

**DAUPHIN ISLAND SEA LAB**

**SPECIAL REPORT**



**REPORT No.**

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

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

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APPENDIX I.

Contents of Northeast Gulf Science

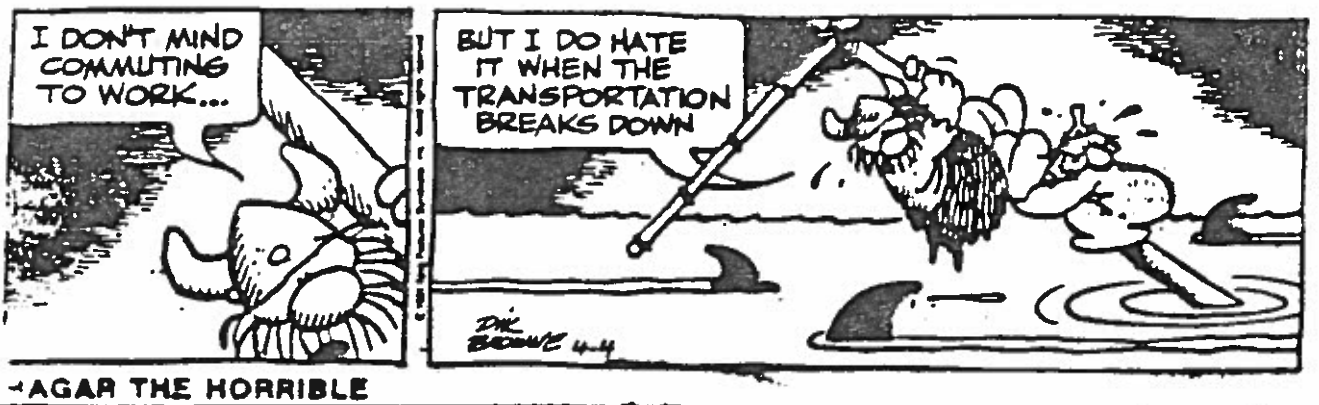
APPENDIX II.

Physical Plant Utilization

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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.



## I. 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.

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Table 1. DHP Participation Breakdown

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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
	<u>3067</u>

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).

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Table 4. Short Course Breakdown.

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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
	<u>238</u>

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Table 5. Field Trip Breakdown.

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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
	<u>234</u>

### 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.

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Table 6. Summer School Breakdown.

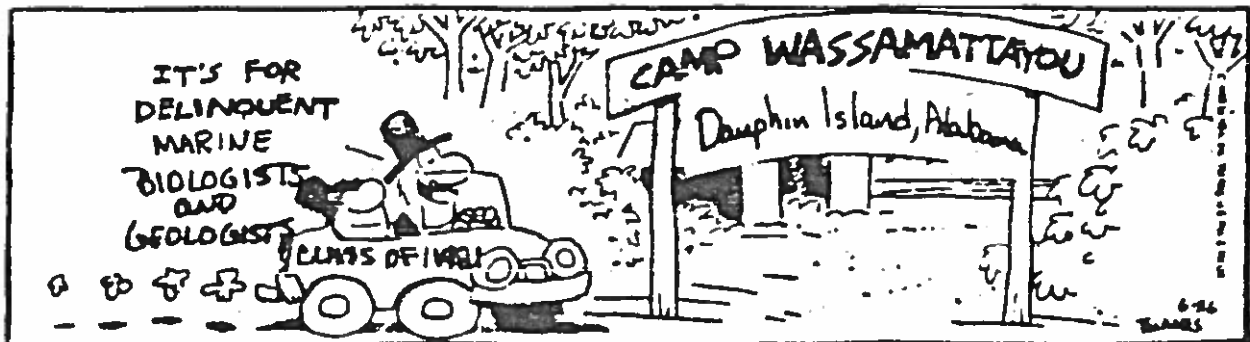
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STATE	ALA. COUNTY	STUDENTS
Alabama	Lauderdale	1
Alabama	Madison	2
Alabama	Washington	1
Alabama	Jefferson	6
Alabama	Baldwin	2
Alabama	Mobile	2
Virginia		1
Florida		3
		<hr/> <u>18</u>

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.



FRANK AND ERNEST



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

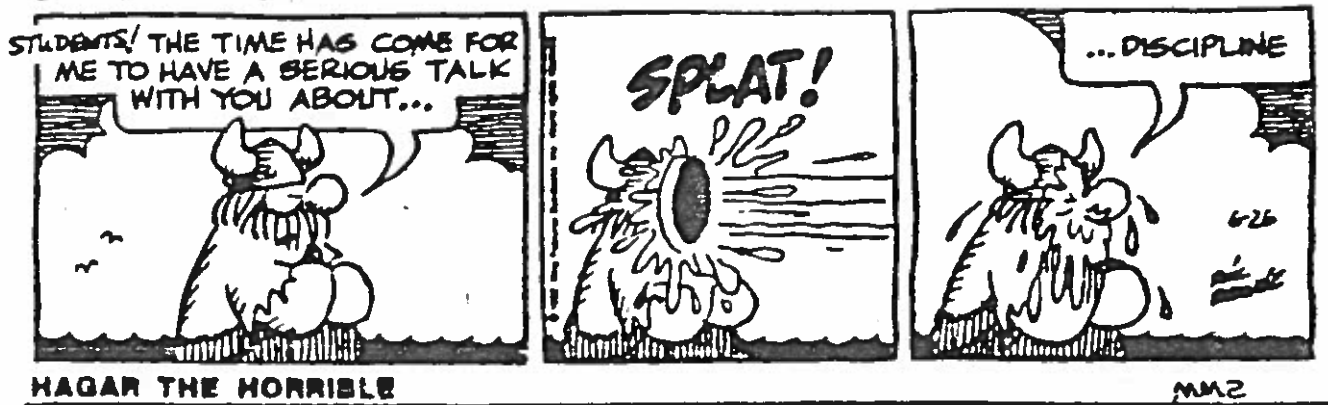
\*Both sessions total.

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.



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Table 9. Colloquium Speakers and Topics.

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- 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

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

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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.

## II. RESEARCH

### A. CONTINENTAL SHELF/SLOPE PROCESSES

An analysis of current meter records from Anderson Reef (DISL data), the Florida Middle Grounds (DISL/BLM data) and the Texas Flower Gardens (TAMU/BLM data) is presently being carried out through a cooperative research program involving Dr. D. W. McGrail and Ms. F. B. Halper of the Department of Oceanography, Texas A & M University and Dr. Schroeder. Specifically, segments from each of the data sets, during the period of July - September 1979, are undergoing examination to determine what responses, if any, the waters of these three shelf regions underwent during the presence of hurricanes and tropical storms in the Gulf of Mexico.

A comparison of meteorological observations from the DISL and the National Weather Service at Bates Field, Mobile, Alabama is being made to better understand and describe the meteorology associated with coastal zones. Potentially this study could result in significant findings because of the record length (over eight years) and the location of the Sea Lab (barrier island immediately bordering the Gulf of Mexico). Dr. Schroeder is working with Dr. W. Wiseman, Jr. of the Coastal Studies Institute of Louisiana State University on this project.

Data from a number of sources is presently being organized in order to study the thermal structure of the continental shelf region between the Chandeleur Islands and the De Soto Canyon. These data include the time-series sets from Anderson Reef, quasi-synoptic CTD sets from joint NMFS and LSU cruises and XBT

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  $\text{Na}^+/\text{K}^+$ -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 style 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
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\*Funds are cash, in-kind costs not included.

### III. PUBLIC SERVICE

The scientists have become more and more utilized by groups and agencies needing expert assistance. The Attorney General's office utilized Drs. Stout and Schroeder as expert witnesses in Alabama's suit against the federal government for title to mineral resources of Mississippi Sound.

The Alabama Water Improvement Commission and the Oil and Gas Board utilized Sea Lab facilities and expertise in their investigation of Mobil Oil Corporation discharges into Mobile Bay. This resulted in the largest penalty settlement in the state's history following the Attorney General's suit.

A pattern is emerging in which the Cooperative Extension/Marine Advisory Services has come to recognize the MESC faculty as their most reliable and accessible resource. Sea Lab personnel located and verified the illegal dumping of Dauphin Island bridge rubble. Testimony was presented in the gill netting controversy at ACES' request and an ongoing relationship has been established in the data center.

#### A. NORTHEAST GULF SCIENCE

Volume 5, Nos. 1 and 2 were published during 1981-82. Volume 5 (1) contained 98 pages, Volume 5 (2) contained 65 pages. The contents of both numbers are included in the Appendix. Circulation continues to increase, despite the fact that at most academic libraries numbers of periodicals are being reduced.

Cost per printed page remains unchanged, with about 70% of printing costs recovered from page and reprint charges.

## B. METEOROLOGICAL STATION

The Dauphin Island Sea Lab Meteorological Station completed its eighth year of operation. The station continues to provide twice daily weather observations to the National Weather Service (Mobile), monthly climatological data to the National Climatic Center (Ashville, N.C.) and specific information needs upon request from numerous Federal, State and local agencies as well as basic meteorological data in support of both research and academic activities.

#### IV. LIBRARY

The library has continued to function with reduced support. The salient facts are presented in Table 14.

Table 14. Library Statistics - Oct. 1, 1981 - Sept. 30, 1982

**BOOKS:**

Total Books Accessioned To Date	3250	
Books and Publications Processed	450	
Books and Publications Purchased	160	
<b>Expenditures</b>		<b>\$ 1,387.47</b>

**REPRINTS:**

MESC Reprints Processed To Date	5544
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**INTERLIBRARY LOANS:**

ILL Requested	36	
<b>Expenditures</b>		<b>\$ 108.88</b>
ILL Requests Received	9	
ILL MESC Library Filled	8	

**JOURNALS:**

Current Subscriptions to Faxon	78	
<b>Expenditures To Faxon</b>		<b>\$10,073.54</b>
Memberships	5	
<b>Dues</b>		<b>\$ 150.00</b>
Current Titles	509	

**EXCHANGE PUBLICATIONS:**

Institutions Agreeing To Change	93
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**BACK ISSUES:**

Number Of Issues Received	689	
<b>Expenditures</b>		<b>\$ 29.89</b>

**HEW GRANT:**

Number Of Books Ordered	34	
<b>Expenditures</b>		<b>\$ 1,100.00</b>

**NTIS:**

Number Of Publications Ordered	48	
<b>Expended From Deposit Account</b>		<b>\$ 524.00</b>

- SEPT 30

## V. ACADEMIC SUPPORT

### A. MUSEUM

Advances toward our goal of producing the most complete single source repository of the invertebrate fauna of the Northeastern Gulf of Mexico have been achieved as major portions of the BLM-MAFLA (outer continental shelf), the BLM-FMG (coral reef cryptofauna) and the CAB-Mobile Bay (estuarine infauna) collections have been shelved. Cataloging of the coelenterates is virtually complete and efforts to catalogue the crustacean and molluscan holdings are progressing well.

Emphasis this year has focused on ways of making our wealth of information and specimens more available to the scientific community. One possibility with tremendous potential was promoted at a Smithsonian Institution workshop, "Computerization for Museum Collections", attended by MESC staff member Mike Dardeau. Computerization of museum records would allow more efficient information retrieval and simplify routine record keeping.

Thirteen loans and gifts totaling 167 lots, have been made so far this year; five to researchers at MESC member institutions, the remainder to scientists at other marine labs and museums.

Special thanks are due to Auburn Graduate Student, Dana West, for help with routine curatorial duties this summer.

## B. TECHNICAL SUPPORT

Sampling and monitoring equipment were checked out on 113 days in the past year. This breaks down to 94 days use in research and 19 days use for education (summer school). In addition, recording salinometer/thermographs were installed at Anderson artificial reef. One unit that was installed in November 1981 and apparently broke loose sometime over the winter before an attempt to recover it could be made in February 1982, has recently been returned to MESC after floating to Florida Bay (near the southern tip of Florida) and recovered by a fisherman. The unit is in very good shape and appears to have functioned correctly until the recording film was used up.

The mainstay of our monitoring equipment, the Hydrolab Surveyor 6D units, continue to be functional although the accuracy of the data has declined slightly due to the wear and tear as well as the age of the units. The last of the Beckman RS-5 salinometers has quit working. These units have been cannibalized so much that it is not worth repairing any of them.

A new peterson grab (used almost exclusively for bay benthic work) has been acquired as a backup to the one we are now using.

A users manual "The Instrumentation and Field Sampling Equipment Available at the Dauphin Island Sea Lab" has been prepared. This is intended to benefit faculty, staff and graduate students as well as be a reference for the Technical Methods class during summer school.

The instrument technician besides maintaining the sampling equipment was in charge of all the field sampling work for three separate contracts working in and around Mobile Bay. This

accounted for 80 boat days and the taking of 1284 benthic samples and 440 water samples.

### C. SCIENTIFIC DIVING

The MESC diving locker is still one of the most well equipped lockers in the area for scientific research. The acquisition of new double manifolds at the beginning of the year has eliminated a nagging maintenance problem that we have had for some time. Although we have had some major problems with two of our air compressors (which are still unresolved) we have been able to keep everything operational.

The diving locker was utilized on at least six different projects. They were:

- (1) The ongoing Anderson artificial reef study.
- (2) The Corps of Engineers Theodore monitoring study.
- (3) Locating and documenting the illegal dumping of the old Dauphin Island bridge rubble in cooperation with the Sea Grant Advisory Service.
- (4) A contract to UAB geologist Scott Brande to study the sediments of Mobile Bay.
- (5) A contract from the Alabama Geological Survey to MESC to monitor the Mobil Oil drilling rigs in Mobile Bay.
- (6) Helped the Alabama Attorney General's office document the Mobil Oil discharges into Mobile Bay.

The diving locker was also utilized on numerous occasions for vessel maintenance. The locker remains a viable functioning facility capable of providing support for a wide variety of projects.



#### D. COMPUTER CENTER

During the past year, moderate progress toward the establishment of substantial data management capabilities at the lab on Dauphin Island was accomplished. With the closing of the "sealab north" office in Mobile, the bulk of the computerized data operations were moved to the administration building on Dauphin Island. The entire operation, including batch terminal, timeshare facilities etc. are now located at this location.

Table 15 presents an inventory of the data equipment now located at the Dauphin Island sea lab that is available for administrative, academic and research purposes. Research is the category responsible for the major share of computerized activities. However, use of the facilities for other activities is increasing.

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Table 15. Inventory of data processing equipment at the Dauphin Island Sea Lab.

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- 1 IBM 3774-P2 Remote Job Entry Facility. With card reader
- 1 General Electric Terminet 2120 Terminal/Printer
- 1 IBM 3101-12 CRT terminal
- 1 Lear-Siegler ADM-5 terminal retrofitted with DE Graphics card
- 1 Digital Equipment Dot-Matrix graphics printer
- 1 Televideo 816 microcomputer w/ 20 Mbyte Winchester drive and 1/4 inch tape drive. MMMost operating system(CP/M).
- 2 Televideo 800 smart terminals w/ integral Z80 processor
- 1 Televideo 802 terminal w/processor and 2 floppy drives
- 1 Apple microcomputer with disk drive,80 column card and Z80 processor card for CP/M.
- 1 GDC 201C 2400 baud modem.
- 2 Star 300 baud acoustic modems
- 2 Omnitec 300 baud acousic modems
- 3 Hayes 300 baud Smartmodems

#### ON LOAN TO SEA GRANT:

- 1 Osborne microcomputer
- 1 Dot matrix printer, NEC PC8023
- 1 video monitor

A substantial amount of new equipment has been acquired as the result of the Mississippi Alabama Sea Grant College's grant to Dr. Blancher. This grant which will give the MASGC full integration with the MESC existing data management system, also funds the establishment of a Coastal Information Management System (CIMS) to bring together information and data from past and ongoing Sea Grant projects as well as information from other regional efforts. Included in the grant were funds for a microcomputer computer system with three "smart" terminals, 20 million byte "hard" disk memory and other hardware and software items totalling over \$27,000. The system is upgradeable to a full 16 user capability with the addition of relatively inexpensive "smart" terminals.

The above items will expand the capabilities of the lab in terms of local data base management, remote job entry and perhaps most importantly, in terms of academic computing in that for the first time, some sort of computing capabilities are available locally at the laboratory without the use (and cost) of telephone lines. Full realization of the entire potential of this system will take some time to develop.

#### E. PLANT OPERATIONS

The annual utilization report is appended for review. Maintenance, other than routine upkeep and emergency repairs has effectively ceased due to financial constraints. The annual cost of physical plant maintenance is currently \$1/sq. ft. and is clearly impossibly unrealistic. Several major capital outlay needs were answered by Frederic but routine O & M funds simply do not exist.

## F. VESSEL OPERATIONS

The attempt to renovate the "Sir Encho" was abandoned due to funding limitations and a replacement in the form of a used but operational vessel is being sought.

After many years of workhorse service, both the R/V G. A. Rounsefell and the R/V Flying Tiger were sold. Virtually all work at sea has been carried out by the R/V Deborah B. and she will continue to carry the load until the "Rouns" is replaced. At the moment there are no funds available to operate such a vessel, if acquired.

The performance records for the Deborah B. are found in Tables 16 and 17.

Table 16. Deborah B. Utilization Breakdown.

	<u>1981</u>	<u>1982</u>
Total Number of Days at Sea:	71	89
Total Number of Cruises:	67	89
Cruise Length:		
Day (0-8 hours)	54	85
Extended Day (Up to 24 Hours)	13	0
Multi-day (24 or More Hours)	5	
Total Number of Participants:	559	893
Total Nautical Miles:	4065	5681
Man Hours at Sea:	4147	5163
Man Days at Sea:	173	215

Table 17. R/V Deborah B. Users.

<u>USERS</u>	<u>NO. OF CRUISES</u>		<u>DAYS AT SEA</u>	
	<u>1981</u>	<u>1982</u>	<u>1981</u>	<u>1982</u>
TEACHING				
MESC	22	32	22	32
Outside	0	6	0	6
MESC RESEARCH	<u>45</u>	<u>47</u>	<u>49</u>	<u>47</u>
<b>TOTAL</b>	67	85	71	85

G. FINANCIAL SUMMARY

The final statement is in Table 18. The apparent carryover is not a positive factor because it is smaller than that of last year, hence indicating a net deficit.

H. FACULTY ACTIVITIES

As usual, faculty activities are summarized in Table 19. Faculty publications are listed in Appendix III.

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Table 18. Condition of Account, September 30, 1982.

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ASSETS:

Bank Balance Forward	\$ 4,967.64
Accounts Receivable	107,255.33
Inventory Cafeteria	622.00
Inventory Bookstore	4,911.60
	<hr/>
	\$117,756.57

LIABILITIES:

Due First National Bank	\$ 32,857.77
Loan from Vessel	16,000.00
Encumbrances Forward	12,381.80
Restricted Monies	19,487.84
	<hr/>
	(\$ 80,727.41)

FISCAL YEAR ENDING

CHANGE IN FUND BALANCE \$ 37,029.16

Table 19. Faculty Activities.

	INSTRUCTION	RESEARCH/CONTRACTS	PROFESSIONAL ACTIVITIES
E. C. Blancher Research Associate Assist. Prof. of Biology University of Alabama	Data Management (Winter) Estuarine Science (Spring) Tech. Methods II (Summer) Systems Ecology (Fall '82) Graduate Committees: 1 Ph.D. 5 M.S.	Data Manager, COE-Inshore (Hopkins) Sea Grant-CIMS (FY 82-83K) COE-MISS. Sound (FY 82-24K) PROPOSALS: CAB-Primary Produc. (N.F.-*) COE-MISS. Sound (funded) NWF-5: Seafood Wastes (N.F.-) AWIC: Seafood Wastes (N.F.-) Sea Grant: Coastal Info. System (*82-fund; '83 in final review) NSF: Equipment (N.F.-)	Coordinator, Sponsored Programs, MESC WORKSHOPS ATTENDED: Adaptive environ. assessment, FWS-WELUT Meaningful Measure of Mar. Poll., NOAA-OWPS Map overlay Statis. System, FWS-NCET COMMITTEES/ADVISORY COE-MISS. Sound PAPERS PRESENTED: ASLO-Raleigh, N.C. NOAA-Pensacola, FL (Poster) MSSC-Mobile, AL 2 publications, 1 accepted, 2 in prep.
G. F. Crozier Assoc. Professor of Biochemistry University of South Alabama	Marine Tech. Methods (16) Graduate Committees: 1 Ph.D. 2 M.S.	MES-Dredging Study (16K)	Director, MESC and Univ. of Alabama Marine Science Programs. REFER: Coastal Area Board Coastal Environ. Educ. Council Board of Directors/MASOC State Comprehensive Outdoor Rec. Planning Group GUMC Environmental Council NUMEROUS PRESENTATIONS Conducted Regional Adaptive Environmental Assessment Workshop for EPA/USFWS.
R. C. Dean Assist. Professor of Biology Univ. of Ala. Birmingham	Marine Animal Physiology BY 109-15 (UWB) -Lecture Estuarine Science -Lecture Graduate Committees 1 Ph.D. 3 M.S.	Proposals: MASC Oyster Biassay (N.F.-) MASC Blue Crab Anoxia (N.F.-) MASC Graduate Support (N.F.-) CAB Anoxic Bolton Lake (N.F.-) MSF Facilities rehab. and Expan. (N.F.-)	SPEAKER: Mobile Kiwanis Mobile Optimists EDITOR: Tidings POSTER PRESENTATION: Workshop on Meaningful Measures of Marine Pollution Effects. DELIVERED PAPER: American Society of Zoologists (A.A. Paparo co-author) Election Microscopy Society of America PRESENTATION: Mobile Bay-MISS. Sound Research Review (MASOC) Chaired Session, American Society of Zoologists (Annual Meeting) REVIEWED: 1 manuscript (N.E. Gulf Science) CONSULTANT: MASC Advisory Service REPRESENTED Lab at meeting with OMPA representative 3 Publications 1 Publ. in Press

INSTRUCTION

T.S. Hopkins  
Professor, Biology  
University of Alabama

Coordinator, Estuarine  
Science, Spring '82  
Marine Invert. I, SSL, '82  
Chairman, 2 Ph.D.  
4 M.S.  
Member 4 M.S. at  
Univ. of South Alabama

W.W. Schroeder  
Associate Professor  
of Biology  
University of Alabama

Scientific Data Management  
Estuarine Science  
Introduction to Oceanography  
Research on Special Topics  
Graduate Committees:  
2 Ph.D.  
8 M.S. (Chairman 1)

R. L. Shipp  
Assistant Professor  
Biology  
University of South  
Alabama

Lectures in Marine Biology,  
-Marine Vert. Zoo.  
-Fishery Science  
On USA Campus:  
-Life Science  
-Marine Zoogeography  
Committees:  
1 Ph.D.  
6 M.S. (Chair 5)

J. P. Stout  
Assistant Professor  
of Biology  
University of South  
Alabama

Marine Botany  
Marsh Ecology  
General Biology  
Estuarine Science  
Ocean Science  
1-Undergrad. Research  
1-M.S.  
1-Ph.D.

RESEARCH/CONTRACTS

CDE \$160,094  
CDE, \$91,970  
CAB, \$85,894  
CAB, \$28,072

CDE-Mobile Bay (On-going)  
MESC/In-house  
-Shelf circulation during tropical  
storms and hurricanes (with  
D.W. McCrell & C. Halper, TAMU)  
-Coastal Zone Meteorology (with  
W. Wiseman, Jr., LSU)  
-Temperature time series data sets.

CAB Assessment of demersal  
fishes of Mobile Bay. 30K  
MFFS: Deep Water Reef Fish  
Population Assessment.

Marine Educational Materials System  
(MEMS) Alabama Repository  
Miss.-Ala. Sea Grant (\$845)  
Library Resource Grant, Dauphin Island  
Marine Repository - U.S. Dept. of  
Inventory of Wetland Habitats and Land  
Use of the Upper Mobile River Delta -  
Alabama Coastal Area Board. (\$32,567)  
JUNCOUS ~~is~~ emergent marshes of the North  
Central Gulf of Mexico: A Community  
Profile-U.S. Fish and Wildlife Service.  
(\$8,788).

Environmental Assessment of Isle of Herbs,  
AL. Ala. Dept. of Cons. and Nat. Res. (\$350)

PROFESSIONAL ACTIVITIES

ABSTRACT submitted ASCO, June 1982  
(with E. C. Blancher)  
PAPER/MEETING: MLSS.-Ala. Sea Grant Workshop  
on Mobile Bay, Feb. 1982  
COMPILED/EDITED CDE Final Report  
Year 01 Theodore Monitoring Study

Coordinator of Graduate Studies UAT/ A & S  
Committee on Undergrad. Mar. Sci. Prog.  
Ala. Sea Grant Advisory Committee on  
"Miss. Sound Dredge Material"  
PAPERS PRESENTED:  
-XI Internat. Est. Res. Conf., Gleneden Beach,  
Oregon, (Nov.)  
-AGU/ASLO, San Antonio, TX, (Feb.)  
-CEFS, Lake Charles, LA, (May)  
1 Publication  
3 Abstracts  
1 Manuscript in preparation.  
Contributor to CDE-Theodore YR-01 Final Report.

Associate Director, MESC  
MEMBER: Special Committees for Gulf of  
Mexico Fisheries Council: Snapper/Groupers  
and Tropical Reef Fish.  
EDITOR: Northeast Gulf Science  
EDITORIAL BOARD: Marine Resources Bulletin  
of Alabama.  
MESC Program & Executive Committees  
Board of Governors, American Society of  
Ichthyologists and Herpetologists.  
1 Publication  
PAPERS PRESENTED:  
-Association of SE Biologists, Richmond, KY  
-American Society of Ichthyologists and  
Herpetologists, Chicago, Ill.

Chm. AL Coastal Env. Education Council  
MEETING ATTENDED: Internat. Est. Res. Fed.,  
6th Biennial Conf., Gleneden Beach, OR (Nov.)  
SEMINARS AND SPECIAL PROGRAMS:  
-Women in Science (NSF) - USA & UAB  
-Inst. & Coord., Coastal Vegetation Seminar  
ADVISORY: Alabama vs. U.S. Boundary Dispute.  
Leadership Mobile - Env. Adv. Comm.  
U.S. EPA Biol. Review Panel.  
PAPERS PRESENTED: Miss. Sound Symposium (June)  
Estuarine Research Federation (Nov.)

PUBLICATIONS:  
3 publications  
1 In Press

APPENDIX I.

Contents of Northeast Gulf Science

# Northeast Gulf Science

Volume 5, Number 1

October, 1981

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# Northeast Gulf Science

Volume 5, Number 2

July 1982

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APPENDIX II  
PHYSICAL PLANT UTILIZATION

1982

**M E**  
**S C**

**Marine Environmental Sciences Consortium**

TEMPORARY MOBILE OFFICE  
MESC  
3940 GOVERNMENT BLVD #10  
MOBILE AL 36609  
TELEPHONE 205-661-8811

DAUPHIN ISLAND SEA LAB  
P.O. BOX 36609  
DAUPHIN ISLAND ALABAMA 36528  
TELEPHONE 205-661-2141

July 14, 1982

**Member Institutions**

- Alabama State University
- Auburn University
- Auburn University at Montgomery
- Birmingham Southern College
- Huntingdon College
- Jacksonville State University
- Livingston University
- Mobile College
- Samford University
- Spring Hill College
- Talladega State College
- Troy State University
- Tuskegee Institute
- University of Alabama
- University of Alabama in Birmingham
- University of Alabama in Huntsville
- University of Montevallo
- University of North Alabama
- University of South Alabama

James G. Warner, Director  
Federal Real Property Assistance  
U. S. Department of Education, Region IV  
101 Marietta Tower, Suite 2221  
Atlanta, GA 30323

Re: (P) Dauphin Island Air Force Station  
Dauphin Island, AL.; Contract No. SA-IV-447.

Dear Mr. Warner;

Enclosed you will find the 1982 annual report of utilization for the Dauphin Island Sea Lab. Repair and restoration work on Hurricane Frederic (1979) damage is essentially complete and two replacement buildings were occupied in February, 1982. FEMA has performed a final inspection of the project, but we have not received the report of this inspection.

Fiscal constraints have delayed any modification to the Power Plant Building (#4063) and the Radome Tower (#4079). There are no immediate plans for either building, though both are currently serving a storage function. All other buildings are being fully utilized in support of the education, research and service missions of the Marine Environmental Sciences Consortium.

If I can provide additional information, please contact me.

Sincerely,

*Judy Stout*

Judy Stout, Ph.D.  
Assistant Director, DISL

JS/gm



ANNUAL UTILIZATION REPORT - 1982

Dauphin Island A.F.S., Alabama SA-IV-447 now referred to as "Dauphin Island Sea Lab."

1. Utilization of building facilities is described below:

<u>BLDG. NO.</u>	<u>BUILDING AND IMPROVEMENTS ACQUIRED AND EDUCATIONAL USE</u>
4000	<u>BE Maintenance Shop (Civil Engineers Bldg.)</u> Maintenance support to the facility.
4001	<u>Miscellaneous recreation facility (Beach Club)</u> Destroyed. FEMA Project (598-92013 #129) Replacement. New building now occupied as recreational facility.
4002	<u>Open Mess, NCO Club (Discovery Hall)</u> Destroyed. FEMA Project (598-92013 #131) Replacement. New building now occupied. Utilized as classroom & laboratory.
4003	<u>Guest House</u> Now being used to house faculty, visiting lecturers and caretaker.
4004	<u>Recreation Workshop (Endeavor Hall)</u> This building has been remodeled to house a classroom and geology lab downstairs. Second floor has been completely renovated as classroom and office space. Building has been air conditioned.

<u>BLDG. NO.</u>	<u>BUILDING AND IMPROVEMENTS ACQUIRED AND EDUCATION USE</u>
4007	<u>Rad Mars (Laundromat)</u> Converted into laundromat building and relocated between buildings 4000 and 4072.
4038	<u>Storage Shed</u> Small-boat and vehicle storage and repair.
4062	<u>Ops. Building (Marine Science Hall)</u> Utilized for classrooms, laboratories and offices. The present summer program lists a student enrollment of about 66 students.
4063	<u>Power Plant Building</u> Temporary storage and rough sample sorting. Reassumed by MESC from USAF-ADC.
4064	<u>Sewage Lift Station</u> Sewage pumping facility.
4065	<u>Fire Pump Station (Dive Locker)</u> Houses scientific diving program equipment and supplies.
4066	<u>Guard Station</u> Gear storage in technical support shop area.
4067-4068	<u>Dormitories</u> Provided housing for students. 2nd Dormitory partially refurnished.
4069	<u>Mess Hall</u> Used for cafeteria services for resident students and staff.
4070	<u>Community Building (Administration)</u> MESC offices. Gym has been renovated to a library and houses all marine science reprints and books belonging to the MESC. Reading and study

<u>BLDG. NO.</u>	<u>BUILDINGS AND IMPROVEMENTS ACQUIRED AND EDUCATIONAL USE</u>
4070 (cont.)	space has been provided for students. Contains a faculty meeting room, student supply store and administrative offices. 1982 renovations provided a computer center for the Sea Lab.
4071	<u>Motor Pool (Technical Support Shop)</u> Shop area for construction, repair, maintenance of technical equipment and field gear.
4072	<u>BOO (Albatross Hall)</u> Living accommodations for married students and staff.
4074	<u>Guard Station</u> Diving locker complex.
4079	<u>Radome Tower</u> Not used-reassumed from USAF-ADC in 1981.
4085	<u>Guard Station</u> Storage
4089	<u>Storage Shed</u> Storage for Maintenance shop facility.
4101-4114	<u>Houses</u> Faculty and student family housing.

2. All real properties are now being utilized in support of our educational mission except the radome tower (4079) which was leased from MESC at the request of the Department of Defense. These Buildings were returned to MESC on January 1, 1981. Space utilization plan and renovation prospectus underway.

The thirteen family housing units have all been connected to sewer, water and electricity and are occupied by summer faculty. Several are utilized year-round by resident technicians and students. House #4110 has been renovated for faculty housing. Propane heat as a back-up system has been added to houses. Nos. 4112 and 4104 have been refloored.

3. Not applicable.

4. Personal Property Statement.

Most properties as listed in the transfer have been utilized in support of the operation of the facility. Many items of dormitory furniture were destroyed or damaged beyond repair by Hurricane Frederick and subsequent exposure and were disposed of.

5. Personal Property

(See No. 4 above)

6. Major Improvements; 1981-82.

1. New ceiling and AC in South portion of Marine Science Hall (#4062) \$1,500.
2. Concrete safety dam around fuel tanks in Motor Pool yard (#4071) \$1,100.
3. Installed smoke detectors in all houses and sleeping rooms (4003, 4067, 4068, 4072, 4101-4113) \$2,400.
4. Installed AC/Battery exit signs (4002, 4062, 4069) \$2,000.
5. Installed emergency lighting (4062, 4067, 4068, 4069, 4072) \$1,200.
6. Constructed and installed insulated shutters (4002) \$1,500.
7. Installed hoods over cooking stoves (4003, 4072) \$900.

7. No complaint of discrimination has been received in connection with use of facility.

8. The Marine Environmental Sciences Consortium operated on a FY 80-81 State appropriation \$400,000 almost all of which is allocated to the operation of the Dauphin Island Sea Lab.

In addition, the University of Alabama provided a budget of \$75,000 for their Marine Science Programs based at the Sea Lab. These funds have supported part of the professional staff as well as vessels used by members of the consortium for research and education.

9. All members of the MESC are fully accredited by the Southern Association of Colleges and Universities. All courses at the Sea Lab have been approved and included in the various degree programs of the member schools. The facility itself has no independent educational program at the college level and must be considered as a specialized extension of each of the member schools. Most of these have the standard programs and commitments to the Veterans Administration and appropriate agencies.

10. This summer 13 of the 19 member institutions of the MESC were represented by 80 students at the Dauphin Island Sea Lab. The Spring Discovery Hall Program hosted over 600 students from 13 universities and high schools from 7 states during the 12 month reporting period.

There are at present 6 graduate students in residence at the Sea Lab. Additional students utilized housing & laboratory facilities, but have moved to the mainland since Hurricane Frederic. These students are all engaged in various research programs of the resident staff and are expected to return to Dauphin Island upon completion of a bridge in July, 1982.

Plans for the coming year center around strengthening of all academic programs with the completion of a bridge in July, 1982. A graduate student recruitment program is underway. Due to the unique design of Buildings 4063 and 4079, full utilization in the near future is not expected because of the great capital investment required. Efforts are underway to secure state funds to further repair and renovate facilities now being utilized. Declining direct state appropriations for basic operation of the Sea Lab have resulted in postponement of larger repair projects which are now reaching critical proportions and must be provided for.



APPENDIX III  
Faculty Publications

## FACULTY PUBLICATIONS

- Blancher, Eldon C. The Marine Environmental Sciences Consortium Data Management System: Description and Organization. Dauphin Island Sea Lab Tech. Rept.
- Blancher, Eldon C. Data Management Report for Analysis of an Environmental Monitoring Program - Theodore Ship Channel and Barge Channel Extension, Mobile Bay, Alabama. COE Rpt. Volume 4.
- Paparo, A. A. and R. C. Dean. Tolerance to test salinities as a function of average rate of transport. Comp. Biochem. Physiol. 72A, 583-585 (1982).
- \_\_\_\_\_ and \_\_\_\_\_. Recovery in average rate of transport as a function of acclimation time. Comp. Biochem. Physiol. 73A, 69-72 (1982).
- Dean, R. C. and A. A. Paparo. Effects of changes in salinity and calcium concentration on ctenidial ciliary activity in the oyster Crassostrea virginica Gmelin. Comp. Biochem. Physiol. (In Press).
- Paparo, A. A., J. A. Murphy and R. C. Dean. The effect of exogenous fluoride on the calcium pump, ciliary activity, and shell formation of the fingernail clam, Musculium transversum. Proc. Electron Microsc. Soc. America (In Press).
- Schroeder, William W. Summer Current Observations off the Alabama Coast (with W. S. Chuang and W. J. Wisemen, Jr.) Cont. in Mar. Sci. Vol. 25, 1982.
- Shipp, Robert L. TETRODONTIDAE. FAO species identification sheets. FAO-United Nations, Rome, Italy. 7 pages (1981).
- Stout, Judy P. Marshes of Mississippi Sound: State of the Knowledge. Miss.-Ala. Sea Grant with A. A. de la Cruz. In Press.
- Stout, Judy P. Wetland Habitats of the Alabama Coastal Area. Part III. An Inventory of Wetland Habitats between the Battleship Parkway and the L & N Railroad, Mobile River Delta. Alabama Coastal Area Board, Tech. Publ. with H. M. Dowling, M. Powers and M. G. LeLong.
- Stout, Judy P. A survey of current land use in the lower Mobile River Delta. Alabama Coastal Area Board, Tech. Publ. with M. Powers and H. M. Dowling.
- Williams, J. T. and R. L. Shipp. A new pearlfish (CARAPIDAE: ECHIODON) from the Gulf of Mexico. Copeia 1982 (4) In Press.