%	50%	80%
USA	34%	-	38%	80%

productivity for a department-sized effort. A recent survey of 35 of those receiving degrees revealed that 32 had successfully gone to jobs or further study related to their training here.

Graduate offerings were increased to four during 1982, up from the one offering during 1981. These were: Marine Animal Physiology (2 enrolled), Marine Zoogeography (4), Data Management (7), and Estuarine Science (7). All were offered at the South Alabama campus due to inaccessibility of the Sea Lab. The first graduate offering to return to DISL, Marine Systems Ecology, is offered during fall of 1982.

A summary of the status of graduate students affiliated with MESC during 1981-1982 is presented in Table 11. Four students

Table 11. Summary of student status in the graduate studies program.

DEGREES COMPLETED 1981-82

Mike Dardeau, (USA) M.S.
Tony Lowery, (USA) M.S.

Ross Lysinger, (USA) M.S.
Don Marley, (USA) M.S.

RESEARCH COMPLETE, WRITING IN PROGRESS

Chris Dyer, (UA) M.S.
Doug Gilbert, (UA) M.S.
Katherine Gilbert, (UA) M.S.
Allen Hooker, (UA) M.S.
Paul Omholt, (UAB) M.S.
Maureen Powers, (UA) M.S.

Ananda Ranasinghe, (UA) M.S.
Robert Reams, (USA) M.S.
Austin Swift, (USA) M.S.
Bill Tyler, (USA) M.S.
Larry Williams, (USA) M.S.

RESEARCH IN PROGRESS

Eric Black, (UAB) Ph.D.
Rick Kasprzak, (UA) M.S.

Debbie Montgomery, (USA) M.S.
Linda Shipp, (UA) Ph.D.

NEW STUDENTS

Brian Hughes, (UA) M.S.
Marina Jovanovich, (UAB) M.S.
Jean Moran, (UA) M.S.

David Wagman, (UA) M.S.
Don Woods, (UA) Ph.D.

completed their degrees, 11 students are in the writing stages and four students have research in progress. Five new students with marine science interests have started their graduate work; one is presently at the Sea Lab while the other four are involved in course work on their home campuses.

It is anticipated that the graduate student population will undergo a slow and steady increase over the next two years as a result of an active recruiting effort begun this past year. Also during the past year Dr. Schroeder assumed the administrative duties of Coordinator of Graduate Studies.

data from a variety of sources. This research effort will be jointly between members of the Coastal Studies Institute and Center for Wetland Resources of Louisiana State University and Dr. Schroeder.

B. ESTUARINE PROCESSES

The several projects for the Corps of Engineers and Coastal Area Board are terminating and final reports are being prepared.

C. ORGANISMIC PROCESSES

Research activity is concentrated on physiological and biochemical approaches to the adaptations of estuarine organisms. Eric Black (UAB) is completing his studies of the role of Na^+/K^+ -ATPases in osmoregulation in the mullet Mugil cephalus. Currently he is conducting perfusion experiments to measure branchial sodium flux and he is analyzing purified membrane fractions by electron microscopy. Paul Omholt (UAB) has partially purified the B-1, 4-glucan glucanohydrolase in the crystalline state of the oyster Crassostrea virginica; the characterization of the enzyme will be completed by the end of 1982. The temperature and salinity tolerances of adults and larvae of the estuarine gastropod Neritina reclinata are under investigation by Marina Jovanovich (UAB). This species is highly abundant in the region but its physiology is virtually known.

Dr. Robert Dean (UAB) continued his collaborative efforts with Dr. Anthony A. Paparo of the Department of Anatomy, School of Medicine, Southern Illinois University, Carbondale, IL. Their studies of the control of ciliary activity in the oyster

C. virginica and other bivalves have concentrated on the responses to environmental variables and toxic compounds. Extracts of drilling muds collected in 1981 remained toxic after storage for one year. Four publications have appeared or are in press; several more are in preparation.

D. SUMMARY OVERVIEW:

Tables 12 and 13 summarize the research effort for this year and compare it to next year. The much reduced scope is reflected in every parameter.

Table 12. Sponsored Projects.

<u>CONTRACT/GRANT</u>	<u>GRAD. STUDENTS</u>	<u>RES. MAN DAYS</u>	<u>BOAT DAYS</u>	<u>COMPUTER</u>	<u>NO. OF SAMPLES</u>	<u>TOTAL K</u>
FY 82						
Hopkins/COE	2.0	1188	48	120	696	92K
Hopkins/CAB 572	6.0	1152	14	22	576	86K
Hopkins/CAB 569	1.0	360	14	22	576	37K
Blancher/MASGC	0.5	150	0	25	0	48K
Blancher/COE	0.5	75	0	10	0	24K
Shipp/CAB	2.0	350	6	0	120	28K
Stout/CAB	2.0	440	24	0	0	33K
TOTAL			106	199	1968	348K
FY 83						
Stout/FWS		66	0	5	0	9K
Schroeder/NSF		55	-	0	0	14K
Dindo/MASGC		30	3	-	0	12K
Blancher/MASGC	1	330	0	200	0	47K
TOTAL		481	3	205	0	82K

Table 13. Summary of outstanding proposals 9/30/82*

AGENCY	PRINCIPAL INVESTIGATOR	START	FUNDS		STAT
			FY 83	FY 84	
MASGC	Blancher	6/82	47K	50K	Ongoing
CAB (Mobil)	-	?	60K	-	Hold
NSF	Schroeder	-	-	-	Pending
MASGC	Dindo	1/83	12K	-	Pending
CAB	Shipp	-	30K	-	Pending
Shell Foundation	Schroeder	1/83	6K	-	Pending
Preproposals/Resubmissions					
NSF	Crozier/Staff		75K		

*Funds are cash, in-kind costs not included.

