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Products and Productivity of the Men and Women of the Virginia Institute of Marine Science from 1940 to June, 1983

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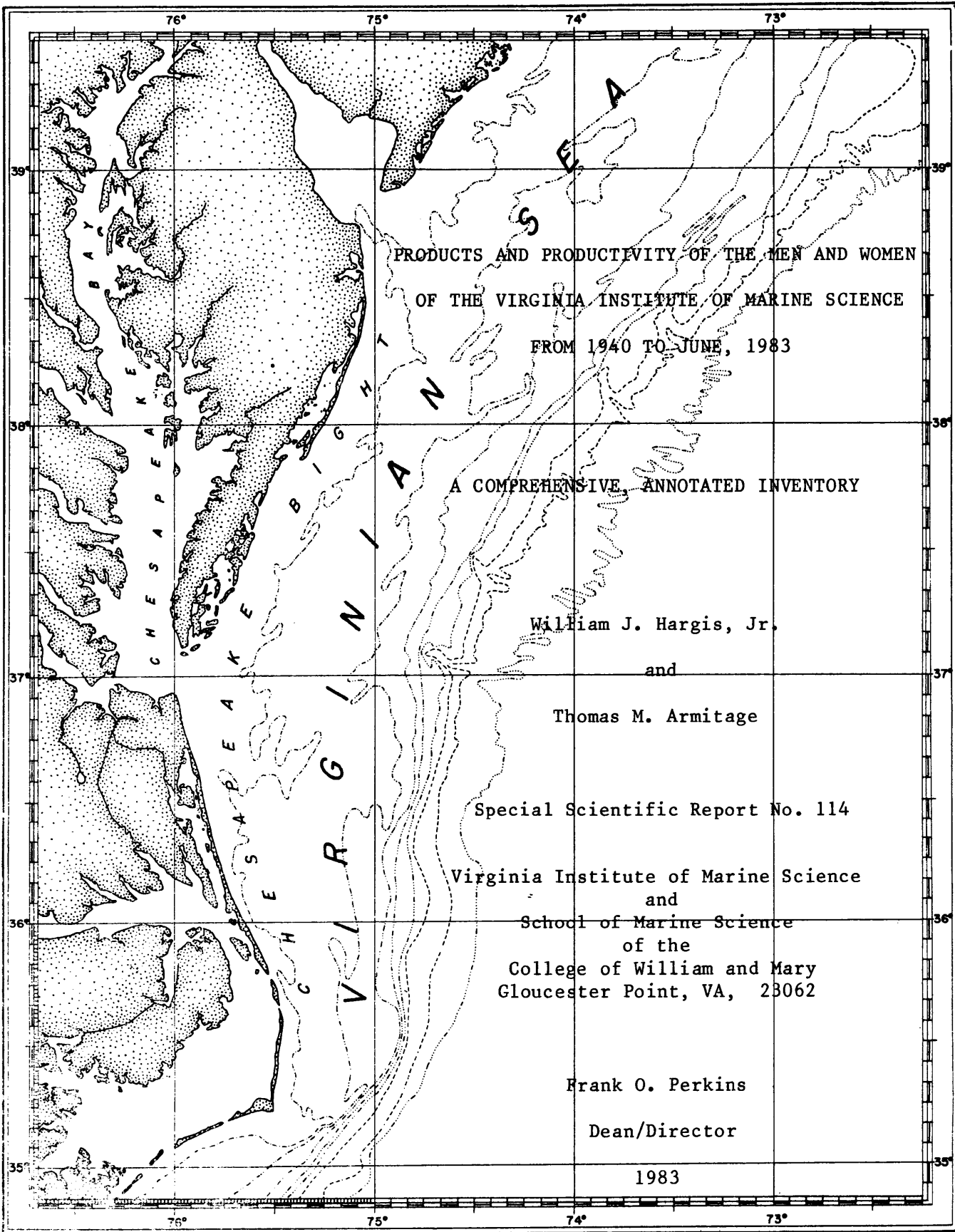


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PRODUCTS AND PRODUCTIVITY OF THE MEN AND WOMEN
OF THE VIRGINIA INSTITUTE OF MARINE SCIENCE
FROM 1940 TO JUNE, 1983

A COMPREHENSIVE, ANNOTATED INVENTORY

William J. Hargis, Jr.

and

Thomas M. Armitage

Special Scientific Report No. 114

Virginia Institute of Marine Science
and
School of Marine Science
of the
College of William and Mary
Gloucester Point, VA, 23062

Frank O. Perkins

Dean/Director

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FOREWORD

Owners, producers, administrators, donors, the public, and society in general have come to expect estimations of productivity and evaluations of the success of operations of the private and public institutions which they support or with which they are associated. For some organizations productivity and success are relatively easy to estimate or establish. For others they are more difficult to assess.

Agricultural and animal-husbandry organizations (farming operations) record their activities and productiveness in yield per acre per year, or per growing season, i.e. in bushels of grain, fruit, produce, cattle, sheep or hogs per acre per year etc. Industry does so in units of production per unit of effort. Some businesses employ units moved and sold or customer services provided. Banks use loans and investments made and compare assets and liabilities and gross and net income. For all of these organizational activities, economic profit and loss are the ultimate standards of productivity and success. They are easy to measure.

More difficult to establish are productivity and success of public service, eleemosynary, non-profit, or educational institutions. Hospitals gauge their productivity in patients treated and costs per patient. Educational institutions do so in students taught and/or graduated and costs per student. Though some of both types of institutions are business ventures, with profits as objectives, many are not. Profit and loss are not entirely adequate as indicators of successful operations for such organizations. While all these institutions must eventually balance their books or close, profit and loss are less important and significant as ultimate measures of success than for business or industry. Many require frequent public or private subsidies in one form or other to survive and continue to serve.

Measurement of the productivity and success of scientific or scholarly research institutions (especially public-supported ones) is even more difficult because of the nature of their products, which often are varied and hard to quantify and compare. However, some types of research organizations are easier to deal with than others. For example, an industrial or engineering research organization can be evaluated in terms of patents or new copyrights or registered trademarks obtained. Concerned with profit, industrial organizations expect their research units to enhance company profits and/or position. They are applied research organizations in the strictest sense, usually, but even their results cannot be dealt with in terms of profitability until a period of production, marketing and sales effort has provided useable numerical data, i.e. financial yield statistics. For most other research institutions the principal products are new facts (information) about the phenomena they study, or existing facts put together and analyzed anew or in different fashion. Their products usually appear in institutional reports

and/or are published (made available) in special documents, most of which are directed toward limited special audiences.

Efficiency and productivity of basic research organizations whose products are data and other forms of information which appear as electronic, magnetic, mechanical or written or printed records or as collections of one sort or another are especially difficult to measure. Often the importance and applicability of the products of science can only be judged by extensive examination and application which requires competent review and evaluation and usually takes time to accomplish -- sometimes years or decades. If eventually put into use, as most research findings are no matter how seemingly esoteric originally, other action agencies are usually involved. Examples are many, but three will suffice. It required a number of years for Gregor Mendel's work on heredity in plants and for the germ theory of disease to be examined, tested and to receive ultimate proof in application, as it did for some of Albert Einstein's notions and equations even though the reality and results of all are taken for granted today. The same is true for most significant scientific discoveries, though the time required for examination and application is usually shorter now than in the times when the plant heredity, germ and energy/mass ideas first came under examination.

Most difficult to evaluate in terms of productivity are research institutions (such as the Virginia Institute of Marine Science, mandated and managed by the public -- or rather its representatives) whose assigned duties include conducting applied research on resource or environmental problems and the supplying of advice and assistance on those problems as well as carrying out basic research and public and formal education programs in specified scientific areas. The results of their applied research (much of which is often on practical problems of some immediacy and/or local relevance) must be put to use by other instrumentalities which are the appliers and decision-makers i.e. the legislative or the public and private executive managers. In such instances the research results and the advice derived therefrom might only be used or applied in part, not at all, or even much later -- long after it has been acquired and given. Some of the research results of such institutions are essentially unpublishable through regular outside scientific communications routes, not for lack of quality of the work but because of its specificity and local relevance and its limited applicability in time and space and because of the generally repetitive nature of some of the investigations. Much applied environmental or resource research is like office or clinical medicine, important to the patient and perhaps adding to data on epidemiology of one disease or another, but often not original or unusual (except spatially or temporarily and as the problem is unique

and important to the sufferer).¹ This does not negate the quality of the work nor does it reflect upon the quality and productivity of the scientists or the organizations who have done it. But it is the type of research that is required and is being paid for.

In most cases the only readily visible results of individual or organizational productivity of this type of research institution (or other non-industrially sponsored research organizations) are the program and project reports and scholarly papers of original research or the analytical reviews published inhouse (or by outside agents) or unpublished, which are produced. Other visible products of the efforts of such institutions are advisories, workshop or symposium volumes, books, data sets, graphics, archival or research and study collections and other products.

Whatever difficulties may exist in making evaluations of productivity of the various types of institutions involved, all efforts to do so must begin with a knowledge of what has been accomplished. Thus, inventories or catalogs of the units of production of the products involved must be available. They are the starting point for review and qualitative evaluation.

General surveys, inventories, listings, and quantitative counts of those listings are not sufficient by, of or in themselves to provide the basis of a competent and thorough evaluation of the types of products involved. To enable such examination the materials involved must be bodily available in institutional archives since programs and projects wax and wane and the initiating and/or participating individuals often move and always die. Direct access to the materials involved is necessary!

Despite vigorous efforts over the last two decades to develop one, no complete archive or even simple listing or inventory of the many products of the Institute has ever been accomplished. This, despite the importance of having such archives to enable judgements of VIMS' accomplishments as an institution and of the individual producing components -- the scientists and other workers (or teams made up of them). There has been no place, collection or even simple list to which one could go to gain an overview of the many and varied products of the Institute, much less to examine the individual products, themselves.

Quite aside from the historical and evaluative aspects, there is another good reason for maintenance of archives and inventories such

¹It is true, however, that most of the scientific information basic to the development of understanding of the Cosmos and its parts was gathered by scientists seeking understanding of and solutions to applied problems -- medical, agricultural, cosmographic, military, resource-management, environmental and others.

as this document represents. The products of past and current scientific activity are also resources, resources which can and should be used to frame new questions and in educational and advisory activities, for insiders and outsiders alike. They are resources for an organization such as this Institute, to employ in its planning, programming, evaluative and promotional activities and in conducting future research and scholarly activity. They provide the basis for objective evaluation of what has been attempted and accomplished and, conversely, of what has not.

For VIMS, inventory-level knowledge of the products of scientific and scholarly research, of advisories and other services, of educational activity, of data gathered, compiled, and stored (analyzed or unanalyzed) can and should provide the basic materials for assessments and evaluations of efforts and a starting point for measuring individual, group and total activity and of the "returns" to its supporters on their investment in the Institute. Such an inventory should provide an organized, comprehensive historical document to which future reviewers and evaluators can refer.

Because of the importance of an adequate record, my research assistant, Mr. Thomas Armitage, and I have undertaken to develop a comprehensive and complete inventory of the products of the Virginia Institute of Marine Science, one which will provide an entry point for evaluation and the basis for development and fleshing out of the archives. Our search has been complicated and difficult because, as we discovered when the work began, all existing archives, collections and lists were incomplete. There was no single place to which one could turn to secure the requisite information! This serious shortcoming has caused many difficulties because we have had to seek out and examine the several applicable sources, i.e. VIMS library, the Sea Grant Office, the Advisory Service archives, the senior author's records, and in some cases have had to query the individuals involved in the original activity directly to secure the required information. Partly due to our efforts in this project the central archives are more complete but unaccessioned items continued to surface throughout the 3-year period of research and still do.

This document represents our efforts at gathering a complete inventory of the products of the Virginia Institute of Marine Science (1962 through May, 1983) and its antecedent, the Virginia Fisheries Laboratory (1940 - 1962). The effort has required much time and energy. Like all such efforts, however, total coverage is difficult to achieve and we have not succeeded entirely. Persons having relevant information not included herein are urged to supply it to the Librarian. At some future time corrections may be published or a new edition produced.

ACKNOWLEDGEMENTS

Numerous individuals have contributed to this volume. Not least are the many scholars, specialists, students and technicians who actually did the work and developed the products which make up this inventory.

We especially wish to thank: Susan O. Barrick, M. Janice Meadows and Catherine L. Mapp of VIMS Library staff (and others) for assistance with accumulation of the information required to produce this annotated inventory; Alice Lee Tillage, Shirley O. Sterling and Virginia S. Emerson for typing early drafts; and, Annette C. Stubbs, Ruth A. Edwards, Maxine E. Smith and Cheryl S. Ripley of Word Processing for valued assistance in producing computer-processed drafts and the final typescript.

SECTION I
INTRODUCTION
TO THE VOLUME

CHAPTER 1
GENERAL INTRODUCTION

GENERAL INTRODUCTION

While a number of academically-associated research organizations exist which deal with marine resources and environments, few are like the Virginia Institute of Marine Science. For a long period unique among such institutions in that it was an independent, state-supported organization with its own Board of Administration, VIMS, which began in 1940 as part of the College of William and Mary and was entirely separated from it in 1962, was reunited with the College in 1979. As a consequence of this legislative action it no longer is administratively independent. In this fundamental aspect, it has lost a measure of the organizational difference which set it apart from most other marine research institutions. Uniqueness continues however. The Institute, though once again part of the College, remains specifically chartered by the several provisions of the Code of Virginia applying.¹

As with any organization, assessments, evaluations or judgments of its effectiveness or productivity (whether external or internal) must consider not only its nature, [i.e. the Institute is an academic institution working in marine science and engineering (or technology), marine education, and marine affairs] and the principles and practices associated with such organizations (along with their obligations, limitations and freedoms) but also the specifications of its charter. Without doing so no objective assessments can be made! The basic nature of the organization establishes certain operational norms and its charter places limits upon its operations.

Science is a scholarly activity involving the powerful analytic approaches and tools developed over the ages by the thousands of scholars involved. Because of the power of the scientific method in discovery and explanation of natural phenomena, it is being applied increasingly in matters relating to natural resources and to the environment, though not nearly as much as it could and should be. The Institute, as a scientific organization, represents Virginia's oldest and still principal effort at adding to the store of knowledge, of fact, about the oceans, estuaries and tidal rivers and their shorelines, resources, environments and amenities of the state, region and nation.

¹The basic reference detailing the duties, responsibilities and rights of the Institute in the Code of Virginia is contained in Title 28, Chapter 9. Additionally, a number of other sections of the Code refer to VIMS and its responsibilities. As part of the College the Institute also falls under its code provisions and internal governing documents. Its higher educational and academic research missions are strengthened in this fashion.

Over the years its scientists,² and other scholars, the producing units in the "fact-factory" that it is, have carried out the programs and projects required to discover details of the phenomena of the extensive and important scientific (including socio-economic factors) and geographical areas it is responsible for. They have also developed and/or employed technology to permit manipulation of the marine environment and its resources. And over the years they have acquired, organized, preserved, analyzed, discussed and presented the scientific (or technical) data and information derived therefrom in the various communications vehicles designed to provide those artifacts and facts to the several audiences involved -- within the Institute, and outside.

A few scientists, driven by a need to satisfy their own curiosity appear content to inform themselves primarily and seem under few or no constraints to communicate their findings to others. Such "pure" scholarship (if indeed it should or can be called that) is fortunately not widespread in estuarine science or at VIMS. Most scientists and scholars, once having worked out an answer to a question, wish to communicate their findings to others -- generally to other advanced scientists and scholars and to students. Recording and communication of efforts and findings or results are essential steps for the continuing growth and development of the fund of information (or the knowledge of that which has been attempted and achieved or not achieved by scientific study), for examination, verification and eventual adoption and integration into the "Body of Knowledge".

Over the years several methods, avenues or vehicles of communication between scientists and with others have been developed by the institutions and individuals involved. Among them are the less formal, direct and immediate (or almost so) communications by letter, or oral communications between collaborators, colleagues or challengers. More formal mechanisms such as verbal and "poster" presentations at scientific meetings, seminars, workshops, symposia, and exchanges of data, preparations, methods, and results, and opinions by these and other organized means are also utilized. Even more formalized are the increasingly common avenues of written communications, as in specially prepared and issued research reports, technical reports and other largely locally-produced (inhouse) organs which allow wider yet still rapid communication and presentation of scientific or technical information as well as more complete and

²As used here a scientist is one who applies the scientific method to the study of approachable and, eventually, understandable natural phenomena.

exhaustive examination.³ Most formal are the communications appearing in scientifically-oriented scholarly journals, which are usually reviewed by knowledgeable scholars (presumed or actual peers in knowledge and ability to the author or authors involved) prior to being published. Also at the apex of formal communications are edited volumes of proceedings and scientific books and monographs. While the last two of the media are extremely important, all of them have contributed significantly to the development, recording and dissemination of scientific findings to scientists and to scientific posterity!

Though working scientists have regularly communicated directly with their colleagues by post and/or in person for centuries and later by telegram, cable and telephone, recent technological advances in word-processing, microphotography, rapid-printing and computer and communications technology have made rapid (in some cases almost instantaneous) communications possible. Nowadays one can secure access to data sets and analysed data months or even years before formal publication of the research which gathered them is accomplished.

The type and breadth of audience reached, quality of the productions and other important features vary between and within all types of communications devices. Work of excellent, good, mediocre and poor quality is found in all media, formal or informal. Scientific work of poor quality is not enhanced (basically) by the more formal types of communications. Work of innately good quality is not damaged or made less relevant or useful (basically) by the less formal media. But the path of Science is made more difficult and

³Though often referred to as "grey literature" in these times, inhouse (or house) organs or publications are ancient outlets. Academic, scholarly, governmental or private institutions have published the results of their own workers, projects and programs for centuries. A large number do so now. Many first-rate contributions have been made in such outlets. For many organizations and fields they are an important medium of timely scientific and technical communication.

progress along it is slowed if good scientific work is not made available quickly and widely.⁴

Even manuscripts or typescripts, data tabulations, field collections, are valuable where more formal communications are not available or cannot be utilized for other reasons. Especially is this true for communications inhouse or between specialists -- and there is an increasing traffic in such material. In the case of data, "secondary users" may be able to make more out of it than the person(s) who generated it.

In these days of high publication costs, increasing pressure for brevity by journals and growing publication lag, some of the less formal media are actually advantageous -- contributing positively to more timely and more complete communications between specialized individuals and groups with a "need to know." In the environment and resource research areas, communications of this type are especially important and cannot be ignored by scientists and organizations involved in research in those fields. Indeed, much good and useful work appears first and, at times, only in such media.

All avenues of communications are useful and important to professionals and their colleagues and serious students, and comprise an essential part of the record which scientists use to communicate amongst themselves, with other groups of specialists, with those in countries and between the ages. They are at once the products and currency of scholarly activity as well as the capital of science -- resources for posterity.

But scholars are not the only audience with a need or right to know. Increasingly the results of scientific research must be communicated with persons and groups other than scientists, since most of the financial support for research is supplied and/or controlled by others. Persuasion of support for science from the public and its

⁴Unfortunately, constraints to effective communication of good research exist despite theseemingly endless and growing numbers of specialized journals available as outlets (whose very nature and specialization may mitigate against widespread notice and utilization -- at times) and the ease by which specialized symposium volumes and books (whose costs are increasing to the point of becoming prohibitive) are put together. Foremost among them are the financial and space constraints which, prevent complete presentation of methods and materials, data, tabulations, graphical materials and other useful information. Often one could not test the reproducibility of an experiment or observation even if one wanted to because of the dearth of essential information. Publication of routine (and often confirmatory) results and of failed or negative efforts is also discouraged.

representatives and from private donors requires proposals, explanations, reports and other accountings. Public research organizations are especially subject to accountability and disclosure. Transfer of scientific information to non-scientific audiences is necessary if science is to contribute to the solutions of society's problems -- a prime reason for support of most public research organizations. Those institutions with advisory and consulting assignments, calling for solution of public problems and provision of advice and assistance to public and private users (managers or decision-makers) must be prepared to communicate in forms and forums most useful to those audiences (science's non-scientific consumers). Education of the public requires the use of media other than those regularly employed by Science.

Because the Virginia Institute of Marine Science has a spectrum of responsibilities, i.e. to conduct research basic and applied, to develop technology, to provide advice and assistance, to educate scientists and scholars and the public, it must employ all avenues or forms of communication necessary to their fulfillment. The Institute is more than a organized body of scientists and scholars talking to each other, to their colleagues and professional posterity: It must address its findings and recommendations -- its products, to other audiences as well!

Since its inception in 1940, the Institute (called the Virginia Fisheries Laboratory from 1940 to 1962) has employed all of the forms of data and information storage, retrieval and communications available. Its products (facts, analyses, syntheses, advisories, etc.) and the means of their transmission to the appropriate or required audiences have been many, perhaps more than most Institute personnel know -- much less the public. For example, its written products include reports in manuscript form, memoranda, letter reports and advisories, longer formal reports and advisories, Annual Reports, Grant and Contract Reports, printed reports in special production series [such as VIMS Translation Series (TS), Data Reports (DRS), Special Scientific Reports (SSR), Special Reports in Applied Marine Science and Ocean Engineering (SRAMSOE), and Special Papers in Marine Science] scientific papers (the Contributions), and conference, symposium and workshop volumes and books. Other recorded verbal (or numerical) products are such documents as the VIMS Education Series, the Marine Resource Advisory Series, the Marine Resource Bulletin, the Commercial Fisheries Newsletter, Fishery Flashes, Tide Graphs and Focus. A complete list of the more permanent, written documents is presented in Tables I and II.

Among the products to be mentioned and included in our catalogue or inventory are the written communications provided to the several audiences (or "customers") -- including responsive letters, special advisories and recommendations, special committee reports, public testimony and news releases. Research proposals are also important inclusions.

Another class of products includes the more transient, and ephemeral oral communications (verbal papers and spoken responses and advisories) as well as contributions to legislative committee and executive agency activities. Institute scientists, advisors and educators have participated in and utilized all such communication avenues. They have even participated in the production of filmstrips, films, television programs and radio shows and press-releases. Unfortunately, our inventory does not include most of this class of products.

Yet other numerical and verbal productions result from the work of the Institute. These are computer-stored and retrievable data and computer programs, which are available inside and out-of-house.⁵ Many mathematical models of various sorts have been produced by Institute scientists.

Non-verbal or numerical products are the formal collections of specimens, as for example, the Ichthyological Museum, the Invertebrate Museum, the Herbarium, various plankton and algae collections, tissue and slide collections, as well as the temporary and permanent maps and charts, photographs, photographic negatives and transparencies produced by the Institute and held by its library, the graphical arts department or the divisions, departments or individual laboratories.

Additional products of the Institute and the School of Marine Science are the students of all levels who have participated in the educational programs. Especially noteworthy are the successful participants in the masterial and doctoral-level programs. They have contributed much to the spirit and productivity of the Institute and most are effectively working in one or more of the several fields for which they were prepared.

Energy and money expended by VIMS result in other products or services, such as workshops, conferences and symposia, interlibrary loans, abstracts, and collection access services and occasional equipment loans.

For a number of years, efforts to catalogue the more transient of the products and services mentioned above were carried out by the Information Office which maintained a VIMS Contribution Log. Though now discontinued, the surviving files are fascinating and provide a fairly detailed account of Institute activities in these areas.

⁵For several years the Institute has worked with the Environmental Data and Information Service of the National Oceanic and Atmospheric Administration (U.S. Dept. of Commerce) in exchanging data, other information and programs. Printouts of VIMS materials are available from EDIS.

All of the above-listed permanent, semipermanent and ephemeral items are products of the efforts of the personnel and result from the expenditure of time, intellectual and physical energy, money and capital resources of the Institute and its personnel. Each has been produced to present the accomplishments of the Institute to a specific audience and to provide effective communications with the audiences (or customers) it serves. In any comprehensive realistic, and fair evaluation of the productivity of individuals, or permanent or ad hoc groupings of individuals, or of the entire organization, each must be considered! None should be neglected, overlooked or ignored.

In the future the number and forms of the individual communications devices or media utilized may be changed. Old series may be discontinued or replaced, or the emphasis may shift from one vehicle to another but the essential features of the Institute's work and its audiences will remain the same -- unless the Charter is altered by the General Assembly and the duties and responsibilities of the organization are changed substantially. Hence, it can be expected that all basic vehicles and avenues of communications listed above will continue in use -- plus any new ones which may be developed and added, in the future.

In summary, VIMS performs several functions - research and engineering development, advisory services and education (at several levels) and it serves several groups of audiences, consumers or "customers." Its products are necessarily varied according to the nature of the materials involved and the needs and abilities of the several audiences, and they range from formally presented and recorded scientific results, through committee participation and reports and news releases to "instantaneous" oral responses. All are truly products and can be considered as such. No inventory of the work of the Institute would be complete without them all.

In the sections and chapters to follow, we present organized listings of each type or class of product (the more permanent ones) which has been produced by the organization over the years. We have attempted to cover all of those produced during the years from the formal beginning in July, 1940 to December 1982, some forty-two years of service. In most cases items produced through April of 1983 are also included to make this inventory or catalogue as recent as possible. It represents as complete an accounting of the "less-ephemeral" products as is available. It should be useful in analyses and evaluations of VIMS, and of the individuals comprising it at any point in time and of its and their productivity and products, and as a resource for future planning, and conduct of research, advisory services and education.

The inventory of the Institute's products will be presented according to the three functional categories assigned by law, research and engineering, education and advisory services. Section I is this general introduction to the volume. Section II includes the results of the research and engineering efforts. It also includes the

research products of the graduate education program. It does not list the numerous masters students and doctoral students who have pursued and obtained scholarly degrees in the School of Marine Science (or associated or predecessor organizations in which VIMS served as the marine principal.) Nor does it include the dozens of others who received undergraduate or graduate instruction at VIMS but were not seeking or, if seeking, were not awarded degrees. The improved, better-informed persons who emerge from our formal educational programs are as much products as are the data, reports, papers and other results. Section III presents those documents which represent the more permanent portion of the total products of VIMS advisory, promotional and consultative activities as well as those of the public educational programs. Within the last two Sections the individually identified products are presented under separate Chapter headings. Some of the Chapters have individual introductions. Others are treated together as a unit with a common, special introduction. Some Sections are arranged into Parts (of Sections) to improve organization and enhance comprehension.

A numerical summary of the separate written items included in the many Chapters is provided in Tables I and II in this Chapter. This summary presents the most complete tabulation of the "products" (by category) of the Institute ever compiled. While some of the products are not included because the archives did not have them, it is as complete as our research has been able to make it.

Tables I and II and the sections and chapters which they summarize clearly show that the Virginia Institute of Marine Science (and its predecessor the Virginia Fisheries Laboratory) has been active in all three code-mandated areas since the very beginning and has made contributions in every important marine and estuarine (tidal) environmental and resource area affecting the Commonwealth, the Chesapeake Region, the Virginian Sea (mid-Atlantic region), and the Nation. Further, they also indicate that little of importance relating to marine and estuarine (tidal) subjects and problems affecting Virginia in the last twenty-five years has escaped the attention of the Institute and its personnel. The Institute has made solid contributions to the maritime interests of the state, region and nation and has advanced the progress of science, technology and marine education at all levels while doing so. This is a substantial record of productivity and progress.

Further, the grant and contract portions of this inventory demonstrate clearly that the Institute and its personnel have been generators of monetary support for their own code-mandated activities, raising over \$40 million dollars from sources inside and outside

(mostly) of Virginia to forward their own assigned work.⁶ This indeed is a sound record of self-help and service to the people and maritime interests of the Commonwealth.

⁶A more complete presentation on this aspect of Institute activities can be found in the document by J. Claiborne Jones, A Review of Grant and Contract Expenditures at the Virginia Institute of Marine Science from July 1, 1965 through June 30, 1980. A VIMS Special Report November, 1980.

Table I
VIMS/ANNUAL WRITTEN PRODUCTION
(1940 through 1982)
Number of Formal Written/Published Documents Produced During Each Year
by Functional Area*
(Includes all dated material)**

Series	Research and Scholarship Production										Grant and Contract Activity			
	Conts.	SRAMSOES	Data SSRS Rep'ts.	Sp. Papers Mar. Sci.	Dissert.	Theses	Trans. Ser.	Gr. & Cont. Rep'ts.	MSS.	Comm'te, Commis'n or Task Force Rep'ts.	Essays, Testimony or Special Rep'ts.	Proposals Submitted	Accepted	% Funded***
Year														
1940	2								1			1	1	100
1941	4								1					
1942	5								1					
1943	3					1			2					
1944	5											2	2	100
1945	4					1			1					
1946	2					1			3					
1947	2								2					
1948	2		3						3					
1949	1		1						5					
1950	3		1			2			4					
1951	4								2			1	1	100
1952	7		1			1			3					
1953	4					1			3					
1954	6		2						2					
1955	5	1				1			6			2	2	100
1956	9		2						1			1	1	100
1957	10		3			2					1	1	1	100
1958	6		1			2			2		1	3	3	100
1959	6		1			1			3			6	6	100
1960	4		1						2		1	7	6	85

Table I (cont.)

Series	Research and Scholarship Production											Grant and Contract Activity			
	Conts.	SRAMSOES	SSRS	Data Rep'ts.	Sp. Papers Mar. Sci.	Dissert.	Theses	Trans. Ser.	Gr. & Cont. Rep'ts.	MSS.	Comm'te, Commis'n or Task Force Rep'ts.	Essays, Testimony or Special Rep'ts.	Proposals Submitted	Accepted	% Funded
Year															
1961	13			9			1	1		8	1		13	9	69
1962	14	2		13			6		1	5		2	19	17	89
1963	27			7			5		1	8			14	13	93
1964	25	1		2			5	8	2	7	1	4	21	16	76
1965	23	1		2	4		4	5	2	7	1		22	19	86
1966	34	2					4	1	4	5			20	18	90
1967	25	2		1			3	3	12	4	1		25	18	72
1968	30			2		2	13	2	4	2	2		26	20	77
1969	35	2		5	1	1	8	1	4	1	2	5	24	20	83
1970	41	1		2		1	5		12	5		7	38	22	57
1971	42	9		7		2	4	16	1	16	6	12	51	37	72
1972	75	10		5	2		8	8	1	19	4	1	52	41	78
1973	71	9		5			6	13		25	3	2	67	31	46
1974	62	16					6	8		37	2	2	65	42	65
1975	56	30		3	1		3	9	1	43	2	2	80	58	73
1976	63	20		2	1		7	9		24	2	1	61	39	64
1977	68	34		5			8	6		22	3	4	49	32	65
1978	36	19		8		1	2	3		41	1		95	64	67
1979	43	35		8	1	1	1	11		30	1	3	84	60	71
1980	48	9		5		1	8	18	1	13		1	118	60	51
1981	49	15		4	3	1	3	10	3	24		1	129	75	58
1982	44	9		2			4	13	1	9			103	56	54
1983	5	2		3	1		1	4		1			12	2	17

* Does not include official advisory letters or memoranda unless they were classified as special reports.

** Thirteen undated fish Promotional Brochures have been published and distributed by the VIMS Sea Grant Program.

***Data on percentage of proposals funded before 1960 mean little. Proposals were few and "arranged". Those rejected or likely to be were not recorded or included in the archives -- evidently.

Table II

VIMS ANNUAL WRITTEN PRODUCTION
(1940 through 1982)
Number of Formal Written/Published Documents Produced During Each Year
By Functional Area*
(Includes all dated material)**

Year***	Educational Production			Resource and Environmental Advisories and Promotional Production							
	Educational Series	Wavelets	Mar. Sci. Methods for Classroom	Va. Mar. Res. Repts.	Mar. Res. Advis. Ser.	Mar. Res. Bulletin	Mar. Res. Spec. Rept.	Comm. Fish. Newsletter	Fishery Flash	Tide Focus	News Graphs Releases
1960 (40)	1										33
1961 (41)	1										46
1962 (42)											36
1963 (43)	(1)										38
1964 (44)	(1)										24
1965 (45)	1 (1)										38
1966 (46)											24
1967 (47)	1										41
1968 (48)	3				1						29
1969 (49)					2	3	1				36
1970 (50)	1				1	16	1				42
1971 (51)	1				1	19	1				37 (19)
1972 (52)					1	15	1				22 (36)
1973 (53)					1	12	1				33 (22)
1974 (54)	1				1	7	1				22 (36)
1975 (55)	(4)				1	7	1				18 (34)
1976 (56)	1				3	4	1				21 (35)
1977 (57)					2	6	1			2	33 (39)
1978 (58)	3 (2)	2		2	4	6	1		4	4	22 (41)
1979 (59)	2 (2)	5		4	4	5	1	1	5	1	41 (51)
1980	3	4	9	14	1	3	1	2	1	1	40
1981	1	3		12	4	3	1	4	1	8	43
1982	1	4		12	4	4	1			3	45
1983		1		3	1	1		2		2	17

* Does not include official advisory letters or advisory memoranda unless they were classified as Special Reports.

** Thirteen undated Fish Promotional Brochures have been published and distributed by the VIMS Sea Grant program.

*** Items enumerated in parentheses were released exactly 20 years earlier. This artifice allowed us to compress the table and thus eliminate much blank space (years when there were few entries).

SECTION II
PRODUCTS OF RESEARCH AND SCHOLARSHIP

PART I
OUTSIDE PUBLICATIONS

CHAPTER 2
VIMS CONTRIBUTIONS

INTRODUCTION TO CHAPTER ON VIMS CONTRIBUTIONS

Among the products of any scientific or scholarly institution and of individual scientists and scholars are the communications in the form of papers and reports submitted to the journals which serve as the formal publication media of scientific societies or institutions. Included are contributions to special scientific meetings such as symposia, conferences and workshops formally published in the proceedings which frequently result. Yet another form of formal communication included in this category are single or multiple-author books or edited volumes.

In the case of papers and reports published in the proceedings of society meetings (and most societies have periodic meetings) or in symposium, conference or workshop volumes, many are first presented orally or in poster sessions associated with those functions. Even short papers and abstracts may find their way into such publications.

Over the years such formally developed and presented written (and oral) or poster-session reports, based upon scholarly studies, compilations, surveys and analyses, have been important channels of communications. Few dispute their significance and utility in the development, evolution and dissemination of facts (knowledge) about the natural world, the universe and space and associated biotas, environments, resources, amenities, phenomena and processes.

All such communications are accepted products (currency) of Science. They are time-tested and vital media or vehicles through which the results of observations, experiments and analyses made utilizing the scientific method and the orderly processes associated therewith are communicated from individual to individual, group to group, and age to age.¹

The primary targets or customers of such products are other students, scholars and scientists interested in the phenomena involved. Published research reports (papers) are among the oldest grist for the mills of Science, providing the carefully gleaned and

¹Begun and evolved as lectures, essays, letters, collections, compilations and other types or "species" of oral and written communications, scientific papers have become much more stylized and formal in recent years. Most societies and their other publications have developed more-or-less standard formats and quite formal review procedures -- commonly called peer review. Some "peers" are more competent than others and some reviewers are more rigorous than others but the common purpose is to assure relevance and quality of the product of the publication process. Occasionally the process is abused and new and contrary ideas and findings are delayed but generally the effort appears to be successful. However, "50 million Frenchmen can be wrong" and, as Science has shown, frequently are. The same applies to scientists, cabals, cliques and clubs, and ignorant narrow-minded and short-sighted "peers" have appeared from time to time to mar the objectivity of the evaluative process.

processed facts for examination, regrinding, and refining and recombining or rejecting the discards or effluvia which time brings as the scientific process continues. The chaff is discarded, the grain is retained and augmented and the winnowing continues and the system grinds on. Time and the self-correcting scientific process are the ultimate "peers" and judges of the products of science and scholarship.

It is the fashion among marine laboratories (and other institutions) to assign numbers to the published scholarly products resulting from the researches of their personnel. Often such contributions are regularly accumulated, indexed, and bound and distributed as contribution volumes of the institution(s) of origin. They are a medium of exchange and communication between institutions.

Reprints of formally published papers are circulated between individuals and the journals or volumes in which the papers or reports originally appeared are acquired, archived and used by individuals and libraries. As long as there are communications, institutions, archives and curious, interested practitioners of marine science, the process will continue and our science will advance.

Oral reports constitute a more rapid means of communicating results to one's colleagues in a formal environment and are important in assuring that the path of Science opens more quickly to new ideas and discoveries than would happen if the slow, sometimes almost unwieldy routes of formal publication were the only means of communication. This rapid avenue is considered so important that considerable time and money is spent in getting scientists together in society meetings, seminars, symposia, workshops and conferences. Since its beginning in 1940 the scientists who constitute the Institute have participated in the oral exchange and formal written report process.

The inventory comprising this chapter, while based upon earlier lists of contributions prepared within the Institute, is the most complete and current compilation available. The authors as well as librarians Susan Barrick, Cathy Mapp and Janice Meadows, to whom we are indebted, have taken considerable pains to discover and verify the inclusions. In the process a number of contribution numbers never used and projected papers never published have been removed from the list.

Tabulation of the numbers of contributions per year illustrates several interesting aspects (see Table I). Even during its very first year of operations (1940) scientists of the Virginia Fisheries Laboratory (predecessor of VIMS) submitted the first in a series of annual contributions which has been unbroken during the entire 43 year history of the organization.

The scientists are the originators of publications; hence, it is no surprise that the number of publications per year roughly parallels

the numbers of scientists employed at the Institute, with the years of peak annual production occurring in the early and mid-1970's. Both relate to the level of financing. The publications by Hargis and Shea, 1979² and Jones, 1980 (op. cit.) show that the numbers of professionals and associates at VIMS reached a maximum of 123 around 1976-1977, while the total financing for maintenance and operations peaked during same period (FY 1976-78) at over \$16 million for the biennium. The same general direct and positive relationship between numbers of scholars and expenditures and Contributions (and other products) will obtain in future.

Some 1100 Contributions have been produced during the 42 year history of the Institute. The bulk has appeared since 1961 when significant organizational growth began. (The first Contribution in 1961 was Number 92 the rest have appeared since.) This is a significant record of scientific and scholarly production.

²Hargis, William J. Jr. and Eileen Shea 1979. The Virginia Institute of Marine Science; Its growth, status and stature. A report on progress during the last 20 years. 39 pp. A VIMS Special Report.

VIMS CONTRIBUTIONS

Number

- * 1. Newcombe, Curtis L. 1940. Studies on the phosphorus content of the estuarine waters of Chesapeake Bay. American Philosophical Society, Proceedings. 83(4):621-630.
- * 2. Newcombe, Curtis L. and Ellen H. Gray. 1941. Observations on the conservation of the Chesapeake blue crab, Callinectes sapidus Rathbun. Virginia Journal of Science. 2(1):1-10.
- * 3. Davis, Donald W. 1941. Biology at the College of William and Mary before the War Between the States. Virginia Journal of Science. 2(2/3):41-52.
- * 4. Newcombe, Curtis L. 1940. A physical, chemical and biological investigation of the layer of low oxygen content in the deeper waters of the Chesapeake Bay. American Philosophical Society, Yearbook. 225-227.
- * 5. Newcombe, Curtis L. 1941. Conserving our salt-water fisheries; work of the Virginia Fisheries Laboratory. The Commonwealth. 8(12):7-10.
- * 6. Delisle, Albert L. and Mary R. Old. 1941. Further genetical and cytological studies on a sea-side ecotype of Aster multiflorus Ait. Virginia Journal of Science. 2(7/8):275-279.
- * 7. Thimann, Kenneth V. and Albert L. Delisle. 1942. Notes on the rooting of some conifers from cuttings. Journal of the Arnold Arboretum. 23(1):103-109.
- * 8. Lochhead, Margaret S., John H. Lochhead and Curtis L. Newcombe. 1942. Hatching of the blue crab, Callinectes sapidus Rathbun. Science. 95(2467):382.
- * 9. Lochhead, Margaret S. and Curtis L. Newcombe. 1942. Methods of hatching eggs of the blue crab. Virginia Journal of Science. 3(2/3):76-86.
- * 10. Hopkins, Sewell H. 1943. The external morphology of the first and second zoeal stages of the blue crab, Callinectes sapidus Rathbun. American Microscopical Society, Transactions. 62(1):85-90.

*Supply exhausted; available on microfiche for \$2.50 (\$3.50 outside the U. S.) or photocopies can be made for \$.10 per page plus \$1.00 handling fee.

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SECTION II
PRODUCTS OF RESEARCH AND SCHOLARSHIP

PART II
VIMS' INHOUSE PUBLICATIONS

INTRODUCTION TO CHAPTERS ON VIMS'
INHOUSE PUBLICATIONS

(Chapters 3,4,5,6, and 7)

Among the VIMS publications written and produced internally to make many of the productive efforts of the personnel of the Institute available to its own professionals and to colleagues, supporters, posterity and to needful customers are several series. These are the VIMS Special Reports in Applied Marine Science and Ocean Engineering (SRAMSOE), the VIMS Special Scientific Reports (SSR), the VIMS Data Reports (DR), the VIMS Translation Series and VIMS Special Papers in Marine Science (the newest of the group).

Individual special scientific reports had been prepared and published by the Virginia Fisheries Laboratory during the directorships of Dr. J. L. McHugh and his predecessors but there was no formal series into which they were placed. Following the lead of comparable institutions in the Chesapeake region and elsewhere, the decision was made (about 1961) to utilize regular organizational publications to present the findings of Institute scientists and other specialists. Accordingly arrangements were made to produce the SSR, SRAMSOE and DR series. After these individual special publication series were begun many of the research products of the Institute, including grant and contract reports, were given numbers and presented in the appropriate one. Even before new reports were entered, however, the unnumbered, individual special reports which had been prepared and issued earlier were examined, numbered and included in the series they fit best.

In 1970, the decision was made to produce the Special Papers in Marine Science Series. This series is designed for larger, more complete monograph-type papers produced by scientists of the Institute. It includes several books and large monographs which were reviewed internally and externally prior to printing and release, and cover isopods, scyphozoans, algae, wetlands plants, monogeneid parasites and the oyster industry of Virginia.

The Translation Series was undertaken to make special translations of foreign papers, mostly Russian, which were made in the course of VIMS' research or teaching programs. The first was a book-length translation of a Russian parasitological book. This work was supported by funds from the National Institutes of Health and the American Institute of Biological Sciences. Several translations by outside specialists working in areas of interest to their colleagues in the Institute were also included. Most of the translations have been of subjects related to parasitism and fishes.

All of this series of VIMS (inhouse) publications were intended to present materials not likely to be presented in full elsewhere. This does not imply that the work reported in those publications was

of lesser quality than that in external publications. In fact, the contrary has often been the case!

Production numbers were limited to those calculated to meet demand, and all were distributed to institutions with which the Institute maintains exchanges and to interested colleagues. Major marine libraries and the Virginia State Library also received copies.

CHAPTER 3

SPECIAL REPORTS IN APPLIED MARINE SCIENCE AND OCEAN ENGINEERING

SPECIAL REPORTS IN APPLIED MARINE SCIENCE

AND OCEAN ENGINEERING

Number

- * 1. Andrews, Jay D. 1955. Reports on freshwater kill of oysters in Rappahannock River caused by Hurricanes Connie and Diane. 79 p.
- * 2. Hargis, William J., Jr. 1962. History and current status James River navigation project. 14 p.
- * 3. Hargis, William J., Jr. 1962. Current knowledge on the hydrography and biology of the estuarine portion of James River. 9 p.
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- * 7. Hargis, William J., Jr. 1966. Final report on Operation James River. An evaluation of the physical and biological effects of the proposed James River Navigation Project. 73 p.
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*Supply exhausted; available on microfiche for \$2.50 (\$3.50 outside the U.S.). Only available to libraries by special request through interlibrary loan.

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CHAPTER 7

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SECTION II

PRODUCTS OF RESEARCH AND SCHOLARSHIP

PART III

GRANT AND CONTRACT DOCUMENTS

INTRODUCTION TO CHAPTERS ON GRANT AND CONTRACT DOCUMENTS

(Chapters 8 and 9)

Institute scientists and administrators have sought and obtained outside financing in the form of grant and contract support for projects or programs of relevance to its missions and interests since the beginning in 1940. Their efforts have been productive. Nearly 40 million dollars have resulted. Jones (op. cit.) prepared a detailed analysis of grant and contract proposal activity and its financial implications through June of 1980. We have continued his tabulation in Chapter 9. All proposals prepared before June, 1983 and made available to us are included! Additionally, available final reports resulting from all grant and contract activity have been included in Chapter 8, immediately following.

As will be seen, grant and contract-supported research covers all facets of the Institute's chartered responsibilities. Institute personnel have done much toward paying their own way. Their efforts to do so continue, despite growing difficulties in securing outside funding -- and this aspect of their efforts and productivity deserves attention, evaluation and, in our opinion, praise.

CHAPTER 8

GRANT AND CONTRACT REPORTS

INTRODUCTION TO CHAPTER ON GRANT AND CONTRACT REPORTS

From its earliest days as the Virginia Fisheries Laboratory the Institute has been involved in research supported by outside funds. Early research grants were secured from such organizations as the American Philosophical Society (to cover studies of "certain physical and chemical conditions affecting the supply of available oxygen in the Bay water") and E. I. duPont de Nemours and Company. The duPont "subsidy" (as it was termed) supported a study of "conservation" of the ribbed mussel, Volselfa demissus, (= Geukensia demissa), allowed the addition of several members of the laboratory staff and helped develop the shellfish aspects of the brand new program. Both projects were of scientific as well as practical importance. The oxygen study added knowledge of a basic chemical phenomenon of the Bay related to pollution and the ribbed mussel study was related to a search for natural sources of Vitamin D to replace or augment supplies reduced due to interruptions of international commerce caused by World War II. Incidentally, the ribbed mussel study was probably the first shellfish aquaculture endeavour of the Institute, although early Institute workers were involved in attempts to rear larvae of the blue crab. Both were partially successful. A short-while later the American Academy of Arts and Sciences supplied a research grant for "special shellfish investigations."

The financial record appears incomplete for the early years of the Institute because from 1940, the year of its formal inception as the Virginia Fisheries Laboratory, to biennium 1954-56 only \$25,500.00 is shown as having resulted from grant and contract proposal activity. For a 15-year span this seems a small amount even for those times but it may be accurate. Judging from the records that are available, the first several grants were small - on the order of several hundreds of dollars each. Only the "subsidy" from duPont to support the mussel - Vitamin D, project, which spanned a three or four year period and supported several researchers and support people, seems to have been sizeable. It probably comprised the bulk of the \$25,500.00 mentioned above.

The record since 1954-56 is known to be reasonably complete. Though the grant and contract-supported activity amounted only to \$8,240.00 for that biennium the record shows regular increases each biennium until the late '70's. In the 1976-78 period it totalled around 12 million dollars.¹

¹Hargis, W. J., Jr. and E. Shea. 1979. The Virginia Institute of Marine Science, its growth, status and stature. A report on progress during the last 20 years. A special report of the Director's Office, February 1979.

Not only is it difficult to discover the financial amounts involved in the early years but specific titles and purposes are elusive also. Since 1954-55 one can find the amounts, titles and purposes of the projects more readily. In 1980 the Director, acting in response to a statement of need of an evaluation of its "relevancy" to the missions of the Institute from several sources including the Board of Visitors of the College of William and Mary requested an accounting and analysis of the grant and contract activity. The resulting report encompassed a detailed listing of the projects by year and by subject or mandate area.² Though it covered in detail only the most recent 15-year period preceding 1980 thoroughly, available earlier historical documents were reviewed also. This report documented clearly the fact that all grant and contract activity carried out by VIMS has been relevant to its code-based mandates and the missions listed therein and that most of it has been directed at resource and environmental problems of the Commonwealth. Some related to those of the region and Nation and some provided basic research, educational and advisory service opportunities as well, but all of it fell within our legal Charter.

Not only are the grant and contract activity portions of the very early financial records hazy but in certain instances specific project reports are lacking. None were available for inclusion in the list of the grant and contract reports constituting this chapter for the first fifteen year period.

Since 1960 an attempt has been made by the administration of the Institute to secure reports of the results of all official grant and contract activity conducted by Institute personnel. This effort has not been completely successful since approved projects are listed in the chapter on proposals for which no reports exist in Institute archives. Nonetheless, a sizeable number are available for presentation here. There are several reasons besides the absence of early reports in the archives and administration's inability to secure some of the recent ones why this list does not match approved proposals entirely. To understand one of those reasons one must

²Jones, J. C. 1980. A review of grant and contract expenditures as the Virginia Institute of Marine Science from July 1, 1965 through June 30, 1980. Revised. A special report of the Virginia Institute of Marine Science, November 1980.

recognize the distinction between grants and contracts that formerly applied.³

Most grant arrangements did not and some still do not require full-scale reports of project or program accomplishments. Usually letters, financial statements and copies of resulting published papers suffice. In the past acceptable results of research activities supported by most research grants were the formal publications derived from those studies and not full-fledged reports such as those most often required by contracts. Secondly, some grants, and a few contracts as well, were for purposes of buying equipment, upgrading facilities or initiating new programs or curricula or some similar purpose and no report, beyond statements of accomplishment of purpose and financial operations was required.

In contrast, most contract-supported programs usually require full-scale reports of the activities involved before the contract is deemed fulfilled. For some service contracts, like those for holding workshops or symposia, only a simple report signifying accomplishment is required. But for contract-supported research projects or programs full-scale reports are necessary.

Such reports are usually significant documentary efforts, detailing the research plans, purposes and goals, the work accomplished, the results and the conclusions. They are often precursors of other, more widely available publications, which present at least part of the results.

Some contract reports are published and issued without alteration in one of the VIMS' inhouse special report series or are made available "as is" through the distribution channels of the funding agency. Some, such as the Bureau of Land Management contract report entitled, "A Socio-Economic Environmental Baseline Summary for the South Atlantic Region Between Cape Hatteras and Cape Canaveral (in five volumes), are even offered for sale. From many one or more outside-published papers, or contributions, result. But publication of grant and contract research results in outside scientific journals is not always possible. Several reasons may apply. For one, a

³In the beginning most outside support was in the form of grants or "subsidies". The makers of those grants and "subsidies", (especially the former) apparently did not, normally require regular reporting of results.

Beginning around 1956 to 1960 performance contracts became common. In recent times performance contracts have predominated. Since most, recent performance contracts require specific reports of contract activity and results we need only review copies of those reports to determine the specific purpose of the contract and the nature, extent and results of the work accomplished thereunder.

considerable portion of the work reported in these documents has been directed toward a single purpose, a specific problem and/or a specific location and may represent research results which, by virtue of geographical, temporal or topical specificity or repetitiousness, is not inherently publishable in the formal channels in and of itself. For other projects not only is the purpose quite specific but the audience is also. To exemplify these points, few journals are interested in publishing the data resulting from the Chesapeake Bay Hydraulic Model Study, Operation James River, Fishery Surveys, meteorological observations, studies of resource or environmental regulation, water quality studies, gear-effects research, underutilized stocks research or other projects of local, topical or repetitious nature.

Additionally, much of the work of local nature was similar to work accomplished elsewhere (which also had to be done locally) and/or, was for specific problem-solving and/or managerial purposes and because of these factors may never be published in regular scientific journals.⁴ The documents are meaningful nevertheless as scientific contributions in and of themselves, and they are legitimate products of the Institute and its professionals!

Grant and contract-supported research has been of special value because of its applicability. Many of the reports are documents on which or from which significant action has been taken by the funding agency, or some other organizations. For example the Virginia Department of Highways, the State Health Department, the State Water Control Board, the Marine Resources Commission, the General Assembly, the Governor's Office, the Bureau of Land Management, the Army Corps of Engineers, the Navy, the National Aeronautics and Space Administration, the Environmental Protection Agency, and the National Marine Fisheries Service are among the many agencies which have paid for and used the reports obtained from research they funded as the basis of management action. Examples of application efforts are many, but a few will suffice. The several reports by Haven, Hargis and Kendall (1978) on the Oyster Industry of Virginia, paid for by VIMS and the Office of Sea Grant Programs, triggered a number of legislative activities attempting to take action to improve the oyster industry of the Commonwealth. The data resulting from the contract-based, Bay-wide hydrographic sampling program paid for by the Corps were used in the construction and verification of the Chesapeake

⁴Yet other factors have prevented or seriously delayed outside publication of results of grant and contract studies. Among them are 1) in the press to maintain personnel and facilities, principal investigators and managers had to rush on to other proposals and projects before formal publications could be extracted, and 2) at times outside pressures from such sources as natural disasters and emergencies, the General Assembly, the Governor's Office and elsewhere prevented appropriate follow up.

Bay Hydraulic Model, which has since been employed on several Chesapeake Bay problems. (These data have also aided understanding of the physical characteristics of the Bay.) The York River State Park project report for the Virginia Parks Department was instrumental in the design and development of the operational plan for that state-owned and operated park. The various studies for the Department of Highways have been used to plan highway and bridge routes, avoid extra costs and pay damage compensation. Much grant and contract research on the fisheries and fishery resources has been employed in developing management plan regulations for inshore and offshore fisheries through the National Marine Fisheries Service and working with the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fisheries Management Council. As a final example (of the many others available) some of our outside-supported work has been incorporated in the development of water quality criteria and standards by the State Water Control Board and the Federal Water Pollution Control Administration of the U.S. Department of Interior, precursor of the Environmental Protection Agency.

Not only have grant and contract-supported projects contributed to executive, legislative and industrial efforts to solve problems (and those of individual citizens) but they have also added materially to our knowledge of the processes and phenomena of the Chesapeake and the nearby Atlantic (Virginian Sea) and of other estuarine and coastal and oceanic waters. They have contributed to Science as well as society. Where known to us these are indicated by footnote in the listing below.

A review of the titles in this Grant and Contract Report inventory will serve to indicate the subject areas to which they were directed and their relevance as well. It is certain that a more exhaustive effort and listing would underscore the scientific and managerial significance of grant and contract activities and the resultant reports even more forcefully than is possible in this brief introduction.

Whether published as VIMS Special Scientific Reports (SSR's), VIMS Special Reports in Applied Marine Science and Ocean Engineering (SRAMSOE's), VIMS Data Reports, VIMS Research Contributions, some other more formal publications or distributed as is, these research reports are basic documents of the efforts and results of VIMS and its personnel. Most of the grant and contract supported research projects or programs detailed in the list required the expenditure of a great deal of effort, energy, time and money. The reports represent the first-stage tangible results of those expenditures! Grant and contract Reports are research products in every sense of the word.

The historical archival value of grant and contract reports is significant also because they are often the only truly complete and "unexpurgated" accounts of the research accomplished which will ever be made available. In these times printing costs are so high that editors and publishers do not normally welcome or make possible the

printing of complete reports of entire research projects with complete accounts of methods and materials, full data, tabular material, figures and records of failures as well as successes. Journal publications are often only condensed and abridged versions of the research being reported. Research reports are usually much more detailed and comprehensive than the formal publications derived from them, and for various reasons, constitute the only complete record of the efforts. Many contain data not available in any other documents. They are scientific assets.

Research, advisory services and educational activities accomplished with outside support constitute a large segment of all the work of the Institute and deserve appropriate recognition. It has required considerable energy, financial support and time, often involving significant investments of institutional personal and financial resources where "in-kind" or cash matches are required by the contracting agency. The reports relating to these activities constitute the results of those efforts, and to the extent that the projects and programs were planned, executed, analyzed and reported well, are valuable additions to the archives.

Further, reports of grant and contract activities, whether elaborate or simple, are the only informative record of grant and contract activities of the organization and the individuals involved. As such they should be preserved quite aside from their scientific and information archival value.

For these and other reasons we have attempted to discover, inventory and present in this listing all of the reports of the grant and contract activities of the Institute and its predecessor organization, the Virginia Fisheries Laboratory. As indicated above our efforts have been only partially successful since the collections of the Institute are incomplete.

We would hope a complete listing will be possible in the future and urge those having knowledge of missing documents to provide the necessary information to make this hope a reality. Copies of all reports should be regularly and faithfully supplied to, and/or acquired and accessioned by VIMS library. No historical record of VIMS activities and accomplishments can be complete without them all.

Despite the incomplete archival effort, over 340 separate report documents are listed. Considering the relevance of the topics to the mandate of the Institute and to the needs of the state, region and nation, this is a formidable record.

GRANT AND CONTRACT REPORTS

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CHAPTER 9

PROPOSALS FOR GRANT AND CONTRACT
PROJECTS OR PROGRAMS
[ARRANGED BY AUTHOR(S) BY YEARS]

INTRODUCTION TO CHAPTER ON
GRANT AND CONTRACT PROPOSALS

Proposals, which usually require time, as well as planning, thought and other creative effort - to say nothing of initiative and work, to develop and prepare are products of the specialists and administration which make up a research organization. Especially useful to the Institute, since they may yield an opportunity to expand the breadth or increase the depth of its efforts or augment its capabilities in personnel, supplies and equipment to do so, proposals also enhance the abilities of the organization to fulfill the various broad yet detailed aspects of its legal mandate. Without the attempt at producing attractive documents for outside support, which usually requires specialized knowledge and preliminary research and literature studies, such opportunities would not even be available. If they are successful the capabilities and potential for increased productivity in research or instruction or advisory services, and reknown (frequently all four) of the organizations are improved. Therefore, proposal documents are relevant and extremely useful products of the Institute.

That past grant and contract activity of the Institute has been relevant to the several legal missions of the Institute was clearly established and documented in the detailed analyses by J. Claiborne Jones. Further, as his 1980 report, entitled a Review of Grant and Contract Expenditures at the Virginia Institute of Marine Science from July 1, 1965 though June 30, 1980, documented thoroughly, Institute scientists and scientist/administrators had raised some 36 million dollars of "outside" money to augment the financial support available from the Commonwealth during the period. (Adding the matching funds involved in some of these programs and projects of about \$7 million the total for the 15-year period was \$43 million -- a healthy sum for research and education. More has been raised since. That the documents, the propoals, which raised these funds have been valuable to the Commonwealth, the Institute, its scientists, purposes, goals, and programs cannot be questioned.

For a long period our success rate in getting proposals approved was quite high, over 65-70%. Since success at securing grants and contract support often depends upon quantity as well as quality and upon exposure, persistence and the creation or seizing of interest and opportunity as well as reputation, reknown and also persistence, this is a noteworthy tribute to the industry and reputation of our personnel and Institution.

Maintenance of all proposal documents in Institute archives is a useful project because they exemplify the efforts which have been successful as well as the features. Even the unsuccessful proposals can be useful products in that they indicate what was not saleable at the time. Further, if they were good to begin with they may be

useable even at a later date, in a different climate or to a different customer.

Aside from their actual or potential yield in increased support or programmatic opportunity they are the only documentation or indicators available of individual and collective efforts to secure additional support -- successful or not.

Frequently sponsors, evaluators or critics of the Institute (or any other public - supported research organization) wish to know what sorts of effort have been made to secure outside support to augment local funds. At other times they may wish to know how successful or relevant those efforts have been. Critics may expect Institute, or College or University to justify utilization of dependence upon or investment of Institute resources as match for outside support. For example, a specific request from one of the investigative units of the General Assembly and the Executive Budget Office of the Commonwealth through the Board of Visitors of the College in 1980 caused the Dean/Director to call forth the Jones report mentioned above. Without the relevant proposals, or listings or other records thereof and/or the grant reports such documentation would have been impossible to provide. This could have had serious consequences for the Institute and its financial future. Since reports of grant and contract activities will be necessary in the future it is especially important that records of proposals be kept. Because nothing can substitute for the actual proposal documents themselves as archival, historical and resource documents, they should be routinely collected and archived.

Our purpose in preparing this review and analysis of the products and productivity of the Institute and its personnel has been to provide as complete a record of the written examples as possible. This chapter on the proposals, which augments the analyses of Jones, provides as complete a listing or inventory of grant and contract proposals as we have been able to compile and prepare from the central archives and other records available to us. If some are missing we would hope that persons having knowledge of them will bring them to our attention and provide the documents to the central archives in the library.

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1940	C.L. Newcombe	Studies of Phosphites variations in Chesapeake Bay	900.00	APS	A
1944-45	C.L. Newcombe	Biological and ecological study of ribbed mussels	24,000.00	DuPont	A
1944	C.L. Newcombe	A physical, chemical, and biological investigation of the layer of low oxygen content in the deeper waters of Chesapeake Bay	600.00	APS	A
1951	J.L. McHugh	Shad investigations	No set amount	Am. Visc.	A
			All expenses, equipment and salaries of field investigators.		
1955	J.D. Andrews	Hampton Roads Bridge Tunnel	No set amount.	DOH	A
			All expenses, equipment and salaries of field investigators.		
1955-56	W.J. Hargis, Jr., J.D. Andrews and J.L. McHugh	A study of oyster drills in Chesapeake Bay	8,240.00	USFWS	A
1956-57	W.J. Hargis, Jr., J.D. Andrews and J.L. McHugh	A study of oyster drills in Chesapeake Bay	7,760.00	USFWS	A

* See table of agency abbreviations at the end of this chapter.

**A = accepted, R = rejected, P = pending, W = withdrawn

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1957-58	W.J. Hargis, Jr., J.D. Andrews and J.L. McHugh	A study of oyster drills in Chesapeake Bay	8,000.00	USFWS	A
1958-59	R. Edge and A. Tubman	Pilot scale oyster processing study	2,645.00	USFWS/ USFDA	A
1958-59	W.J. Hargis, Jr.	Host specificity of monogenetic trematodes	11,599.00	NIH	A
1958-59	W.J. Hargis, Jr., J.D. Andrews and J.L. McHugh	A study of oyster drills in Chesapeake Bay	12,190.00	USFWS	A
1959	R.S. Bailey	Research participation for college teachers program	16,030.00	NSF	A
1959	R.S. Bailey	Undergraduate student participation program	8,250.00	NSF	A
1959-60	R. Edge and A. Tubman	Pilot scale oyster processing study	3,550.00	USFWS/ USFDA	A
1959-60	W.J. Hargis, Jr.	Host specificity of monogenetic trematodes	74,411.00	NIH	A
1959-60	W.J. Hargis, Jr.	A study of ecto- and endo-parasites of antarctic fishes	10,435.00	NSF	A
1959-60	W.J. Hargis, Jr.	A study of oyster drills in Chesapeake Bay	10,000.00	USFWS	A
1960-61	R.S. Bailey	Research Participation for college teachers program	21,525.00	NSF	A
1960	R.S. Bailey	Undergraduate student participation program	8,055.00	NSF	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1960	M.L. Brehmer	Acquisition of equipment in nuclear technology as applied to the life sciences	7,520.00	AEC	A
1960	M.L. Brehmer	A study of toxicity of pesticides to selected marine invertebrates	15,000.00	USFWS	R
1960-61	R. Edge and A. Tubman	Pilot scale oyster processing study	800.00	USFWS	A
1960-61	W.J. Hargis, Jr.	Host specificity of monogenetic trematodes	7,573.00	NIH	A
1960-61	W.J. Hargis, Jr.	A study of parasites of antarctic vertebrates and invertebrates	29,062.00	NSF	A
1961	R.S. Bailey	Undergraduate student participation program	8,000.00	NSF	A
1961	R.S. Bailey	Research participation for college teachers program	18,810.00	NSF	A
1961-62	M.L. Brehmer	N.S. Savannah surveillance program	Co-op program No charge	USPHS	A
1961-62	M.L. Brehmer	Studies to determine the effects of dredge spoil disposal on marine life in connection with dredging the Baltimore ship channel	15,000.00	COE	A
1961	M.L. Brehmer and D.S. Haven	The physiological response of oysters	22,950.00	Ches. Corp.	A
1961-62	W.J. Hargis, Jr.	Host specificity of monogenetic trematodes	11,907.00	NIH	A
1961	W.J. Hargis, Jr.	Microbiology research building	27,345.00	NIH	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1961	W.J. Hargis, Jr.	Proposal for support of new major oceanographic research vessel	5,495,100.00	NSF	R
1961-62	W.J. Hargis, Jr.	A study of parasites of antarctic vertebrates and invertebrates	11,370.00	NSF	A
1961	D.S. Haven and M.L. Brehmer	Fecal deposition of filter feeding organisms as a process in concentrating suspended radioactive wastes into bottom deposits	20,000.00	AEC	A
1961	E.B. Joseph	A biological and hydrographic study of spawning grounds in Atlantic waters adjacent to Chesapeake Bay	31,475.00	ONR	R
1961	G. Moskovits	Attached bacterial flora of estuarine phytoplankton	27,023.00	HEW	R
1961-62	G. Moskovits	Attached bacterial flora of estuarine phytoplankton	39,919.00	NIH	R
1962	R.S. Bailey	Research participation for college teachers	25,995.00	NSF	A
1962	R.S. Bailey	Undergraduate student participation program	8,175.00	NSF	A
1962-63	M.L. Brehmer	Effects of thermal effluents on marine organisms	11,711.00	NIH	A
1962-63	M.L. Brehmer	Studies to determine effects of dredge spoil disposal on marine life, etc.	10,000.00	COE	A
1962	M.L. Brehmer	A study of hydrography and biology of the Atlantic Ocean near Virginia Beach, Virginia	6,000.00	HRSD	A
1962	M.L. Brehmer	A study of marine flora and fauna	17,035.00	USN	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1962-63	M.L. Brehmer	Toxicity of industrial wastes to marine animals	14,175.00	NIH	A
1962	W.J. Hargis, Jr.	Cooperative menhaden program	2,400.00	USFWS	A
1962-63	W.J. Hargis, Jr.	Host specificity of monogenetic trematodes	10,079.00	NIH	A
1962	W.J. Hargis, Jr.	Operating expenses for one month and equipment for R/V Langley	7,185.00	NSF	A
1962	W.J. Hargis, Jr.	A study of parasites of Antarctic vertebrates and invertebrates	9,775.00	NSF	A
1962	W.J. Hargis, Jr.	A study of parasites of Antarctic vertebrates and invertebrates	13,200.00	NSF	A
1962	W.J. Hargis, Jr.	A study of parasites of Antarctic vertebrates and invertebrates	7,900.00	NSF	A
1962	W.J. Hargis, Jr.	A study of parasites of Antarctic vertebrates and invertebrates	1,884.00	NSF	A
1962	D.S. Haven and M.L. Brehmer	Concentration of suspended radioactive wastes by filter feeding organisms	20,000.00	AEC	A
1962-63	E.B. Joseph	A proposal for experimental studies of pelagic embryos and larvae of marine fishes	8,100.00	NSF	A
1962-63	B.C. Patten	A proposal for the study of community organization and energy relationships in plankton	17,839.00	ONR	A
1962	J.L. Wood and W.J. Hargis, Jr.	Application for Bureau of Commercial Fisheries Educational Grant	10,000.00	BCF	R

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1962	J.L. Wood and W.J. Hargis, Jr.	Application for Bureau of Commercial Fisheries Educational Grants	5,000.00	BCF	R
1963	J.D. Andrews and W.J. Hargis, Jr.	Study of upper York River spatfall	1,392.00	YRO	A
1963	R.S. Bailey	Cooperative college-school science program	9,295.00	NSF	A
1963	R.S. Bailey	Research participation for college teachers program	22,430.00	NSF	A
1963	R.S. Bailey	Undergraduate research participation program	14,000.00	NSF	A
1963	M.L. Brehmer	Effects of thermal effluents on marine organisms	9,800.00	NIH	A
1963-64	M.L. Brehmer	Studies to determine effects of dredge spoil disposal on marine life, etc.	12,000.00	COE	A
1963-64	M.L. Brehmer	Toxicity of industrial wastes to marine life	14,400.00	NIH	A
1963	M.L. Brehmer and R.V. Davis	A study of artificial enrichment of marine waters	56,000.00	HEW	R
1963	C.D. Cone	Albatross soaring flight in ocean shear layers	3,900.00	NSF	A
1963-64	W.J. Hargis, Jr.	Host specificity of monogenetic trematodes	9,418.00	NIH	A
1963-64	W.J. Hargis, Jr.	A study of certain parasites of Antarctic vertebrates and invertebrates	11,200.00	NSF	A
1963	W.J. Hargis, Jr.	A study of monogenetic and digenetic trematodes of middle continental shelf off W. Africa	1,400.00	NSF	A

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1963	D.S. Haven and M.L. Brehmer	Study of concentration of radioactive wastes into bottom deposits	20,000.00	AEC	A
1963-64	E.B. Joseph	A proposal for experimental studies of the pelagic embryos and larvae of marine fishes	4,500.00	NSF	A
1964	J.D. Andrews and J.L. Wood	Development of disease resistant strain of oyster PL, 87-580	Fed. 37,000.00 State 18,471.00	BCF	A
1964	R.S. Bailey	Cooperative college school science program	9,130.00	NSF	A
1964	R.S. Bailey	Research participation college teachers	32,430.00	NSF	A
1964	R.S. Bailey	Undergraduate science education program	14,000.00	NSF	A
1964-65	M.L. Brehmer	A study of fouling organisms, marine flora and fauna	8,700.00	USN	A
1964-65	M.L. Brehmer	Toxicity of industrial wastes to marine organisms	16,192.00	NIH	A
1964-67	W.J. Hargis, Jr.	Monogenetic trematodes of the Indian Ocean area, their systematics, ecology and phylogeny	38,277.00	NSF	R
1964-65	W.J. Hargis, Jr.	A study of certain parasites of Antarctic vertebrates and invertebrates	14,300.00	NSF	A
1964	W.J. Hargis, Jr.	A study to determine effects of dredging the channel in James River, Virginia	300,000.00	VCF	A
1964	W.J. Hargis, Jr. and J.A. Kerwin	Analysis and tabulation of data on Mexican waterfowl food habits	425.00	USFWS	A

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1964-65	W.J. Hargis, Jr. and J.L. Wood	Educational grant in biological oceanography or fisheries biology- E. Warinner, recipient	4,877.00	BCF	A
1964-65	W.J. Hargis, Jr. and J.L. Wood	Educational grant in biological oceanography or fisheries biology	10,000.00	BCF	R
1964-65	P.W. Harrison and M.M. Nichols	Beach erosion study to include near shore processes and response elements at Virginia Beach, Virginia	30,000.00	COE	A
1964-65	R.R. Hathaway	Steroid metabolism in semen (Dr. Hathaway resigned and this grant went with him)	14,604.00	USPHS	A
1964	D.S. Haven	Concentration of suspended radioactive waste into bottom deposits	20,000.00	AEC	A
1964-65	E.B. Joseph	A proposal for experimental studies of the pelagic embryos	4,000.00	NSF	A
1964	G. Moskovits	Seasonal distribution of <u>Pseudomonas</u> in an estuary	12,539.00	HEW	R
1964-65	M.M. Nichols	Beach erosion study to include near shore processes and response elements at Virginia Beach, Virginia	15,000.00	COE	A
1964-65	M.L. Wass	Systematic studies of Paguridae (<u>Crustacia decapoda</u>)	10,000.00	NSF	A
1964	J.Z. Wilczynski	Sex behaviour and sex determination in the snail <u>Credipula fornicata</u> (as compared with some other protandrous hermaphrodites)	68,632.00	NSF	R
1965	R.S. Bailey	Cooperative college-school science program	8,245.00	NSF	A

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1965	R.S. Bailey	Research participation program for college teachers	19,740.00	NSF	A
1965	R.S. Bailey	Undergraduate science education program	14,000.00	NSF	A
1965-66	M.L. Brehmer	Estuarine monitoring program	9,900.00	USFWS	A
1965-66	M.L. Brehmer	Nutrient and phytoplankton distribution James River estuary	10,000.00	HEW	A
1965-66	M.L. Brehmer	Toxicity of industrial wastes to marine animals	13,944.00	HEW	A
1965-67	C.D. Cone	Aerodynamics of oscillating air foils	18,900.00	NSF	A
1965-66	W.J. Davis	Investigation of potential for expansion of industrial fishery of the Mid-Atlantic Bight industrial fish project	49,852.00	BCF	A
1965	W.J. Hargis, Jr.	Host specificity of monogenetic trematodes	10,309.00	NIH	R
1965-66	W.J. Hargis, Jr.	Investigation of oyster larvae and spat and certain important environmental factors in an horizontally stratified estuary	Fed. 105,600.00 State 35,300.00 VIMS 56,800.00 VCF 84,000.00	BCF	A
1965-68	W.J. Hargis, Jr.	Monogenetic trematodes of the Indian Ocean area	39,421.00	NSF	R
1965-67	W.J. Hargis, Jr.	A study of certain parasites of Antarctic vertebrates and invertebrates	33,200.00	NSF	A
1965-66	D.S. Haven	Concentration of suspended radioactive wastes into bottom deposits	16,915.00	AEC	A

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1965-66	D.S. Haven	Study of nutritive value of lignins and wood sugar on oysters	4,102.00	YRO	A
1965-66	E.B. Joseph and W.A. Van Engel	Characterization of coastal and estuarine fish nursery grounds	Fed. 22,575.00 State 7,525.00	BCF	A
1965	W.L. Mengebier	Research in respiratory enzyme systems of <u>Crassostrea virginica</u>	1,611.00	NSF	A
1965	J.L. Wood	Electrophysical studies of gastropods	4,000.00	NIH/NSF	R
1965-66	J.L. Wood and J.D. Andrews	Production of disease resistant oysters	Fed. 33,918.00 State 16,947.00	BCF	A
1965-66	J.L. Wood and W.J. Hargis, Jr.	Educational grant in biological oceanography or fishery biology	4,982.00	USFWS	A
1965	J.L. Wood and W.J. Hargis, Jr.	Educational grant in biological oceanography or fisheries biology (J. Howard Kerby)	10,000.00	BCF/UVA	A
1965	J.L. Wood and W. J. Hargis, Jr.	Educational grant in biological oceanography or fisheries biology	10,000.00	BCF/W&M	R
1965-66	R.A. Woodmansee	Daily vertical migration of planktonic copepods (Dr. Woodmansee resigned and the grant was rescinded)	22,300.00	NSF	A
1966-67	J.D. Andrews	Production of disease-resistant oysters	Fed. 35,202.00 State 17,602.00	BCF	A
1966	R.S. Bailey	Cooperative college-school science program	8,500.00	NSF	A
1966	R.S. Bailey	Research participation for college teachers	13,160.00	NSF	A

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1966	R.S. Bailey	Undergraduate science education program	14,000.00	NSF	A
1966-67	M.L. Brehmer	Estuarine monitoring program	9,994.00	USFWS	A
1966-67	M.L. Brehmer	Nutrient and phytoplankton distribution Nansemond River estuary	10,000.00	FWPCA	A
1966-67	W.J. Davis	Investigation of potential for expansion of the industrial fishery of the Mid-Atlantic Bight	Fed. 69,375.00 State 23,125.00	BCF	A
1966-67	D. Gibson	NSF Traineeship	2,500.00	W&M/NIH	A
1966	W.J. Hargis, Jr.	Governor's graduate incentive fund proposal program of establishment of a major in physical oceanography (Basic and/or applied) Submitted through W&M	46,335.00	OSTS	R
1966-67	W.J. Hargis, Jr.	Library improvement and assistance grant	10,000.00	ODF	A
1966	W.J. Hargis, Jr.	A program of technical service for marine research based industry and managers of marine resources under PL 89-182 (Jointly with W&M)	47,489.00	OSTS	A
1966-68	W.J. Hargis, Jr.	A study of certain parasites of Palmer Peninsula area	53,413.00	NSF	A
1966	D.S. Haven	Concentration of suspended radioactive wastes into bottom deposits	18,149.00	AEC	A
1966-67	E.B. Joseph and W.A. Van Engel	The characterization of coastal and estuarine fish nursery grounds	Fed. 13,106.25 State 39,318.75	BCF	A
1966-67	M.P. Lynch	Educational fellowship	5,600.00	W&M/NIH	A

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1966	M.M. Nichols	Study to determine paleosalinity of Chesapeake Bay waters	1,420.00	UVA/NIH/NSF	A
1966	F.O. Perkins	Mitochondrial morphogenesis in <u>Dermoscystidium marinum</u>	3,970.00	UVA/NIH/NSF	A
1966-67	M.H. Roberts	National Science Foundation Fellowship	3,100.00	W&M/NIH	A
1966-67	K.L. Webb	Marine invertebrates	3,995.00	UVA/NIH/NSF	A
1966	K.L. Webb	Turnover time of dissolved free amino acids in estuarine waters	5,000.00	NSF/NIH	R
1967-68	J.D. Andrews	Production of disease-resistant oysters	Fed. 45,243.00 State 15,082.00	BCF	A
1967	R.S. Bailey	Cooperative college-school science program	18,570.00	NSF	A
1967	R.S. Bailey	Research Participation teachers program	13,360.00	NSF	A
1967	R.S. Bailey	Undergraduate research participation program	14,000.00	NSF	A
1967-70	M.L. Brehmer	Biological and chemical studies of Virginia's estuaries	Fed. 42,990.00 State 59,964.00	OWRR	A
1967-68	M.L. Brehmer	Estuarine monitoring program (Amendment 1)	4,640.00	USFWS	A
1967-68	M.L. Brehmer	Evaluation of dredge spoil disposal progress off South Virginia Beach	1,620.00	COE	A
1967	W.J. Davis	Biology and utilization of anadromous alosids	Fed. 53,000.00 State 53,000.00	BCF	A
1967-68	W.J. Davis	Biology and utilization of anadromous alosids	Fed. 80,000.00 State 80,000.00	BCF	A

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1967-70	M.M. Nichols and Ellison	Energy flow in populations of benthonic foraminifera	66,513.00	NSF/API	R
1967-68	W.J. Hargis, Jr.	Project Themis proposal	250,000.00	DOD	R
1967-70	W.J. Hargis, Jr.	Project Themis proposal	250,000.00	DOD	R
1967-68	W.J. Hargis, Jr.	Technical services for marine resources based industry (Phase 1)	24,041.00	OSTS	A
1967-69	W.J. Hargis, Jr.	Utilization of physical and mathematical models in marine water resources research and management	Fed. 34,900.00 State 25,375.00	OWRR	A
1967	D.S. Haven	Concentration of suspended radioactive wastes into bottom deposits	21,995.00	AEC	A
1967	D.S. Haven	Diquat shellfish residue studies	2,500.00	Chevron	A
1967-68	D.S. Haven	Study of hard and soft clam resources of Virginia	Fed. 13,200.00 State 13,200.00	DOI	A
1967	E.B. Joseph	Estimation of parameters of striped bass populations and description of the fishery of the lower Chesapeake Bay	Fed. 35,000.00	BSFW	A
1967-68	E.B. Joseph	Estimation of parameters of striped bass populations and description of the fishery of lower Chesapeake Bay	Fed. 60,000.00 State 60,000.00	BSFW	A
1967-68	M.M. Nichols	Accumulation of organic detritus in a tidal lagoon system	32,488.00	OWRR	R
1967-69	M.M. Nichols	Dynamics of sediment movement through the fresh-saltwater gradient zone of an estuary	80,288.00	OWRR	R

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1967-68	M.M. Nichols	Submergence and salinity intrusion in the Chesapeake region	3,500.00	NSF/UVA	A
1967	S. Riggs and W.J. Hargis, Jr.	Shallow submarine scarps and terraces on the continental shelf off North Carolina	28,280.00	NSF	R
1967-69	K.L. Webb	Marine invertebrates and seawater: flux of dissolved free amino acids	38,000.00	NSF	A
1967	J.L. Wood and W.J. Hargis, Jr.	Proposal for a marine research and physiology building	865,019.00	NSF	R
1968-69	J.D. Andrews	Production of disease-resistant oysters	Fed. 48,000.00 State 16,000.00	USFWS	A
1968	R.S. Bailey	Research participation for college teachers	13,360.00	NSF	A
1968	R.S. Bailey	Undergraduate research participation program	14,000.00	NSF	A
1968-72	M.L. Brehmer	Ecological study of James River	80,000.00	VEPCO	A
1968-70	M.L. Brehmer	Environmental study of Hampton Roads	9,800.00	HRSD	A
1968	M.L. Brehmer	Evaluation of dredge spoil disposal progress off South Virginia Beach (Amendment 1)	598.00	COE	A
1968-71	M.L. Brehmer	Possible role of marshes in preventing eutrophication of estuaries	Fed. 86,200.00 State 86,200.00	OWRR	R
1968	M.L. Brehmer	Study of currents and sediments off Cape Henry, Virginia	5,000.00	TCC	A

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1968-69	M.L. Brehmer	A study of near shore currents off Virginia Beach	9,200.00	COE	A
1968-69	W.J. Davis	Biology and utilization of anadromous alosids	160,000.00	BCF	A
1968-69	W.J. Davis	Exploration for schooling pelagic fishes	95,000.00	BCF	A
1968-69	J. Davis	Investigation of potential for expansion of the industrial fishery of Mid-Atlantic Bight	34,667.00	BCF	A
1968-69	W.J. Hargis, Jr.	Parasites of antarctic vertebrates and invertebrates of Palmer Peninsula area	23,600.00	NSF	A
1968-69	W.J. Hargis, Jr.	Technical services for marine resources based industries (Phase 2)	26,286.00	OSIS	A
1968-69	W.J. Hargis, Jr.	Utilization of physical and mathematical models in marine water resources research and management	Continuation No Funds Involved	OWRR	A
1968-69	D.S. Haven	An ecological study of jellyfish	Fed. 19,246.66 State 19,246.66	DOI	A
1968-69	D.S. Haven	Study of hard and soft clam resources of Virginia	Fed. 25,000.00 State 25,000.00	BCF	A
1968-69	E.B. Joseph	Estimation of parameters of striped bass populations and description of the fishery of lower Chesapeake Bay	Fed. 45,000.00 State 45,000.00	BSFW	A
1968-71	W.G. MacIntyre	Sea water chemical studies at high pressure (Project Themis)	W&M 194,000.00 DOD 118,800.00	W&M/DOD	R

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1968-70	M.M. Nichols	Study of river-ocean processes from space photography	4,307.00	UVA/NASA	A
1968-69	W.A. VanEngel	Blue crab study in Chesapeake Bay	25,000.00	BCF	A
1968-70	W.A. VanEngel	Blue crab study in Chesapeake Bay	88,000.00	BCF	R
1968	K.L. Webb	Significance of dissolved organic carbon in estuarine waters	5,044.00	UVA/NASA	R
1968-71	L.R. Wood	Experimental biogeography of marine animals	151,816.00	NSF	R
1968-69	J.L. Wood and W.J. Hargis, Jr.	Improved management and utilization of estuarine resources (Sea Grant)	99,600.00	NSF	A
1968	J.L. Wood and W.J. Hargis, Jr.	Proposal for marine science building	199,753.00	HEW	A***
1969-70	J.D. Andrews	Production of disease resistant oysters	60,000.00	BCF	A
1969	R.S. Bailey	Research participation for college teachers	13,000.00	NSF	A
1969	R.S. Bailey	Undergraduate research participation	12,960.00	NSF	A
1969-71	D.F. Boesch	Fellowship	10,400.00	FWQA	A
1969	M.L. Brehmer	Estuarine monitoring program	9,996.00	BCF	A
1969-70	M.L. Brehmer	Nearshore hydrography off Dam Neck, Virginia	5,000.00	HRSD	A

***HEW accepted the proposal. Governor Godwin would not let VIMS accept funds because grant required payment of union wages. Therefore Virginia rejected the money despite our successful proposal.

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1969	M.L. Brehmer	Study of the effects of introduction of thermal effluents into a temperate zone estuary	205,757.00	FWPCA	R
1969-70	W.J. Davis	Biology and utilization of anadromous alosids	174,165.00	BCF	A
1969-70	W.J. Hargis, Jr.	Dye study of bifurcated estuary	42,000.00	Ch. Co.	A
1969	W.J. Hargis, Jr.	Utilization of physical and mathematical models in marine water resources research and management	Fed. 15,225.00 State 6,469.00	OWRR	A
1969-70	W.J. Hargis, Jr. and P.V. Hyer	Hydrographic study of the York River Estuary	45,000.00	DWR/SWCB	A
1969-70	W.P. Harrison	Investigation of surface films--Chesapeake Bay entrance	57,962.00	FWPCA	A
1969-70	W.P. Harrison	Investigation of water table in tidal beach	27,683.00	ONR	A
1969-70	M.L. Brehmer	Nearshore hydrography off Dam Neck, Virginia	5,000.00	HRSD	A
1969-70	W. Harrison	Storm wave and storm surge modification of Virginia's ocean coast	19,954.00	COE	A
1969-70	D.S. Haven	Study of hard and soft clam resources of Virginia	Fed. 26,250.00 State 26,250.00	BCF	A
1969-70	E.B. Joseph	Estimation of parameters of striped bass populations and description of the fishery	Fed. 60,000.00 State 60,000.00	BSFW	A
1969-70	E.B. Joseph	A multidisciplinary study of the scyphozoan jellyfishes of Chesapeake Bay	Fed. 50,000.00 State 50,000.00	BCF	A

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1969-72	W.G. MacIntyre	Investigation of surface films - Chesapeake Bay entrance	No additional funds	FWPCA	A
1969-71	M.M. Nichols	Development of turbidity maximum in a coastal plain estuary	52,995.00	COE	A
1969-71	F.O. Perkins	Ultrastructural studies of bacteria growth in aqueous and semi-solid media with emphasis on intercellular spatial orientation in uniform and zero gravity fields	Fed. 35,873.00 State 1,900.00	NASA	A
1969	K.L. Webb	Estuarine ultraplankton and their relationship to dissolved organic matters	4,746.00	UVA/NSF/NIH	R
1969	K.L. Webb	Significance of humic type substances in the estuarine environment	4,552.00	UVA/NSF/NIH	R
1970-71	J.D. Andrews	Production of disease-resistant oysters	Fed. 17,816.00 State 5,934.00	BCF	A
1970	R.S. Bailey	Research participation for college teachers	5,487.00	NSF	A
1970	R.S. Bailey	Undergraduate research participation program	16,338.00	NSF	A
1970-71	M.L. Brehmer	Dynamics and biological significance of zinc in coastal waters, sediment and shellfish	56,438.00	FWPCA	R
1970-71	M.L. Brehmer	Enviromental study of Hampton Roads	9,800.00	HRSD	A
1970	M.L. Brehmer	A study of effects of thermal shock and chlorination on estuarine plankton		AEC	R

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1970	M.L. Brehmer	Survey-Department of Highways		5,000.00	DOH	A
1970-72	R.J. Byrne	Investigation of the water table in a tidal beach	Fed.	2,500.00	ONR	A
1970-71	R.J. Byrne	Suspended sediment transport processes in marsh channels		1,950.00	UVA	R
1970-71	W.J. Davis	Biology and management of river herring and shad	Fed. State	85,000.00 85,000.00	BCF	A
1970-71	G.C. Grant	Feasibility of increasing striped bass population by stocking in under-utilized nursery grounds	State Fed.	80,000.00 80,000.00	BSFW	A
1970-71	W.J. Hargis, Jr.	Chesapeake Bay Research Planning		44,440.00	NSF	A
1970	W.J. Hargis, Jr.	Establishing legal ownership and boundaries for the islands and wetlands of the Commonwealth			COR	R
1970	W.J. Hargis, Jr.	Inventory and systems of lower Chesapeake Bay, adjacent continental shelf waters and littoral reaches of the Eastern Shore and the Virginia Beaches and outer banks		44,969.00	NSF	R
1970	W.J. Hargis, Jr.	Operation Eastern Shore-interdisciplinary studies of Eastern Shore, its marine environments and resources and present and future uses		481,645.00	NSF(IRRPOS)	R
1970	W.J. Hargis, Jr.	Study of some effects of the introduction of thermal effluents into a temperate zone estuary			AEC	R
1970-71	W.J. Hargis, Jr. and C.S. Fang	Water quality model study of the Rappahannock River	VIMS	25,000.00	CSA/SWCB	A

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1970-71	W.J. Hargis, Jr. and E.P. Ruzecki	Hydrographic studies of the Rappahannock River and Mobjack Bay (Chesapeake Bay Study)	134,349.00	COE	A
1970-71	W.P. Harrison	Hog Point thermal survey (waste heat discharge)	55,000.00	AEC	A
1970-71	W.P. Harrison	Investigation of the Water Table in a tidal beach	27,683.00	ONR	A
1970-71	W.P. Harrison	Storm wave and storm surge modification of Virginia's ocean coast	25,534.00	COE	A
1970-71	W.P. Harrison	York River study	57,000.00	VEPCO	A
1970-72	W.P. Harrison and W.G. MacIntyre	Investigation of surface films-Chesapeake Bay entrance	Fed. 59,307.00 State 15,936.00	FWPCA	A
1970-71	D.S. Haven	An investigation into commercial aspects of the hard clam fishery and development of commercial gear	Fed. 28,648.00 State 28,648.00	NMFS	A
1970-71	E.B. Joseph	A multidisciplinary study of the scyphozoan jellyfishes of lower Chesapeake Bay	Fed. 69,533.00 State 69,533.00	NMFS	A
1970	E.B. Joseph and J.C. Munday	Conceptual study and requirements for an oceanographic satellite	25,316.00	NASA	A
1970-71	F.Y. Kazama	Morphological and physiological response of <u>Thraustochtrium motivum</u> to various salinities and Na ⁺ K ⁺ ratios	4,000.00	UVA	R
1970-71	W.G. MacIntyre	Kinetics of solubilization of clay minerals	2,625.00	UVA	R
1970-71	J.C. Munday, Jr.	Analysis and evaluation of remote sensor data for marine science applications	54,783.00	NASA	A

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1970	J.A. Musick	Benthic fish communities in the Chesapeake Bight	7,016.00	UVA	R
1970-71	M.M. Nichols	Environmental application of remote sensing methods to coastal zone and land use and water resources management	10,156.00	UVA/USGS	A
1970-71	F.O. Perkins	Studies on the biological control of the commercial oyster pathogen, <u>Dermocystidium marinum</u>	42,588.43	NSF	R
1970-71	F.O. Perkins	Studies of the effects of zinc on gametogenesis in oysters	4,200.00	UVA	R
1970-71	F.O. Perkins	Studies of marine coccoid fungi and protozoa	91,409.00	USPHS	R
1970-71	K.L. Webb	Significance of humic-type substance in the estuarine environment	4,552.00	UVA	R
1970-71	J.L. Wood and W.J. Hargis, Jr.	Improved management and utilization of estuarine resources (Sea Grant)	Fed. 200,500.00 State 101,652.00	NSF	A
1970-72	P.L. Zubkoff	Neutron activation analysis of Chesapeake Bay sediments	4,550.00	UVA	R
1971	R.S. Bailey	Undergraduate research participation program	18,632.00	NSF	R
1971	M.E. Bender	Chronic effects of chlorinated biphenyls on the striped blenny <u>Chasmodes bosquianus</u>	Fed. 30,705.43 State 7,729.07	FWPCA	R
1971-73	M.E. Bender	Function of the marshes in reducing eutrophication of estuaries of the Middle Atlantic Region	Fed. 50,000.00 State 50,600.00	OWRR	A

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1971	M.E. Bender	An investigation to determine the effects of oil spilled in eastern coastal plain estuaries	197,185.00	EPA	R
1971	M.E. Bender	Investigation to determine the fate and effects of oil spilled in eastern plain estuaries (Joint project with NASA-Langley)	196,353.00	EPA	R
1971-72	M.E. Bender	James River dredge spoil study	14,000.00	COE	A
1971-72	M.E. Bender	Near Shore hydrography off Dam Neck, Va.	No additional funds	HRSD	A
1971	M.E. Bender	Study of dispersion patterns on south side of Elizabeth River	2,000.00	HRSD	A
1971-73	M.E. Bender and R.J. Huggett	Mechanisms of metal transport in the estuarine environment	Fed. 76,845.28 State 33,124.32	NSF	R
1971-74	M.E. Bender and M.L. Wass	An evaluation of the effects of flow augmentation on the ecology of three Virginia waters	Fed. 110,890.00 State 30,144.00	OWRR	R
1971-72	J.D. Boon, III	Study of suspended sediment transport processes in marsh channels	2,900.00	NSF	A
1971-72	M.L. Brehmer	Estuarine monitoring program	Fed. 9,996.00 State 1,570.00	NOAA/NMFS	A
1971-72	R.J. Byrne	Response characteristics of tidal inlets (the effect of hydraulic forces and sediment supply)	Fed. 36,201.00 State 8,200.00	ONR	A
1971-72	R.J. Byrne and C.S. Fang	Numerical modeling of tidal flows in the marsh channel-lagoon-inlet system	Fed. 49,542.00 State 78,627.00	OWRR	R
1971-72	W.J. Davis	Biology and management of river herring and shad	Fed. 90,000.00 State 90,000.00	NMFS	A

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1971-72	H.H. Gordon and R.J. Byrne	Analysis and evaluation of remote sensor data for marine science applications	38,999.00	NASA	A
1971-72	G.C. Grant	Feasibility of increasing striped bass population by stocking of underutilized nursery grounds	Fed. 80,000.00 State 80,000.00	BSFW	A
1971-72	W.J. Hargis, Jr.	The Chesapeake Bay (RANN)	398,200.00	NSF	A
1971	W.J. Hargis, Jr.	Detailing the technical information base on environmental quality of the James River (Task Order Number 1)	Fed. 20,350.00	NASA	A
1971-73	W.J. Hargis, Jr.	Eastern Shore economic study of seafood industry	15,000.00	DSPCA	A
1971-74	W.J. Hargis, Jr.	Equipment for monitoring stations on Rappahannock River	Fed. 61,394.00 State 12,367.00	COE	A
1971-72	W.J. Hargis, Jr.	Equipment for monitoring stations on Pamunkey River	10,000.00	VEPCO	A
1971-74	W.J. Hargis, Jr.	Master agreement for research and development in the physical and life sciences, engineering, and application of aerospace technology for oceanography	No Fixed Amount	NASA	A
1971	W.J. Hargis, Jr.	Operation Eastern Shore--inter- disciplinary studies of Eastern Shore, its marine environments and resources, their present and future uses	215,687.00	NSF (RANN)	R
1971-73	W.J. Hargis, Jr., M.E. Bender and C.S. Fang	James River Three C Project	222,000.00	SWCB/EPA	A

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1971-72	W.J. Hargis, Jr. and C.S. Fang	Collection of hydrographic data on Chesapeake Bay and tributaries (James River Study)	207,310.00	COE	A
1971-72	W.J. Hargis, Jr. and C.S. Fang	Hog Point thermal survey, waste heat discharge (Renewal Proposal)	70,000.00	AEC	A
1971-72	W.J. Hargis, Jr. and C.S. Fang	Hydrographic study of the James River estuary	110,000.00	CSA/SWCB	A
1971-73	W.J. Hargis, Jr. and J.C. Munday	Southern Chesapeake Bay water color analysis using ERTS A imagery	Fed. 104,010.00 State 65,465.00	NASA	R
1971	W.J. Hargis, Jr. and J.L. Wood	Improved management and utilization of estuarine and coastal resources (Sea Grant)	Fed. 249,600.00 State 138,055.00	NOAA	A
1971	W.P. Harrison and W.J. Hargis, Jr.	Storm wave and storm surge modification of Virginia's ocean coast	No additional funds	COE	A
1971-72	D.S. Haven	An investigation into commercial aspects of the hard clam fishery and development of commercial gear for harvest of molluscs	Fed. 39,593.00 State 39,593.00	NMFS	A
1971-72	D.S. Haven	North Portal Island oyster ground survey	1,500.00	DOH	A
1971-72	R.J. Huggett and M.E. Bender	Tagged clays as a means of tracing particulate pollutants in the marine environment	Fed. 25,948.56	FWPCA	R
1971-72	R.A. Jordan	An <u>in situ</u> evaluation of nutrient effects in lakes	Fed. 9,193.00 State 1,148.00	EPA	A
1971-72	E.B. Joseph	Control measures for Chesapeake Bay jellyfishes	Fed. 66,751.00 State 66,751.00	NMFS	A
1971-74	E.B. Joseph	Multiple approach research on possible control measure for Chesapeake Bay	Fed. 180,000.00 State 180,000.00	NMFS	A

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		jellyfishes and assessment of ecological consequences			
1971	E.B. Joseph	Surveys and investigations to determine sources, causes, effects, movement or dispersion of oil and hazardous substances spilled in the coastal and estuarine zones	196,353.00	FWQA/DSV	A
1971	F.Y. Kazama	Cellulolytic activity of fungi isolated from decaying <u>Spartina alterniflora</u>	2,020.00	UVA	R
1971-72	W.G. MacIntrye	Investigation of surface films-Chesapeake Bay entrance (Study of effects of oil discharged into the York River)	10,000.00	FWPCA	A
1971-72	M.M. Nichols	Development of turbidity maximum in a coastal plain estuary	11,194.00	COE	A
1971	M.M. Nichols	Utilization of sequential photography for coastal oceanography	16,000.00	ONR/UVA	A
1971	F.O. Perkins	Life cycle studies of the commercial oyster pathogen, <u>Minchinia nelsoni</u>	46,723.43	NSF	R
1971-72	F.O. Perkins	Life cycle studies of the commercial oyster pathogen, <u>Minchinia nelsoni</u>	50,621.70	NSF	R
1971	F.O. Perkins	Scanning electron microscopy and its potential use in the solution of research problems in biological and geological oceanography	56,000.00	NSF	R
1971-72	F.O. Perkins	Studies of the biophysical characteristics of bacterial cell surfaces	Fed. 14,508.00 State 4,100.00	NASA	A
1971-75	F.O. Perkins	Studies of marine coccoid fungi and protozoa of the lower Chesapeake Bay	46,900.00	NSF	A

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1971-72	W.A. Van Engel	Development of a bio-assay for sublethal effects of toxic pollutants on the growth and reproduction of estuarine crustaceans	Fed. 31,171.00 State 2,813.00	FWPCA	R
1971-72	M.L. Wass	Existing conditions report on the biota of Chesapeake Bay	29,992.00	NSF/CRC/COE	A
1971	K.L. Webb	The variability of heavy metals and major cations in the serum of the blue crab, <u>Callinectes sapidus</u>	4,752.86	UVA	A
1971	J.M. Zeigler	Analysis of effects of access across Back Bay to the Outer Banks	5,500.00	VDP	A
1972	J.D. Andrews	Production of superior oysters for mariculture	Fed. 24,700.00 State 16,100.00	NOAA	R
1972-76	M.E. Bender	Biological, chemical and physical study of lower York River	198,000.00	VEPCO	A
1972	M.E. Bender	Estuarine monitoring program	1,666.00	EPA	A
1972-73	M.E. Bender	Hazard to shrimp, crabs and oysters from exposure to MOCAP	600.00	Mobil	A
1972-73	M.E. Bender	Hematology, histology and serum chemistry of striped bass, <u>Morone saxatilis</u>	4,000.00	UVA	A
1972-73	M.E. Bender	James River sediment study after tropical storm Agnes	11,532.00	COE	A
1972-76	M.E. Bender	Post-operational study of the James River in the vicinity of Hog Point	123,820.00	VEPCO	A
1972-73	M.E. Bender	Program to monitor the environmental effects of shipyard expansion	22,716.00	NNS&DDCo.	A

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1972-73	M.E. Bender	Recovery and analysis of core samples in the Baltimore Harbor and Norfolk Harbor and York entrance channels	32,460.00	COE	A
1972-74	M.E. Bender	Sea lettuce problem in the tidal area of Hampton Roads	8,000.00	HRSD	A
1972-73	R.J. Byrne	Analysis and evaluation of remote sensor data for marine science application (Renewal)	22,000.00	NASA	A
1972-73	R.J. Byrne	Response characteristics of tidal inlets	49,888.00	ONR	A
1972	W.J. Davis	Culture of marine mollusca for species of Eastern U.S. Coast	313,016.00	EPA	R
1972-73	J.L. Dupuy	Testing of phytoplankton samples of selected species	8,500.00	NASA	A
1972	W.J. Hargis, Jr.	The Chesapeake Bay, research and study	Time extension, no funds	NSF	A
1972-73	W.J. Hargis, Jr.	Hydrographic Phase of operation Agnes	52,000.00	NOAA	A
1972	W.J. Hargis, Jr.	Operation Agnes-Pollution Study	9,862.00	EPA	A
1972	W.J. Hargis, Jr.	Research and management study of effects of Hurricane Agnes	50,000.00	NMFS	A
1972-73	W.J. Hargis, Jr.	York River State Park	8,307.00	VDP	A
1972-73	W.J. Hargis, Jr. and W.J. Davis	Preliminary analysis of the ecological and environmental aspects of the storm Agnes in the Chesapeake Bay	12,000.00	UM/COE	A
1972-76	W.J. Hargis, Jr. and C.S. Fang	Bathymetric survey of Wormley Creek, York County, Virginia	6,250.00	VEPCO	A

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1972-73	W.J. Hargis, Jr. and C.S. Fang	Hog Point thermal survey (Waste Heat Discharge) Renewal	Fed. 75,000.00 State 15,705.00	AEC	A
1972-73	W.J. Hargis, Jr. and C.S. Fang	Hydrographic study of James and York Rivers (State Mathematical Model)	135,000.00	CSA/SWCB	A
1972-73	W.J. Hargis, Jr. and C.S. Fang	Proposed crossing of Hampton Roads near Craney Island (Route I-664)	33,000.00	DOH	A
1972-73	W.J. Hargis, Jr. and R.J. Huggett	An investigation to determine the effects of tropical Storm Agnes on the concentration of pollutants in shellfish	4,000.00	USFDA	A
1972-73	W.J. Hargis, Jr. and A.Y. Kuo	Operation Agnes-Monitoring and circulation	25,100.00	NSF	A
1972-73	W.J. Hargis, Jr. and M.P. Lynch	Research and study of the Chesapeake Bay	504,900.00	NSF (RANN)	A
1972	W.J. Hargis, Jr. and J.B. Pleasants	Telecommunications policy research planning grant	2,866.00	NSF	R
1972-73	W.J. Hargis, Jr. and E.P. Ruzecki	Collection of hydrographic data on Chesapeake Bay and tributaries (York, Back, Poquoson, Piankatank, and Great Wicomico Rivers) CBM	170,000.00	COE	A
1972	W.J. Hargis, Jr. and J.L. Wood	Improved management and utilization of estuarine and coastal resources (Sea Grant)	Fed. 325,000.00 State 173,663.00	NOAA	A
1972-73	W.J. Hargis, Jr. and J.M. Zeigler	Application of remote sensing to study nearshore circulation	Fed. 100,000.00 State 31,579.00	NASA	A
1972	P.A. Haefner	Oxygen consumption in the blue crab <u>Callinectes sapidus</u>	2,950.00	UVA	R

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1972-73	D.S. Haven	An investigation into commercial aspects of the hard clam fishery	73,000.00	NMFS	A
1972-73	D.S. Haven	James River Bridge Study	5,920.00	DOH	A
1972	D.S. Haven	Proposed crossing of Hampton Roads near Craney Island	12,000.00	DOH	A
1972	D.S. Haven	Proposed Shipyard improvements study	1,400.00	NNS&DDCo.	A
1972-73	D.S. Haven	Resurvey of the Hampton Bar area-north Portal Island	1,588.00	DOH	A
1972-73	W.J. Hoagman	Biology and management of river herring and shad	Fed. 90,000.00 State 90,000.00	NMFS/NOAA	A
1972-74	F.Y. Kazama	Fungi associated with decaying <u>Spartina</u> sp.	31,350.00	NSF	A
1972	K.L. Marcellus	Application of recognition remote sensing for the inventory of wetland vegetation	29,939.10	DOI	R
1972-73	J.V. Merriner	Feasibility of increasing striped bass populations by stocking of underutilized nursery grounds	Fed. 80,000.00 State 80,000.00	BSFW	A
1972-73	J.A. Musick and G.C. Grant	Study of ecosystem structure and dynamics in Norfolk Canyon and adjacent slope	251,410.00	NSF	R
1972	M.M. Nichols	Utilization of sequential photography for coastal oceanography	Fed. 16,000.00	ONR	A
1972	C.L. Smith	Investigations of petroleum lumps, "Tar Balls," on the sea surface	38,632.00	USCG	R
1972-74	K.L. Webb	Aspects of the nitrogen cycle in estuarine waters	161,196.00	NSF	R

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1972-76	K.L. Webb	Aspects of nitrogen and phosphorus flux in a coral reef community (Joint proposal with University of Georgia)	40,000.00	NSF	A
1972-74	K.L. Webb	Subsection of detritus and nutrients group proposal for IDOE, CITRE	22,218.00	Smithsonian	R
1972-73	J.L. Wood	Bacteriology of shellfish growing areas	Fed. 99,900.00 State 50,200.00	NOAA	R
1972	J.M. Zeigler	Analysis of the effects of access Back Bay to the Outer Banks	No additional funds	VDP	A
1972	J.M. Zeigler	Development of instrumentation to measure currents and circulation	16,000.00	NASA	A
1972-73	P.L. Zubkoff	Control measures for Chesapeake Bay jellyfishes	Fed. 60,000.00 State 60,000.00	NMFS	A
1972-74	P.L. Zubkoff	A food chain link between estuarine primary producers and primary consumers	58,430.00	NSF	R
1973-74	M.E. Bender	Virginia Beach outfall study	17,150.00	HI/HRSD	A
1973	M.E. Bender and R.J. Huggett	Effects of chlorine on estuarine organisms	Fed. 108,000.00 State 12,000.00	EPA	R
1973-75	M.E. Bender and R.J. Huggett	Effects of oily waste treatment on the York River estuary (Cheatham Annex Waste Oil Facility)	82,527.00	DOC	A
1973	D.F. Boesch	Role of benthic oxygen consumption in estuarine ecosystems	2,655.00	UVA	A
1973-75	R.J. Byrne	Application and evaluation of remote sensor data for marine science applications	19,100.00	NASA	A

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1973-75	R.J. Byrne	Hydraulic study of Long Creek and Lynnhaven waters	13,161.00	FBYA	A
1973-74	R.J. Byrne	Response characteristics of tidal inlets	41,918.00	ONR	A
1973-74	W.J. Davis and D.S. Haven	Evaluation of shell plantings in various locations in 1973 and 1974	40,000.00	VMRC	R
1973-74	W.J. Davis and W.J. Hoagman	Biology and management of river herring and shad	Fed. 90,000.00 State 90,000.00	NMFS	A
1973-74	W.J. Davis and J.V. Merriner	Fluctuations in year class strength and biology of striped bass in Virginia tributaries of Chesapeake Bay	Fed. 150,000.00 State 150,000.00	BSFW	R
1973	J.L. Dupuy	Effect of temperature and photoperiod on the division rate of selected phytoplankton isolated from Virginia marine waters	5,027.99	UVA	R
1973	V.R. Goldsmith	Distribution, morphology and volumetric importance of washovers along the Eastern Shore of Virginia	94,012.00	NSF	R
1973-75	V.R. Goldsmith	Formulation of depth data for the Delaware-New Jersey Bight	14,550.00	NASA	A
1973	G.C. Grant	Distribution and ecology of cladocera (Branchipoda: Crustacea) in lower Chesapeake Bay	5,000.00	UVA	R
1973-75	G.C. Grant	Seasonal study of the biochemistry of <u>Neomysis americana</u> and <u>acartia tonsa</u> in the York River and adjacent waters of the Chesapeake Bay	99,775.00	NSF	R

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1973	G.C. Grant	Zooplankton of continental slope and oceanic waters in the vicinity of Norfolk Canyon	4,385.00	UVA	R
1973	W.J. Hargis, Jr.	Operation Agnes-OEP	175,115.00	OCD	A
1973-74	W.J. Hargis, Jr. and W.J. Davis	Reports on the effects of tropical storm Agnes on the Chesapeake Bay estuarine system	99,081.00	CRC/COE	A
1973	W.J. Hargis, Jr. and J.L. Dupuy	Test of two forms of Olin's calcium sulfate as a cultch material for oyster spat	1,000.00	Olin Co.	A
1973-74	W.J. Hargis, Jr. and C.S. Fang	Collection of hydrographic data on Chesapeake Bay and tributaries (Lower Chesapeake Bay Study) CBM	144,880.00	COE	A
1973-74	W.J. Hargis, Jr. and C.S. Fang	Hog Point thermal survey	Fed. 80,000.00 State 21,022.00	AEC	A
1973-74	W.J. Hargis, Jr. and C.S. Fang	Hydrographic study of Rappahannock River (State Mathematical Model)	SWCB 110,000.00 VIMS 35,000.00	CSA/SWCB	A
1973-74	W.J. Hargis, Jr. and C.S. Fang	Long term effects on marine environments-second Hampton Roads Bridge Tunnel	68,750.00	DOH	A
1973-74	W.J. Hargis, Jr. and C.S. Fang	Sedimentation study, piers 10 and 12, Naval Station, Norfolk, Virginia	5,000.00	DON	A
1973	W.J. Hargis, Jr. and M.P. Lynch	Data inventory in Chesapeake Economic Sub-regions	50,000.00	NODC/NAAA	A
1973	W.J. Hargis, Jr. and M.P. Lynch	An evaluation of the immediate and long range social consequences of hurricane Agnes in the Chesapeake Bay	Fed. 36,500.00 State 2,767.00	COE	R

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1973	W.J. Hargis, Jr. and M.P. Lynch	Policy study of marine and estuarine sanctuaries	55,939.00	NOAA	A
1973-75	W.J. Hargis, Jr. and M.P. Lynch	Research on the Chesapeake Bay to provide knowledge base for waste outfall management	427,183.00	NSF(RANN/CRC)	A
1973	W.J. Hargis, Jr. and J.V. Merriner	Culture of marine fishes for species of the N.E. United States	274,967.00	EPA/NERC	R
1973-74	W.J. Hargis, Jr. and J.L. Wood	Improved management and utilization of estuarine and coastal resources (Sea Grant)	Fed. 335,000.00 State 181,300.00	NOAA	A
1973-74	W.J. Hargis, Jr. and J.M. Zeigler	Proposal to obtain a research vessel system for use in the Chesapeake Bay and adjacent shelf waters	280,000.00	NSF	R
1973	D.S. Haven	Evaluation of the density of hard clams and oysters in the Elizabeth River (Transco)	3,417.00	WEI	A
1973-74	D.S. Haven and J.G. Losesch	An investigation of the seed oyster reserves in Virginia and the testing and development of gear to harvest oysters	Fed. 29,700.00 State 29,700.00	NMFS	A
1973	R.J. Huggett	Fish pesticide monitoring program	2,715.00	EPA	A
1973	F.Y. Kazama	Role of fungi in the decomposition of <u>Spartina alterniflora</u>	33,899.52	NSF	R
1973	M.P. Lynch	Determination of osmotic response rates in estuarine animals	4,885.00	UVA	R
1973-74	M.P. Lynch	Development of guidelines on criteria for approval of state coastal zone management programs	73,268.00	NOAA	R

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1973-74	M.P. Lynch	Environmental inventory of the Middle and South Atlantic Outer Continental Shelf	120,000.00	CEQ	A
1973	M.P. Lynch	Osmotic accommodation of oysters as a function rate of dilution of the external environment	4,985.00	UVA	R
1973-75	M.P. Lynch	Print and distribute publication, "University Curricula in the marine sciences and related fields", for the academic years 1973-74 and 1974-75	25,000.00	DOC	R
1973-74	B.W. Mattox	An assessment of the socio-economic data base relating to the coastal zone and adjacent continental shelf area from Sandy Hook, New Jersey to Cape Hatteras, North Carolina	40,844.00	BLM	R
1973-76	J.A. Musick	Ecology of fish communities in Norfolk Canyon and the adjacent continental slope	40,000.00	NSF	A
1973-75	J.A. Musick	Ecology of zooplankton and fish communities in Norfolk Canyon and the adjacent continental shelf	286,859.00	NSF	R
1973-75	J.A. Musick	Taxonomic and ecological studies of western North Atlantic Alepocephalidae (Salmoniformes: Pisces)	3,360.00	NSF	R
1973-75	J.A. Musick	Study of the reproductive biology, behavior and population dynamics of black sea bass (<u>Centropristis striata</u>)	10,475.00	SFI	A
1973	M.M. Nichols	Inner shelf off Chesapeake Bay-Mineral Resources and Ecology	20,939.00	USGS	A

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1973	M.M. Nichols	Source and dispersal of suspended material: its impact and management	634,476.00	NASA	R
1973	M. Nolan	Characterization of mixtures of transition metal complexing agents in estuarine water and wastewater by anodic stripping voltammetry	5,000.00	UVA	R
1973	F.D. Ott and J.L. Dupuy	Effect of temperature and photoperiod on the division rate of selected phytoplankton isolated from Virginia marine waters	5,027.99	UVA	R
1973-74	I.E. Paperna	Impact of parasitic infections on the striped bass, <u>Morone saxatilis</u>	63,436.43	NSF	R
1973	F.O. Perkins	Application of scanning electron microscopy to problems in biological and geological oceanography	25,000.00	NSF	R
1973-75	F.O. Perkins	Studies of marine coccoid fungi and protozoa of the Lower Chesapeake Bay, Virginia	15,000.00	NSF	A
1973	G.M. Silberhorn	Virginia wetlands propagation study	1,943.80	UVA	R
1973	C.L. Smith	Fate of crude oil stranded on Atlantic beaches and its effect on biota and coastal processes	92,905.00	USCG	R
1973-74	C.L. Smith	Organic geochemistry of Chesapeake Bay sediments Part I: Hydrocarbons and total organic carbon	31,150.00	NSF	R
1973	T.F. Smolen	An analysis of the extent of Virginia's coastal zone	3,900.00	UVA	R

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1973	J.E. Warinner	<u>In vivo</u> fluorescence of selected marine algae	4,600.00	UVA	R
1973-74	M.L. Wass	Existing conditions report on the biota of Chesapeake Bay (Renewal)	22,187.00	CRC/COE	A
1973	K.L. Webb	Evaluation of the acetylene method to measure nitrogen fixation in the southern Chesapeake Bay Region	4,800.00	UVA	R
1973	C.S. Welch	Tidal circulation of a small multi-tributary bay	5,000.00	UVA	R
1973-76	J.L. Wood and D.S. Haven	Technical studies on the engineering and biological aspects of controlled purification of the eastern oyster	254,145.00	HEW/USFDA	A
1973-74	J.M. Zeigler	Application of remote sensing to study nearshore circulation	Fed. 100,000.00 State 21,560.00	NASA	A
1973-74	J.M. Zeigler and C.L. Smith	Perform a scientific study to determine the leeway of oil slicks under varying winds and seas	42,797.00	USCG	A
1973-74	P.L. Zubkoff	Control measures for Chesapeake Bay jellyfishes	Fed. 60,000.00 State 60,000.00	NMFS	R
1973	P.L. Zubkoff	Determination of the sinus volume of the blue crab, <u>Callinectes sapidus</u> Rathbun	4,600.00	UVA	R
1973	P.L. Zubkoff	Identification of humic acid substances associated with phytoplankton blooms	4,800.00	UVA	R
1973-75	P.V. Zubkoff and D.R. Calder	Morphological and biochemical comparison of the venomous and innocuous forms of <u>Cyanea</u> from the Western Atlantic	80,376.00	NSF	R

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1974-75	M.E. Bender	Environmental impact assessment of the James River, upper and lower Chesapeake Bay	59,100.00	NCWQ	A
1974	M.E. Bender	Lower York River sewage plant	35,716.00	HRSD/GG	A
1974-75	M.E. Bender	Lower York River sewage plant	500.00	HRSD/GG	A
1974-75	M.E. Bender	Study of impact of Philip Morris Bermuda hundred plant on organisms of James River	67,099.00	PM	R
1974	M.E. Bender	Study for the interpretation of remotely sensed data obtained from satellite (ERTS) and aircraft platforms in the Hopewell area	4,165.00	NASA	A
1974	M.E. Bender	Water quality data evaluation and program design in conjunction with "208"	15,499.00	HSMM	A
1974-77	M.E. Bender	Site of Hampton Roads Sanitation District Commission Plant at Pig Point	62,500.00	HRSD/MMM	A
1974	M.E. Bender	Water quality studies at Dam Neck facility	9,237.00	HRSD	A
1974	M.E. Bender	Water quality survey for Atlantic treatment plant	8,129.20	MPI	A
1974	R.H. Bieri	Fate of fossil hydrocarbons and petroleum derived products on the nearshore marine environment (Chesapeake Bight)	296,217.00	AEC	A
1974	D.F. Boesch	Investigation of marine growth, Norfolk Naval Shipyard, Portsmouth, Virginia	1,250.00	DON	A

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1974-75	D.F. Boesch and R.J. Huggett	Biological and chemical sampling and analyses	19,150.00	AL	A
1974	D.F. Boesch and M.H. Roberts	Repletion of eelgrass in Virginia	26,648.00	VMRC	R
1974	D.F. Boesch and M.H. Roberts	Study to determine vertical migration ability of benthos in dredged material deposits	44,790.00	COE	R
1974	R.J. Byrne	An erosion control plan for Ocean View	65,617.00	NORFOLK	R
1974	R.J. Byrne	Shoreline studies for planning erosion control, Kingsmill, Busch properties	26,406.00	BUSCH	R
1974	W.J. Davis	Proceedings of symposium on the effects of tropical storm Agnes on the Chesapeake Bay estuarine system	18,000.00	NSF/RANN	A
1974-75	W.J. Davis	Research on alternative management measures for the surf clam fishery	8,027.00 1,931.98	NMFS	A
1974-76	C.S. Fang and D.F. Boesch	Environmental assessment work at Windmill Point, James River, Virginia	10,439.40	COE	A
1974-75	V.R. Goldsmith	Formulation of second order bathymetry for the Delaware-New Jersey Bight coastline waters	14,018.00	NASA	A
1974-77	V.R. Goldsmith	Significance of washovers on barrier islands	74,687.00	COLE	R
1974-77	V.R. Goldsmith and R.J. Byrne	Coastal data acquisition, compilation, and analysis of the Virginia Beach coastal compartment, Southeastern Virginia	88,977.00	COE	A

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1974	G.C. Grant	Near-surface vertical stratification of estuarine zooplankton	3,859.00	UVA	R
1974-75	G.C. Grant	Zooplankton of the Norfolk Canyon and adjacent continental slope	50,616.00	NOAA/NMFS	R
1974-75	P.A. Haefner, Jr.	Biology of decapod crustaceans collected in Norfolk Canyon and the adjacent continental shelf	2,508.00	UVA	A
1974-75	W.J. Hargis, Jr.	Virginia's Coastal Zone Management Program	Fed. 131,323.00 State 65,661.00	NOAA/DSPCA	A
1974-75	W.J. Hargis, Jr. and C.S. Fang	Hog Point thermal survey	Fed. 50,000.00 State 50,000.00	AEC	A
1974-76	W.J. Hargis, Jr. and C.S. Fang	Hydrographic study of small coastal basin I (State Mathematical Model)	SWCB 135,000.00 VIMS 45,000.00	CSA/SWCB/VIMS	A
1974-75	W.J. Hargis, Jr. and M.P. Lynch	Data inventory in North Carolina, South Carolina, and Georgia	50,000.00	NODC/NOAA	A
1974	W.J. Hargis, Jr. and M.P. Lynch	Policy study of marine and estuarine sanctuaries	7,975.00	NOAA	A
1974-76	W.J. Hargis, Jr. and M.P. Lynch	Relative impact of selected pollutants from diffuse and discrete sources on quality on water in Chesapeake Bay	68,550.00	NSF/RANN/CRC	A
1974-75	W.J. Hargis, Jr. and J.L. Wood	Improved management and utilization of estuarine and coastal resources (Sea Grant)	Fed. 355,000.00 State 178,342.00 - 15,303.92	NOAA	A
			**Total	518,038.08	

**Deduction per letter of 9 June 1977

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1974	D.S. Haven	Elizabeth River study at the site of the new west Norfolk Bridge	9,034.00	DOH	A
1974-75	D.S. Haven	Investigation of seed oyster reserves in Virginia and testing and modifying gear	Fed. 40,000.00 State 40,000.00	NMFS	A
1974-75	W.J. Hoagman and W.J. Davis	Biology and management of river herring and shad	Fed. 90,000.00 State 90,000.00	NMFS	A
1974	R.J. Huggett	Effects of oil on hard and soft clams	5,000.00	EPA	A
1974-75	R.J. Huggett	Fish pesticide monitoring program	5,000.00	EPA	A
1974	R.J. Huggett	Trace metal distributions in sediments, hard clams and oysters in the Elizabeth River	1,400.00	WEI	A
1974	R.J. Huggett	Little Creek sediment analysis	3,000.00	EI	A
1974-75	R.J. Huggett and R.H. Bieri	Study of the chemical fate and the biological consequences of no. 2 fuel oil spills in seminatural ecosystems	19,400.00	EPA	A
1974	W.R. Kerns	Water quality benefits from solid waste pollution abatement	36,018.00	EPA	R
1974-75	J.G. Loesch	Inventory of surf clams in nearshore waters from Cape Henlopen to the False Cape Area	35,002.00	NMFS	A
1974-76	M.P. Lynch	Development of physiological condition indices based upon serum chemistry	64,973.00	NSF	R
1974	M.P. Lynch	Participation in UL Helgoland Project	4,651.00	NOAA	A
1974	M.P. Lynch	Pollution related studies utilizing Hydrolab	7,111.84	NOAA	A

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1974-75	J.V. Merriner	Effects of entrainment on fish eggs, larvae and zooplankton at the VEPCO Surry Power Station	229,464.00	VEPCO	R
1974	J.V. Merriner and J.A. Musick	Artificial reef program for the Commonwealth of Virginia	90,000.00	DSPCA	R
1974-75	J.A. Musick	Study of the archibenthic and abysobenthic fishes of deep water dump site 106	16,667.00	NOAA	A
1974-76	M.M. Nichols	Analyses of sediment transport in extreme transient flows of a coastal plain estuary	100,845.00	OWRR	R
1975-77	M.M. Nichols	Mathematical modeling of sediment movement in an estuary: an analysis of the turbidity maximum	Fed. 20,677.00 State 20,677.00	OWRR	A
1974	M.H. Roberts, Jr. and R.J. Huggett	Acute and chronic toxicity of four pesticides to the sheepshead minnow, <u>Cyprinodon variegatus</u>	101,851.00	EPA	R
1974	M.H. Roberts	Study to determine availability of sediment adsorbed heavy metals to benthos with particular emphasis on deposit feeding infauna	72,966.00	COE	R
1974	E.P. Ruzicki and C.S. Welch	Study to use Eole buoy systems to study and identify major circulation features of continental shelf in the Mid-Atlantic Bight	50,000.00	NASA	R
1974	G.M. Silberhorn	A vegetative study at Duck field research facility	19,508.40	COE	R

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1974-75	C.L. Smith	Determination of those portion of oils commonly used aboard ships which are soluble in fresh and salt water	49,909.87	USCG	R
1974-75	W.A. Van Engel	Biology and management of the american lobster	41,092.00	NMFS	A
1974	M.L. Wass	Study of successional patterns of plants and animals at confined disposal areas	45,326.00	COE	R
1974-75	M.L. Wass and R.J. Orth	Remote sensing of submerged aquatic vegetation in the lower Chesapeake Bay	10,746.00	NASA/BSFW	A
1974	K.L. Webb	Effects of chronic No. 2 fuel oil pollution on nitrogen fixation in the salt marsh	3,200.00	UVA	R
1974-75	J.M. Zeigler	Application of remote sensing to the study of nearshore circulation	Fed. 100,000.00 State 23,007.00	NASA	A
1974	J.M. Zeigler	Dye dispersion study of the effluent from the Newport News small boat harbor STP	27,933.00	HSMM	R
1974	J.M. Zeigler	Dye study for York River STP	9,547.00	HSMM	R
1974	J.M. Zeigler	Shoreline processes on limited fetch beaches	3,500.00	UVA	R
1974	J.M. Zeigler	A proposal to monitor the environmental effects of NNS&DDCO borrow site on Hampton bar	51,667.00	NNS&DD Co.	A
1974	P.L. Zubkoff	Metabolites of the fluid tissues of important estuarine and marine invertebrates	5,250.00	UVA	R

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1975-76	R.D. Anderson	Coastal plains center for marine development services (Cooperative Projects Program)	6,500.00	CPCMDS	R
1975-76	R.D. Anderson	Coastal zone environmental education program	Fed. 27,316.00 State 7,000.00	HEW	R
1975-77	R.D. Anderson	Coastal Zone Management Program	Fed. 193,696.00 State 100,381.00	NOAA	A
1975-76	R.D. Anderson	Improved management and utilization of estuarine and coastal resources (Sea Grant)	Fed. 395,000.00 State 201,000.00	NOAA	A
1975	R.D. Anderson	Improved management and utilization of estuarine and coastal resources (Sea Grant)	Fed. 374,000.00 State 191,200.00	NOAA	A
1975-76	R.D. Anderson	National Aquaculture Information System (Part of improved management and Utilization of estuarine and coastal resources Sea Grant)	Fed. 21,000.00 State 10,600.00	NOAA	A
1975-76	R.D. Anderson	Seminar series on marine affairs academic program	1,000.00	LF	A
1975-76	M.E. Bender	Assessment of fate and effects of petroleum hydrocarbons on Virginia wetlands	5,000.00	EXXON	A
1975-76	M.E. Bender	Ecological study of the tidal segment of the James River encompassing Hog Point	234,593.00	VEPCO	A
1975-76	M.E. Bender	A study of the responses of selected bacterial and fungal populations in a salt marsh environment to crude oil	9,150.00	API	A

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1975-76	M.E. Bender and C.S. Fang	Water quality and mathematical model studies of the Hampton Roads area	504,000.00	HRWQA	R
1975-78	M.E. Bender and C.S. Fang	Water quality and mathematical model studies of the small coastal basins of Hampton Roads area	100,000.00	HRWQA	A
1975-76	M.E. Bender and C.S. Fang	Small coastal basins study	100,000.00	HRWQA	R
1975-76	M.E. Bender and D.S. Haven	Environmental effects of James River sewage treatment plant outfall	23,374.00	HRSD	A
1975-77	R.H. Bieri	Fate of fossil hydrocarbons and petroleum derived products on the nearshore marine environment (Chesapeake Bight)	296,217.00	NSF-RANN	A
1975-77	D.F. Boesch	Assessment of acute impacts of the James River/Windmill Point Habitat Development Site on the macrobenthic community	32,712.00	COE	A
1975-77	D.R. Boesch	Assessment of the application of multivariate analyses in ecological investigations of water pollution	Fed. 80,032.00 State 4,210.00	EPA	A
1975	D.F. Boesch	Application of classification in ecological investigations of water pollution	Fed. 13,956.00 State 750.00	EPA	A
1975	D.R. Boesch	Tangier Island airport benthic survey	5,000.00	VAA	A
1975-76	J.D. Boon, III	Coastal wetlands classification systems	41,733.00	EPA	A
1975-76	J.D. Boon	Field study of groundwater transport between artificially recharged soil	Fed. 100,269.00 State 20,952.00	OWRT	R

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		horizons and a nearby salt marsh drainage system in lower Chesapeake Bay			
1975	R.J. Byrne	Tangier Island airport project	4,910.00	VAA	A
1975-76	R.J. Byrne	York River state park surveys	2,555.00	VD CED	A
1975-76	R.J. Byrne and J.D. Boon, III	Role of basin morphology in tidal inlet stability	Fed. 71,547.00 State 20,887.00	NSF	R
1975-77	W.J. Davis	Biology and management of river herring and shad	Fed. 90,000.00 State 90,000.00	NOAA	A
1975	G.M. Dawes	Cold Harbor Creek, mount Airy dam site survey	1,140.00	COE	A
1975	G.M. Dawes	Water quality analysis	2,000.00	COE	A
1975-76	J.L. Dupuy	Research to determine fluorescence cross-section of phytoplankton	11,941.00	NASA	A
1975	J.L. Dupuy and G.C. Grant	Zooplankton and phytoplankton samples	37,678.00	EPA	A
1975-77	G.L. Engel	Proposal to process records and prepare summary statistics for surf clams	20,598.00	NMFS	A
1975-76	C.S. Fang	Hog Point survey	Fed. 35,305.00 State 14,833.00	USERDA	A
1975	C.S. Fang	Portsmouth source dye circulation study	7,052.00	NUS	A
1975	C.S. Fang	Richmond combined sewer overflow abatement study	30,730.00	HSMM	R
1975-77	C.S. Fang	Water quality mathematical model study of the Chincoteague/Sinepuxent/	Fed. 50,000.00 State 18,452.90	MDNR MDNR	A A

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		Assawoman Bay System and the adjacent near-shore (Atlantic) ocean side			
1975-76	C.S. Fang P.V. Hyer	Computer model of ocean fronts	67,760.00	NASA	R
1975-77	G.C. Grant	Sampling of phytoplankton, zooplankton in quantitative baseline and monitoring program	18,403.00	EPA	A
1975-77	P.A. Haefner	Biology and ecology of decapod crustaceans in Norfolk canyon and adjacent continental slope	69,125.00	NSF	R
1975-77	P.A. Haefner and R.A. Gleeson	Physiological investigation of pheromone-mediated behavior in the blue crab <u>Callinectes sapidus</u>	1,500.00	NSF	A
1975-77	W.J. Hargis, Jr.	NACOA - Service Support Funds	16,573.00	DOC	A
1975-76	W.J. Hargis and M.P. Lynch	Data inventory in North Carolina, South Carolina and Georgia	109,600.00	NODS/NOAA	A
1975-77	W.J. Hargis, Jr. and M.P. Lynch	Management of physical alterations to the edges of Chesapeake Bay and their effects on environmental quality	148,507.00	NSF/RANN/CRC	R
1975-78	D.S. Haven	An inventory of the seed oyster producing potential of the Commonwealth of Virginia	Fed. 99,400.00 State 114,793.00	DOC	A
1975-76	W.J. Hoagman	Analysis of Chesapeake Bay fish survey data	9,791.60	WRRC	R
1975	D.S. Haven	Studies on the enlargement of I-64 in the Hampton Roads	8,100.00	S&P	A

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1975	R.J. Huggett	Chemical and biological analysis for pier expansion at Piney Point, Maryland	17,654.00	S. Pet.	A
1975	R.J. Huggett	Chemical sampling for proposed dredging and pier construction for Hampton Roads Energy Co.	5,751.00	NUS	A
1975	R.J. Huggett	Corps of Engineers - Elutriate study	3,150.00	COE	A
1975	R.J. Huggett	Corps of Engineers - Elutriate study	3,150.00	COE	A
1975-76	R.J. Huggett	Investigation to determine the acute ecological effects of oil spills in eastern coastal plain estuaries	358,042.00	API	A
1975	R.J. Huggett	Lynnhaven Bay sediments analysis	500.00	Environplan	A
1975	R.J. Huggett	Sediment analysis of Skiffes Creek and Deep Creek, Va.	2,250.00	COE	A
1975-76	R.J. Huggett	Sediment and elutriate analysis of Back River	600.00	COE	A
1975	R.J. Huggett	Sediment-metal elutriates analysis	4,600.00	NUS	A
1975-76	J.A. Lanier	Introduction to the coastal zone environment: a training program for high school teachers	Fed. 25,537.00 State 6,250.00	USOE	R
1975-77	M.P. Lynch	Assessment of the environmental impact of dredge and fill projects	29,114.00	EPA	A
1975-76	M.P. Lynch	Assessment of estuarine and nearshore marine resources	60,246.00	USFWS	A
1975-77	M.P. Lynch	Environmental data acquisition and analysis of Atlantic baseline	2,042,978.12	BLM	A

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1975-76	M.P. Lynch	Proposal to conduct an inventory of environmental parameters in the deep Atlantic shelf and slope	157,187.00	DOI	R
1975-76	W.G. MacIntyre	Adsorption of phosphate and poly-phosphate by clay minerals of estuarine sediments	10,750.00	OWRR	A
1975	J.V. Merriner	Life history of the grey tilefish, <u>Caulotatilus microps</u>	8,400.00	SFRF	R
1975-77	J.V. Merriner	Residual chlorine in the tidal James River Virginia and its effects upon nekton	Fed. 159,474.00 State 159,474.00	OWRR	R
1975-76	J.A. Musick	Study of the reproductive biology, behavior and population dynamics of black sea bass (<u>Centropristis striata</u>)	SFI 3,600.00 State 2,550.00	SFI	A
1975-79	M.M. Nichols	Estuarine fluid mud: its dynamic behavior and accumulation	111,170.00	COE	A
1975-78	M.M. Nichols	Estuarine fluid mud: its behavior and accumulation	148,684.00	NSF	R
1975-78	M.M. Nichols	A field study of fluid mud dredge spoil: its physical nature and dispersal	Fed. 160,106.00 State 21,248.05	COE	A
1975-76	F.O. Perkins	Establishment of cultures of oyster cell lines	29,983.00	USFDA	R
1975-77	F.O. Perkins	Identification and role of the ultraplankton of the lower Chesapeake Bay Region	52,716.00	NSF	A
1975-77	F.O. Perkins	<u>Salmonella</u> in estuaries: numbers, survival and source	Fed. 99,430.00 State 16,730.00	HEW	R

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1975-77	F.O. Perkins	Validity of coliforms as indicators of <u>Salmonella</u> and environmental factors affecting its distribution in estuaries	Fed. 99,430.00 State 16,730.00	NSF	R
1975-76	P.T. Pohorence	Economic development program, Title Ten	3,295,701.00	DOC	R
1975-77	P.T. Pohorence	Title VI and Title II	402,350.10	VEC	A
1975-76	M.H. Roberts	Sublethal effects of chlorine on marine vascular plants and decapod crustaceans	71,000.00	EPA	A
1975-77	E.P. Ruzecki and C.S. Welch	Mid-Atlantic Bight studies: an analysis of Eole drogue buoy data	9,975.19	NASA	A
1975-76	C.L. Smith	Water quality monitoring in the James River in the vicinity of the Newport News Shipbuilding and Dry Dock Company	39,704.00	DON	A
1975-76	C.L. Smith	Weathering and dissolution of crude oils at sea	98,891.00	API	R
1975-76	W.A. Van Engel	Biology and management of the American lobster	34,379.00	NMFS	A
1975-78	K.L. Webb	Role of heterotrophic Protozoa in the flux of energy and nitrogen in the marine ecosystem	Fed. 239,477.00 State 81,635.00	ERDA	A
1975-76	C.S. Welch and C.S. Fang	Drifting buoy systems to monitor continental shelf circulation	94,272.00	NOAA	R
1975	R.L. Wetzel K.L. Webb and J.N. Kraeuter	Role of benthic macroheterotrophs in carbon and nutrient flux in salt marsh and intertidal mud flat communities	258,879.00	NSF	R

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1975-78	P.L. Zubkoff	A comparison of venomous and innocuous forms of the scyphozoan jellyfish, <u>Cyanea capillata</u>	Fed. 196,206.00 State 24,798.00	AEC	R
1976	R.D. Anderson	Link Foundation - Initiation of ocean education workshops	1,500.00	LF	A
1976-77	R.D. Anderson	Marine development cooperative projects program	7,500.00	CPC	A
1976-77	R.D. Anderson	Regional Coastal Zone Information Center (Sea Grant)	52,622.00	NOAA	R
1976-78	T.A. Barnard	Ecological effects of highway fill on wetlands	128,797.00	NCHRP	R
1976-78	M.E. Bender	Ecological study of the tidal segment of the James River encompassing Hog Point - 1976 extension	397,146.00	VEPCO	A
1976-77	M.E. Bender	Sea Water Sampling	374,097.00	NOAA/NMFS	R
1976	M.E. Bender	A study of the responses of selected bacterial and fungal populations in a salt marsh environment to crude oil	147,000.00	API	A
1976	R.H. Bieri and J.P. Jacobson	Coordination of Glass Capillary Workshop	2,519.00	BLM	A
1976-77	J.D. Boon	Dam Neck outfall evaluation and interpretation	29,096.00	MPI	A
1976-78	J.D. Boon	Delineation of coastal marsh boundaries in the Central Atlantic Coastal Region	Fed. 40,094.00 State 4,207.00	EPA	A
1976-77	W.J. Davis	Alternative management schemes for surf clam fishery	4,755.00	NMFS	A

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1976-77	W.J. Davis	The present and potential productivity of Baylor Grounds in Virginia	Fed. 30,914.00 State 30,914.00	NMFS	A
1976-77	G.M. Dawes	Causeway construction in a tidal marsh system	2,000.00	USDOT	A
1976	G.M. Dawes	Ecological effects of highways on coastal wetlands-Atlantic coast region	4,622.28	USDOT	A
1976-78	J.L. Dupuy	Marine and freshwater unialgal cultures	15,500.00	NASA	A
1976	J.L. Dupuy	Unialgal culture studies of marine and freshwater algae	6,086.00	NASA	A
1976-77	W.J. Hargis, Jr.	Improved management and utilization of estuarine and coastal resources (Sea Grant)	Fed. 405,000.00 State 226,700.00	NOAA	A
1976-77	D.S. Haven	Colley Avenue Bridge area leased oyster grounds survey	2,311.00	DOH	A
1976	D.S. Haven	Leased oyster bottoms survey adjacent to the new Granby Street Bridge	3,500.00	DOH	A
1976	D.S. Haven	Resurvey of leased oyster grounds surrounding the new James River bridge	5,637.00	C. of Va.	A
1976-78	D.S. Haven and F.O. Perkins	Depuration of oysters, <u>Crassostrea virginica</u> , and hard clams, <u>Mercenaria mercenaria</u> , under field conditions in Virginia	259,800.00	USFDA	R
1976-77	R.J. Huggett	Collection and preparation of fish monitor samples	2,500.00	EPA	A
1976	R.J. Huggett	Kepone Emergency Fund Studies	52,159.00 900.00	EPA VEPCO	A

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1976-77	R.J. Huggett	Kepone sediment analysis	543.00	COE	A
1976-77	R.J. Huggett	Kepone Seminar	3,138.00	EPA	A
1976-79	R.J. Huggett	The role of sediments in the storage movement and biological uptake of kepone in estuarine environments	Fed. 277,570.00 State 27,773.00	EPA	A
1976-78	J.A. Lanier	Wetlands of Virginia	1,200.00	VWF	A
1976-77	J.G. Loesch	Shell microstructure of the hard clam, <u>Mercenaria mercenaria</u> : analysis of age and growth	11,767.00	WRRC	R
1976-78	M.P. Lynch	Atlantic baseline studies and analysis	2,835,460.00	BLM	A
1976	M.P. Lynch	Deep ocean dredge disposal	99,392.00	ASC	R
1976-77	M.P. Lynch	Inventory of environmental data from North Carolina, South Carolina, Georgia, Maryland and Virginia	52,991.00	NOAA	A
1976	M.P. Lynch	Measurement and sorting of plankton	11,296.00	NOAA	R
1976-78	M.P. Lynch	Scientific studies utilizing UWL Helogland	Fed. 21,178.00 State 9,632.00	NOAA	A
1976-77	M.P. Lynch	South Atlantic/Georgia Embayment outer continental shelf studies	133,055.00	Beak Con.	R
1976-77	M.P. Lynch	South Atlantic/Georgia Embayment outer continental shelf studies	242,615.00	NUS	R
1976-77	M.P. Lynch	Summary and analysis of environmental information on the continental shelf from the Bay of Fundy to Cape Hatteras	98,680.00	DOI	R

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1976-78	M.P. Lynch	Windmill Point Marsh development site studies	215,358.00	COE	A
1976-80	J.V. Merriner	Biology and Management of Mid-Atlantic anadromous fishes under extended jurisdiction	Fed. 562,754.00 State 281,376.00	NOAA/USFWS	A
1976-78	J.V. Merriner	An experimental study of the uptake and retention of carbon from various food substances by an early postlarval teleostean fish	Fed. 22,494.00 State 9,703.00	NSF	R
1976-78	J.V. Merriner	Factors associated with accuracy in sampling fish eggs and larvae	58,844.00	DOI	A
1976-77	J.V. Merriner	Techniques for predicting entrainment and impingement at power plants	323,068.00	DOI/USFWS	R
1976-77	J.A. Musick	The ecology of fish communities in Norfolk Canyon and the adjacent continental slope	37,000.00	NSF	A
1976-78	B.J. Neilson	Estuarine sampling and modeling of the York below West Point and the James below the Chickahominy	300,000.00	EPA/HRWQA	A
1976-78	B.J. Neilson	Data collection and processing for state coop mathematical model (CSA)	410,000.00	SWCB	A
1976-78	B.J. Neilson	Non-point source sampling	100,000.00	HRWQA	A
1976-77	R.J. Orth	Ecology, man's impact and management of seagrasses of the United States	40,062.00	USFWS	R
1976	F.O. Perkins	Assessment of the distribution and density of <u>Canida albicans</u> in the Potomac River	26,122.00	PEMPTO	R

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1976-77	F.O. Perkins	Effects of the Chesapeake Corporation on the water quality of the upper York River to total and faecal coliforms and fecal streptocci	19,063.00	Ch. Co.	A
1976	F.O. Perkins	Incidence of oyster and clam pathogens in the lower Potomac River	24,814.00	PEMPTG	R
1976-77	F.O. Perkins and H.I. Kator	Validity of coliforms as indicators of <u>Salmonella</u> and environmental factors affecting its distribution in estuaries	Fed. 91,191.00 State 15,995.00	OWR	R
1976	M.H. Roberts	Development of time-dilution dredged material bioassay using zooplankton	82,167.00	COE	R
1976-77	M.H. Roberts	The effects of chaff at high exposure levels on selected estuarine species	23,829.00	SCI	R
1976-78	M.H. Roberts	Sublethal effects of Chlorine on marine vascular plants and decapod crustaceans	118,578.00	EPA	A
1976-77	W.A. Van Engel	Biology and management of the American lobster	21,280.00	NMFS	A
1976-78	R. Virnstein	Predation as a factor regulating infaunal community structure: an experimental evaluation	76,089.00	NSF	R
1976-78	C.S. Welch and J.C. Munday	Georges Bank surface circulation data analysis	173,631.00	EG&G	R
1976-78	R.L. Wetzel	The functional ecology of an intertidal mud flat: an experimental and ecosystem modeling approach	284,084.00	NSF	R
1976	R.L. Wetzel and K.L. Webb	A preliminary characterization of a nutrient impacted aquatic ecosystem	10,000.00	EPA	A

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1976	J.M. Zeigler	Delineation of storm flood levels in Chesapeake Bay	Fed. 31,900.00 State 8,629.00	FIA	R
1976	J.M. Zeigler	Ecological results of energy conversion when salt and fresh water mix at mouth of estuary	8,303.00	ERDA	A
1976-77	J.M. Zeigler	Remote sensing to study nearshore circulation	106,033.00	NASA	A
1977-78	R.D. Anderson	Coastal Zone Management Program	Fed. 336,400.00 State 88,346.00	NOAA	A
1977	R.D. Anderson	Outer Continental Shelf information and understanding	36,000.00	UVA	R
1977-79	M.E. Bender	Advisory assistance for seafood processors in Virginia	60,000.00	CPRC	A
1977-80	M.E. Bender	Investigation to determine the ecological effects of oil spills in the eastern coastal plain estuaries	114,446.00	API	A
1977-80	D.F. Boesch	Assessment of the application of multivariate analysis in ecological investigations of water pollution	105,000.00 6,134.00	EPA	A
1977-79	D.F. Boesch	Distributional ecology of fishes and macroinvertebrates as related to daily and seasonal dynamics of water masses on the continental shelf	26,485.00	U of W	A
1977-78	R.J. Byrne	Demonstration project in low cost shoreline erosion control techniques	81,273.00	CPRC	A
1977-78	R.J. Diaz	Personnel assignment (Title IV of the Inter-governmental Personnel Act of 1970)	36,748.00	COE	A

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1977	T.M. Dillon	Minor dissertation research funds	293.00	W&M	A
1977-80	J.L. Dupuy	Development of the Bac heat exchanger storage tank	401,273.00	ERDA	R
1977-78	J.L. Dupuy	Development of the Bac Solar Collector	126,946.00	ERDA	R
1977-78	G.L. Engel	Design and development of an order and retrieval system for dredging materials research	52,659.00	COE	R
1977-79	P.A. Haefner and B.G. Lewis	Biology of archi-benthic and deep-sea decapod Crustacea from the Norfolk Canyon and the adjacent continental slope	3,900.00	NSF	A
1977	W.J. Hargis, Jr. and R.D. Anderson	VIMS Institutional Sea Grant Program	Fed. 508,400.00 State 315,100.00	NOAA	A
1977-78	D.S. Haven	Assessment of molluscan populations on leased bottoms adjacent to the proposed channel into Langley Air Force Base in the southwest branch of the Back River	3,280.00	COE	R
1977	D.S. Haven	Leased oyster grounds survey adjacent to former site of the old James River Bridge	4,951.00	DOH	A
1977-78	D.S. Haven	The present and potential productivity of Baylor Grounds in Virginia - Phase II	Fed. 36,098.00	NMFS	A
1977-78	H. Hennigar	Historical evolution of coastal sand dunes: Currituck Spit Virginia-North Carolina	75.00	Sigma XI	A
1977-78	R.J. Huggett	Sediment analysis of Chesapeake Bay channel	7,825.00	COE	A
1977-78	J. Jellison	Comprehensive Employment and Training Act	277,639.73	VEC	A

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1977-78	H.I. Kator	Temperature and salinity evaluations as stress factors affecting fecal coliforms enumeration	15,726.00	NASA	A
1977	J.A. Lanier	Marine environment conservation educational workshop	1,391.00	VWF	A
1977	J.A. Lanier	Youth Conservation Corps	31,870.00	VDP	A
1977-78	M.P. Lynch	Chesapeake Bay baseline data acquisition	32,482.00	CRC&EPA	A
1977-78	M.P. Lynch	Environmental studies at proposed Cape Charles development site	328,592.00	B&R Inc.	R
1977	W.G. MacIntyre	Sulfide preservation in seawater	2,000.00	COE	A
1977-79	J.V. Merriner	Aspects of the matter-per-energy transfer of larval spot, <u>Leiostomus xanthurus</u>	30,772.00 8,432.00	MDNR	R
1977-79	J.V. Merriner	Drift and upstream movement of fish larvae	135,833.00	PANY	A
1977-78	J.C. Munday	Applications of remote sensing in estuarine management	Fed. 67,000.00 State 4,130.00	NASA	A
1977	J.C. Munday	Surface circulation at the turbid-clear water interface of the Georgia embayment	98,419.00	ERT Inc.	R
1977-78	J.A. Musick	Nektonic community structure and function in the deep sea	46,060.00	NSF	A
1977-80	B.J. Neilson	Non-point source studies on the Chesapeake Bay	457,958.00	CRC	R
1977-81	R.J. Orth	The biology and management of eelgrass and its importance as an erosion control measure	102,534.00	USFWS	R

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1977-81	R.J. Orth	Evaluation of wetlands tidal flat areas for highway planning and design	175,000.00	DOT	A
1977	R.J. Orth	Submerged aquatic vegetation study	7,350.61	MDNR/USFWS	
1977	F.O. Perkins	Multi-user applications of scanning electron microscope to problems in biological oceanography	Fed. 30,000.00 State 30,000.00	NSF	A
1977-79	J.B. Pleasants	Preliminary design and planning for a marine science service center	43,750.00 State 3,750.00	CPRC	A
1977-80	P.T. Pohorence and C.H. Hershner	Graduate traineeship program	105,000.00	NSF	R
1977-79	M.H. Roberts	James River STP Pilot Plant Study	47,525.00	VMRC	A
1977-79	W.A. Van Engel	Biology and management of the american lobster	30,053.00	NMFS	A
1977-79	K.L. Webb	Inorganic nutrition of marine algal-invertebrate symbioses	83,907.00	NSF	R
1977-78	K.L. Webb	Minor dissertation research funds	295.00	W&M	A
1977-80	K.L. Webb	Role of heterotrophic protozoa in the flux of energy and nitrogenous nutrients in the marine ecosystem	Fed. 130,000.00 State 59,036.00	NSF	A
1977	C.S. Welch	Physical oceanographic and meteorological information summary and analysis	20,966.00	AGA	R
1977-79	C.S. Welch	Summary and analysis of physical oceanographic and meteorological information	11,029.00	ERT	A

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1977-78	J.M. Zeigler	A baseline study of the sediments of the Chesapeake Bay	611,689.00	EPA	**
**Consolidated with Dr. Byrne's contract with EPA #350					
1977-79	J.M. Zeigler	A mathematical model to study predict flood levels in Chesapeake Bay due to storm surge	129,437.00	HUD	A
1977-78	P.L. Zubkoff	Characterization of sulfate-rich polysaccharides from scyphozoan jellyfishes	Fed. 68,902.00	NSF	R
1977-80	P.L. Zubkoff	Comparison of venomous and innocuous forms of the scyphozoan jellyfish, <u>Cyanea capillata</u>	Fed. 109,650.00 State 30,974.00	ERDA	R
1978-80	M.E. Bender	Investigation to determine the ecological effects of oil spills on eastern coastal plain estuaries	60,000.00	API	A
1978	M.E. Bender	Manual development to study oil spills	16,200.00	CONOCO	A
1978	M.E. Bender	Study to determine the uptake of Kepone from contaminated sediments in the presence of powdered coal	3,000.00	ACC	A
1978-80	M.E. Bender	Study of dredging effects in Hampton Roads, Virginia	81,894.00	COE	A
1978-81	D.F. Boesch	Biogenic structures of Chesapeake Bay sediments	Fed. 76,857.00 State 7,795.00	EPA	A
1978-79	D.F. Boesch	Evaluation of existing data on macrobenthos of the New York Bight	Fed. 92,677.00 State 6,746.98	NOAA	A

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1978	D.F. Boesch	Identification and enumeration of South Atlantic Outer Continental shelf macrofauna	25,900.00	TIC	A
1978-80	E.M. Burreson	Amendment to a proposal to conduct a benthic recolonization study in the Middle Atlantic Region	560,712.00	BLM	A
1978-80	E.M. Burreson	Comparison ecological study of parasitism among Atlantic coast deep sea fishes	Fed. 64,960.00 State 40,000.00	NSF	R
1978-79	E.M. Burreson	Parasite study of atlantic croaker, <u>Micropogon undulatus</u> within the Chesapeake Bay	150.00	Sigma Xi	A
1978-81	R.J. Byrne	Baywide baseline sediment studies to determine distributional, physical properties, sedimentation budgets and rates	Fed. 630,442.00 State 31,606.00	EPA	A
1978-79	R.J. Byrne	Surface sediment sampling and analysis	32,985.00	COE	A
1978-80	W.D. DuPaul	Fisheries development through trade and media contacts and market development	5,000.00	GSAFDF	A
1978-81	C.S. Fang	Chesapeake Bay Circulation Model	Fed. 358,219.00 State 9,530.00	CRC	R
1978-80	C.S. Fang	Data collection and processing for state Co-op Mathematical Model	356,00.00	SWCB	A
1978-80	C.S. Fang	James River hydraulic model test to evaluate the effects of newly proposed Bridge-tunnel-Causeway structures	95,349.00	DOH	A

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1978-79	C.S. Fang	Survey of existing marsh/estuarine quality and ecological modeling techniques	103,417.00	COE	R
1978-79	V.R. Goldsmith	Dynamics of nearshore bar formation	70,088.00	DOD	A
1978-80	V.R. Goldsmith	Improvement and application of ocean wave data acquisition and modeling techniques	131,400.00	NOAA	A
1978-79	V.R. Goldsmith	Wave data and shoreline change data for Smith Island Maryland	9,958.00	COE	A
1978	H.H. Gordon	Remote sensing of subaquatic vegetation	Fed. 2,705.00 State 786.00	NASA	A
1978-79	H.H. Gordon	Series Studies	5,000.00	USFWS	A
1978-79	G.C. Grant	Acute biological effects of chemically dispersed oil spillage	47,159.00	API	A
1978-79	G.C. Grant	Environmental assessment of the waters in the vicinity of the C.P. Crane Generating Station	58,820.00	MDNR	A
1978-79	G.C. Grant	The identity, seasonality, and physical requirements of barnacle larvae in the vicinity of Calvert Cliffs	69,962.00	MDNR	R
1978-79	A. Greer	Personnel Assignment Agreement	21,129.00	NOAA	A
1978-79	W.J. Hargis, Jr. and M.P. Lynch	Virginia Institute of Marine Science institutional Sea Grant Program	496,568.00	NOAA	A
1978-80	R.E. Harris, Jr.	Trace metal monitoring in the Chesapeake Bay utilizing mollusks	138,400.00	EPA	R
1978	D.S. Haven	Croaker landing site survey	5,164.00	VDCEd	A

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1978	D.S. Haven	Leased oyster bottoms survey in the Nansemond River Bridge vicinity	5,000.00	DOH	A
1978	D.S. Haven	Leased areas study of North Shore of the James River Bridge	1,800.00	DOH	A
1978	D.S. Haven	Leased oyster grounds survey adjacent to bridge over Brick Kiln Creek	1,760.00	DOH	A
1978-79	D.S. Haven	The present and potential productivity of Baylor Grounds in Virginia--Phase III	116,192.00	VMRC	A
1978-79	C.H. Hershner	Effects of sublethal petroleum hydrocarbon stress of <u>Spartina alterniflora</u>	124,313.00	EPA	R
1978-79	C.H. Hershner	Equipment Funds	10,000.00	CIBA-GEIGY	A
1978-80	C.H. Hershner	Study of the fringing salt marshes of the lower Chesapeake Bay	167,628.00	EPA	R
1978-82	R.J. Huggett	Investigation of organic pollutants in the Chesapeake Bay	Fed. 955,848.00 State 59,927.00	EPA	A
1978	P.V. Hyer	Computer analysis of the Cockrell Creek Model	400.00	CD&A	A
1978-79	P.V. Hyer	<u>In-situ</u> and lab comparison of titration and probe methods of determining dissolved oxygen	31,581.01	WRRC	R
1978	D.E. Illowsky	Avoidance of chlorinated water layers by the larvae of the hermit crab, <u>Pagurus longicarpus</u>	298.97	W&M	A
1978-80	R.A. Jordan	Marine water sample analysis	600.00	NASA	A
1978-79	H.I. Kator	Research on selected bacterial and fungal populations in a Virginia salt marsh	14,986.00	API	A

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		environment exposed to crude oil spoilage			
1978-79	M.S. Kowalski	Food value survey of vascular plants in Virginia's tidal freshwater wetlands	200.00	Sigma Xi	A
1978-79	J.A. Lanier	Crest: an alternative education project for the gifted and talented child	4,000.00	GCSB	A
1978	J.A. Lanier	Enviroadventure Camp	2,000.00	VWF	A
1978-80	J.A. Lanier	Marine education K-12: information dissemination	Fed. 24,836.53 State 3,566.00	NSF	R
1978-79	J.A. Lanier	National Aquaculture Information System	Fed. 29,896.00 State 2,731.00	OWRT	R
1978	J.A. Lanier	Youth Conservation Corps Camp	Fed. 22,118.00 State 5,806.00	COR	A
1978-79	D.F. Ludwig	The effects of chemical pollutants on snail-microbe interactions on salt marshes	130.00	Sigma XI	A
1978	D.F. Ludwig	Interactions of the grazing snail, <u>Nassarius obsoletus</u> , and meiofauna on an intertidal mudflat	246.70	W&M	A
1978-79	M.P. Lynch	Cumulative environmental impact of engineering and construction activities review	32,972.00	CRC	R
1978-79	M.P. Lynch	Coastal Zone Management Program	Fed. 357,051.00 State 114,217.00	NOAA	A
1978-79	M.P. Lynch	Institutional Grant	34,854.00	W&M	R
1978-79	M.P. Lynch	Marine development workshops	6,000.00	CPCMD	A

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1978-79	M.P. Lynch and H.M. Austin	MESA New York Bight Project Symposium	1,000.00	NOAA/DOI	A
1978-81	M.P. Lynch and T.M. Dillon	Effects of fluctuating temperatures and polycyclic aromatic hydrocarbons on the survival potential of the estuarine grass shrimp, <u>Palaemonetes pugio</u>	5,000.00	NWF	A
1978	J.V. Merriner	Cownose Rays: Gear feasibility study 1978	14,000.00	GSAFDF	A
1978	J.V. Merriner	Cownose ray: gear feasibility study 1978	18,000.00	CPRC	W
1978-80	J.V. Merriner	Data management for Atlantic menhaden fishery logbooks - 1978 season and 1979 season	21,790.00	NMFS	A
1978-81	J.V. Merriner	Ecological study of the tidal segment of the James River encompassing Hog Point	133,813.00	VEPCO	A
1978-79	J.V. Merriner	Investigation of the american eel, <u>Anguilla rostrata</u> , in Virginia waters	52,613.00	CPRC	R
1978-80	J.V. Merriner	Investigation of elver recruitment in Virginian waters	94,000.00	CPRC	R
1978	J.V. Merriner	Menhaden reproduction study	6,500.00	Std. Prod.	A
1978-79	J.V. Merriner and W.A. Van Engel	Finfish and macroinvertebrate community in "Old Plantation Trough": biological description of a proposed dredge materials disposal site	5,500.00	COE	A
1978-80	J.V. Merriner and R.L. Wetzel	Structural and functional ecology of the nekton community utilizing an intertidal mud flat	Fed. 44,655.00	NSF	R

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1978-79	J.C. Munday	Remote sensing in estuarine management	Fed. 33,000.00 State 2,048.00	NASA	A
1978-79	J.A. Musick	Historical trends in the community structures of finfishes on George's Bank and the Gulf of Maine	132,027.00	BLM	R
1978-79	J.A. Musick	Radiation dump site demersal nekton	19,500.00	EPA	A
1978-80	J.A. Musick	Systematics and zoogeography of the arctic and near-arctic fishes of the family Zoarcidae (Teleostei)	5,223.00	Smithsonian	A
1978-81	J.A. Musick and D.F. Boesch	Effects of oil industry development activities on benthic ecosystems on the Middle Atlantic Outer Continental Shelf	622,071.00	USFWS	R
1978-80	B.J. Neilson	Adsorption of chlorinated organic compounds of sewage effluent by clay minerals and estuarine sediments	Fed. 28,000.00 State 28,000.00	OWRT	R
1978-81	B.J. Neilson	Chesapeake Bay problem of excessive enrichment or eutrophication	Fed. 136,446.00 State 8,943.00	EPA/CRC	A
1978-79	B.J. Neilson	Evaluation of the chlorophyll/phaeophytin ratio as an index of water quality	Fed. 9,912.00	OWRT	R
1978-80	B.J. Neilson	Evaluation of Ventra Vac units for removal of marine organisms	86,890.00	DON	A
1978-80	B.J. Neilson	Grey water reuse for horticulture in semi-rural residential areas	Fed. 21,315.00 State 2,164.00	OWRT	R
1978	B.J. Neilson	Water Quality Study	500.00	MPI	A
1978-79	B.J. Neilson and H.I. Kator	Predictive modeling of pollutant dispersal in estuarine waters	57,848.00	NASA	R

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1978-82	M.M. Nichols	Fate, transport and transformation of toxics	Fed. 349,690.00 State 17,805.00	EPA	A
1978-79	R.J. Orth	Mapping the distribution and abundance of submerged aquatic vegetation (SAV) in the lower Chesapeake Bay	Fed. 68,681.00 State 4,066.00	EPA	A
1978-81	R.J. Orth	<u>Zostera marina</u> : biology, propagation and effect of herbicides	Fed. 321,677.25 State 41,836.75	EPA	A
1978-80	R.J. Orth and C.H. Hershner	Effects of herbicides on submerged aquatic vegetation (SAV) in Virginia's Chesapeake Bay waters	Fed. 119,188.00 State 30,912.00	EPA	**
**Combined with Orth's contract listed directly above.					
1978	J.P. Pleasants	Vessel Rental	1,838.00	USGS	A
1978-79	M.H. Roberts	Sublethal effects of chlorine and other chemicals in power plant effluents on oyster production	70,121.00	MDNR	R
1978-79	M.H. Roberts	Species selection for biological evaluation of pollution potential of dredged material	39,783.00	COE	R
1978-79	M.H. Roberts	Toxicity of chemical oil spill dispersants	29,999.00	API	R
1978-79	R.L. Schmied	Intergovernmental Personnel Assignment Agreement	26,523.00	NMFS	A
1978-81	W.A. Van Engel	Relationship between the Chesapeake Bay blue crab and its climatological environment	40,000.00	NOAA/NMFS	A
1978-79	W.A. Van Engel	Relationship between the Chesapeake	Fed. 31,835.00	CPRC	R

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		Bay blue crab and its climatological environment	State 3,940.00		
1978-80	K.L. Webb	Dissolved nitrogen and phosphorus fluxes of scieractinian coral zooxanthellae symbioses	39,149.00	NSF	A
1978-79	K.L. Webb and L.J. Pastor, Jr.	Equipment Funds	299.00	W&M	A
1978-80	C.S. Welch	Georges Bank surface and subsurface current study	125,135.00	EG&G	R
1978-81	R.L. Wetzel and K.L. Webb	Functional ecology of submerged aquatic vegetation in the lower Chesapeake Bay	Fed. 647,455.80 State 76,486.20	EPA	A
1978-80	P.L. Zubkoff	Polysaccharides of the extracellular matrix of a scyphozoan jellyfish	73,852.00 31,102.00	NSF	R
1978-81	P.L. Zubkoff	Polysaccharides of the extracellular matrix of a scyphozoan jellyfish	44,750.00	ACS	R
1978-80	P.L. Zubkoff	Sulfate-rich polysaccharides of scyphozoan jellyfish	121,992.00	HEW	R
1979-80	H.M. Austin	Large area marine productivity experiments (LAMPEX) state agencies - Universities coordination	1,639.45	NMFS	A
1979-81	H.M. Austin	Platforms-of-opportunity program CPR/XBT support and analyses	22,723.00	NMFS	A
1979-81	H.M. Austin	Workshop on the population dynamics of the striped bass, <u>Morone saxatilis</u>	Fed. 5,200.00 State 1,153.97	NMFS	A
1979-82	H.M. Austin and R. Bowles	Striped bass ichthyoplankton size distribution in the Potomac River	298,073.00	MDNR	R

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1979-80	R.P. Ayers	Atlantic Coast Ecological Inventory	74,211.00	USPWS	R
1979-80	T.A. Barnard	Technical services assistance in connection with regulatory permit applications and violations in Virginia	40,000.00	COE	A
1979-81	M.E. Bender	Ecological effects to experimental oil spills in eastern coastal plains estuaries	25,000.00	API	A
1979	M.E. Bender	Skiffes Creek-Kepone Monitoring	16,289.00	COE	A
1979	R.H. Bieri	Fate of hydrocarbons from the Amoco-Cadiz oil spill in anoxic environments	99,551.00	NOAA	W
1979-81	G.W. Boelhert	Criteria for identification of starvation-induced mortalities in first-feeding striped bass (<u>Morone saxatilis</u>) larvae	133,440.30	MDNR	R
1979-81	J.D. Boon and D.A. Evans	Video digitization system to support Fourier analysis of particle shape	8,586.00	NSF	A
1979-80	C.F. Cerco and C.S. Fang	Parker Creek water quality studies	42,000.00	SWCB	A
1979-80	H.S. Chen	Frictional effect on water wave scattering	28,826.00	DOC	R
1979	G.M. Dawes	Technical services for federal regulatory activities in tidal waters of Virginia	9,800.00	COE	A
1979	D.G. Doumlele	Tidal Freshwater Swamp Inventory	10,788.00	VEE	A
1979-80	W.D. DuPaul	Utilizing seasonal abundance of seafood: a consumer edge on inflation	21,809.00 10,879.00	UVA VIMS	R
1979-81	C.S. Fang	Analytical and experimental study to improve computer models for mixing and	273,250.00	USCG	R

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		dilution of water soluble hazardous chemicals			
1979	C.S. Fang	Dye Studies Program	7,000.00	CFI	A
1979	C.S. Fang	The effects of proposed improvement to small boat harbor	6,500.00	NN	A
1979	C.S. Fang	Installation of current meters in the vicinity of the outfall for the Chesapeake-Elizabeth sewage treatment plant	6,000.00	MPI	A
1979-80	C.S. Fang	Modeling services in conjunction with Lynnhaven River EIA	6,000.00	HSMM	A
1979	C.S. Fang	Small wave tank construction	10,000.00	DOH	A
1979-80	S.C. Gammisch	Improving the marine education materials system	Fed. 34,565.00 State 3,000.00	NOAA	R
1979	S.C. Gammisch	Virginia Wildlife Federal Summer Camp	2,000.00	VWF	A
1979-81	V.R. Goldsmith	Training and application of ocean wave/current data and modeling techniques: an international cooperative assistance program for improved coastal management and research in Egypt	180,109.00	NOAA	A
1979-81	V.R. Goldsmith J.C. Munday and C.S. Welch	Seasat SAR test of Virginian Sea wave climate model	67,829.00	NOAA	A
1979	H.H. Gordon	Aerial photography in Virginia Beach	719.00	COE	A
1979-80	H.H. Gordon	Beach monitoring	2,641.00	COE	A

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1979-80	G.C. Grant	Acute biological effects of chemically dispersed oil spillage-II	66,474.00	API	R
1979	G.C. Grant	Environmental assessment of the waters in the vicinity of the C.P. Crane generating station	89,057.00	MDNR	A
1979-80	G.C. Grant	An environmental assessment of the waters in the vicinity of the C.P. Crane Generating Station	71,275.00	MDNR	A
1979-80	G.C. Grant and A.Y. Kuo	Investigations of hydrodynamic and behavioral factors affecting zooplankton sampling by pumps	39,670.00	MMC	A
1979-81	L.W. Haas	A fully automatic camera system for photographing fluorescent microscope images	5,210.00	NSF	A
1979-82	L.W. Haas	Interdisciplinary York River study: a biological and physical investigation of estuarine mixing	109,769.00	NSF	R
1979	D.S. Haven	Leased oyster ground survey in Hampton Roads	2,086.00	DOH	A
1979-81	M.P. Lynch	Marine Development Workshop	13,000.00	CPC	A
1979-81	D.S. Haven	The present and potential productivity of Baylor Grounds in Virginia - Phase III	22,298.00	VMRC	A
1979	D.S. Haven	Study to estimate shellfish density in the vicinity of the Chuckatuck Creek Bridge	4,822.14	DOH	A
1979	D.S. Haven	Study to estimate oyster density in the vicinity of new West Norfolk Bridge	4,733.00	DOH	A
1979-80	R.J. Huggett	Sediment analysis (Deep Creek)	1,000.00	COE	A

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1979-80	R.A. Jordan	An environmental assessment of the waters in the vicinity of the C.P. Crane Generating Station, benthos study	74,377.00	MDNR	A
1979-80	H.I. Kator	A study of the responses of selected bacterial and fungal populations in a Virginia Salt Marsh environment to crude oil spillage	15,000.00	API	A
1979	A.Y. Kuo	Chinese Engineers Visit	500.00	WRPC	A
1979-80	A.Y. Kuo	Model study in Lynnhaven Bay	15,838.00	COE	A
1979	J.A. Lanier	The coastal problems and resource management course	2,000.00	CPCB	R
1979-80	J.A. Lanier	The coastal problem and resource management	1,997.00	CPCB	R
1979-81	J.A. Lanier	Marine education K-12: information dissemination	28,948.00	NSF	A
1979	J.A. Lanier	National Aquaculture Information System	18,759.00	NOAA	A
1979	J.A. Lanier	VIMS Youth Conservation Corps Program	Fed. 14,355.00 State 3,589.00	USFS/USDA	A
1979-81	J.G. Loesch	Anadromous Fisheries Research Program, Virginia	Fed. 72,428.00 State 83,502.00	NMFS	A
1979-80	J.G. Loesch and E.J. Foell	Effect of light attenuation on abundance indices for estuarine-dependent juvenile fishes	85,616.00	MDNR	A
1979-81	M.P. Lynch	Assessment of effects of low flows on biota of Chesapeake Bay	94,000.00	COE	A

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1979-80	M.P. Lynch	Development of a use ethic for the Chesapeake Bay	5,000.00	CPCB	A
1979-81	M.P. Lynch	Marine Development Workshop	13,000.00	CPC	A
1979	M.P. Lynch	VIMS Institutional Sea Grant Program 1979	Fed. 715,400.00 State 434,562.00	DOC	A
1979-80	J.V. Merriner	Drift and Upstream movement of fish larvae	111,000.00	PANY	A
1979-81	J.V. Merriner	The spotted seatrout, reproductive biology and the sport fishery in the Chesapeake Bay area	2,744.00	SFI	A
1979-80	J.V. Merriner and N.J. Brown	The spotted sea trout (<u>Cynoscion nebulosus</u>), reproductive biology and sport fishery in the Chesapeake Bay area	6,000.00	AFTMA	R
1979-81	J.V. Merriner and R.K. Dias	Evaluation of gear for sampling juvenile fishes in shallow nearshore area of Chesapeake Bay	104,500.00	MDNR	R
1979-81	J.C. Munday	Establishment of Landsat Data Analysis capability for use in Virginia	9,500.00	NASA	A
1979	J.A. Musick	An analysis of size dependent seasonal distribution of the summer flounder <u>Paralichthys dentatus</u> in the Middle Atlantic Bight	Fed. 9,962.00 State 1,762.00	SFFMP	R
1979-82	J.A. Musick	A comparative study of the structure and function of demersal deep-sea fish assemblages in tropical and temperate ecosystems	82,359.00	NSF	A
1979-80	J.A. Musick	Identification of stocks of summer flounder <u>Paralichthys dentatus</u> in the Middle Atlantic	12,321.00	SFFMP	R

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1979-80	J.A. Musick	Studies of the status of threatened and endangered marine biota in Virginia	20,000.00	SWCB	R
1979-81	J.A. Musick	A study of sea turtle mortality in Virginia	Fed. 35,000.00 State 4,710.00	NMFS	A
1979-80	B.J. Neilson	Lynnhaven Bay Study	45,351.00	COE	A
1979-81	B.J. Neilson	Study plan for the Ware River	600,000.00	EPA	A
1979-80	B.J. Neilson	Water quality and non-point pollution studies	5,000.00	HRWQA	A
1979-80	M.M. Nichols	Estuary-shelf Interrelationships	3,900.00	NASA	R
1979	M.M. Nichols	Fifth Estuarine Conference	4,600.00	BLM	R
1979-81	M.M. Nichols	Fifth Estuarine Research Conference	9,710.00	NOAA	A
1979-81	J.E. Olney	Contributions to the biology and taxonomy of the Carapidae (Pisces: Ophidiformes): an analysis of larval characters	47,197.00	NSF	A
1979-80	L.M. Ondic W.J. Diggles	Comprehensive Employment and Training Act	21,021.00	VEC	A
1979-80	R.J. Orth	Distribution and abundance of submerged aquatic vegetation in the lower Chesapeake Bay	Fed. 18,436.00 State 1,214.00	EPA	A
1979-80	F.O. Perkins	Eelgrass Wasting Disease	46,322.00	EPA	R
1979	F.O. Perkins	Travel grant to study identity of the causative agent of pearl oyster, <u>Pinctada maxima</u> , mortalities in tropical Australia	3,557.00	NSF	R

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1979-81	M.H. Roberts	Bioassay methodology evaluation	67,840	CRC	A
1979-80	M.H. Roberts	Evaluation of bioassay methodology for application to Chesapeake Bay and other estuaries	177,520.00	CRC	A
1979-80	C.L. Ruddell	Multidisciplinary study of the response of the American oyster (<u>Crassostrea virginica</u>) to a model organic compound	51,081.00	NSF	R
1979-82	C.L. Ruddell and F.O. Perkins	Multidisciplinary study of infectious agents and neoplastic disease in several marine bivalves	401,719.00	HEW/FDA	R
1979-80	R.L. Schmied	Intergovernmental Personnel Assignment Agreement	33,143.19	NMFS	A
1979	E.L. Shea	Intergovernmental Personnel Assignment	16,982.00	NOAA	A
1979-81	M.E. Sparrow and J.A. Lanier	An alternative education project for the gifted and talented child	4,000.00	GCSB	A
1979-80	N.B. Theberge	State and federal regulatory impact on aquaculture development	59,441.55	USFWS	R
1979-80	P.L. Zubkoff	An environmental assessment of the waters in the vicinity of the C.P. Crane Generating Station, 1979-1980	29,909.00	MDNR	A
1980	H.M. Austin	Climate scale environmental factors affecting year class fluctuations of Chesapeake Bay croaker	Fed. 5,000.00 State 3,550.00	NMFS	A
1980-81	H.M. Austin	The distribution and abundance of bottlenosed dolphins, <u>Tursiops truncatus</u> , in the nearshore waters from Cape Charles to Back Bay, Virginia	9,890.00	NMFS/NOAA	A

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1980-82	H.M. Austin	Investigation into density-independent causes of natural variations in abundance of the Atlantic croaker in the York River, Va.	Fed. 23,000.00 State 3,550.00	ERL	R
1980-81	H.M. Austin	Temporal fluctuations of phytoplankton abundance as related to climatic variation off southern California for the period 1920-39	15,500.00	NOAA	R
1980	M.E. Bender	Analysis of trace metal in marine biota	42,400.00	Va. Corp.	R
1980-81	R.H. Bieri	HMW Hydrocarbon analysis of 30 sediment samples	46,021.00	Raytheon	R
1980	R.H. Bieri	Validation of second sediment interim reference material	2,700.00	NMFS	A
1980-82	D.F. Boesch	Benthic biological processes affecting shelf sediment dynamics and stratum	Fed. 101,726.00 State 30,169.45	NSF	R
1980	D.F. Boesch	Biogenic structures in sediments off Chang Tiang, East China Sea	14,700.00	NOAA	A
1980	D.F. Boesch	Distributional ecology of fishes and macroinvertebrates as related to daily and seasonal dynamics of water masses on the continental shelf	7,333.10	UW	A
1980-81	D.F. Boesch and H.I. Kator	Effects of ocean dumping on macrobenthos and sediment microorganisms at the Philadelphia Dumpsite	63,018.00	NOAA	R
1980-81	J.D. Boon and D.A. Evans	Particle shape analysis and morphogenetic trends in littoral and inner shelf sands of the Chesapeake Bight	167,904.00	NOAA	A
1980-81	M.A. Bowen	Ocean Pulse	396,102.00	NMFS	R

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1980	E.M. Burreson	Analysis of benthic macrofauna samples from the New England outer continental shelf	41,855.00	BLM	R
1980	R.J. Byrne	Investigation of subsurface conditions at Goose Hill channel and Dancing Point-Swann Point, shoal channel, James River	19,791.00	COE	A
1980	R.J. Byrne	Processes in tidal inlet stability	15,620.00	NSF	R
1980	R.J. Byrne	Services to obtain continuous undisturbed cores in the Potomac estuary	14,710.57	USGS	A
1980-81	R.J. Byrne, B.J. Neilson and J.L. Mercer	An investigation to monitor community structure and distribution changes in a tidal wetland of Cabin Point Creek in response to land development perturbation	26,719.00	NMFS	A
1980-81	K. Char	Intergovernmental Personnel Assignment	27,859.00	NOAA	A
1980-81	E.A. Cornell	Virginia Wildlife Federation summer camp	2,000.00	VWF	A
1980-81	R.J. Diaz	Field and semi-field validation of laboratory derived aquatic test systems	Fed. 47,300.00 State 2,800.00	NOAA	A
1980-81	R.J. Diaz	Investigation of preventative measures against mud ingestion and sea organism fouling in deep-draft capital ships	15,000.00	HRS	A
1980-81	R.J. Diaz	Investigation of the transport route and quantity of marine organisms entering pier 11 and 12 areas Naval Station, Norfolk, Virginia	97,995.00	DON	A
1980	R.J. Diaz	Long-term ecological effects of oil	98,699.00	EPA	R

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		spills and restoration techniques on salt marsh Ecosystems			
1980-81	R.J. Diaz	Valuation of wetlands for highway planning and design	197,948.00	FHA	R
1980-81	R.J. Diaz and M.A. Bowen	Evaluation of the environmental impact of dredged material disposal in the open ocean	29,379.00	NOAA	R
1980-81	R.T. Doyle	Investigation of the behavioral and and lateral line development of larval striped bass	73,000.00	PANY	R
1980	W.D. DuPaul and S.C. Gammisch	Mainstreaming MEMS. Rapid Access education Materials System	29,882.00	NSF	R
1980-81	D.A. Evans and W.F. Roller	The feasibility of a unified water monitoring and data management system for the Chesapeake Bay	35,000.00	NOAA	R
1980-81	C.S. Fang	Application of a coastal circulation model to the South Atlantic Outer Continental Shelf	396,795.00	BLM	R
1980-82	C.S. Fang	The cooperative state agency program: Biennium 1980-1982	446,000.00	CSA	A
1980-81	C.S. Fang	Hydrographic and water quality mathematical model study of Little Hunting Creek, Va.	72,500.00	SWCB	A
1980-81	C.S. Fang	A hydrodynamic and water quality model for Chesapeake Bay	11,804.00	EPA	A
1980-82	J.J. Govoni	Intergovernmental Personnel Assignment Agreement	30,264.00	NMFS	A

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1980-81	G.C. Grant	Assessment of larval striped bass	Fed. 56,766.00 State 28,383.00	NMFS	A
1980-81	G.C. Grant	Influences of the Wagner Power Plant on aquatic fauna of the Patapsco River	71,285.00	MDNR	R
1980-82	L.W. Haas	Secondary production based on marine coccoid Cyanobacteria	99,039.00	NSF	A
1980-81	R.L. Harris	Metal distributions in suspended sediment in the Chesapeake Bay Plume and adjacent Atlantic Continental Shelf	10,000.00	NMFS	A
1980-81	D.S. Haven	Hard clam survey in Hampton Roads	9,539.00	DOH	A
1980-81	D.S. Haven	Study areas of leased oyster ground around the site of the additional lanes of the James River Bridge	5,477.00	DOH	A
1980	D.S. Haven and P.C. Kendall	Proposal to study areas of leased oyster ground around the site of the additional lanes of the James River Bridge	5,477.00	DOH	A
1980-81	G.C. Ho	Optimization of GC/MS methods for toxic organics	Fed. 172,000.00 State 8,600.00	EPA	R
1980	R.J. Huggett	Petroleum hydrocarbon analysis of fish and eggs in the Rappahannock River	16,962.00	SWCB	R
1980	R.J. Huggett	Source assessment program	26,868.00	EPA	A
1980-82	P.V. Hyer	Local and nonlocal forcing in the Chesapeake Bay-a model study	88,098.56	MDNR	R
1980-83	P.V. Hyer	The response of an estuarine ecosystem to the cessation of pollution	107,364.00	NOAA	R

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1980	P.V. Hyer and C.S. Welch	Development of physical oceanographic model(s) for the deep ocean environment	128,724.32	EPA	R
1980-81	R.A. Jordan and R.L. Harris	Distribution of metals in York River plankton and total seston	Fed. 73,714.00	NOAA	R
1980	R.A. Jordan and P.L. Zubkoff	The design and test of a long range sampling protocol for the phytoplankton community of the lower Chesapeake Bay	39,219.00	NOAA	R
1980-81	H.I. Kator	Assessment of bacterial biomass and heterotrophic potential in water samples for the Chesapeake Bay plume and Atlantic Continental Shelf	19,919.00	NMFS	A
1980	H.I. Kator and J.N. Boyer	Microbial degradation of 14 C-Chitin in an estuary	300.00	W&M	A
1980-81	H.I. Kator and D.S. Gussman	Evaluation of brewery wastes as a nutrient source for oysters	22,233.00	ABC	A
1980-81	H.I. Kator and M.W. Rhodes	<u>In situ</u> survival of enteric bacteria in estuarine waters of different nutrient characteristics	Fed. 12,500.00 State 12,977.00	VPI&SU/OWRT	A
1980-81	H.I. Kator and M.W. Rhodes	Study of the relationship between <u>V.</u> <u>cholerae</u> and domestic sewage in shellfish growing waters in the mid-Atlantic Region	83,235.00	DHHS/FDA	R
1980	H.I. Kator and M.W. Rhodes	Survival potential and the development of sublethal stress	115,571.00	OWRT	R
1980	W.H. Kriete	Study of the Rappahannock River spawning grounds following the spring 1980 Oil Spill	8,000.00	M&HSM Co.	A
1980-81	A.Y. Kuo, C.S. Welch and C.S. Fang	Chesapeake Bay tributary-embayment fluxes	75,000.00	NOAA	A

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1980-81	J.A. Lanier	Pilot classes in Virginia for the coastal problems and resource management course	Fed. 5,000.00 State 1,865.00	NOAA	A
1980-81	J.G. Loesch and R.K. Dias	Development of a standardized sampling program for the quantitative assessment of juvenile striped bass abundance within Chesapeake Bay	Fed. 70,836.00 State 40,295.00	NMFS	R
1980-81	J.G. Loesch and R.T. Doyle	Spawning conditions of striped bass in Virginia waters	Fed. 56,570.00 State 30,904.00	NMFS	A
1980-81	J.G. Loesch and E.J. Foell	Effects of light attenuation on abundance indices for estuarine dependent juvenile fishes	88,567.00	NSF	R
1980-81	J.G. Loesch and R.L. Harris	Evaluation of the concentrations and effects of organic and inorganic pollutants in Chesapeake Bay striped bass	110,826.00	NMFS	R
1980-83	J.G. Loesch and W.H. Kriete	Assessment of adult striped bass stocks utilizing pound net and stake gill net fisheries in Virginia	Fed. 272,540.00 State 136,990.00	NMFS	R
1980-81	M.P. Lynch	The Virginia Institute of Marine Science Sea Grant Program	Fed. 791,200.00 State 436,100.00	NOAA	A
1980-81	W.G. MacIntyre	Interaction of air force hydrocarbon fuels with clays and sediments	142,122.00	USAF	A
1980-81	J.V. Merriner	Atlantic menhaden preparation and publication	2,500.00	NMFS	A
1980-81	J.V. Merriner	Intergovernmental Personnel Assignment	40,615.00	NMFS	A
1980	J.V. Merriner and R.K. Dias	A preliminary evaluation of the efficiency of vertical angled screens in guiding entrainable size striped bass into a	68,469.00	PANY	R

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		bypass channel			
1980	J.C. Munday	Landsat digital mapping and analysis of Chesapeake Bay plume	5,697.00	Dept. of Tax	A
1980-81	J.C. Munday	Landsat analysis of the dynamics of the Chesapeake Bay plume	5,039.62	NMFS	A
1980	J.C. Munday	Landsat data processing services for Virginia users	4,000.00	NASA	A
1980-81	J.C. Munday	Seasat SAR test of Virginian Sea wave climate model	49,962.00	NOAA	A
1980-81	T.J. Murray	Crab solid waste in the Chesapeake Bay - A financial analysis of crab meal production	8,080.00	MAFDI	A
1980-82	J.A. Musick	A comparative study of life history patterns of demersal deep-sea fish assemblages in tropical and temperate ecosystems	4,189.00	NSF	R
1980	J.A. Musick	A comparative study of life history patterns of demersal deep-sea fish assemblages in tropical and temperate ecosystems	3,825.00	NSF	A
1980-82	J.A. Musick	The functional morphology and feeding strategies of demersal deep-sea neobythitine fishes	4,300.00	NSF	A
1980	J.A. Musick	Identification of finfish nursery grounds on the Bayside of the Eastern Shore of Virginia	Fed. 459,026.00 State 156,609.00	NMFS	R
1980	J.A. Musick	Identification of finfish nursery grounds on the bayside of the eastern shore of Virginia	615,635.00	NMFS	R

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1980	J.A. Musick	Mesopelagic Fish Study	1,894.00	D&M	R
1980-81	J.A. Musick	A study of the status of loggerhead turtle nesting in Virginia	10,000.00	Danville	A
1980-82	J.A. Musick	Studies of the trophic function of demersal fishes in deep-sea ecosystems	25,000.00	VSWCB	R
1980-81	B.J. Neilson	Estuarine and nonpoint source water quality studies of Lynnhaven Bay and Northwest River	237,000.00	HRWQA	A
1980-81	B.J. Neilson	Intergovernmental personnel assignment	24,776.00	EPA	A
1980-81	B.J. Neilson	Literature review of environmental effects associated with reservoir mixing, destratification, aeration, and oxygenation techniques	58,495.00	COE	R
1980-81	M.M. Nichols	Environmental monitoring of an ocean dump site off Chesapeake Bay	123,332.00	NOAA	R
1980	P.A. Penhale	The interrelationship of photosynthesis, pigment complement and canopy structure as affected by light in a seagrass community	103,112.00	NSF	R
1980-81	P.A. Penhale	A system to measure atmospheric and underwater photosynthetically active radiation	4,574.00	NSF	R
1980-84	F.O. Perkins	NIEHS Marine/Freshwater Biomedical Center	420,997.00	HEW	R
1980	W.I. Priest	Impact of landward bulkheads or alternative structures on marshes	59,063.00	NMFS	R
1980-82	M.W. Rhodes	Bacterial flora associated with a power plant cooling tower and its public	133,874.00	MDNR	R

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		health significance			
1980-81	M.W. Rhodes	Evaluation of standard and proposed methods for enumerating fecal coliforms exposed <u>in situ</u> to the estuarine environment	Fed. 37,207.00 State 2,391.00	EPA	R
1980	M.W. Rhodes and H.I. Kator	Survival potential and the development of sublethal stress in fecal coliforms, fecal streptococci, salmonellae and <u>Vibrio cholerae</u> along a freshwater-estuarine transition zone	115,571.00	OWRT	R
1980-81	C.E. Richards	Young-of-year, juvenile striped bass relative recruitment estimates from three Virginia rivers	Fed. 18,000.00 State 9,000.00	NMFS	A
1980	C.B. Rideout	Aquaculture-computerized information	22,977.05	NOAA	A
1980-81	M.H. Roberts	Improvement of bioassay methods for application to estuaries and coastal waters	27,644.00	CRC	A
1980-81	M.H. Roberts	Production of halogenated organics during wastewater disinfection	2,171.00	HRSD	A
1980	A. Rooney-Char	Transportation incidents involving hazardous materials	28,720.00	VEE	A
1980	A. Rooney-Char	Transportation incidents involving hazardous materials	28,720.00	DOH	R
1980-81	C.L. Ruddell	Histopathological and microbiological studies of the effects of sewage dumping on two macrobenthic invertebrates at the Philadelphia Dumpsite	31,194.00	NOAA	R

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1980-81	C.L. Ruddell	A study of the factors which promote the growth of oyster cells in tissue culture	96,856.00	NSF	R
1980	E.P. Ruzecki	Conduct sampling in association with the ocean pulse and superflux projects	10,000.00	NMFS	A
1980	E.P. Ruzecki	Use of R/V Captain John Smith	2,000.00	NMFS	A
1980	E.P. Ruzecki	Utilization of VIMS's Beaver aircraft	1,500.00	NASA	A
1980	E.L. Shea	Intergovernmental Personnel Assignment	18,957.39	NOAA	A
1980-81	N.B. Theberge	Assessment of energy efficient techniques for offshore recreational fishing	81,483.00	AFTMA	R
1980	N.B. Theberge	Assessment of imported foreign fish products in U.S. markets	13,663.00	NMFS	R
1980-81	N.B. Theberge	Continuation of research project for the False Cape Senate subcommittee of the Virginia General Assembly	23,000.00	NSF	A
1980-81	N.B. Theberge	Foreign sanitation requirements and U.S. inspection procedures	20,485.00	NMFS	R
1980-81	N.B. Theberge	Shipping conference rates-an impediment to U.S. fish exports	41,342.00	NMFS	R
1980-81	N.B. Theberge	Survey and assessment of angler preferences toward energy efficient alternative offshore fishing techniques	17,088.00	AFTMA	R
1980-81	J. vanMontfrans	An evaluation of the importance of <u>Vallisneria</u> beds as a habitat for representative important species in Maryland	53,795.00	MDNR	R

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1980-81	K.L. Webb	Chesapeake Bay nutrient study	Fed. 121,628.00 State 9,253.00	EPA	A
1980	C.S. Welch	An active, wind-powered device for control of beach erosion and channel sedimentation	37,839.00	DOE	R
1980-82	C.S. Welch	Development of a langrangian current follower for use in estuaries	195,342.95	MDNR	R
1980-81	C.S. Welch	Mixed layer studies of the Puerto Rico Dumpsite	147,395.00	NOAA	R
1980	C.S. Welch	Wave response tests for the proposed jetty-break water, Seafood Industrial Park, Newport News	19,890.79	CEMI	A
1980-82	C.S. Welch and G.C. Grant	Dispersal of aqueous pollutants in subtropical waters	182,501.00	NOAA	R
1980-82	R.L. Wetzel and P.A. Penhale	Environmental regulation of <u>Zostera marina</u> and <u>Ruppia maritima</u> community metabolism and growth	121,810.00	EPA	A
1981	H.M. Austin	A fellowship continuation proposal to the Northeast Fisheries Center	20,745.00	NMFS	A
1981	H.M. Austin	Low flow study	3,000.00	USFWS	A
1981	J. Baker	Research Grant for Supplies	167.00	W&M	A
1981	S.O. Barrick and J.M. Meadows	A Union List of Serials in marine science libraries	36,418.00	NOAA	A
1981	M.E. Bender	Kepona studies	44,815.00	VDCR	A
1981	R.H. Bieri and C.W. Su	Toxic organic compounds in flyash, scrubber sludge, stabilized coal wastes and biota associated with artifical reefs	103,981.00	NOAA	R

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1981	J.D. Boon and D.A. Evans	Source identification and tracing of sand shoal deposits in lower Chesapeake Bay using Fourier grain shape analysis	21,668.00	NOAA	A
1981	J.N. Boyer	Research Grant for Supplies	238.00	W&M	A
1981	E.M. Burreson	Effects of mortality caused by the hemoflagellate, <u>Trypanoplasma bullocki</u> , on summer flounder, <u>Paralichthys dentatus</u> , populations	21,941.00	NOAA/NMFS	A
1981	E.M. Burreson	Effects of mortality caused by the hemoflagellate, <u>Trypanoplasma bullocki</u> , on summer flounder, <u>Paralichthys dentatus</u> , populations	55,561.00	NSF	R
1981	R.J. Byrne and R.J. Huggett	Kepone and suspended sediment analysis	85,809.00	COE	A
1981	R.J. Byrne and W.I. Priest	Water quality in Cabin Point Creek	25,485.00	NMFS	A
1981	J.H. Carter	Doctoral Dissertation	5,827.00	NSF	A
1981	M. Castagna and J.N. Kraeuter	Assessment of supplemental feeds for cost reduction in growing hard clam seed	56,367.00	NOAA	A
1981	M. Castagna and J.N. Kraeuter	Production economics of a clam hatchery	45,000.00	NOAA	R
1981	F.L. Chu and K.L. Webb	Artificial food for oyster larvae	86,629.00	NOAA	A
1981	J.A. Colvocoresses and J.A. Musick	An evaluation of the fishery potential of underutilized marketable species in Virginia: anglerfish	53,559.00	NOAA	A
1981	E.A. Cornell	Environmental studies research program	97,044.00	NSF	A

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1981	R.E. Crabtree	Doctoral Dissertation	5,065.23	NSF	A
1981	R.K. Dias	Eel pot mesh selection and catch efficiency	36,000.00	NOAA	R
1981	R.K. Dias	Relative recruitment estimates for striped bass from three Virginia Rivers	Fed. 30,294.00 State 30,323.00	NMFS	A
1981	R.K. Dias, J.G. Loesch and W.H. Kriete	Striped bass project	61,500.00	NMFS	A
1981	R.J. Diaz	Analysis of long term benthic data	9,824.00	EPA	R
1981	R.J. Diaz	Effects of a pier on the distribution of subtidal benthic organisms and an investigation of animal-sediment relationships at Duck, NC.	10,594.00	COE	A
1981	R.J. Diaz	Field and semi-field validation of laboratory derived aquatic test systems	72,700.00	NOAA	A
1981	R.J. Diaz	Habitat evaluation of artificial reefs made of stabilized coal waste	43,555.00	MDNR	R
1981	W.D. DuPaul	Beam trawl demonstration	2,076.00	Fass Broth.	A
1981	W.D. DuPaul	Virginia Graduate Marine Science Consortium	554,867.00	NOAA	A
1981	W.D. DuPaul and S.C. Gammisch	Infusion of fisheries/seafood education materials into MEMS	15,647.00	MAFDF	R
1981-83	C.S. Fang	Proposal to study the water quality of Fourmile Run and Neabsco Creek	185,000.00	SWCB	A
1981	D.J. Fisher	Dietary accumulation of Kepone by spot, its importance in determining residue	29,868.00	VEE	R

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		levels in feral organisms			
1981-83	S.C. Gammisch	Mainstreaming MEMS: rapid access to resources of the marine education materials system for all students	29,882.00	NMFS	R
1981	G.C. Grant	Assessment of larval striped bass - Year 2	Fed. 51,000.00 State 25,500.00	NMFS	A
1981	G.C. Grant	Assessment of larval striped bass	76,500.00	NOAA	A
1981	G.C. Grant and E.P. Ruzecki	Feasibility study and plan of study for assessment of the effects of jetties on larval migration, Oregon Inlet, North Carolina	99,869.00	COE	R
1981-82	D.S. Gussman	Assistance for supplies	1,000.00	ABC	A
1981	D.S. Gussman	Research Grant for Supplies	247.00	W&M	A
1981	L.W. Haas	Heterotrophic microflagellates as a food for oyster mariculture	54,500.00	USDA	R
1981	L.W. Haas	Plankton rate processes in oligotrophic oceans: microzooplankton; the role of heterotrophic microflagellates	107,883.00	NSF	R
1981	L.W. Haas	Microzooplankton secondary production: heterotrophic microflagellates grazing on heterotrophic bacteria and coccoid Cyanobacteria	199,000.00	NMFS	R
1981	L.W. Haas	Microzooplankton secondary production	111,061.00	NSF	A
1981	L.W. Haas	Secondary production based on marine coccoid cyanobacteria (blue-green algae)	105,800.00	NSF	A
1981	R.C. Hale	Research Grant for Supplies	137.00	W&M	A

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1981	W.J. Hargis, Jr.	To attend and support First US-USSR Symposium on Parasites and Pathogens of world ocean	4,985.00	NOAA	A
1981	W.J. Hargis, Jr.	Oyster Disease Workshop	1,000.00	NOAA	A
1981	D.S. Haven	Obtaining <u>Rangia</u> clams for ABS Corp.	2,054.79	ABC	R
1981	D.S. Haven	Proposed study to estimate shellfish density in the vicinity of the Route 202 Bridge over Nomini Creek, Project 0202-096-103, B 602	3,615.00	DOH	A
1981	D.A. Hepworth and M.H. Roberts	Artificial food for oyster larvae	75,096.00	USDA	A
1981	C.H. Hershner	Aerial photography of the Wye River drainage basin	1,323.00	USDA	A
1981	C.H. Hershner	Evaluation of adenylate energy charge as an indicator of stress in estuarine macrophytes	68,622.00	NOAA	R
1981	C.H. Hobbs	Sample Analysis for Dravo Corp.	700.00	Dravo Corp.	A
1981	C.H. Hobbs	Seismic Work for VMRC	6,240.00	VMRC	A
1981	R.J. Huggett	Analysis of organic compounds in eight rainwater samples	8,000.00	State of Md.	A
1981	R.J. Huggett	Analysis of samples for Kepone	3,500.00	COE	A
1981	R.J. Huggett	A new dumpsite biomonitoring technique for assessing sublethal stresses on aquatic organisms	95,172.00	NOAA	R
1981	R.J. Huggett, M.E. Bender and	Accumulation of toxic organics in the blue crab	21,352.84	VEE	R

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	R.C. Hale				
1981	P.V. Hyer, A.Y. Kuo, H.I. Kator and M.W. Rhodes	Evaluation of representative marinas as sources of fecal coliforms and the concept of seasonal fecal coliform buffer zone - A combined field and numerical modeling study	70,521.00	NOAA	A
1981	R.A. Jordan	Ecological studies in the vicinity of the Badische Corp. effluent, James River, Virginia	7,360.00	Hampton In.	R
1981	R.A. Jordan	Predicting persistent chemical concentrations in marine food chains	117,265.00	NOAA	R
1981-82	J.N. Kraeuter, R.L. Wetzel and J.A. Musick	Effects of tidal creek irrigation water impoundments on the structure and function of a salt marsh ecosystem	187,333.00	EPA	R
1981	W.H. Kriete and J.G. Loesch	Survey of <u>Alosa</u> spawning sites in Virginia tributaries to the Potomac River	19,464.00	NMFS	P
1981	A.Y. Kuo	Lynnhaven River model runs	698.00	HSMM	A
1981	F.L. Lawrence	Teaching resources of maritime Virginia - a course for elementary level teachers	13,700.00	Dept. of Ed.	R
1981	F.L. Lawrence	Toxic wastes education proposal	75,387.00	VEE	R
1981	J.G. Loesch	Anadromous fisheries research program, Virginia	Fed. 60,204.00 State 60,204.00	NMFS	A
1981	J.G. Loesch	Continuation anadromous fisheries research program, Virginia AFC 10 3	133,994.00	NMFS	A
1981	J.G. Loesch	Feasibility study of fish passage facilities in the James River, Richmond, Virginia	15,672.00	VCGIF	A

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1981	J.G. Loesch	Study of anadromous fish in Pohick Creek, Fairfax, Va.	3,720.00	USDA/SCS	A
1981	J.G. Loesch	Continuation of relative recruitment estimates for striped bass from three Virginia Rivers and potential predator-prey relationships with cohabitant species	90,000.00	NMFS	A
1981	M.P. Lynch	Chesapeake Research Consortium, Inc.	157,336.50	NOAA	R
1981	M.P. Lynch	Development of a capability to predict the survival of oysters, <u>Crassostrea virginica</u> , under conditions of periodic inundation by fresh water	104,540.00	NOAA	R
1981-82	M.P. Lynch	Oyster production in the outflow of salt water ponds	5,000.00	USDA	R
1981	M.P. Lynch	The Virginia Institute of Marine Science Institutional Sea Grant Program	Fed. 669,500.00 State 462,200.00	NOAA	A
1981	W.G. MacIntyre	Investigation of deviations from ideal solution behavior in two phase systems of medium molecular weight liquid hydrocarbon mixtures in water (Resubmitted 4/2/82)	120,946.00	NSF	A
1981	J.V. Merriner	The functional relationship between the Atlantic menhaden and its planktonic food resource	48,648.00	NSF	R
1981	J.C. Munday	Land cover classification maps	8,344.88	RAPP	A
1981	J.C. Munday	Landsat analysis of the dynamics of the Delaware and Raritan Bay plumes on the continental shelf	10,000.00	NOAA/NMFS	A

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1981-82	J.C. Munday	Landsat digital mapping and analysis of the Chesapeake Bay plume dynamics	41,270.00	NMFS	A
1981	J.C. Munday	Virginia Landsat applications and resource center for the commonwealth data base	41,766.00	Dept. of Taxation	A
1981	T.J. Murray, J.A. Lucy and R.J. Lukens	Partial budget analysis of sail contribution to reduced offshore fishing trip costs	9,996.00	RMS, Inc.	A
1981	J.A. Musick	An evaluation of the fishery potential for sharks in Virginia	34,161.00	NOAA	R
1981	J.A. Musick	Habitat selection, population dynamics and historical trends in abundance of dominant fishes in estuarine nurseries: a framework for impact assessment and population persistence	347,769.00	EPRI	R
1981	J.A. Musick	Mortality and behavioral studies of sea turtles in Virginia	39,671.00	NMFS	A
1981	J.A. Musick	Power generation effects on migratory pathways and production of estuarine fishes and shellfish	28,487.00	VCU/State of Maryland	R
1981	J.A. Musick	A reevaluation of the gross morphology of placoid scales from a hydrodynamic standpoint	5,999.00	NASA	A
1981	J.A. Musick	Tagging studies of sea turtles in Virginia	91,927.00	USFWS	Re-submitted in revised form
1981	J.A. Musick	Tracking studies of sea turtles in Virginia (Revised)	28,323.00	USFWS	A

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1981	J.A. Musick and W.D. DuPaul	Feasibility study of commercial fishing operation in the Mid-Atlantic continental slope	81,173.00	MAFDF	A
1981	J.A. Musick and A.D. Estes	Tagging studies of summer flounder in Virginia	146,850.00	NOAA	R
1981	B.J. Neilson	An assessment of environmental contamination of the Chisman Creek drainage basin near ash disposal sites	59,950.00	VEE	A
1981	B.J. Neilson	Chesapeake Bay circulation and water quality models	21,314.00	EPA	A
1981	B.J. Neilson	Chesapeake Bay circulation and water quality models	161,934.00	EPA	A
1981	B.J. Neilson	An evaluation of existing tidal creek impoundments as nonpoint source pollution controls, wildlife habitats, and sources of irrigation water	611,264.00	EPA	R
1981	B.J. Neilson	Renewal of 546001	150,000.00	SWCB	A
1981	M.M. Nichols	Stability of toxic contaminated sediment in the James Estuary	71,690.00	VEE	R
1981	B.J. Neilson	Water quality study of four mile run and Neabsco Creek	185,000.00	SWCB	A
1981	B.J. Neilson and C.L. Bosco	Assessing Virginia's water quality monitoring program: a case study	15,882.00	VWRR/VPI&SU	R
1981	J.E. Olney	Systematics, evolutionary biology and zoogeography of the pearlfishes (Pisces, Ophidiformes, Carapodidae)	68,923.00	NSF	A
1981	R.J. Orth	Critical assessment of the resource value	86,200.00	NOAA	R

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		of shallow water habitats to the blue crabs in the Chesapeake Bay			
1981	R.J. Orth	Submerged aquatic vegetation: distribution and abundance on the lower Chesapeake Bay and interactive studies of light, epiphytes and grazers	136,984.00	EPA	A
1981	P.A. Penhale	The interrelationship of photosynthesis, pigment complement, and canopy structure as affected by light in an <u>Ruppia maritima</u> - <u>Zostera marina</u> seagrass	137,287.00	NMFS	R
1981	F.O. Perkins, D.S. Gussman and D.S. Haven	Utilization of brewery wastes for oyster mariculture	25,272.00	NOAA	A
1981	F.O. Perkins, D.A. Hepworth and M.H. Roberts	Controlled interbreeding of disease resistant oyster stocks	173,775.00	NOAA	R
1981	F.O. Perkins, L.W. Haas and K.L. Webb	Protozoan predation of mass cultured algae: investigation of a potential control	56,500.00	NOAA	R
1981	F.O. Perkins and M.H. Roberts	Effects of anti-apicomplexan drugs under aquaculture conditions on the oyster disease organism, <u>Perkinsus marinus</u>	79,103.00	USDA	R
1981	W.I. Priest	Development of management guidelines for time-of-year dredging decisions	35,194.00	EPA	R
1981	W.I. Priest	Natural resources survey	7,132.00	DON	A
1981-84	M.H. Roberts	Acute and chronic effects of haloforms on estuarine animals	249,108.00	EPA	R

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1981	M.H. Roberts	Field validation of laboratory test of environmental impact	70,000.00	NOAA	A
1981	M.H. Roberts, A.Y. Kuo, M.E. Bender, R.H. Bieri and R.J. Diaz	The applicability of single species bioassays for estimating the effect of refinery effluent on an estuarine environment	385,187.00	API	R
1981	M.H. Roberts and J.G. Loesch	Effects of agrichemicals on juvenile striped bass	112,111.00	NOAA/VEE	R
1981	A. Rooney-Char	Cooperative work program	5,036.00	CRC	A
1981-82	A. Rooney-Char	Mapping of the sensitivity of selected coastal environments in Maryland, Virginia and North Carolina to spilled oil	32,710.00	NOAA	A
1981	A. Rooney-Char	Preplanning and response by scientific resources to oil and hazardous material spills in the Chesapeake Bay region	67,625.00	NOAA	A
1981	G.M. Silberhorn	Coastal habitat and resource management program	6,033.00	CRC	A
1981	K.I. Sulak	Analysis of patterns in the taxonomic composition and zoogeography of the demersal deep sea fish fauna of the North Sea	195,468.00	NSF	R
1981	J.P. Sypek	Research Grant for Supplies	75.00	W&M	A
1981	A.D. Thomson	Research Grant for Supplies	300.00	W&M	A
1981	J. VanMontfrans	Assessment of impact of possible dredging activities at the mouth of the James River	2,463.00	COE	A

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1981	J. VanMontfrans	Assessment of impact of possible dredging activities at the mouth of the James River	871.00	USFWS	A
1981	K.L. Webb	Artificial food for larvae of the American oyster (<u>Crassostrea virginica</u>)	77,268.00	USDA	A
1981-83	K.L. Webb	Development and testing of an automated discriminating unicellular plankton enumeration technique	34,891.00	NSF	A
1981	C.S. Welch and K.L. Webb	Development of a lagrangian current follower for use in estuaries	52,460.00	MDNR	R
1981	R.L. Wetzel	Effects of tidal creek irrigation water impoundments on the structure and function of a salt marsh ecosystem	75,737.00	NOAA	R
1981	R.L. Wetzel	Environmental regulation of <u>Zostera</u> and <u>Ruppia maritima</u> growth and metabolism	164,997.00	EPA	A
1981	R.L. Wetzel, M.E. Bender and R.A. Jordan	The development of methodologies to assess damage from accidental discharges of oils and chemicals	36,742.00	CONOCO	R
1981	R.L. Wetzel and J.N. Kraeuter	Sediment stability, tidal pumping and the exchange of nutrients across the sediment-water interface of intertidal mudflats	57,041.00	NOAA	R
1981	P.L. Zubkoff and R.A. Jordan	The design and test of a long range sampling protocol for the phytoplankton community of the lower Chesapeake Bay	73,221.00	NOAA	R
1982	H.M. Austin	Participation on the Chesapeake Bay Study Biota Evaluation Panel	9,300.00	USFWS	A

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1982	H.M. Austin	Participation on the Chesapeake Bay Biota Evaluation Panel	3,100.00	USFWS	A
1982	H.M. Austin and R.K. Dias	The effects of climate scale environmental variables on selected estuarine-dependent fish stocks	120,400.00	NOAA	R
1982	H.M. Austin and P.L. Duncan	Development of techniques for the mass culture of larval fish food	17,122.00	NOAA	R
1982	T.A. Barnard	Technical assistance in connection with permit applications and alleged violations	23,816.00	COE	A
1982	M.E. Bender	Preparation of the ecological aspects section of the technical report entitled "Offshore Oil and Gas Environmental Guidelines"	6,850.00	EAPI	A
1982	M.E. Bender	Fish Samples	34,382.00	SWCB	A
1982	M.E. Bender and	Bioaccumulation of Kepone by spot	39,000.00	NOAA	R
1982	R.H. Bieri and H.I. Kator	Early Diagnostic Transformations of Biogenic Compounds Induced by Microbial Populations in Anoxic Estuarine Environments	34,819.00	NSF	R
1982	R.H. Bieri	University Research Instrumentation Program	505,361.00	DOD	P
1982	J.D. Boon	Chesapeake Bay Sediments	2,194.00	NBS	A
1982	J.D. Boon	Effects of particle abrasion and selective sorting on fourier grain shape distribution	33,228.00	ACS	P
1982	J.D. Boon and C.R. Berquist	Stratigraphy and heavy mineral analysis of the lower Chesapeake Bay	6,525.00	NSF	R

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1982	E.M. Burreson	Effects of mortality caused by the hemoflagellate <u>Trypanoplasma bullocki</u>	28,501.00	NOAA	A
1982	E.M. Burreson	Prevalence of the flounder pathogen, <u>Trypanoplasma bullocki</u> , in North Carolina waters	35,406.00	NOAA	P
1982	R.J. Byrne	Current aerial photographs of Norfolk's beaches	100.00	Norfolk	P
1982	R.J. Byrne	Vegetative erosion control	57,808.00	VWRRRC	A
1982	C.F. Cerco	Elizabeth River runs	1,500.00	MPI	A
1982	C.F. Cerco	Temperature and dissolved oxygen effects on benthic nutrients	85,279.00	NSF	P
1982	F.L. Chu, M.H. Roberts, K.L. Webb and B.A. Weeks	The investigation of acquired immunity: adaptive response in the American oyster	5,937.00	NOAA	A
1982	F.L. Chu and K.L. Webb	Artificial food for oyster larvae	75,096.00	USDA	A
1982	P.O. DeFur and R.H. Bieri	Interlaboratory comparison of hydrocarbons in marine sediments	2,843.00	NOAA	A
1982	G.R. Delaney	1982 Sea Grant Internship	37,100.00	NOAA	A
1982	R.K. Dias	The effects of climate scale environmental variables on selected estuarine-dependent fish stocks	120,400.00	NOAA	R
1982	R.K. Dias, J.G. Loesch and W.H. Kriete	Striped bass research	172,431.00	NMFS	A

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1982	R.J. Diaz	Environmental Indices - MESA	3,000.00	NOAA	A
1982	R.J. Diaz	Northeast Monitoring Program (NEMP)	16,109.00	NOAA/NMFS	P
1982	R.J. Diaz	Field and semi-field validation of laboratory derived aquatic test systems	79,267.00	EPA/FSU	A
1982	R.J. Diaz	Response to an invitation of bid P655N-0920-Y12	1,166.00	NNSDDC	A
1982	R.J. Diaz, R.J. Huggett and H.I. Kator	Biological and chemical impacts related to new energy activities in the Elizabeth River, Virginia, recommendations for management and mitigation	127,443.00	VCEIP	P
1982	W.D. DuPaul and J.A. Musick	Feasibility study of commercial fishing operations in the mid-Atlantic continental slope	27,284.00	MAFDF	A
1982	W.D. DuPaul	OMNI Conference	7,342.00	MAFDF	A
1982	W.D. DuPaul	Sea Grant Advisory Services Program	527,111.00	NOAA	A
1982	W.D. DuPaul	1982 Sea Grant publications	20,000.00	NOAA/UVA	A
1982	G.C. Grant	Fishery investigation of the deep trough	35,205.00	State of Md.	R
1982	G.C. Grant and J.E. Olney	Identification of striped bass (<u>Morone saxatilis</u>) stock units within the Chesapeake Bay using natural tags	43,152.00	NOAA	A
1982	W.J. Hargis, Jr.	Participation on the Chesapeake Bay Biota Evaluation Panel	3,100.00	USFWS	A
1982	W.J. Hargis, Jr.	Preparation of U.S.-USSR parasites and pathogens of World Ocean symposium for publication	6,750.00	NMFS/NOAA	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1982	W.J. Hargis, Jr.	Holding shellfish transport workshop and submitting a report	2,500.00	NMFS/NOAA	A
1982	D.S. Haven	Evaluation of Norfolk Harbor deepening project	2,166.00	COE	P
1982	D.S. Haven	Participation on the Chesapeake Bay Biota Evaluation Panel	3,100.00	USFWS	A
1982	D.S. Haven	Post construction study at the site of the Mills E. Godwin Jr. Bridge over the Nansemond River	6,739.00	DOH	A
1982	D.S. Haven	Review of molluscan data	1,018.96	EPA	A
1982	D.A. Hepworth and K.L. Webb	Artificial food for oyster larvae	86,629.00	NOAA	A
1982	C.H. Hershner	Mapping the Wye River basin	1,993.00	USDA	A
1982	C.H. Hershner	Sea Grant Internship for A. Zacherle	28,000.00	NOAA	A
1982	C.W. Hobbs	Aerial photography	1,300.00	USFW	P
1982	C.W. Hobbs	Estuarine sedimentation: a stratigraphic model	192,492.00	NSF	P
1982	C.W. Hobbs	James River aerial photography	971.00	USFWS	A
1982	C.W. Hobbs and C.J. Alston	Aerial photography for the Corps of Engineers	3,242.00	COE	A
1982	R.J. Huggett	Investigation of Virginia pollutants in the Chesapeake Bay	21,254.00	EPA	A
1982	R.J. Huggett	Shelf water analysis	8,778.00	EPA	A
1982	R.J. Huggett	Chemical and biological analysis	2,910.00	COE	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount</u> (\$)	<u>Agency*</u>	<u>Action**</u>
1982	R.J. Huggett and W.G. MacIntyre	Investigation of mercury in spiny dogfish (<u>Squalus acanthias</u>) populations of the U.S. middle continental shelf	52,039.00	NOAA	R
1982	R.J. Huggett, C.W. Su and M.E. Bender	A study of a refinery outfall area in the York River estuary	116,276.00	API	A
1982	H.I. Kator	An evaluation of crab byproducts as a substrate for production of methane	19,468.00	NOAA	P
1982	H.I. Kator	Microbial alteration of menhaden extracts: A feasibility study	17,356.00	Std. Prod.	P
1980	H.I. Kator and M.W. Rhodes	Survival potential and the development of sublethal stress	115,571.00	OWRT	R
1982	W.H. Kriete and J.G. Loesch	Anadromous fisheries research project, Virginia	149,954.00	NMFS	A
1982	J.G. Loesch	Striped bass research	172,431.00	NMFS	A
1982	J.A. Lucy	Recreational fishery for large offshore pelagic fishes of the Mid-Atlantic Coast: The Virginia fishery	10,000.00	NJFG	P
1982	M.P. Lynch	Proposal to develop material for incorporation into the resources studies management plan for the proposed Norfolk Canyon Marine Sanctuary	9,931.00	NOAA/OCZM	A
1982	M.P. Lynch	Sea Grant Internship for K. Grane	28,000.00	NOAA	A
1982	W.G. MacIntyre	Aqueous leaching of bituminous coal particles	67,000.00	NOAA/Amer. Univ.	P
1982	W.G. MacIntyre	Environmental fate studies of HMX	118,483.00	US Army	R

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1982	J.V. Merriner	Determinants of nekton community structure in shallow marsh habitats	19,300.00	EPA/VCU	A
1982	J.V. Merriner and J.A. Lucy	Bluefishing in Virginia: an indicator of the relative significance of this species to the Mid-Atlantic recreational fishery	19,300.00	NMFS	P
1982	K.A. Moore and C.W. Hobbs	Aerial photographs of Prince William County, Virginia	2,887.00	PWC	A
1982	J.C. Munday	Landsat analysis of turbid plumes in southern New England	10,060.65	NMFS	A
1982	J.C. Munday	SATMAP: Virginia landsat applications and resource center for the commonwealth data base: continuation of 496	192,372.00	Dept. of Tax	A
1982	J.A. Musick	Electrophoretic identification of stocks of summer flounder in the Middle Atlantic Bight	2,090.00	AFTMA	R
1982	J.A. Musick	Life history and population structure of Tautog in Virginia sport fishery	3,200.00	SFRF	P
1982	J.A. Musick	Population dynamics of nekton in estuarine habitats	22,474.00	VCC/NOAA	P
1982	J.A. Musick and R.A. Byles	Activities, behavior and migratory pathways of the loggerhead turtle, <u>Caretta caretta</u> in Virginia	27,425.00	VCEIP	A
1982	J.A. Musick and A.D. Estes	Summer flounder stock studies	320,884.00	NOAA	R
1982	B.J. Neilson	Chowan River study	15,630.00	MPI	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1982	B.J. Neilson	Development of a shellfish data management system	30,079.00	NOAA	R
1982	B.J. Neilson	Nansemond/Chuckatuck surveys	55,000.00	MPI	A
1982	B.J. Neilson	Trace metal distribution	58,139.00	VARC	R
1982	R.J. Orth	SAV in the Chesapeake Bay	23,128.00	EPA	A
1982	R.J. Orth	Extension of Grant X003246	11,115.00	EPA	A
1982	W.I. Priest	Aerial photography of commonwealth coal facilities	510.00	VPA/EC	A
1982	M.W. Rhodes	Coliform samples analyses	5,600.65	VSE Corp.	
1982	C.B. Rideout	Aquaculture data base	36,070.00	OEI	R
1982	C.B. Rideout	Aquaculture data base	36,070.00	CDC	R
1982	C.B. Rideout	Aquaculture data base	22,549.51	NMFS	R
1982	C.B. Rideout	Aquaculture data Base	22,885.00	NAL	A
1982	M.H. Roberts	Acute and chronic effects of haloforms on estuarine animals	80,500.00	EPA	R
1982	M.H. Roberts	Bioaccumulation of kepone by spot	60,573.00	NOAA	R
1982	M.H. Roberts	Effects of chlorinated sewage on oyster spatfall	37,793.00	VEE	A
1982	A. Rooney-Char	Preplanning and response by scientific resources to oil and hazardous material spills in the Chesapeake Bay Region	37,000.00	NOAA	A
1982	A. Rooney-Char	Sensitivity Index Mapping	21,500.00	NOAA	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1982	E.P. Ruzecki	Conduct sampling in association with the ocean Pulse and Superflux project	20,285.00	NOAA	A
1982	E.M. Silberhorn	Elizabeth River wetland inventory program	42,017.00	VCEIP	R
1982	C.L. Smith	Organic leachates from coal stored at power plant sites	78,608.00	State of Md	P
1982	C.W. Su	Analysis of organic compounds in chlorinated cooling water from coal fired power plants	65,180.00	State of Md.	R
1982	N.B. Theberge	Model legislation for interstate fisheries management	16,245.00	ASMFC	R
1982	R.L. Wetzel	The effects of nutrients, light, and grazing on the community metabolism of an intertidal sandflat with special emphasis on scales of temporal variability	43,562.00	NOAA	R
1982	R.L. Wetzel	Environmental regulation of <u>Z. marina</u> and <u>R. maritima</u> growth and metabolism	2,412.00	EPA	R
1982	R.L. Wetzel	Functional ecology of seagrass communities in the lower Chesapeake Bay	50,215.00	EPA	R
1982	R.L. Wetzel	Nutrient and light dynamics in relation to seagrass community production in Laguna de Terminos, Campeche, Mexico	19,142.03	NSF/LSU	P
1982	L. Wood	1982 Sea Grant Program special education study	7,100.00	NOAA/UVA	R
1982	D.L. Wright	Nearshore and surf zone morphodynamics: A global environmental model for predicting hazards and changes	106,922.00	ONR	A

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
1982	D.L. Wright	University Research Program	661,014.00	DOD	P
1983	R.J. Byrne	Chesapeake Bay modeling effort	41,460.00	SWCB/EPA	W
1983	E.A. Cornell	Assessing trends in federal funding for interdisciplinary humanities/science projects	33,231.00	NEH	P
1983	W.J. Hargis, Jr.	Development of an atlas of the microscopical anatomy of the spot (<u>Leiostomus xanthurus</u>) a marine experimental animal	20,639.00	NOAA	P
1983	W.J. Hargis, Jr.	A preproposal for the second symposium on parasitology and pathology of marine organisms of the working groups on biological productivity and biochemistry of the world ocean of the United States of America and the Union of Soviet Socialist Republics to be held in the United States in early winter, 1983	preproposal		P
1983	W.G. MacIntyre	Sources and distribution of carbon monoxide in the coastal environment	19,285.00	NASA	P
1983	J.A. Musick	Evaluation of the fishery potential of the monkfish	26,410.00	NOAA	A
1983	B.J. Neilson	Chesapeake Bay Mathematical Model	40,282.00	EPA	P
1983	B.J. Neilson	Development of Shellfish data	9,532.00	NOAA/UVA	P
1983	B.J. Neilson	An evaluation of eastern shore tidal creek impoundments	52,083.00	SWCB	P
1983	B.J. Neilson	The influence of sediment oxygen demand on the dissolved oxygen level of the	35,135.00	SWCB	R

<u>Date</u>	<u>Principal Investigator</u>	<u>Title</u>	<u>Amount (\$)</u>	<u>Agency*</u>	<u>Action**</u>
		Pagan River and Gunston Cove			
1983	K.L. Webb	Supplemental fuding for NSF grant OCE 82-6030	25,409.00	NSF	A
1983	K.L. Webb	University research instrumentation program	196,426.00	DOD	P

Abbreviations for Granting Agencies

ABC	Anheuser Busch Corporation
ACC	Allied Chemical Corporation
ACS	American Chemical Society
AEC	Atomic Energy Commission
AFTMA	American Fishing Tackle Manufacturers Association
AGA	Alpine Geophysical Association
AL	Arthur Little, Inc.
Am Visc	American Viscose Corporation
API	American Petroleum Institute
APS	American Philosophical Society
ASC	Applied Science, Inc.
ASMFC	Atlantic States Marine Fisheries Commission
Beak Con.	Beak Consultants
BCF	U.S. Bureau of Commercial Fisheries
B&R	Brown and Root, Inc.
BLM	U.S. Bureau of Land Management
BSFW	U.S. Bureau of Sport Fish and Wildlife
CD&A	Clark Dietz and Associates
CDC	Control Data Corporation
CEMI	C.E. Maquire International, Inc.
CEQ	Council on Environmental Quality
CFI	Continental Forest Industries
Ches. Corp.	Chesapeake Corporation of Virginia
CIBA	CIBA Geigy, Inc.
COE	Corps of Engineers

ERT Environmental Research and Technology, Inc.

FBYA Faioli, Blum, Yesselmen Associates

FIA Federal Insurance Administration

FSU Florida State University

FWPCA Federal Water Pollution Control
Administration

FWQA Federal Water Quality Administration

GCSB Gloucester County School Board

GG Gannett, Gleming, Inc.

GSAFDF Gulf and South Atlantic Fisheries
Development Foundation

Hampton In. Hampton Institute

HEW U.S. Department of Health, Education, and
Welfare

HI Hydrosience, Inc.

HUD U.S. Department of Housing and Urban
Development

HRS Hydro Research Science

HRSD Hampton Roads Sanitation District Commission

HRWQA Hampton Roads Water Quality Agency

HSMM Hayes, Seay, Mattern, and Mattern, Inc.

IRRPOS Interdisciplinary Resource Research on the
Problems of Society (National Science
Foundation)

LF Link Foundation

LSU Louisiana State University

MAFDF Mid Atlantic Fisheries Development
Foundation

MDNR Maryland Department of Natural Resources

M&HSM Mason & Hanger - Silas Mason Company

MMC Martin Marietta Corporation
MMM McGaughy, Marshall, and McMillan, Inc.
MOBIL Mobil Oil Company
MPI Malcolm Pirnie Engineers, Inc.
NAL National Agriculture Library
NASA National Aeronautics and Space
Administration
NBS National Bureau of Standards
NCHRP National Cooperative Highway Research
Project
NCWQ National Commission on Water Quality
NIH National Institute of Health
NJFG New Jersey Department of Fish and Game
NMFS National Marine Fisheries Service
NNS&DD Co. Newport News Shipbuilding and Drydock
Company
NOAA National Oceanic and Atmospheric
Administration
NODC National Oceanographic Data Center
NORFOLK City of Norfolk
NUS NUS Corporation
ODF Old Dominion Foundation
OEI Ocean Environments, Inc.
OLIN Olin Company
ONR Office of Naval Research
OSTS Virginia Office of State Technical Services
OWRR Office of Water Resources Research
OWRT Office of Water Resources Technology
PANY Power Authority of New York State

PEMPTG Potomac Estuary Monitoring Plan Task Group
PEMPTO Potomac Estuary Monitoring Plan Task Order
PM Philip Morris Company
PWC Prince William County
RAPPD Rappahannock-Rapidan Planning District
Commission
RAYTHEON Raytheon Corporation
RMS Rebel Marine Services, Inc.
SCI Systems Consultants, Inc.
SEA GRANT NOAA Sea Grant Program
SFFMP State Federal Fisheries Management Program
SFI Sport Fishing Institute
SFRF Sport Fishery Research Foundation
Sigma XI Sigma XI Scientific Fraternity
Smithsonian Smithsonian Institute
S&P Sverdrup and Parcel, Inc.
State of Md. State of Maryland
Std. Prod. Standard Products
SWCB Virginia State Water Control Board
TIC Texas Instruments Corporation
TCC Tidewater Construction Company
UM University of Maryland
UW University of Wisconsin
USAF U.S. Air Force
U.S. Army U.S. Army
USCE U.S. Coast Guard
USDA U.S. Department of Agriculture

WEI Woodward Envicon, Inc.
W&M College of William and Mary
YRO York River Oyster Corporation

SECTION II

PRODUCTS OF RESEARCH AND SCHOLARSHIP

PART IV

PRODUCTS OF GRADUATE STUDENT RESEARCH

INTRODUCTION TO CHAPTERS ON PRODUCTS OF
GRADUATE STUDENTS RESEARCH

(Dissertations, Chapter 10, and Theses, Chapter 11)

Since its doors opened in 1940 the Institute has been involved in advanced undergraduate and graduate education. Each successful graduate student, whether seeking the masters or doctoral degree, must plan, pursue and report an acceptable research project. The dissertations (doctoral) and theses (magisterial-level) presented in Chapters 10 and 11 respectively, are the scholarly reports of those scholarly studies. Many of the research projects involved have been on problems of direct interest to the Commonwealth and constitute significant contributions to understanding of its marine resources and environments. All have been within the VIMS mandates. A number have formed the basis for advisory and consultative activities and thus contributed directly to management activities.

A large number of these student research reports have been formally published. All are additions to the body of knowledge about phenomena of the seas and estuaries of the region.

CHAPTER 10
(DOCTORAL RESEARCH REPORTS)
DISSERTATIONS

DISSERTATIONS

- Calder, Dale R. 1968. Hydrozoa of southern Chesapeake Bay. 158 p. + plates.
- Hargraves, Paul E. 1968. Species composition and distribution of net plankton diatoms in the Pacific sector of the Antarctic Ocean. 171 p.
- Roberts, Morris H., Jr. 1969. Larval development of Pagurus longicarpus Say in laboratory culture. 115 p.
- Marsh, G. Alex. 1970. A seasonal study of Zostera epibiota in the York River, Virginia. 156 p.
- Boesch, Donald F. 1971. Distribution and structure of benthic communities in a gradient estuary. 120 p.
- Lawler, Adrian R. 1971 Zoogeography and host-specificity of the superfamily Capsaloidea Price, 1936 (Monogenea: Monopisthocotylea). 638 p.
- Leonard, Sara B. 1971. Larvae and young of the western North Atlantic bothid flatfishes Etropus microstomus (Gill) and Citharichthys arctifrons Goode in the Chesapeake Bight. 101 p., 30 figs.
- Pickett, Robert L. 1971. Numerical modeling investigation of cyclonic Gulf Stream eddies. 86 p.
- Lynch, Maurice P. 1972. Variations in some serum constituents of the blue crab Callinectes sapidus. 122 p.

Copies of the Dissertations and Theses are available on microfiche for \$5.00 or photocopies can be made at \$.15 per page plus \$1. handling fee.

Degree conferred by the University of Virginia, Charlottesville, Virginia.

- Swartz, Richard C. 1972. Postlarval growth and reproductive biology of the xanthid crab, Neopanope texana sayi. 230 p.
- *Burbidge, Richard Greig. 1972. Distribution, growth, selective feeding, and energy transformations of young-of-the-year blueback herring, Alosa aestivalis (Mitchell), in the James River, Virginia. 131 p.
- Burrell, Victor G., Jr. 1972. Distribution and abundance of calanoid copepods in the York River estuary, Virginia, 1968 and 1969. 234 p.
- *Cain, Thomas David. 1972. The reproductive cycle and larval tolerances of Rangia cuneata in the James River, Virginia. 121 p.
- DuPaul, William David. 1972. Mechanisms of isosmotic intracellular regulation in marine molluscs. 89 p.
- *Kerby, Jerome Howard. 1972. Feasibility of artificial propagation and introduction of hybrids of the Morone complex into estuarine environments, with a meristic and morphometric description of the hybrids. 171 p.
- *Sandifer, Paul Alan. 1972. Morphology and ecology of Chesapeake Bay decapod crustacean larvae. 532 p.
- Boon, John D. III. 1973. Sediment transport processes in a salt marsh drainage system. 238 p.
- McEachran, John D. 1973. Biology of seven species of skates (Pisces: Rajidae). 127 p.
- Manzi, John Joseph. 1973. Temporal and spatial heterogeneity in diatom populations of the lower York River, Virginia 163 p.
- *Peddicord, Richard Knox. 1973. Growth and condition of Rangia cuneata in the James River, Virginia. 117 p.
- Stofan, Paul E. 1973. Surface phytoplankton community structure of Mobjack Bay and York River, Virginia. 116 p.

- Witherington, Philip Dalton. 1973. The hermit crabs (Crustacea, Decapoda, Anomura) collected by the International Indian Ocean Expedition, 1963-64, with notes on their distribution and the zoogeography of the western Indian Ocean. 192 p.
- Able, Kenneth. 1974. Life history, ecology and behavior of two new Liparis (Pisces: Cyclopteridae) from the western North Atlantic. 87 p.
- Axelrad, Donald M. 1974. Nutrient flux through the salt marsh ecosystem. 134 p.
- Larsen, Peter F. 1974. Quantitative studies of the macrofauna associated with the mesohaline oyster reefs of the James River, Virginia. 182 p.
- Amon, James P. 1974. The effect of sodium on the growth and development of an estuarine species of Phyctochytrium (Chytridiales). 138 p.
- *Sallenger, Asbury Hilliard, Jr. 1974. Mechanics of beach cusp formation. 214 p.
- Zachary, Arthur L. 1974. The biology of marine bacteriophages of Beneckeia natriegens. 223 p.
- Haas, Leonard William. 1975. Plankton dynamics in a temperate estuary with observations on a variable hydrographic condition. 202 p.
- Lin, Alan Lung-Ming. 1975. Enzymes associated with carbohydrate metabolism of Scyphozoan jellyfish. 109 p.
- *Weaver, James Edwin. 1975. Food selectivity, feeding chronology and energy transformations of juvenile Alewife (Alosa pseudoharegus) in the James River near Hopewell, Virginia. 88 p.
- Boule, Mark E. 1976. Geomorphic interpretation of vegetation on Fisherman Island, Virginia 125 p.
- Chao, Labbish Ning. 1976. Aspects of systematics, morphology, life history and feeding of western Atlantic Sciaenidae (Pisces: Perciformes). 342 p.

- Markle, Douglas F. 1976. Preliminary studies on the systematics of deep-sea Alepocephaloidea (Pisces: Salmoniformes). 225 p.
- Rosen, Peter S. 1976. The morphology and processes of the Virginia Chesapeake Bay shoreline. 313 p.
- Stanley, Everett Michael. 1976. A two-dimensional time-dependent numerical model investigation of the coastal sea circulation around the Chesapeake Bay entrance. 165 p.
- Virnstein, Robert W. 1976. The effects of predation by epibenthic crabs and fishes on benthic infauna in Chesapeake Bay. 87 p.
- Windsor, John G., Jr. 1976. Isolation and characterization of estuarine and marine sedimentary humic acids. 109 p.
- *Bryan, Burton Barker. 1977. The ecology of the marine cladocera of lower Chesapeake Bay. 100 p.
- Diaz, Robert James. 1977. The effects of pollution on benthic communities of the tidal James River, Virginia. 149 p.
- Gleeson, Richard A. 1977. Pheromone communication in the reproductive behavior of Callinectes sapidus.
80 p.
- *Hershner, Carlton H., Jr. 1977. Effects of petroleum hydrocarbons on salt marsh communities. 160 p.
- Huggett, Robert James. 1977. Copper and zinc in bottom sediments and oysters, Crassostrea virginica, from Virginia's estuaries. 113 p.
- Lake, Carol A. 1977. Adsorption of orthophosphate and tripolyphosphate by clay minerals. 95 p.
- Lake, James L. 1977. The effects of petroleum on the salt marsh ecosystem. 137 p.
- Vogel, Rosalie M. 1977. Shell-less opisthobranchs of Virginia and Maryland. 159 p.
- *Jacobs, Fred. 1978. Zooplankton distribution, biomass, biochemical composition and seasonal community structure in lower Chesapeake Bay. 105 p.

- Wenner, Charles A. 1978. Making a living on the continental slope in the deep-sea: life history of some dominant fishes of the Norfolk Canyon area. 294 p.
- Carron, M. 1979. The Virginia Chesapeake Bay: recent sedimentation and paleodrainage. 83 p.
- Govoni, John Jeffrey. 1980. Morphological, histological, and physiological aspects of assimilation in larval spot, Leiostomus xanthurus Lacepede. 122 p.
- Ho, Ming-Shan. 1980. Anaerobic metabolism of the ribbed mussel Geukensia demissa. 72 p.
- Laird, Chae Edward. 1980. The effects of chlorinated sea water on the blue crab, Callinectes sapidus. 135 p.
- Maccubbin, Alexander Ernest. 1980. Petroleum degradation by naturally occurring populations of marine bacteria from middle Atlantic outer continental shelf waters. 158 p.
- Mauro, Nicholas A. 1980. The role of the blood in the temperature dependence of oxidative metabolism in decapod crustaceans. 57 p.
- Sedberry, George R. 1980. Food habits, prey selectivity and food resource partitioning of a community of fishes on the outer continental shelf. 166 p.
- Vecchione, Michael. 1980. Planktonic molluscan faunal structure across a large scale environmental gradient. 153 p.
- Wenner, Elizabeth L. 1980. The faunal assemblages, community structure, and life history patterns of decapod crustacea from the Middle Atlantic Bight. 410 p.
- Dillon, Thomas M. 1981. The effects of daily fluctuating temperatures and dimethylnaphthelene - contaminated food on the estuarine grass shrimp, Palaemonetes pugio.

- Lanier, James A., III. 1981. A comparative study of priorities for pre-college marine education objectives in Virginia. 191 p.
- Milligan, Donald B. 1981. The Kara Sea: geological structure and water characteristics. 58 p.
- Cerco, Carl F. 1982. Two-dimensional, intratidal model study of salinity intrusion structure and motion in partially-mixed estuaries. 283 p.
- Chu, Fu-Lin E. Ko. 1982. A study of nutritional requirements of the larvae of the American oyster (Crassostrea virginica). 103 p.
- Delistraty, Damon A. 1982. Adenine nucleotide levels and adenylate energy charge in Zostera marina (eelgrass): determination and application. 227 p.
- Sypek, Joseph P. 1982. Influence of temperature on the immune response of juvenile summer flounder, Paralichthys dentatus, and its role in the elimination of Trypanoplasma bullocki infections. 61 p.
- Croonenberghs, Robert E. 1983. Organic toxic substances monitoring in Virginia. 333 p.

CHAPTER 11

THESES

(MASTERS RESEARCH REPORTS)

THESES

- Menzel, R. Winston. 1943. Notes on the biology and commercial fishery of the catfish of the James River, Virginia. 51 p.
- Rogers, M. Rosalie. 1945. Distribution of the fungus Lagenidium callinectes Couch and its effect on eggs of the blue crab. 31 p.
- Overcash, Alice E. 1946. The use of measurement to determine the condition of oysters in Virginia. 42 p.
- MacGregor, John S. 1950. Some hydrographic conditions found in winter in lower Chesapeake Bay and their possible effects on the blue crab (Callinectes sapidus Rathbun) population. 56 p.
- Tresselt, Ernest F. 1950. Spawning grounds of the striped bass or rock, Roccus saxatilis (Walbaum), in Virginia. 29 p.
- Massmann, William H. 1952. A preliminary study of shad, Alosa sapidissima (Wilson), spawning in some Virginia rivers. 24 p.
- McCutcheon, Henry N. 1953. Differential growth of the menhaden, B. tyrannus (Latrobe), during early development. 40 p.
- Oglesby, Ray T. 1955. Age and length of menhaden (Brevoortia tyrannus) in the waters in Chesapeake Bay, with comments of the rate of growth. 27 p.
- Feng, Sung Yen. 1957. Ecological and epidemiological studies of Nematopsis ostrearum, a sporozoan parasite of the oyster Crassostrea virginica, in lower Chesapeake Bay and its tributaries. 43 p.

Copies of Theses and Dissertations are available on microfiche for \$5.00 or photocopies can be made at \$.15 per page plus \$1. handling fee.

*Degree conferred by the University of Virginia, Charlottesville, Virginia.

- Pacheco, Anthony L. 1957. The length and age composition of spot, Leiostomus xanthurus, in the pound net fishery of lower Chesapeake Bay. 34 p.
- Ladd, Ernest C. 1958. A comparative study of meristic variation in the American eel (Anguilla rostrata) and Atlantic anchovy (Anchoa mitchilli). 29 p.
- Mackenzie, Clyde L., Jr. 1958. Growth and reproduction of Eupleura caudata (Say) in the York River, Virginia. 84 p.
- McMahon, John W. 1959. Monogenetic trematodes from some Chesapeake Bay fishes. 74 p.
- Moore, Richard B. 1961. Morphology and histology of the reproductive organs of Urosalpinx cinerea (Say) and Eupleura caudata (Say). 67 p.
- Eldridge, Peter J. 1962. Observations on the winter trawl fishery for summer flounder, Paralichthys dentatus. 58 p.
- Grant, George C. 1962. The Chaetognatha of the inner continental shelf waters off Virginia, their taxonomy, abundance and dependence on physical factors of the environment. 60 p.
- Isaacson, Peter A. 1962. Modifications of the Chesapeake Bay commercial crab pot. 30 p.
- Tan, Eng Chow. 1962. Studies on osmotic and ionic regulation in the blue crab, Callinectes sapidus Rathbun. 66 p.
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- Schaffner, Linda Carol. 1980. Resource use by Amphipoda (Crustacea: Peracarida) on the outer continental shelf of the Middle Atlantic Bight: implications to community structure. 179 p.
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- Applegate, Andrew J. 1983. An environmental model predicting the relative recruitment success of the Blue Crab, Callinectes sapidus (Rathbun) in Chesapeake Bay, Virginia. 73 p.
- Hedgepeth, Marion Y. 1983. Age, growth, and reproduction of American Eels, Anguilla rostrata (Lesueur) from the Chesapeake Bay. 61 p.
- Moustafa, Mohamed Z. 1983. On water masses of the Red Sea. 60 p.
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SECTION II

PRODUCTS OF RESEARCH AND SCHOLARSHIP

PART V

UNPUBLISHED SCIENTIFIC MATERIALS AND RESEARCH AND
STUDY COLLECTIONS

CHAPTER 12
DATA BASES AND PROGRAMS

INTRODUCTION TO CHAPTER ON DATA BASES AND PROGRAMS

Among the products of the research, survey and monitoring activities of the Institute are the data that are gathered during the course of specific research projects or programs and accumulated. Computer Programs to handle particular "sets" of data or types of data have also been produced and could be made available to others were they among the Institute's archives. Some of those data, especially those gathered in the early days prior to acquisition of computer storage and processing capability, exist only in the files of the investigator responsible. Of course, many were reconciled and made available in the various reports and publications resulting from the scientific effort applicable and some were published in the VIMS Data Report series. Even so, much information from precomputer times is not available for ready assessment and some may have been lost irretrievably since several of the investigators involved have left the Institute or are deceased.¹

During the last twenty years card, paper and magnetic tape and disk storage and retrieval have been among the capabilities of the organization. With the computer it is now possible to accession, recover and process large quantities of data and the research output of the Institute is greatly enhanced.

Also, and equally important, massive volumes of information are available to investigators, not only to those responsible for initial acquisition and analysis of the particular data sets involved, but also to others, in-house and away, who wish to make use of the data.

Data and other information thus accumulated and made available can be as, or even more valuable than, the original reports and publications and represent a continuing, often improving asset. In the hands of different investigators they may yield results far beyond the initial analyses - augmented or not. Augmented by continuing improvements in quality and quantity they may increase in value. New technological advances in hardware and software appearing with increasing rapidity, which often involve the ability to handle greater volumes and mixes of data and/or provide better programming capabilities, may allow even better results than those achieved by the original research effort which gathered them.

¹Certain VIMS-generated data are included in the Environmental Data Base Inventory (EDBD) maintained by the Environmental Data and Information Service (EDIS) of the National Oceanic and Atmospheric Administration (NOAA). Data in the EDBD are available through Bibliographic Retrieval Services, a commercial, on-line retrieval system.

Obviously then, well-garnered, processed and developed data "bases" ("data sets" or "data banks") and programs to process those data are extremely valuable and useful to science -- especially to environmental, resource-related or ecological disciplines. Data sets and programs are products of research which are or can be useful, not only to the original researcher, but to others. They are scientific assets or products and should be listed among the contributions of the research projects and programs and the scientists who generated them. For this reason they must be counted among the "permanent" products and contributions of the Institute and its personnel and are here recorded.

DATA BASES AND PROGRAMS

Bibliographical

Name of Data Base: Aquaculture Data Base

Acronym:

Data Base Organization Residence: Department of Advisory Services,
Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer, DIALOG
System

Nature of Data Base: All printed information on aquaculture

Contact Person: Ms. Carol B. Rideout

Subject Coverage: Aquaculture

Geographical Coverage: Global

Keywords: Descriptors developed from VIMS aquaculture thesaurus

Data Base Type: Bibliographic and descriptive data base

Coordinate System:

Sources of Data in Data Base: Publication sources identified for each
citation

Time Span of Data: 1970 to present

Output Media: DIALOG system, computer printout, CRT display,
microfiche copies

Storage media: magnetic tape, microfiche copies

Applicable Programs: Sort programs by descriptor, genus-species,
year, author, title, source

Name of Data Base: Chesapeake Bay Bibliography

Acronym: CBB

Data Base Organization Residence: Library, Virginia Institute of
Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: All printed information on Chesapeake Bay and
its tributaries including scientific, historical, social and resource
management data

Contact Person: Ms. Susan O. Barrick, Librarian

Subject Coverage: The Chesapeake Bay

Geographical Coverage: The Chesapeake Bay and tributaries

Keywords: Descriptors developed from U.S. Water Resources thesaurus

Data Base Type: Descriptive data base

Coordinate System:

Sources of Data in Data Base: Publication sources identified for each
citation.

Time Span of Data: 1970 to present

Output Media: VIMS Special Scientific Reports, printouts and CRT
display

Storage Media: Magnetic tape and printed publication

Applicable Programs: Sort programs by descriptor, year, and author
are available.

Name of Data Base: Virginian Sea Bibliography

Acronym:

Data Base Organization Residence: Library, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: All printed information on the Middle Atlantic Bight, the region from Cape Hatteras, N.C. to Sandy Hook, N.J. from three to two hundred miles offshore. The data base also includes data sets that have not been published.

Contact Person: Ms. Susan O. Barrick, Librarian

Subject Coverage: Oceanographic research in the Middle Atlantic Bight

Geographical Coverage: Cape Hatteras to Sandy Hook, N.J. from 3 to 200 miles offshore

Keywords: Descriptors developed from U.S. Water Resources Thesaurus

Data Base Type: Bibliographic

Coordinate System: Latitude and Longitude

Sources of Data in Data Base: Publication sources identified for each citation

Time Span of Data: indefinite past to 1980

Output Media: Printed copies, computer printout, CRT display

Storage Media: Printed copies, magnetic tape

Applicable Programs: Sort programs are available by descriptor, year, title, author

Biological, Fisheries

Name of Data Base: Age and growth of Channel Bass, Sciaenops ocellata

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: A study of the age and growth of the Channel Bass was made from fish taken in the North Carolina Outer Banks and Virginia Capes from 1959 to 1975. Data were taken from 4000 stations.

Contact Person: Ms. Susan O. Barrick, Librarian

Subject Coverage: Age and growth of Channel Bass

Geographical Coverage: North Carolina, Outer Banks to the Virginia Capes

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS Survey

Time Span of Data: 1959 to 1975

Output Media: Data Sheets

Storage Media: Data Sheets

Applicable Programs:

Name of Data Base: Age Growth of Striped Bass from Lower York River

Acronym:

Data Base Organization Residence: Department of Fisheries Science,

Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Length, weight, age and sex were identified for the Striped Bass (Morone saxatilis) from the Cheatham Annex Pier in the Lower York River for 7 years. 5000 observations were made and recorded for each biological parameter.
Contact Person: Ms. Susan O. Barrick, Librarian
Subject Coverage: Striped Bass age and growth
Geographical Coverage: York River, Virginia
Keywords:
Data Base Type: Scientific
Coordinate System: Longitude and latitude
Sources of Data in Data Base: VIMS survey
Time Span of Data: 1967 to 1973
Output Media: Data Sheets, Reports to VMRC, NMFS
Storage Media: Data Sheets
Applicable Programs:

Name of Data Base: Alosid file
Acronym:
Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer
Nature of Data Base: Survey of alosid fishes in Virginia Waters - length, weight, species, sex, age, gonad condition, spawning history, and hydrographic data.
Contact Person: Dr. Joseph G. Loesch or Mr. William H. Kriete, Jr.
Subject Coverage: Population dynamics of adult and juvenile anadromous fishes in Virginia Waters
Geographical Coverage: Chesapeake Bay tributaries
Keywords:
Data Base Type: Scientific data
Coordinate System: Longitude, latitude
Sources of Data in Data Base: VIMS juvenile sampling annually by trawl survey; commercial sampling March-July.
Time Span of Data: 1967 to present
Output Media: Grant and contract reports, several theses and dissertations Print outs, CRT display
Storage Media: Cards currently being transferred to tape and disk.
Applicable Programs: Data retrieval program now exists.

Name of Data Base: Blood constituents of Cancer irrorata
Acronym:
Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Levels of calcium, magnesium, sodium, and chloride were measured in the blood of Cancer irroratus specimens collected in the lower Chesapeake Bay each December. Osmotic concentrations and the level of ninhydrin positive substances were

also measured. Specimens were obtained from crab dredge boats during the winter fishery.

Contact Person: Prof. Willard A. Van Engel

Subject Coverage: Blood constituents of Rock Crabs

Geographical Coverage:

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS Rock Crab Project

Time Span of Data: 1970 to 1974

Output Media: Data Sheets, Grant Reports

Storage Media: Data Sheets

Applicable Programs:

Name of Data Base: Commercial trawler landings

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Commercial trawler catch of fish and shellfish landed in Virginia ports - catch by species, vessel, location landed, dockside cost

Contact Person: Mr. Frank J. Wojcik

Subject Coverage: Offshore fishing industry landings in Virginia Ports

Geographical Coverage: Virginia

Keywords:

Data Base Type: Scientific data

Coordinate System:

Sources of Data in Data Base: Virginia Institute of Marine Science with cooperation of Virginia Ports and National Marine Fisheries Service

Time Span of Data: 1960-1980

Output Media: Few publications, print-out, CRT display

Storage Media: Magnetic tape

Applicable Programs:

Name of Data Base: Fall Oyster Survey

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Survey of oyster bars in Virginia, number of oysters per bar, sized as to whether they are over 3", 1"-3", or less than 1"

Contact Person: Mr. Dexter S. Haven

Subject Coverage: Annual survey of oyster bars in Virginia

Geographical Coverage: Virginia waters

Keywords:

Data Base Type: Scientific data

Coordinate System: Bar location - can convert to longitude, latitude
Sources of Data in Data Base: VIMS Survey
Time Span of Data: 1946 to present
Output Media:
Storage Media: Now stored on paper sheets
Applicable Programs:

Name of Data Base: The Fish Communities and other Vertebrates of Norfolk Canyon.

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Extensive collections of biological material, observations of life history, meristics and morphometrics, distribution data and community structure analysis

Contact Person: Dr. John A. Musick

Subject Coverage:

Geographical Coverage: Continental shelf off Virginia

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS trawl and longline survey

Time Span of Data: Data collected, June 1973

Output Media: Theses, Dissertations, Grant Reports, Printouts, CRT display

Storage Media: Data Sheets, Punched Cards

Applicable Programs: None

Name of Data Base: Hard Clam Growth Rates

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Growth rates of marked hard clams: clams measured for length, width, weight

Contact Person: Prof. Dexter S. Haven, Mr. James P. Whitcomb, Dr. Joseph G. Loesch

Subject Coverage: Hard clam growth rates

Geographical Coverage: York River, James River, seaside Eastern Shore, of Virginia

Keywords:

Data Base Type: Scientific

Coordinate System: Latitude and longitude

Sources of Data in Data Base: VIMS Survey

Time Span of Data: Marked clams sampled annually, 1968 to 1972, final pickup in 1980. Entire growth rate study covers period 1967-1980.

Output Media: Grant and contract reports, related publications, printouts, CRT display

Storage Media: Disk

Applicable Programs: Some data retrieval programs exist

Name of Data Base: NMFS Groundfish Survey

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia, 23062
System(s) that Access Data Base: VIMS, PRIME 750 Computer, NMFS-Woods Hole, others

Nature of Data Base: Groundfish survey results: numbers, lengths, weights by species of fishes and major invertebrates, surface and bottom temperature, depth and surface salinity.

Contact Person: Mr. James A. Colvocoresses

Subject Coverage: Results of National Marine Fisheries Service groundfish surveys

Geographical Coverage: Nova Scotia to Cape Fear, N.C. or portions thereof

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: National Marine Fisheries Service file

Time Span of Data: 1963 to present. Spring and fall, all years, summer and winter sporadically, biannually.

Output Media: Many publications of various types, Print-outs, CRT display

Storage Media: Magnetic tape

Applicable Programs: Access programs available

Name of Data Base: Oyster Spatfall Data

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Data on oyster spatfall setting from shellstring surveys - date string in, date string out, number of spat counted, number of shells counted.

Contact Person: Prof. Dexter S. Haven

Subject Coverage: Oyster setting in Virginia Waters

Geographical Coverage: 172 standard stations in Chesapeake Bay and tributaries

Keywords:

Data Base Type: Scientific

Coordinate System: River name, station name - no latitude or longitude

Sources of Data in Data Base: VIMS Surveys

Time Span of Data: Spotty data 1947 to 1952, no data 1952 to 1963, solid data 1963 to 1981.

Output Media: Few, if any, publications from this data file, Print-outs, CRT display

Storage Media: Magnetic disk

Applicable Programs: Retrieval program recently updated and improved

Name of Data Base: The Population dynamics of private and public oyster beds in Virginia

Acronym:

Data Base Organization Residence: Division of Biological Oceanography, and Fisheries Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Annual population assessments of oysters in the lower Chesapeake Bay and numerous tributaries have been made since 1947. Data also includes counts of oyster spatfall at both seasonal intervals and within season intervals for numerous stations. Occurrence, abundance and distribution of predators, fouling organisms, scavengers, and other associates of oyster bed communities is available.

Contact Person: Dr. Jay D. Andrews

Subject Coverage: Oyster population dynamics

Geographical Coverage: Lower Chesapeake Bay

Keywords:

Data Base Type: Scientific

Coordinate System: Latitude and longitude

Sources of Data in Data Base: VIMS study

Time Span of Data: 1947 to present

Output Media: Reports, Data Sheets

Storage Media: Data Sheets

Applicable Programs:

Name of Data Base: Pound Net Survey in lower Chesapeake Bay

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Tabulation and graphic summary of pound net fishery in lower Chesapeake Bay and its tributaries. Study area surveyed by aircraft. Data includes active pound nets.

Contact Person: Dr. Herbert M. Austin

Subject Coverage: Pound net counts for areas of the lower Chesapeake Bay

Geographical Coverage: Lower Chesapeake Bay

Keywords:

Data Base Type: Scientific

Coordinate System: Latitude and longitude

Sources of Data in Data Base: VIMS aircraft survey

Time Span of Data: 1959 to 1975

Output Media: Data Sheets

Storage Media: Data Sheets

Applicable Programs:

Name of Data Base: Sport fishing catch record from Steel Pier, Virginia Beach

Acronym:

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: The daily sport fishing catch records from the steel pier at Virginia Beach were measured for 735 days.

Contact Person: Ms. Susan O. Barrick, Librarian

Subject Coverage: Sport fishing records

Geographical Coverage: Virginia Beach, Virginia

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS study

Time Span of Data: 1956 to 1958

Output Media: Data Sheets

Storage Media: Data Sheets

Applicable Programs:

Name of Data Base: Survey and Landings Data Operation (Crabs)

Acronym: SALDO

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Magnetic tapes of commercial crab landings, juvenile crab surveys, american lobster catch, blue crab growth, tagging and morphometric data, red crab morphometric data

Contact Person: Mr. W. A. Van Engel, Mr. R. E. Harris, Jr.

Subject Coverage: Juvenile blue crab survey data, commercial blue crab landings, commercial crabber's daily-weekly catch logs, american lobster catch and tagging data

Geographical Coverage: Chesapeake Bay and adjacent shelf and slope.

Keywords: Blue crab survey data, blue crab landings, commercial catch logs, lobster catch logs, and lobster tagging data

Data Base Type: Scientific

Sources of Data in Data Base: NMFS, VIMS Crustaceology Studies

Time Span of Data: Commercial crab landings - 1960 to 1975 monthly, 1880 to 1979 annually. Juvenile crab survey: York River - 1956 to 1979, James River - 1964 to present, Rappahannock River - 1968 to present, Potomac River - 1979. Commercial blue crabbers daily/weekly catch: Dredgers - 1916 to 1977, Potters - 1944 to 1964, Trotliners - 1947 to 1959, Scrapers - 1942 to 1926, Fyke netters - 1949 to 1977. American lobster catch - 1974 to 1976, tagging data - 1977 to 1978.

Output Media: Magnetic tape, disk, printouts, CRT display

Storage Media: Magnetic tape, disk, punched cards

Applicable Programs: Data retrieval programs are available in FORTRAN, PASCAL, and SPSS.

Name of Data Base: Small Fish Survey

Acronym:

Data Base Organization Residence: Department of Fisheries Science,

Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer
Nature of Data Base: Trawl survey data on young of the year fish including, number taken, weight by catch by species, lengths by species, and some hydrographic data. 600,000 records.
Contact Person: Mr. Frank J. Wojcik
Subject Coverage: Survey of young of the year fish in Virginia waters
Geographical Coverage: Chesapeake Bay and tributaries - access by longitude, latitude, river mile, species, date
Keywords:
Data Base type: Scientific
Coordinate System: Latitude and longitude
Sources of Data in Data Base: VIMS surveys
Time Span of Data: 1955 to present, data collected monthly
Output Media: Few publications, computer printouts, CRT display
Storage Media: Magnetic tape and disk
Applicable Programs: Standardized retrieval program currently being developed

Name of Data Base: VEPCO York River Trawl Survey
Acronym:
Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer
Nature of Data Base: Trawl survey results: Numbers, lengths, weights by species of fishes and decapods, bottom material in net, surface and bottom salinity, dissolved oxygen, Secchi disk reading, air temperature, tide stage, and depth. 10,000 card image records.
Contact Person: Mr. James A. Colvocoresses
Subject Coverage: Results of 16' otter trawl survey of lower York River
Geographical Coverage: Lower York River (miles 0-10).
Keywords:
Data Base Type: Scientific
Coordinate System: Latitude and longitude
Sources of Data in Data Base: VIMS Surveys
Time Span of Data: March 1972 - December 1974, monthly sampling
Output Media: VIMS theses, grant and contract reports, SSR 76, computer printout, CRT display
Storage Media: Magnetic tape
Applicable Programs: Retrieval programs available

Name of Data Base: VIMS Longline Survey
Acronym:
Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Longline catch records: number of hooks set, catch by species, length, weight, stomach contents, age, reproductive status, surface temperature

Contact Person: Mr. James A. Colvocoresses
Subject Coverage: Longline catch records
Geographical Coverage: Chesapeake Bay and Continental Shelf waters in Virginia
Keywords:
Data Base Type: Scientific
Coordinate System: Longitude and latitude
Sources of Data in Data Base: VIMS Surveys
Time Span of Data: 1973 to present. Sporadic summer sampling, 1973 to 1979; monthly sampling, May to October, 1980 to 1981.
Output Media: VIMS Theses
Storage Media: Cards
Applicable Programs:

Biological, Other

Name of Data Base: Benthic Surveys
Acronym:
Data Base Organization Residence: Division of Fisheries and Biological Oceanography, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer
Nature of Data Base: Macrobenthic community structure and species abundance and sediment size in sample size of one-half square meter. No hydrographic or water quality parameters were sampled.
Contact Person: Dr. Robert J. Diaz
Subject Coverage: Benthic Community Structure
Geographical Coverage: Ten square meter area off VIMS pier in approximately 30 feet of water in mud habitat.
Keywords:
Data Base Type: Scientific data
Coordinate System: VIMS pier, longitude, latitude
Sources of Data in Data Base: VIMS Survey
Time Span of Data: 1961 to present
Output Media: VIMS theses, one page publication, Print-outs, CRT
Storage Media: Disk - VIMS Computer Center
Applicable Programs: Several programs exist for retrieval of various data sets.

Name of Data Base: BLM Survey Data
Acronym:
Data Base Organization Residence: Computer Center, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer, National Oceanographic Data Center
Nature of Data Base: Hydrographic data, invertebrate biomass estimates, fish species (length and number of individuals), fish stomach contents, chemical and physical parameters obtained during VIMS BLM Survey
Contact Person: Dr. David A. Evans, Ms. Ginny H. Shaw

Subject Coverage: Baseline study of outer continental shelf oil leases.

Geographical Coverage: Mid-Atlantic Outer Continental Shelf

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS Survey

Time Span of Data: 1975 to 1977

Output Media: VIMS Grant reports, VIMS SRAMSOE, Printouts, CRT display, Theses and dissertations

Storage Media: Magnetic tape and disk

Applicable Programs: Retrieval programs are available.

Name of Data Base: Crustaceans of Indian River Inlet, Delaware Bay

Acronym:

Data Base Organization Residence: Division of Biological Oceanography, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Count, length and identification of zooplankton (isopods) in the Indian River Inlet, Delaware at 1 station sampled weekly for 3 years

Contact Person: Dr. George C. Grant

Subject Coverage: Zooplankton of the Indian River Inlet, Delaware Bay

Geographical Coverage: Delaware Bay, Indian River Inlet

Keywords:

Data Base Type: Scientific Data

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS Survey

Time Span of Data: 1956 to 1959

Output Media: Data Sheets, Reports

Storage Media: Data Sheets

Applicable Programs: None

Name of Data Base: Epizootiology of Oyster Diseases in Chesapeake Bay

Acronym:

Data Base Organization Residence: Division of Biological Oceanography and Fisheries, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Mortality of oysters in the lower Chesapeake Bay region have been determined by tray counts and sampling from public and private oyster beds since 1950. The samples of oysters obtained for disease diagnosis over these periods of time have resulted in a permanent collection of over 150,000 sectioned and stained slides.

Contact Person: Dr. Jay D. Andrews

Subject Coverage: Oyster disease

Geographical Coverage: Lower Chesapeake Bay

Keywords:

Data Base Type: Slide, scientific data

Coordinate System: Longitude and latitude
Sources of Data in Data Base: VIMS sampling program
Time Span of Data: 1950 to present
Output Media: Data Sheets, reports, slides
Storage Media: Data Sheets, reports, slides
Applicable Programs:

Name of Data Base: Lower Bay zooplankton monitoring program
Acronym: LBZMP
Data Base Organization Residence: Department of Estuarine and Coastal Ecology, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer
Nature of Data Base: Hydrographic data from the Lower Chesapeake Bay. Four surveys per year are conducted sampling 16 stations on each survey. At each station, data on water temperature, salinity, and dissolved oxygen at two meter intervals throughout the water column are obtained. On the March and August surveys, density estimates for all zooplankton species are obtained.
Contact Person: Dr. George C. Grant
Subject Coverage: Hydrographic data and zooplankton density in Lower Chesapeake Bay
Geographical Coverage: Lower Chesapeake Bay
Keywords:
Data Base Type: Scientific data
Coordinate System: Latitudes and longitude
Sources of Data in Data Base: VIMS surveys
Time Span of Data: 1871 to present
Output Media: Printout, CRT display
Storage Media: Magnetic tape
Applicable Programs: Access programs available

Name of Data Base: The Parasites of Atlantic Menhaden, Monogenea on Gills
Acronym:
Data Base Organization Residence: Division of Biological Oceanography and Fisheries, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Parasitological study of Monogenetic trematodes on the gills of Atlantic menhaden. An attempt to define fish stocks along the Atlantic seaboard by parasite fauna.
Contact Person: Mr. David E. Zwerner
Subject Coverage: Size of parasite, age and maturity, stage
Geographical Coverage: Chesapeake Bay
Keywords:
Data Base Type: Scientific
Coordinate System: Longitude and latitude
Sources of Data in Data Base: VIMS project conducted with the Bureau of Commercial Fisheries, Beaufort, NC

Time Span of Data: 1959 to 1962
Output Media: Data Sheets
Storage Media: Data Sheets
Applicable Programs:

Name of Data Base: The Parasites of Fishes of the Chesapeake Bay region

Acronym:

System(s) that Access Data Base: VIMS Manual System

Data Base Organization Residence: Division of Biological Oceanography and Fisheries, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

Nature of Data Base: A parasite survey of fishes in the Chesapeake Bay region. Includes host records, incidence and severity of infestation, organ specificity, histology of infestation. This is a long-term accumulative study. Over two thousand fish specimens have been examined, representing over 100 species.

Contact Person: Mr. David E. Zwerner

Subject Coverage: Parasities of fish, emphasis on monogenea.

Collection includes copepods and endoparasites, reference vials, slide mounts and cross sections.

Geographical Coverage: Chesapeake Bay

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: Collections made by VIMS

Time Span of Data: 1955 to present

Output Media: VIMS Special Scientific Reports, several publications

Storage Media: Data Sheets

Applicable Programs:

Name of Data Base: RV Eastward Cruises progress reports, Norfolk Canyon Studies, Cape Hatteras biogeographical studies

Acronym:

Data Base Organization Residence: Division of Biological Oceanography and Fisheries, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Yearly survey of hydrographic parameters and zooplankton on the continental shelf and slope off the coast of North Carolina and Virginia. Sampling designed to study the biogeographic regions and faunal boundary north and south of Cape Hatteras as well as the Norfolk Canyon area.

Contact Person: Dr. George C. Grant

Subject Coverage: Zooplankton and hydrography of the Mid-Atlantic and Virginia

Geographical Coverage: Outer Continental Shelf off North Carolina and Virginia

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude
Sources of Data in Data Base: Cruises aboard RV Eastward
Time Span of Data: 1962 to 1974
Output Media: Reports, data sheets
Storage Media: Data Sheets
Applicable Programs:

Name of Data Base: Monogenea of the World
Acronym:
Data Base Organization Residence: Division of Biological Oceanography and Fisheries, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: A keysort catalogue including data on the systematics, morphology, and ecology of monogeneid parasites of the world. Data base also includes a bibliography of monogeneid parasites.
Contact Person: Prof. William J. Hargis, Jr.
Subject Coverage: Monogeneid parasites
Geographical Coverage: Global
Keywords:
Data Base Type: Scientific and bibliographic data
Coordinate System:
Sources of Data in Data Base: Many and varied
Time Span of Data: 1750 to present
Output Media: Many publications
Storage Media: Keysort catalogue
Applicable Programs: Data base being automated.

Name of Data Base: Weekly phytoplankton sample, Gloucester Point, Virginia
Acronym:
Data Base Organization Residence: Division of Biological Oceanography and Fisheries, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Phytoplankton samples taken weekly from fixed platform at Gloucester Point, Virginia. Generally a qualitative survey.
Contact Person: Ms. Susan O. Barrick, Librarian
Subject Coverage: Phytoplankton, lower York River
Geographical Coverage: York River, Virginia
Keywords:
Data Base Type: Scientific
Coordinate System: Longitude and latitude
Sources of Data in Data Base: VIMS study
Time Span of Data: 1971 to 1973
Output Media: Data Sheets
Storage Media: Data Sheets
Applicable Programs: None

Chemical

Name of Data Base: Bay-Mouth Flux-Agnes

Acronym:

Data Base Organization Residence: Department of Chemical Oceanography, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Flux measurements for 9 stations for the mouth of the Potomac River and Chesapeake Bay were taken for four 24 hour periods sampled hourly at 5 sample depths, surface to the bottom, to study the effects of Hurricane Agnes.

Contact Person: Dr. William G. MacIntyre

Subject Coverage:

Geographical Coverage: Potomac River Mouth

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS Sample Stations

Time Span of Data: 1972

Output Media:

Storage Media: Data Sheets

Applicable Programs:

Name of Data Base: Nonpoint Source (Runoff) Data

Acronym: NPS

Data Base Organization Residence: Division of Physical and Engineering Sciences, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer and Va. State Water Control Board

Nature of Data Base: Quantity and quality of water leaving a small catchment.

Contact Person: Dr. Bruce J. Neilson or Mr. Gary F. Anderson

Subject Coverage: Water flow and rainfall, and water quality (nutrients, suspended solids etc.).

Geographical Coverage: Coastal Plains

Keywords:

Data Base Type: Continuous time series of rainfall with intermittent runoff data

Coordinate System: Latitude and longitude

Sources of Data in Data Base: VIMS - Estuarine Proceses Department

Time Span of Data: 1976 to present

Output Media: Scientific reports and articles, Print-outs, CRT

Storage Media: Magnetic Tape

Applicable Programs: Access programs available

Name of Data Base: Offshore Distribution of Nitrogen and Phosphorous

Acronym:

Data Base Organization Residence: Division of Physical and

Engineering Sciences, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Salinity, nitrogen and phosphorous were measured at 83 stations on the Virginia continental shelf at the surface, mid-depth and bottom.

Contact Person: Dr. William G. MacIntyre

Subject Coverage: Phosphorous and nitrate concentrations offshore

Geographical Coverage: North Carolina and Virginia offshore

Keywords:

Data Base Type: Scientific Data

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS survey

Time Span of Data: Aug. 1972 to Sept. 1972

Output Media: Data Sheets, Grant Reports

Storage Media: Data Sheets

Applicable Programs:

Educational

Name of Data Base: Marine Education Materials System

Acronym: MEMS

Data Base Organization Residence: Department of Advisory Services, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: All printed educational documents about water, including both marine and freshwater systems. Data base is multidisciplinary, including all aspects of marine education.

Contact Person: Ms. Susan C. Gammisch

Subject Coverage: Educational documents relating to marine environment

Geographical Coverage: Global

Keywords: Descriptor set developed by the Department of Marine Education Advisory Services at the Virginia Institute of Marine Science

Data Base Type: Bibliographic data with descriptive information

Coordinate System:

Sources of Data in Data Base: Sea Grant education program, other general education programs, and selected journals of education

Time Span of Data: 1960 to present

Output Media: Computer printout, CRT display, and microfiche copies

Storage Media: Magnetic tape, disk and microfiche

Applicable Programs: Sort programs by author, title, subject, type of document, year

Environmental

Name of Data Base: Crustaceology Environmental Data Base

Acronym: CREDO

Data Base Organization Residence: Department of Fisheries Science, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Magnetic tape containing historical records of: air temperature data, water temperature data, precipitation data, river transport data, Ekman transport data, wind stress data, wind vector data, solar radiation data, sunshine data, sunspot data, sky cover data, salinity and density data, hydrographic and atmospheric data

Contact Person: Mr. Robert E. Harris, Mr. Willard A. Van Engel

Subject Coverage: Oceanographic and atmospheric data

Geographical Coverage: U.S. Mid-Atlantic Coast

Keywords: Temperatures, precipitation, river discharge, Ekman transport wind stress, wind vector, solar radiation, sunshine, sky cover, salinity

Data Base Type: Scientific

Coordinate System:

Sources of Data in Data Base: Data were obtained from the following sources: NMFS, VIMS Crustaceology Studies, National Climatic Center, Climatological data from U.S. Environmental Data Service, National Ocean Survey, U.S. Geological Survey, Pacific Environmental Group (NOAA), U.S. Fish and Wildlife Service, U.S. Geological and Solar Terrestrial Data Center.

Time Span of Data: 1938-1979, water temp. data-1951 to 1979 (some gaps), Precipitation - 1938 to 1977, River Discharge - 1951 to 1977, Ekman transport - 1958 to 1975, wind stress - 1946 to 1976, wind vector - 1975 to 1976, solar radiation 1958 to 1975, Sunshine - 1958 to 1979, Sunspots - 1749 to 1978, Sky cover - 1938 to 1979, Salinity and Density - 1954 to 1971 (some gaps), Hydrographic Data 1956 to 1979

Output Media: Bound data reports, magnetic tape and disk, Print-out, CRT display

Storage Media: Magnetic tape and disk.

Applicable Programs: Some programs to manipulate data are available in FORTRAN, PASCAL and SPSS.

Name of Data Base: VIMS Environmental Data Base

Acronym: VBASE

Data Base Organization Residence: Department of Geological Oceanography, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Monthly files of observed times and heights of high and low tides. Monthly files of observed hourly height of tide at Gloucester Point and Wachapreague, VA.

Contact Person: Dr. John D. Boon, III, Dr. David E. Evans

Subject Coverage: Monitored tide data. VIMS.

Geographical Coverage: Two stations are providing continuously monitored (time series) data - Gloucester Point and Wachapreague, VA.

Keywords:

Data Base Type: Time series of environmental data

Coordinate System: Longitude and Latitude

Sources of Data in Data Base: VIMS Survey
Time Span of Data: Continuously monitored beginning 1975. Computer files online, tidal height data begins with March, 1981.
Output Media: Computer printout, CRT display, magnetic tape
Storage Media: Magnetic tape and disk
Applicable Programs: A descriptor of data file organization for VBASE is included in a file called READ THIS In VBASE.

Management Information, Information Management

Name of Data Base: Marine Affairs Bibliography
Acronym:
Data Base Organization Residence: Department of Ocean and Coastal Law
System(s) that Access Data Base: VIMS PRIME 750 Computer
Nature of Data Base: All printed information on marine resource management and ocean and coastal law.
Contact Person: Ms. Susan W. Carter, Prof. N. Bartlett Theberge
Subject Coverage: All matters pertaining to marine resource management and coastal law.
Geographical Coverage: Primarily Chesapeake Bay and Mid-Atlantic region.
Keywords: 30 descriptors
Data Base Type: Bibliographic, management oriented
Coordinate System:
Time Span of Data: From indefinite past to 1979
Output Media: Microfiche copies of publications, computer generated bibliographic, printouts, CRT display.
Storage Media: Magnetic tape, printed copy
Applicable Programs: Sort programs and retrieval programs are available.

Name of Data Base: Marine Environment and Resources Research Management System
Acronym: MEERMS
Data Base Organization Residence: Division of Marine Resource Management, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer
Nature of Data Base: Bibliographic - retrievable manually and via computer. Publications range from copies of hardcover books and technical journals to gray literature entries like grant reports and newspaper clippings. Historic data on temperature, salinity and winds are included. Contains all VIMS publications from 1947 to present as well as slides, maps, and charts.
Contact Person: Dr. Maurice P. Lynch
Subject Coverage: All matters pertaining to marine coastal and estuarine environments
Geographical Coverage: Primarily, but not exclusively, Chesapeake Bay and Mid-Atlantic Coastal Areas
Keywords: More than 2000 keywords

Data Base Type: Bibliographic, management oriented, and applied scientific
Coordinate System:
Sources of Data in Data Base: Many and varied
Time Span of Data: From indefinite past to present
Output Media: Microfiche copies of data and publications, computer generated bibliographies, Print-outs, CRT display
Storage Media: Magnetic disk
Applicable Programs: Sort programs and data retrieval programs are available.

Meteorological

Name of Data Base: VIMS Weather Observations
Acronym:
Data Base Organization Residence: Computer Center, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS PRIME 750 Computer or VIMS Manual System depending upon type of data
Nature of Data Base: Daily observations of weather conditions at Wachapreague, Va. and Gloucester Point, Va. including precipitation, barometric pressure, solar radiation, relative humidity, wind speed and direction, air temperature, salinity in York River at Gloucester Point, and tide height at Gloucester Point.
Contact Person: Dr. David E. Evans, Ms. Ginny H. Shaw
Subject Coverage: Weather data
Geographical Coverage: Gloucester Point, Va. and Wachapreague, Va.
Keywords:
Data Base Type: Scientific
Coordinate System: Latitude and longitude
Sources of Data in Data Base: VIMS Monitoring Program
Time Span of Data: 1963 to present for precipitation and air temperature. 1971 to present for all other data.
Output Media: Strip charts, data sheets, CRT display, printout
Storage Media: Strip charts, data sheets
Applicable Programs: Automated data retrieval is available for some parameters

Photogrammetry, Imagery, Mapping

Name of Data Base: Coastal Archives
Acronym:
Data Base Organization Residence: Coastal Archives, Department of Geological Oceanography, Reed Hall, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual and VIMS PRIME 750 Computer
Nature of Data Base: Old maps, charts, beach profiles, and wave refraction diagrams. Most extensive archives of Chesapeake Bay maps and photos in Commonwealth.

Contact Person: Mr. Gary L. Anderson
Subject Coverage: Chesapeake Bay and Virginian Sea
Geographical Coverage: Chesapeake Bay and Virginian Sea
Keywords: Photos, Bay topography, Bay Bathymetry
Data Base Type: Mylar maps, computer tapes
Coordinate System: Longitude and latitude, UTM
Sources of Data in Data Base: National Oceanic and Atmospheric Administration
Time Span of Data: 1859 to present
Output Media: Printouts, CRT display
Storage Media: Charts and magnetic tape
Applicable Programs: Some FORTRAN programs are available to access data.

Name of Data Base: Oblique Shoreline Photography
Acronym:
Data Base Organization Residence: Department of Geological Oceanography, Masefield Hall, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Approximately 15,000, color, 35 mm slides of Virginia tidal shoreline with photo number, date, and altitude
Contact Person: Mr. Carl W. Hobbs
Subject Coverage: Tidal Shoreline
Geographical Coverage: All of Virginia's tidal shorelines
Keywords: Shoreline, photography
Data Base Type: Spatial, photography
Coordinate System: County and geographic name
Sources of Data in Data Base: VIMS overflight photography
Time Span of Data: 1972 to 1978
Output Media: Interpreted data published as shoreline situation reports
Storage Media: Mechanical
Applicable Programs:

Name of Data Base: Remote sensing of oil slicks
Acronym:
Data Base Organization Residence: Department of Geological Oceanography, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Interpretation and analysis of remote sensing by variable wavelength photography of oil spills. Report includes type of oil spilled, oil temperature estimated thickness of oil, and rate of oil slick spreading.
Contact Person: Ms. Susan O. Barrick, Librarian
Subject Coverage: Oil spills, remotely sensed
Geographical Coverage: York River, Virginia
Keywords:
Data Base Type: Scientific

Coordinate System: Longitude and latitude
Sources of Data in Data Base: NASA Wallop's Island overflight
photography
Time Span of Data: 1969 to 1972
Output Media: Reports
Storage Media: Reports
Applicable Programs:

Name of Data Base: Submerged Aquatic Vegetation
Acronym: SAV
Data Base Organization Residence: Department of Wetlands, Virginia
Institute of Marine Science, Gloucester Point, Virginia 23062.
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: Location of submerged aquatic plants in Virginia
waters, primarily those occurring in the saline portions of the Bay;
maps on USGS Topographic Quadrangles showing SAV beds at scale of
1:24,000 with area of each bed and objective density rating of the bed
(maps made from aerial photos also archived at VIMS).
Contact Person: Dr. Robert J. Orth
Subject Coverage: Location and density of SAV beds
Geographical Coverage: Chesapeake Bay and Tributaries, tributary
coverage approximately 20 to 30 km from mouth
Keywords:
Data Base Type: Spatial - charts and objective density rating
Sources of Data in Data Base: VIMS surveys
Time Span of Data: 1974, 1978, 1980, 1981
Output Media: Theses, published papers
Storage Media: Maps accessed manually
Applicable Programs:

Name of Data Base: Satellite Imagery of the Virginia Coast
Acronym:
Data Base Organization Residence: Remote Sensing Center, Virginia
Institute of Marine Science, Gloucester Point, Virginia 23062
System(s) that Access Data Base: VIMS Manual System
Nature of Data Base: The data base consists of 92 13 cm Landsat
transparencies, 46 70 mm Landsat transparencies, and 20 HC mm
transparencies of the Virginia portion of the Chesapeake Bay and
adjacent Atlantic coastal waters.
Contact Person: Dr. John C. Munday
Subject Coverage: Coastal Virginia
Geographical Coverage: Chesapeake Bay, Atlantic shoreline, Atlantic
coastal and shelf waters
Keywords: water movement, suspended material
Data Base Type: Spatial, satellite imagery coordinate system
Coordinate System: Latitude and longitude
Sources of Data in Data Base: EROS Data Center, S.D.; NASA Goddard,
Md.
Time Span of Data: Oct. 1972 to present
Output Media: Final Contract Reports

Storage Media: Photographic images
Applicable Programs:

Physical

Name of Data Base: Corps of Engineers, Rappahannock River temperature and salinity

Acronym:

Data Base Organization Residence: Division of Physical and Engineering Sciences, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Temperature and salinity values were monitored every 30 minutes at two stations in the Rappahannock River, Virginia from March to November of each year.

Contact Person: Dr. Ching S. Fang

Subject Coverage: Temperature and Salinity - Rappahannock River

Geographical Coverage: Rappahannock River

Keywords:

Data Base Type: Scientific

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS fixed station measurements

Time Span of Data: 1972 to 1974

Output Media: Magnetic Tape, CRT display, Print-out

Storage Media: Magnetic Tape

Applicable Programs: access program available

Name of Data Base: Current Meter Data

Acronym:

Data Base Organization Residence: Division of Physical and Engineering Sciences, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062.

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Data from current meters placed in Chesapeake Bay and tributaries: current speed, direction, depth, time, winds, tides

Contact Persons: Dr. John P. Ruzecki, Mr. Robert J. Lukens

Subject Coverage: Current meter data

Geographical Coverage: Tributaries and lower Chesapeake Bay - primarily tributaries now, but expected future shift in emphasis to lower Bay. Data from approximately 36 current meters.

Keywords:

Data Base Type: Scientific data

Coordinate System: Longitude and latitude

Sources of Data in Data Base: VIMS Surveys

Time Span of Data: 1971 to present

Output Media: Primarily grant and contract reports, printouts, CRT display

Storage Media: Magnetic tape and disk

Applicable Programs: Standardized retrieval program currently under

development

Name of Data Base: Drift Bottle and Bottom Drifter Data

Acronym:

Data Base Organization Residence: Division of Physical and Engineering Sciences, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS Manual System

Nature of Data Base: Drift bottle recoveries

Contact Person: Dr. John P. Ruzicki

Subject Coverage: Location of drift bottle recoveries from 169 release stations

Geographical Coverage: Primarily Chesapeake Bay and continental shelf

Keywords:

Data Base Type: Scientific data

Coordinate System: Latitude and longitude

Sources of Data in Data Base: VIMS research

Time Span of Data: 1969-1974 Experiments conducted routinely for first 18 months, sporadically for remainder of time period.

Output Media:

Storage Media: Cards - no current plans for conversion to disk or tape.

Applicable Programs:

Name of Data Base: VIMS Hydrographic Data Bank

Acronym:

Data Base Organization Residence: Computer Center, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

System(s) that Access Data Base: VIMS PRIME 750 Computer

Nature of Data Base: Over 90,000 records of temperature, salinity, dissolved oxygen, organics, algae, suspended solids, conductivity from VIMS slack water runs on Chesapeake Bay tributaries

Contact Person: Ms. Ginny H. Shaw

Subject Coverage: Hydrographic data and slack water runs

Geographical Coverage: Chesapeake Bay, its tributaries and some Atlantic Ocean Shelf

Keywords: River, date, cruise, station, location

Data Base Type: Spatial

Coordinate System: Latitude and longitude

Sources of Data in Data Base: VIMS and some from Chesapeake Bay Institute

Time Span of Data: 1942 to 1981

Output Media: Disk, tape or printout, CRT display

Storage Media: Magnetic tape and disk

Applicable Programs: Can be accessed using PRIME/POWER and PLIG

CHAPTER 13

VIMS RESEARCH AND STUDY COLLECTIONS

INTRODUCTION TO RESEARCH AND STUDY COLLECTIONS

Professional personnel of the Institute collect, process, produce and use a large number of individual items which are maintained in special collections. Most are natural objects. Among them are the specimens of sea and shore plants comprising the Herbarium and the microalgae maintained in the laboratories of the algae culture program.

The Invertebrate Museum includes a collection of over 20,000 specimens representing a wide variety of phyla, classes, order, families, genera and geographic areas. Certain invertebrate species are maintained by the culture program, also. Many parasites are included in the Parasitology collection. Other free-living and symbiotic invertebrates are in the special collections of the research scientists who gathered them.

Marine vertebrates are represented in the Ichthyology Museums, research and study collection of some 125,000 specimens of animals from around the world. Also included are freshwater specimens from eastern North America.

Other biological objects held in VIMS' collections are the large number of preserved and prepared specimens and histological materials in the Histology Collection. Many of the whole specimens are parasites, while most of the embedded and/or stained preparations are for disease-related studies.

Institute geologists have gathered and are maintaining a collection of bottom cores from the Chesapeake region.

All of these formal collections of preserved or processed research and teaching collections are results of the efforts of the scientists and their assistants and students. Assets available for future reference, educational and exchange activities, they are also products.

Among the non-biological objects regularly maintained by Institute personnel are the VIMS Library's large collections of books, reference volumes, journals, separates, microfilm, microfiche, microcards, maps and charts. The Art and Photography unit continues to accumulate color transparencies of marine organisms and research activities, base maps and negatives. And finally, the VIMS/Sea Grant Marine Education Center maintains a growing number of sound and silent films, film loops, cassettes, slide programs and other such items in its Audiovisual Aids Collection. The importance of the library collections to the research, teaching and advisory activities of the Institute is so obvious as not to require further mention. The audiovisual collection is extremely popular and widely distributed and utilized in the public educational, informational and advisory programs of the Institute as are the transparencies of the Art and Photography collections. The latter are also used in research. Since

all of these collections require creativity, ingenuity, time, effort and funds they, too, are products of the personnel of the Institute.

RESEARCH AND STUDY COLLECTIONS OF THE INSTITUTE

Herbarium

No. species - 380, registered with international association of herbaria

Composition of collection - wetland plants and some macrophytic algae

Geographical coverage - Primarily tidewater Virginia marsh plants. Some macrophytes from Florida and elsewhere on Atlantic coast included

Temporal coverage - late-1960's to present

Current status: Additions to collection made annually

Algae and Shellfish Stock Collections

No. algae species: 10 algae species are maintained in culture.

Most were originally isolates from the York River. The algae specimens are Pseudoisochrysis paradox, Pyramimonas virginica, Chlorella spp., Thalassiosira pseudomana, Skeletonema spp., Osochrysis galliana, Nannochloris oculata, Prorocentrum minimum, Tetraselmis suecica, Monochrysis spp.

Shell-stock cultured: Crassostrea virginica, Mercenaria mercenaria and mussels.

Rotifers are also maintained in culture.

Current status: Algae cultures are maintained by transferral to new medium every 2 weeks.

Invertebrate Museum

No. species - 1,100

No. lots - 2,500

No. specimens - approximately 20,000

Geographical coverage - Worldwide

Temporal coverage - Mid-1940's to present

Current status: Collection is being expanded at a rate of approximately 15% per year

Parasitology Collection

No. and Types of Specimens: Parasites and pathological conditions from striped bass and other local fishes -- 953 whole mounts, 836 histological specimens, 98 specimen vials,

155 lots of stored tissue. Parasitology teaching collection - 121 whole mounts, 72 histological specimens, 60 specimen vials, 30 lots of stored tissue. Surf clam parasite collection - 42 whole mounts, 191 histological specimens, 37 specimen vials. Parasitic copepods - 534 whole mounts.

Geographical Coverage: Primarily Chesapeake Bay and tributaries

Temporal Coverage: Striped Bass - 1972 - present, surf clams - 1974-1975, copepods - 1964 - present.

Current Status: Collection being expanded continually.

Ichthyology Museum

No. species - 875

No. lots - 13,000

No. specimens - 125,000

Geographical Coverage: Marine collection worldwide. Fresh water collection from eastern North America.

Temporal Coverage: Mid-1960's to present

Current status: Collection being continually expanded at a rate of approximately 8% per year.

Histology Slide Collection

No. slides: 169,711 prepared slides of oysters
601 slides of clams, other bivalves, snails and fish

Geographical Coverage: Primarily Chesapeake Bay and tributaries, and a small number of specimens from Delaware Bay and New Jersey.

Temporal Coverage: 1959 - Present

Current Status: Collection being expanded continually

Sediment Core Collection

Size: 103 sediment core samples, some taken as 20 foot cores, some taken as 40 foot cores

Information: Core samples have been sectioned and geologically identified according to constituents. Analytical and statistical data as well as pertinent bottom records are filed with each core sample.

Geographical Range: Core samples have been taken primarily from the Virginia portion of the Chesapeake Bay, however some have

been taken from Maryland regions of the Bay also.

Temporal Range: Earliest samples were taken in 1979. All core samples processed at VIMS are archived in the collection.

Current Status: Collection being continually expanded.

VIMS Library

Collections: Types and Numbers (as of April 1983)

Monographs - 12,050
Bound Serials - 19,550
Current Subscriptions & Exchange Titles - 1,000
Separates File Reprints - 20,000

NOS Nautical Charts (includes duplicates) 1,000
GS Topographical Maps (includes duplicates) 1,200
Boat Sheets - 500
Misc. Charts & Maps - 300

Microfiche - 400 sheets
Microfilm - 250 reels
Microcards - 1500 cards (back issue journal volumes)

Current Status: Collections in all categories, expanded and/or updated continually.

Photographic (slide) Collection

No. slides: 347 color transparencies of marine organisms, VIMS facilities and research conducted at the institute.

Geographical Coverage: Chesapeake Bay and tributaries

Temporal Coverage: Historical coverage of institute activities.
1960's to present

Current Status: Collection being expanded continually

Audiovisual Collection

This inventory contains 16 mm films, filmstrips, film loops, slide programs and records archived by the VIMS/Sea Grant Marine Education Center

<u>Items</u>	<u>Quantity</u>
16 mm color films	40
16 mm silent films	3
8 mm color film loops	3
filmstrips with cassettes	44

slide programs	32
filmstrips without sound	12
overhead transparencies	11
records	4
study prints	5

Current Status: Collection being expanded continually.

CHAPTER 14

VIMS MANUSCRIPTS

INTRODUCTION TO VIMS MANUSCRIPTS

A large number of internal reports of one sort or another have been prepared by personnel of the Institute over the years. Many are available only as internal documents or manuscripts. Some are student reports but the large majority have been produced by full-time professionals. Some have been printed and issued in limited numbers and thus could be considered technically as special reports. Not included in one of the special report series they are included here with the VIMS Manuscripts. Others have, with modifications, appeared in more formal presentations. A number have been the basis for advice to and action by executive, legislative, judicial agencies of the state region or by managers outside the government. All of those listed are available in VIMS' library manuscript collection.

VIMS MANUSCRIPTS*

UNDATED (Presented Alphabetically):

- Andrews, Jay D. Preliminary notes copied for class use on taxonomy of barnacles of Tidewater Virginia.
- Biggs, Fred C. An annotated list of theses - School of Marine Science (1940 - present).
- Campbell, Frank. Survey of Matoaka Lake.
- Castagna, Michael. Economic potential of clam operation.
- Churchill, E. P. The conservation of the blue crab of Chesapeake Bay.
- Doyle, R. T. Investigation of the behavioral and lateral line development of larval striped bass.
- Dufek, George J. Rear admiral Richard Evelyn Byrd; a biography. Gloucester.
- Haven, Dexter. Mass treatment with 2, 4-D of milfoil in tidal creeks in Virginia.
- Moskovits, George. Notes on potential microbiological investigations involving fouling.
- Patten, Bernard. An introduction to the cybernetics of the ecosystem: Design for a plankton machine - Gloucester Point, Va.: Virginia Fisheries Laboratory.
- Van Engel, Willard A. Sources of weather data.
- Virginia Fisheries Laboratory. Fish problems (or where are the fish?).
- Virginia Institute of Marine Science. Hydrographic data (Gloucester Point, Virginia Institute of Marine Science) Dates to 1942. Unpaged computer print-outs.
- Virginia Institute of Marine Science. Oyster producing section of James River, Va. Map and thermofax copies.
- Virginia Institute of Marine Science. Keys to Virginia invertebrates. 2 sets, preliminary collection of keys.

*Being a mixture of manuscripts and limited-edition reports on file in the VIMS Manuscript file.

Virginia Oyster Laws. March 1, 1882. An act to define the true boundary line between Maryland and Virginia; to designate the headlands upon the Potomac River, and to prohibit unlawful oystering and dredging in the Potomac River and Pocomoke Sound.

Wass, Marvin L. A study of infaunal communities in Arthur Harbor, Antarctica. Research submitted to the National Science Foundation by the Virginia Institute of Marine Science.

DATED:

Lochhead, John H. (undated, probably 1940). Artemia, the "brine shrimp".

Hopkins, Sewell H. 1941. Distinguishing characteristics of the zoea seen in plankton tows.

Strickland, John C. 1942. Cultivation of micro-organisms as food for crab larvae.

Anon. 1943. Effects of winter temperature on various groups of blue crabs and Efforts to find small crabs.

Davis, H. S. 1943. Report on green croaker infection of lower Chesapeake Bay in July. (The report appears to have been written by someone at the Virginia Fisheries Laboratory at Yorktown, quotes opinions of H. S. Davis, fish pathologist in Kearneysville, West Virginia.)

Virginia Fisheries Laboratory. 1945. Report on observations on the use of crab pots.

Hopkins, Sewell H. 1946. Crabs are abundant in the bay this year.

Hopkins, Sewell H. 1946. Early history of the crab industry in the U.S.

Newcombe, Curtis L. 1946. Summary of results: crab studies by the Virginia Fisheries Laboratory presented before the crab panel of the Atlantic States Marine Fisheries Commission, Baltimore meeting.

Hopkins, Sewell H. 1947. Preliminary survey of literature on Polydora.

Virginia Fisheries Laboratory. 1947. Matoaka Lake, Report. Hydrobiology class.

- Andrews, Jay D. 1948. Oyster setting records for the Rappahannock River.
- Hoffman, Richard L. 1948. Report on chemical control of oyster drills. 8 p.
- Tresselt, E. 1948. Age-length relationship of fishes from Matoaka Lake, 1948 and the food of juvenile Leiostomus xanthurus and Roccus saxatilis taken in the York River.
- Andrews, Jay D. 1949. A preliminary draft of recommendations to the Commissioner of Fisheries for oyster repletion work in Virginia.
- Bailey, Robert S. 1949. The blue crab, a study for secondary school pupils. Virginia Institute of Marine Science. Gloucester Pt., Virginia. Teachers supplement. Christ Church, Virginia, 1949. Author on supplement: Bailey, Robert S. No author listed on main text.
- Haven, Dexter S. 1949. Black oysters on the Potomac.
- Virginia Advisory Council on the Virginia Economy. Fisheries Research Committee. 1949. The importance of catch records in the management of the fisheries of Virginia with recommendations for the establishment of a fishery statistical laboratory.
- Virginia Advisory Council on the Virginia Economy. Fisheries Research Committee. 1949. A proposed oyster survey program for Virginia.
- Andrews, Jay D. 1950. Annotated list of important taxonomic references.
- Andrews, Jay D. 1950. Key to the species of marine pelecypods of Chesapeake Bay (based mostly on shell characters).
- Anon. 1950. (Notes on Anomia literature, 1871-1950, assembled by someone at the Institute for an apparently incompleated study).
- Atlantic Estuarine Reseach Society. 1950. Symposium on estuarine ecology... presented at the dedication exercises of the Virginia Fisheries Laboratory, Gloucester Point, Va. October 13, 1950. 22.
- Andrews, Jay D. Revised May 1951, revised April 1956. Annotated checklist of mollusks of Chesapeake Bay.
- Ladd, Ernest C. 1951. A limnological survey of Burke's Pond, Gloucester County, Virginia, 1950-1951.

- Andrews, Jay D. and Dexter S. Haven. 1952. The Public oyster grounds of the Rappahannock River.
- Haven, Dexter S. 1952. Trip on crab dredge to investigate possible mortality of young fish. January 15, 1952.
- McHugh, J. L. 1952. Noise-producing organisms in the Chesapeake Bay. Manuscript of Chesapeake Bay Institute Interim Report, XIII (in part).
- Andrews, Jay D. 1953. Studies of the relation between black mud and mortalities in the Rappahannock River, Virginia in 1953.
- Massman, W. H. 1953. Check list of marine fishes collected on the beach in front of the Virginia Fisheries Laboratory, Gloucester Point, Virginia.
- McHugh, J. L., W. A. Ellison, Jr., and R. E. Tiller. 1953. Proposed research outline for cooperative investigation of the migratory fish stocks of the Chesapeake Bay and the North Carolina sounds.
- Bucklin, Donald H. 1954. In vitro experiments with Dermocystidium marinum.
- Hopkins, Sewell H. 1954. Notes on the meetings of the American Institute of Biological Sciences in Gainesville, Florida.
- Andrews, Jay D. 1955. Memorandum on fresh-water Fish Kills.
- Andrews, Jay D. 1955. Memorandum on Mackin's manuscript, entitled "Oxygen and hydrogen sulphide."
- Andrews, Jay D. 1955. Notes on survey of Rappahannock and Corrotoman Rivers, 23 September 1955.
- Oglesby, Ray T. 1955. A comparison of seasonal variation in dorsal ray counts in a spring spawner, Fundulus heteroclitus (L.) and a fall spawner, Micropogon undulatus (L.), Parts I and II. January 1954. Relative and seasonal distribution of fish in "scrap" samples from York River pound nets. January 1955.
- Pacheco, A. L. 1955. The anatomy of the lateral line system and a demonstration of the canals and pores in armored fish, Prionotus evolans.
- Virginia Fisheries Laboratory. 1955. Fisheries research expanding. Manuscript of article appearing in 1955 Year Book of the Southern Fisherman.

- Massman, W. H. 1956. Fishes of Chesapeake Bay. Contents: Alphabetical list of common and scientific names.
- Massman, W. H. 1958. A check list of fishes of the Virginia waters of Chesapeake Bay and its tidal tributaries.
- McHugh, J. L. 1958. Analysis of Virginia finfish research program.
- Hewatt, Willis G. 1959. A preliminary checklist of the invertebrate fauna of marine and brackish waters of Virginia.
- Massman, W. H. 1959. Approximate length of shoreline in Tidewater, Virginia.
- Massman, W. H. 1959. A check list of fishes the Virginia waters of Chesapeake Bay and its tributaries. Second revision.
- Hargis, William J., Jr. 1960. Research for the oyster industry at the Virginia Fisheries Laboratory.
- Ramsey, Sarah. 1960. The oyster industry of Virginia after 1865. (high school theme.)
- Andrews, Jay D. and John L. Wood. 1961. Occurrence of MSX in live oysters in Rappahannock River.
- Andrews, Jay and D. and J. L. Wood. 1961. Status of disease of oysters in Chesapeake Bay.
- Berg, Leo. 1961. A classification of fishes extracted from "Classification of fishes both recent and fossil" (2nd edition).
- Hargis, William, Jr. 1961. The mid-Atlantic Bight: A neglected marine gold mine.
- Hargis, William J., Jr. 1961. Virginia's marine laboratory, present and future.
- Hopkins, Sewell H. 1961. Report on work done and observations made August 7 - September 5, 1961 on the Eastern Shore.
- Massman, W. H. and Robert S. Bailey. 1961. Virginia's anadromous fishes. Virginia Wildlife, April.
- Virginia Institute of Marine Science. 1961. Radiation safety manual for use at the Virginia Fisheries Laboratory.
- Biggs, Fred. 1962. Maritime Virginia.

- Hargis, William J. 1962. Current knowledge on the hydrography and biology of the estuarine portion of James River. Gloucester Pt., Virginia Inst. of Marine Science.
- Patten, Bernard C. 1962. Synoptic comparison of seston loads in the Rappahannock, York and James Rivers.
- Richards, Clarence E. 1962. Salt water sport fishing in Virginia. Virginia Wildlife 23(6):10-12. Manuscript of article.
- Virginia Institute of Marine Science. 1962. Summary of York River water temperatures, 1962.
- Barnes, Robert C. 1963. Sea-surface temperature measurements of Atlantic-shelf waters by an air-borne thermometer.
- Chanley, Paul. 1963. Ecological survey of lower York Creek. Gloucester Pt., Virginia Institute of Marine Science ill. 28 cm.
- Hargis, William J., Jr. 1963. The James River basin - great natural resource or problems of developing the James River.
- Hargis, William J., Jr. 1963. Virginia Institute of Marine Science. American Zoologist 3(3):3-317. Manuscript of article.
- Haven, Dexter, Michael Castagna, James Whitcomb and Paul Chanley. 1963. Oyster drill control studies with formulations of "Polystream" and "Seven". Part I. Treatment of planted oyster grounds. -- Part II. Treatment of shells to increase survival of "set".
- Patten, Bernard C. 1963. Dark and light bottle experiments. Field data sheets.
- Virginia Institute of Marine Science. 1963. Book list. (List indicates student background reading compiled by scientific staff in 1963.)
- Andrews, Jay D. and G. F. Beaven. 1964. A management program for the Potomac River oyster fishery.
- Bailey, Robert S. and Dexter S. Haven. 1964. Milfoil, a frill weed that ruins your sport.
- Hargis, William J., Jr. 1964. The marine resources of Virginia, their development, use, preservation.

- Hargis, William J., Jr. 1964. Research in progress at the Virginia Institute of Marine Science, Gloucester Point and Wachapreague, Virginia.
- Smith, Wallace G. 1964. Dinoflagellate red tides. Student report. Reproduced from typewritten copy. Literature cited.
- Virginia Fisheries Laboratory. 1964. Preliminary report on crab investigations in Virginia waters conducted by the Virginia Fisheries Laboratory. Submitted to Mr. John C. Pearson of the Fish and Wildlife Service, head of cooperative crab studies in Chesapeake Bay.
- Virginia Institute of Marine Science. 1964. Hydrographic cruise schedule; operation James River. unpagged, thermofax copies.
- Virginia Institute of Marine Science. 1966. James River Model Data, 1964.
- Andrews, Jay D. 1965. Pre-season survey of oyster beds in Potomac River 21-22 September for Potomac River Fisheries Commission.
- Biggs, Fred. 1965. Virginia's marine waters in (stat. miles)² and (nautical miles)².
- Eble, Albert F. 1965. Enzyme histochemistry of the normal oyster, Crassostrea virginica; a preliminary report.
- Norton, Warren. 1965. Distribution variation of estuarine benthonic foraminifera in a changing environment.
- Thornborough, John R. 1965. Marine and freshwater invertebrates.
- Van Engel, Willard A. 1965. Part I. Review of the effects of DDT on the blue crabs Callinectes sapidus, 1948. Part II. The effects of DDT spraying in the Langley, Messick area, 1947 and 1948. Part III Sources of weather data, 1965.
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SECTION III

PRODUCTS OF ADVISORY AND CONSULTATIVE, EXTENSION,
AND PUBLIC EDUCATIONAL OR INFORMATION PROGRAMS

PART I

ADVISORY CONSULTATIVE AND PARTICIPATIVE PRODUCTS OF
SCIENTISTS AND OTHER SCHOLARS

INTRODUCTION TO THE CHAPTERS ON ESSAYS, TESTIMONY AND SPECIAL
REPORTS (Chapter 15) AND COMMITTEE, COMMISSION OR TASK FORCE SERVICE
AND/OR RELATED REPORT PREPARATION (Chapter 16)

Certain audiences, problems, customers, users or legislative, executive or judicial procedures cannot employ the scientific literature directly. Nor can they wait until the results of recently accomplished or current research are complete or fully published (i.e. have run the gauntlet from completion of the project to full-scale publication in one or the other of the formal scientific journals) before taking action. Further, many audiences or action forums require communication of scientific or other technical information in a special form, at a special time and place. For example, the legislative or executive committee meeting, the hearing room, the court room.

Often it is legislative, executive or judicial action that is the ultimate objective of a particular scientific investigation or special study of the Institute responding to those portions of its legal charge in the Code. In such cases the communications (the products of these scholarly studies or scientific investigations) must be tailored to suit the audience and/or the arena. They must be in the form required (in some cases specified) by the user or the occasion and they must be prepared by the time and circumstance specified. For these communications or audiences the formal scientific literature or lengthy scientific or engineering papers or books are not suitable. Usually locally-published documents such as technical reports, special scientific reports, data reports will not do either. For these special forums, tailored forms of communications are required such as special written reports, letter reports, printed advisories, testimony (written or oral - often both), or oral reports are the most useful or applicable media.

Thus, a scientific organization or individual wishing (or obligated) to communicate with decision-making bodies such as executive officers, executive task forces, committees or special commissions, executive regulatory bodies, legislative bodies (special and regular) and the semi-judicial hearing groups or regular judicial organizations, which are the "action" agencies of society and its governments, must produce the products in the form required. The written and oral communications involved are legitimate products of scientific institutions and of individuals charged with advising and assisting such decision-making organizations. They are an important part of the scholarly and scientific currency of the organizations and individuals involved, and should be recognized as the accomplishments they are.

This chapter on essays, testimony and special reports constitutes an inventory of this category or class of products of the Institute and its professionals. We have attempted to make it complete, but the Institute's central archives have been even less adequate for this category of accomplishments or works than for the grant and contract

reports inventory. As a consequence, the record probably is incomplete, lacking certain examples of this class of product of many Institute contributors. Likely it is weighted toward those whose efforts have been more completely recorded, maintained and stored, those directly contacted by the authors in the preparation of this inventory and those who responded to our requests for information.

We would hope that the future will see a more careful tracking, acquisition, accessioning and storage of these important contributions by the Institute's central archivists, and a more deliberate and conscientious effort on the part of its professionals to provide them. They are important for they are often the only (or the primary) evidence of technical information that executive, legislative or judicial decision-making officers or bodies receive from VIMS for consideration in decision-making. Because those decisions may lead to new executive regulations or rulings, new or modified civil or criminal law, new judicial rulings or case decisions (and hence case law) relating to Virginia's maritime activities, resources and environments this class of products is especially important.

Not only is the inventory of these products, here published for the first time, incomplete but even were it complete it would be only the "tip of the iceberg" -- only part of the record. Many of the products of the Institute in these categories (i.e. the direct advisories or the recommendations given as testimony) are delivered orally in an instantaneous, ad hoc fashion and there are no Institute records of these efforts, unless the proceedings have been recorded in detail and the detailed records are made available to Institute archivists -- a combination not always common.¹

¹For semi-judicial proceedings like Marine Resource Commission or Water Control Board hearings, detailed, taped records are made but they are rarely made available for distribution. (Summaries are, but the detailed records which would contain such advice testimony are not!) The same is true of judicial proceedings. Full records are made but not distributed regularly. Neither of these products delivered in the arenas indicated would be part of VIMS archives. Unfortunately, many - in fact most, of the meetings of many executive committees and task forces and many committees of the Virginia General Assembly are not regularly recorded carefully and such records of their proceedings as may be made are sparse, and quickly are lost. Furthermore, even when notes are kept the testimony involved is usually not recorded.

For committee proceedings of the United States Congress the situation is much better. Detailed records are made and they are often printed and distributed. In most cases these printed records include not only the formal oral testimony and the written testimony which is usually required in advance, but also the give-and-take period after the testimony is concluded. Often letter interventions are included also. Printed records are readily available and

FOOTNOTE 1 (Continued)

Institute archives contain many! Even so, more of VIMS' advice and oral testimony is directed to local and state executive and legislative bodies and judicial organizations than to those at the national level. Thus, the records of VIMS contributions to these types of decision-making activities are lacking. As a consequence of these facts any inventory of this class of products that we could prepare would be lacking. VIMS and its people have done much more than the record shows in these arenas!

It is unfortunate that the record is lacking in this respect because the Institute and its people have contributed significantly to many, (in fact - most) executive and legislative proceedings that have affected the marine environments and resources of the Chesapeake system and the nearby Virginian Sea and their uses and users for over twenty years. Available examples are many -- some are conspicuous.

For instance, the Institute has been involved in research on or providing opinions advice and testimony in such projects or proposals as; the proposed James River Navigation Project, the Baltimore Channel Project, the Hampton-Roads Deepening proposal; the proposed James River Tidal Exclusion Dam, Gathright Dam on the upper James, the proposed Salem Church Dam on the Rappahannock and many other water supply and control projects in the region; Yorktown Power Plant, Surry Nuclear Power Plant, North Anna Nuclear Power Plant, Morgantown Power Plant on the Potomac and most other power plant projects in the Chesapeake system; refinery projects at Yorktown (Amoco), Piney Point on the Potomac, and Portsmouth; the Dow Chemical Plant on Skiffes Creek, the Chesapeake Corporation at West Point and many similar manufacturing activities; the sewage treatment plants (actual or proposed) at Jail Point, Pig Point and Small Boat Harbor (Hampton) on the James, Dandy (on the York) and many other locations in Virginia's Chesapeake System as well as Dam Neck on the Atlantic; and, York River State Park, False Cape State Park, Back Bay Wildlife Refuge, Assateague State Park, the Barrier Island Preserve of Nature Conservancy and many of other projects of the same type. Institute scientists have investigated, reported and advised on chemical discharges (Kepone and other pesticides, acid wastes, and fertilizer); oil spills; river closures and openings; ship collisions, groundings, and discharges; fish kills; bridge and highway projects; water quality criteria and standards; industrial sites; spoil disposal projects; water supply projects; inshore and offshore dump sites; establishment of fishing piers and reefs; fishery regulations, resource allocations and laws; and, many, many more socially-relevant activities. Also, the Institute and its personnel have been instrumental in having appropriate areas of the Bay and its tributaries declared disaster areas (and consequently eligible for financial aid); in encouraging and/or participating in the Barrier Island protection program of Nature Conservancy; development of the Virginia Wetlands Program and subsequent additions to laws and regulations; settlement of offshore boundary disputes (U.S. - versus Maine et al.); development and passage of the Fishery Conservation and Management Act of 1976 (offshore fishery extension), passage and continuation of Public Law 88-309, Public Law 89-304; the National Sea Grant Program; the National Coastal Zone Management Act; the Virginia Coastal Erosion Program and many others. Virginia's Marine Institute scientists have advised and participated in fishery disputes and resource allocation deliberations of the U.S.-U.S.S.R., U.S.-Poland, and U.S. and Canada. Many other examples could be given.

In such activities the Essays, Testimony and Special Reports prepared by Institute personnel have been significant forms (in fact,

the primary and/or only forms) of technical communications. They are products of VIMS' research scholarly and advisory efforts which have made solid contributions to the Institute's missions, purposes and goals and to the societal needs of Virginia, the Chesapeake and the mid-Atlantic region as well as to the Nation. They should be recognized as such!

An additional and special avenue of productive translation of scientific and scholarly information and advice is through service on executive, legislative, industrial, special scientific and other public and private committees, commissions and task forces. Such bodies, and the resulting reports, are often extremely productive, resulting in new laws, regulations, programs and financing, or academic or industrial ventures or procedures.² Many economic, political and social aspects of local and regional significance have been effected by the services of Institute personnel with and to such organizations.

²Research and advisory products and committee contributions could also be included with the numerous other results of research and scholarly efforts in Section II. Instead, we have chosen to place them with the results of advisory activities, which they are also.

CHAPTER 15

ESSAYS, TESTIMONY AND SPECIAL REPORTS

ESSAYS, TESTIMONY AND SPECIAL REPORTS

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- Smolen, Theodore F. 1974. Chairman, Wetlands symposium for members of Bench and Bar.
- Theberge, N. Bartlett. 1974. Testified before Attorney General Andrew Miller regarding common lands.
- Theberge, N. Bartlett. 1975. Deep Seabed Mining - Environmental, Economic and Legal Considerations. In Joyner, (Ed.) International Law of the Sea and Future of Deep Seabed Mining.
- Theberge, N. Bartlett. 1975. An Investigation into the History and Ownership of Starling's Island. A Report Prepared Pursuant to Senate Joint Resolution No. 153.
- Theberge, N. Bartlett. 1975. University of Virginia, guest lecturer on Deep Seabed Mining.
- Theberge, N. Bartlett. 1975. Extended Jurisdiction - International and Domestic Implications (Conference Proceedings).
- Theberge, N. Bartlett. 1976. Chairman, Symposium on Extended Jurisdiction - International and Domestic Implications.
- Theberge, N. Bartlett. 1976. An Investigation into the History and Ownership of Adams Island. A Report Prepared Pursuant to Senate Joint Resolution No. 57.
- Theberge, N. Bartlett. 1977. Cochairman, Ocean Law Symposium.
- Theberge, N. Bartlett. 1978. A Crisis in Coastal Zone Management in Virginia - Virginia Bar Association Journal.
- Theberge, N. Bartlett. 1978. Wetlands Evaluation and Management in Virginia. A Report Prepared for the Virginia Bar Association's Wetlands Committee.
- Theberge, N. Bartlett. 1979. Cochairman, Symposium on Toxic Substances.
- Theberge, N. Bartlett. 1979. Testified before the Coastal Erosion Abatement Commission on two occasions.
- Theberge, N. Bartlett. 1979. Virginia Fisheries and the Environment, proceedings of a conference.

- Theberge, N. Bartlett. 1979. VPI&SU, guest lecturer on Marine Affairs.
- Theberge, N. Bartlett. 1980. Invited Participant, National Sea Grant College Program - Issues for the 80's - Ocean and Coastal Law Workshop.
- Theberge, N. Bartlett. 1980. Invited Participant, Chesapeake Research Consortium - Workshop on Issues for the 80's.
- Theberge, N. Bartlett. 1980-81. Testified before the False Cape State Park Senate Subcommittee of the Virginia General Assembly on two occasions.
- Theberge, N. Bartlett. 1981. Chairman, Symposium on the 208 Program of the Federal Water Pollution Control Act in Virginia.
- Theberge, N. Bartlett. 1981. State Claims to Lands Within the Back Bay National Wildlife Refuge, Senate Document No. 2, prepared pursuant to a request from the Senate Subcommittee on False Cape.
- Theberge, N. Bartlett. 1981. Testified before the Senate Committee on Agriculture, Conservation, and Natural Resources of the Virginia General Assembly regarding False Cape State Park on two occasions.
- Theberge, N. Bartlett. 1981. Testified before a joint meeting of the Senate Committee on Agriculture, Conservation, and Natural Resources and the House of Delegates Committee on Conservation and Natural Resources of the Virginia General Assembly regarding False Cape State Park.
- Theberge, N. Bartlett. 1981. Testified before Governor John N. Dalton regarding False Cape State Park.
- Theberge, N. Bartlett. 1982. Invited Participant and Panel Chairman, Corps of Engineers Mariculture Workshop.
- Theberge, N. Bartlett. 1982. Invited Participant, Virginia Water Resources Research Center Water Law Workshop for the Working Press.
- Theberge, N. Bartlett. 1982. Legal Aspects of Chesapeake Bay Fisheries - Perspectives for the Future. Included in the proceedings of the 6th Annual Meeting of the Potomac Chapter of the American Fisheries Society.
- Theberge, N. Bartlett. 1983. Chesapeake Bay Conflicts and Fishery Management. Included in the proceedings of Coastal Zone '83. VIMS Contribution No. 1108.

- Theberge, N. Bartlett. 1983. The Commons Concept and Coastal Management. Included in the proceedings of Coastal Zone '83. VIMS Contribution No. 1107.
- Theberge, N. Bartlett. 1983. League of Women Voters, Panelist, Virginia's Water Supply Problems - Searching for Solutions.
- Theberge, N. Bartlett. Contributing Draftsman-Chesapeake Bay Commission Compact - Sec. 62.1-69.1 of the Virginia Code.
- Theberge, N. Bartlett. Primary Draftsman - Public Beach Conservation and Development Act - Sec. 10-215 of the Virginia Code.
- Virginia Fisheries Laboratory. 1945. Report and Summary of Educational Work of the Virginia Fisheries Laboratory. 1944-1945.
- Virginia Fisheries Laboratory. 1946. Guide to the Study of Marine Biology and Conservation.
- Virginia Institute of Marine Science. 1972. Publications of the Virginia Institute of Marine Science.
- Virginia Institute of Marine Science. The Fishing Industry of the Eastern Shore. A Report to the Governor of Virginia. Part of the Accomack and Northampton Counties, Virginia Developmental Study.
- Virginia Institute of Marine Science. 1976. VIMS statement, Portsmouth Refinery. Comments submitted to the State Secretary of Commerce and Resources. Relative to the Proposed Portsmouth Oil Refinery. 26 April, 1976.
- Virginia Institute of Marine Science. 1982. A public relations plan.
- Wass, Marvin L. 1971. Testimony at Wetlands Hearings, Yorktown, Virginia. October 27, 1971.

CHAPTER 16

COMMITTEES, COMMISSIONS, OR TASK FORCE SERVICE AND/OR
RELATED REPORT PREPARATION

COMMITTEES, COMMISSIONS OR TASK FORCES AND/OR
RELATED REPORT PREPARATION

Organization: The Commission to Study and Revise Title 28 of the Code of Virginia Relating to Fish, Oysters and Shellfish. 1961.

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: A Report to the Governor and the General Assembly of Virginia. House Document No. 14, 1961.

Organization: The Commission to Study Matters Pertaining To The James River. 1962.

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: Current knowledge on the Hydrography and Biology of the Estuarine Portion of the James River. 1962.

Organization: The Virginia Institute of Marine Science Salem Church Dam Study Committee. 1964.

Serving Members From VIMS: J. D. Andrews, M. L. Brehmer, W. J. Hargis, Jr., M. N. Nichols, L. H. Wood and D. S. Haven.

Reports: A Report to the Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service. VIMS SRAMSOE No. 4. 1964.

Organization: The Governor's Fish Kill Committee. 1965

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: The Report of the Governor's Fish Kill Committee. VIMS SRAMSOE No. 5. 1963.

Organization: Virginia Marine Resources Study Commission

Serving Member From VIMS: W. J. Hargis, Jr.

Group Report Resulting: Fidler, Walther B. (Chairman) 1967. Marine Resources of Virginia - Their Use, Conservation and Development. Report of the Virginia Marine Resource Study Commission to the Governor and General Assembly of Virginia. Commonwealth of Va., Dept. of Purchasing and Supply, Richmond, 1967.

Organization: The National Technical Advisory Committee on Water Quality Criteria. 1968

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: A Report of the National Technical Advisory Committee on Research Needs to the Federal Water Pollution Control Administration, U.S. Dept. of Interior, 1968.

Report of the National Technical Advisory Committee on Water Quality Criteria to the Federal Water Pollution Control Administration, U.S. Dept. of Interior, 1968.

Organization: Governor's Council on Environment, 1970.

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: Statements for Governor's Council on Environment. 1970.

Organization: The Southern Governor's Task Force for Nuclear Power Policy, Environmental Effects Subgroup. 1970.

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: Environmental Effects. Section VI. pp. 86-105 in Eaton, William W., et. al. (eds.), Nuclear Power in the South, A Report of the Southern Governor's Task Force for Nuclear Power Policy. Presented at the 1970 Southern Governor's Conference, Sept. 27, 1970.

Organization: Steering Committee, Chesapeake Research Consortium (CRC) 1970-1971

Serving Member From VIMS: R. J. Byrne

Organization: Technical Resource Committee - Task Force for Virginia Soil Survey Master Plan, Virginia Soil and Water Conservation Commission. 1970.

Serving Member From VIMS: R. J. Byrne

Organization: Ad Hoc Interagency Water Resources Coordinating Committee, held at the Virginia Institute of Marine Science 28 May 1971.

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: Notes on the first workshop on monitoring and data processing.

Organization: Task Force on Erosion and Sedimentation Control. 1971.

Serving Member From VIMS: R. J. Byrne

Reports: Report of the Task Force on Erosion and Sedimentation Contact. Prepared for the Governor's Council on the Environment. 1971.

Organization: Chesapeake Research Consortium Shoreline Studies (CRC) 1972-1976.

Serving Member From VIMS: R. J. Byrne

Organization: Research Advisory Committee, Chesapeake Research Consortium (CRC) 1972-1975

Serving Member From VIMS: R. J. Byrne

Organization: Virginia Marine Resources Commission, Wetlands Regulations Guidelines Assistance. 1973

Serving Members From VIMS: T. Barnard and G. Silberhorn

Reports: Local Management of Wetlands: Environmental Considerations. VIMS SRAMSOE No. 35. Coastal Wetlands of Virginia: Guidelines for activities affecting Virginia Wetlands. VIMS SRAMSOE No. 46.

Organization: The Outer Continental Shelf Advisory Committee. 1974.

Serving Members From VIMS: W. J. Hargis, Jr. and J. B. Pleasants

Reports: A Report of the Outer Continental Shelf Advisory Committee: Virginia and the Outer Continental Shelf: Problems, Possibilities and Posture, 1974

Organization: State Coastal Resources Management Program. 1974-78

Serving Member From VIMS: N. Bartlett Theberge

Organization: Ad hoc Technical Advisory Committee to the Baltimore District Corps of Engineers, Baltimore Channels Deepening Project. 1974-1981.

Serving Member From VIMS: R. J. Byrne

Reports: Monitoring plan for Virginia - Baltimore Channels Project, A Monitoring Plan.

Organization: The National Advisory Committee on Oceans and Atmosphere (NACOA)

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: First Annual Report by NACOA to the President and Congress, 1972. Second Annual Report by NACOA to the President and Congress, 1973. Third Annual Report by NACOA to the President and Congress, 1974. Fourth Annual Report by NACOA to the President and Congress, 1975. Fifth Annual Report by NACOA to the President and Congress, 1976. The National Sea Grant Program: A Review. A Report for the Secretary of Commerce by NACOA. Sixth Annual Report by NACOA to the President and Congress, 1977.

Organization: Advisory Board of the Shoreline Committee, Virginia Soil and Water Conservation Districts. 1975 - present.

Serving Member From VIMS: R. J. Byrne

Organization: The Select Inter-Agency Task Force on Chlorine. 1975.
Serving Members From VIMS: M. W. Rhodes, F. O. Perkins, C. S. Fang,
M. H. Roberts, A. Y. Kuo, B. Neilson, M.
Bender and R. Huggett.
Reports: Proceedings of a Seminar Held by the Select Inter-Agency
Task Force on Chlorine, Sponsored by the Virginia Marine
Resources Commission. 1975.

Organization: Task Force on Shore Erosion at Tangier Island. 1975.
Serving Members From VIMS: R. J. Byrne and T. Barnard
Reports: Shore Erosion at Tangier Island. 1976.

Organization: Chesapeake Bay Study Program Advisory Group. 1976
Serving Member From VIMS: W. J. Hargis, Jr.
Reports: Virginia Water Planning Studies Related to Chesapeake Bay.
1976.

Organization: Governor's Task Force on Craney Island, Site Selection
Subcommittee. 1976-77.
Serving Member From VIMS: N. Bartlett Theberge.
Report: Report of the Task Force to Study Future Disposal of Dredged
Material for the Commonwealth of Virginia.

Organization: Atlantic Offshore Users Workshop. 1977
Serving Member From VIMS: W. J. Hargis, Jr. (there were others)
Reports: A Report on the Atlantic Offshore Users Workshop held May
19-21, 1977.

Organization: Virginia Bar Association, Wetlands Committee.
1977-present.
Serving Member from VIMS: N. Bartlett Theberge.
Report: Wetlands Evaluation and Management in Virginia, VIMS SRAMSOE
NO. 211.

Organization: The Virginia Coastal Study Commission. 1977.
Serving Members From VIMS: Commission was assisted by J. B. Pleasants
and R. Anderson
Reports: A Report of the Virginia Coastal Study Commission to the
Governor and General Assembly of Virginia. Senate Document
No. 19, 1977.

Proposals for Coastal Resources Management in Virginia,
1977.

Organization: The Task Force to Study Future Disposal of Dredged Material for the Commonwealth of Virginia. 1977

Serving Member From VIMS: J. Zeigler

Reports: Interim Report of the Task Force to Study Future Disposal of Dredged Material for the Commonwealth of Virginia. 1977.

Organization: The Coastal Erosion Abatement Commission. 1979.

Serving Members From VIMS: G. L. Anderson, R. J. Byrne and N. Bartlett Theberge, special counsel

Reports: Report of the Coastal Erosion Abatement Commission to the Governor and General Assembly of Virginia, Senate Document No. 4. 1979.

Organization: The Cousteau Society. 1979

Serving Member From VIMS: W. J. Hargis, Jr.

Reports: Ocean Policy Papers, 1979.

Organization: The Virginia Coastal Resources Management Program Planning Activities, 1979.

Serving Members From VIMS: R. J. Byrne, C. H. Hobbs, III and N. B. Theberge.

Reports: Shoreline Erosion in the Commonwealth of Virginia: Problems, Practices, and Possibilities. A Report for the Office of the Secretary of Commerce and Resources, Commonwealth of Virginia. VIMS SRAMSOE No. 220. 1979.

Organization: Coastal Erosion Abatement Commission. 1980.

Serving Member From VIMS: G. L. Anderson

Reports: Report of the Coastal Erosion Abatement Commission to the Governor and General Assembly of Virginia. 1980.

Organization: Citizens Program for the Chesapeake Bay. 1981.

Serving Members From VIMS: A. H. Rooney-Char and M. P. Lynch

Reports: Ethical Aspects of Chesapeake Bay Use. 1981.

Organization: Committee on Research Needs for the 80's for Chesapeake Bay 1981.

Serving Members From VIMS: W. H. Hargis, Jr., R. J. Huggett, M. P. Lynch and D. S. Haven and F. O. Perkins

Reports: Hargis, W. J., Jr., I. S. Gottschalk, D. S. Haven, W. S. Jensen, R. Lippson, M. P. Lynch, C. Morgan, and V. Morton. 1982. Research Needs for the 80's for Chesapeake Bay. Part III. Fisheries and Wildlife. Report of a workshop convened by the Chesapeake Research Consortium, 21-23 Sept. 1981 at Windmill Pt., Va.

Organization: Council on the Environment Baltimore Harbor Channels
Project Task Force. 1982 - present.
Serving Member From VIMS: R. J. Byrne

Organization: False Cape State Park Senate Subcommittee. 1981.
Serving Member From VIMS: N. Bartlett Theberge, Special Counsel.
Report: Report of the False Cape State Park Subcommittee to the
Governor and the General Assembly, Senate Document No. 3.

Organization: Bay Model Task Force to Examine the Utility of the
Chesapeake Bay Hydraulic Model and to Form
Recommendations on the Future of the Facility. 1983
Serving Member From VIMS: R. J. Byrne

Organization: The Kepone Task Force
Serving Members From VIMS: W. J. Hargis, Jr., M. E. Bender and R. J.
Huggett
Reports: No reports, but the committee has contributed to other
government material.

SECTION III. PRODUCTS OF ADVISORY, CONSULTATIVE, EXTENSION
OR PUBLIC EDUCATIONAL AND INFORMATIONAL PROGRAMS

PART II. PRODUCTS OF EXTENSION AND ADVISORY SERVICES AND
PUBLIC EDUCATIONAL AND INFORMATIONAL PERSONNEL

INTRODUCTION TO CHAPTERS ON PRODUCTS OF EXTENSION AND
ADVISORY SERVICES AND PUBLIC EDUCATIONAL AND INFORMATIONAL PERSONNEL,
(Chapters 17 through 29)

The Institute (and its predecessor - The Virginia Fisheries Laboratory) have been involved in public education and extension and advisory services from the very beginning. These activities, chartered in the Code of Virginia since first passage of those provisions relating to the organization, have played an important role in the maritime life of the Commonwealth. Several generations of Virginians of all ages have been introduced to marine science, the marine resources and environments of the state, region and Nation and to the need for their proper and effective utilization, developments and preservation through these programs. Further, Institute programs have been aided and advanced by them. Many, now middle-aged, citizens of the State received their first meaningful introduction to marine matters through VIMS' programs.

Activities range from one-on-one contacts by extension and advisory personnel (and scientists) with fishermen buyers, fishery products processors and shippers, wetlands boards, private owners, and other maritime industry representatives to formal conferences, workshops, symposia and classes. Special conservation programs have been presented in conjunction with Virginia Wildlife federation and other such organizations at one university or another through the years. The Institute has worked with local schools and school boards and with the State Department of Education on educational programs.

The products represented in the pertinent chapters to follow are titles of the printed documents relating to some of these activities. Radio and television spots and features and, slide shows, film strips and feature movies have also resulted.

By incorporating marine and estuarine research, advisory services and education into one single institution the General Assembly of Virginia anticipated the now-famous nationwide Sea Grant Program by over a quarter of a century. The advisory and consultative service and public educational programs of the Institute have dealt with every facet of maritime activity and have contributed significantly to solution of public and private marine problems, to development and preservation of marine resources and environments, to orderly growth of Virginia's maritime economy and to the origination and evolution of many state, regional and national marine programs and to settlement of disputes -- accomplishments of which the Commonwealth can be proud.

CHAPTER 17
MARINE RESOURCE BULLETIN

MARINE RESOURCE BULLETIN

- 1969 Vol. I, No. 1-3, Editor: Lawrence W. Mason.
- 1970 Vol. II, No. 1-16, Editor: W. David Garten.
- 1971 Vol. III, No. 1-19, Editor: W. David Garten.
- 1972 Vol. IV, No. 1-15, Editor: W. David Garten.
- 1973 Vol. V, No. 1-12, Editor: W. David Garten.
- 1974 Vol. VI, No. 1-7, Editor: W. David Garten.
- 1975 Vol. VII, No. 1-7, Editor: W. David Garten.
- 1976 Vol. VIII, No. 1-4, Editor: Ann L. Greer.
- 1977 Vol. IX, No. 1-6, Editor: Ann L. Greer.
- 1978 Vol. X, No. 1-6, Editor: Richard A. Cook.
- 1979 Vol. XI, No. 1-5, Editor: Richard A. Cook.
- 1980 Vol. XII, No. 1-3, Editor: Richard A. Cook.
- 1981 Vol. XIII, No. 1-3, Editors: Kym A. Young (No. 1&2), Richard A. Cook (No. 3).
- 1982 Vol. XIV, No. 1-4, Editor: Richard A. Cook.
- 1983 Vol. XV, No. 1, Editor: Richard A. Cook.

CHAPTER 18

MARINE RESOURCES ADVISORY SERIES

MARINE RESOURCES ADVISORY SERIES

Number

1. Mason, Lawrence W. (n.s.) 1968. Growing Oysters in MSX Areas. 3 p.
2. Mason, Lawrence W. and Fred C. Biggs. 1969. James River Hydraulic Model. 7 p.
3. Andrews, Jay D. and Lawrence W. Mason. 1969. Cultchless Seed Oysters. 2 p.
4. Castagna, Michael A., Lawrence W. Mason and Fred C. Biggs. 1970. Hard Clam Culture Method Developed at VIMS. 3 p.
5. Castagna, Michael A., William P. Duggan, and W. David Garten. 1971. Spawning and Rearing the Bay Scallop. 3 p.
6. Haven, Dexter S. and W. David Garten. 1972. Shell Bags for Catching Oyster Spat. 3 p.
7. Haefner, Paul A., W. A. Van Engel and David Garten. 1973. Rock Crab: A Potential New Resource. 3 p.
8. Haefner, Paul A. and W. David Garten. 1974. Methods of Handling and Shedding Blue Crabs, Callinectes sapidus. 14 p.
9. Van Engel, W. A. and P. A. Haefner, Jr. 1975. Discoloration in Rock Crabs: What to do about it. 1 p.
10. Haefner, Paul A., Jr. 1976. Cancer Crabs: Aids to Identification.
11. Strand, Ivar. 1976. An Economic Appraisal of Eastern Shore Seafood Harvesting.
13. Lucy, Jon A. 1977. Dry Stack storage--a Promising Marina Alternative.
14. Smith, Joseph W. and J. V. Merriner. 1977. Rays in the Chesapeake Bay. 4 p.
15. Zaborski, Jim. 1979. A New Roe Knife. 4 p.
16. "Virginia Marine Turtle Stranding Form" 1979.

Available for distribution free of charge from the Marine Resources Advisory Services at the Virginia Institute of Marine Science.

17. Priest, Walter I., III and Joseph C. Mizell. 1979. Waste Water Discharges, Treatment and NPDES Permits.
18. Merriner, John and Joseph Smith. 1979. Cleaning and Preparing the Cownose Ray.
19. Lucy, Jon. 1980. Virginia MSD Problems and Options.
20. Andrews, J. D. 1981. Potential Effects of the 1980-81 Drought on Oyster Diseases and Predators.
21. Kuo, Albert and Michael J. Oesterling. 1981. Salinity Projections for the James, York and Rappahannock Rivers.
22. Anon. 1982. Chart of Fish Haven Off Cape Henry, Virginia.
23. Anon. 1982. Emergency Plan and First Aid for Virginia Divers.
24. Rieser, Alison and Nancy Zeigler. 1983. Tangier Sound Watermen's Association V. Douglas: Chesapeake Bay Blue Crab Residency Restrictions Held Unconstitutional. Reprinted from The Territorial Sea, University of Southern Maine.

CHAPTER 19

VIRGINIA MARINE RESOURCE REPORTS

VIRGINIA MARINE RESOURCE REPORTS*

- 78-1 Wojcik, Frank. 1978. Length-Weight Conversions for Potomac River Striped Bass. A Report to the Potomac River Fisheries Commission.
- 78-2 Austin, Herbert M. 1978. Striped Bass (Morone saxatilis) in Virginian Waters A Report to the Atlantic States Marine Fisheries Commission.
- 79-1 Haven, Dexter S. and Paul Kendall. 1979. Results of Planting Cultchless Spat in Buckners Creek off Nomini Creek on 14 June 1979. A Report to the Potomac River Fisheries Commission.
- 79-2 Haven, Dexter S. 1979. A Classification of Baylor Bottoms in Virginia. A Report to the Virginia General Assembly.
- 79-3 Austin, Herbert M. 1979. Recommendations on Virginia Territorial Sea Trawl Mesh Size. A Report to the Virginia Marine Resources Commission.
- 79-4 Moreales, Reinaldo and Dexter S. Haven. 1979. An Experiment in Raising the Salt Content of Oysters from Low Salinity Waters to Improve their Taste. A Report to the Seafood Industry.
- 80-1 Austin, Herbert M. 1980. Position of the Virginia Institute of Marine Science on the use of Hydraulic Dredging for the Taking of Hard Clams. A Report to the Virginia General Assembly.
- 80-2 Musick, John. 1980. Evaluations of Menhaden Net Mesh Regulations Options. A Report to the Virginia Marine Resources Commission.
- 80-3 Fritz, Lowell. 1980. Preliminary Heights at Annulus of Scallops from Jeffrey's Ledge, Gulf of Maine. A Report to the Seafood Industry.
- 80-4 Kriete, William. 1980. Status of American Shad Stocks in Virginia. A Report to the Virginia Marine Resources Commission.
- 80-5 Haven, Dexter S. 1980. A Study of Some Public Rocks in the Lower Rappahannock River below Towles Point. A Report to the Virginia General Assembly.

*In addition to this series, a Marine Resource Special Report, "Annual Summary of Oyster Spatfall on Shellstrings in Virginia Rivers," has been published annually by Dexter S. Haven and Paul Kendall.

- 80-6 Hargis, William J., Jr. 1980. Testimony before the Subcommittee on Fisheries, and Wildlife Conservation and the Environment of the Committee on Merchant Marine and Fisheries on H. R. 4890 The Reauthorization of P.L. 88-309.
- 80-7 Marshall, Anne. 1980. Data on the Commercial Sport Fishery for Summer Flounder, Paralichthys dentatus, in Virginia; Based on information collected in a survey of approximately 65% of the boat captains operating in 1978. A Report to the Virginia Marine Resources Commission.
- 80-8 Musick, John. 1980. Status of Sturgeons in Virginia. A Report to the American Fisheries Society.
- 80-9 Austin, Herbert M. 1980. Preliminary Management Plan for the Striped Bass of the Atlantic Coast from Maine through North Carolina. A Report to the Atlantic States Marine Fisheries Commission.
- 80-10 Kriete, William. 1980. Status of Hickory Shad Stocks in Virginia A Report to the Virginia Marine Resources Commission.
- 80-11 Andrews, Jay D. 1980. A critique of the introduction of Crassostrea gigas to Europe.
- 80-12 Austin, Herbert M., Michael Castagna, William J. Hargis, Jr. and Dexter S. Haven. 1980. Position of the Virginia Institute of Marine Science on the use of hydraulic dredging for the taking of hard clams.
- 80-13 Murray, Thomas J. 1980. Impacts of E.P.A.'s proposed effluent guidelines on the blue crab processing industry.
- 80-14 Virginia Institute of Marine Science. 1980. Summary of arguments in favor of and against use of a hydraulic escalator dredge for harvest of hard clams in Virginia with a short statement on operation of the machine. Intended as background material for student in preparation of a class report on the subject.
- 81-1 Austin, Herbert M. 1981. Chesapeake Bay finfishes and fisheries.
- 81-2 Haven, Dexter S., H. M. Austin and W. J. Hargis, Jr. 1981. A definition of a natural oyster rock. Prepared for The Offices of Legislative Services, Virginia General Assembly.

- 81-3 Austin, Herbert M. and Dexter S. Haven. 1981. A report on the operation of a hydraulic escalator dredge on private ground on Hampton flats, James River, during October, 1980. A Report to the Virginia Marine Resources Commission.
- 81-4 Austin, Herbert M. 1981. The allocation of James River living marine resources. Presented at the symposium, The James River: Its Use and Misuse.
- 81-5 DuPaul, William. 1981. Seafood buyer contacts and government tender specifications and conditions.
- 81-6 Burton, William H. 1981. Adaptability of beam trawling gear to Mid-Atlantic waters. A Preliminary Report to the Mid-Atlantic Fisheries Development Foundation, Inc. and Fass Brothers, Inc.
- 81-7 Murray, Thomas J. 1981. A preliminary analysis of the Virginia pleasure boat fleet. A Report Submitted to the Virginia Boating Advisory Committee.
- 81-8 Kendall, Paul C. and Dexter S. Haven. 1981. Report of trip to investigate area around Heron Island bar in the Potomac River.
- 81-9 Loesch, Joseph G. 1981. Determination of the presence, species composition, and relative abundance of anadromous fishes in Pohick Creek, Fairfax, Virginia. A Report to the U.S. Dept. of Agriculture, Soil Conservation Service.
- 81-10 Austin, Herbert M. 1981. Assessment and monitoring of sciaenid stocks, with particular reference to the weakfish, Cynoscion regalis Prepared for the Annual meeting of the Atlantic States Marine Fisheries Commission.
- 81-11 Haven, Dexter S. 1981. Preliminary report of the impact of the extended season for dredging seed oysters in the James River, Virginia. A Report to the Commissioner of Marine Resources.
- 81-12 Whitcomb, James S. 1981. The Backus patent tong and its potential for harvesting oysters commercially.
- 82-1 Haven, Dexter S. 1982. The Virginia oyster industry: its present status and remedial measures needed to increase statewide production.
- 82-2 Travelstead, John G., Herbert M. Austin, William H. Kriete, A. Deane Estes and John E. Olney. 1982. Striped bass, Morone saxatilis, spawning season and grounds in

Virginia rivers with notes on concomitant fisheries. A Report to the Virginia Marine Resources Commission.

- 82-3 Haven, Dexter S. 1982. A report on the Jail Island repletion area in the James River. A Report to the Virginia Marine Resources Commission.
- 82-4 Austin, Herbert M. 1982. Comments on reauthorization of P.L. 89-304.
- 82-5 Haven, Dexter S. 1982. Surf clams of the Virginia Coast.
- 82-6 Oesterling, Michael J. 1982. Mortalities in the soft crab industry: sources and solutions.
- 82-7 Haven, Dexter S. and Elgin A. Dunnington. 1982. Report to the Potomac River Fisheries Commission on the hand scraping and oyster culture in the hand scrape area.
- 82-8 Haven, Dexter S. 1982. The impact of the extended season for tonging seed oysters in the James River, Virginia.
- 82-9 Austin, Herbert M. 1982. Position of the Virginia Institute of Marine Science on the use of the "high roller gill net" in the Chesapeake Bay for the taking of Bluefish and weakfish.
- 82-10 Atran, Steven M., Joseph G. Loesch and William H. Kriete, Jr. 1982. An overview of the status of Alosa stocks in Virginia.
- 82-11 Dias, Robert K. 1982. Virginia eel pot study.
- 82-12 Haven, Dexter S. 1982. A report on the area impacted by the tug tunnel near the mouth of Onancock Creek from November 21-23, 1982.
- 83-1 Oesterling, Michael J. and Dexter S. Haven. 1983. Oyster survey, Great Wicomico River.
- 83-2 Musick, John A. 1983. Comments to the United States Department of the Navy on the draft environmental impact statement on the disposal of decommissioned, defueled naval submarine reactor plants.
- 83-3 Lucy, Jon A. 1983. Summary of the economic impact of the eighth annual VBAC small boat marlin tournament.

CHAPTER 20

COMMERCIAL FISHERIES NEWSLETTER

COMMERCIAL FISHERIES NEWSLETTER

A quarterly publication directed to inform various facets of the industry about new programs, products and other information that would be of value to the fishing community. Current distribution is about 2,000.

Young, Kym. 1980. 1 Issue: Vol. 1, No. 1.

Oesterling, Michael, Richard Cook and Kym Young. 1981. 2 Issues:
Vol.

1, No. 2-3.

Oesterling, Michael and Richard Cook. 1982. 1 Issue: Vol. 2, No. 1.

Cook, Richard. 1983. 2 Issues: Vol. 2, No. 1-2.

CHAPTER 21

FISHERY FLASH

FISHERY FLASH

An information or fact sheet, produced when the need arises, covering specific topics addressing research activities of the VIMS Marine Fisheries Department.

Number

1. "Croaker" 1978.
2. "Menhaden" 1978.
3. "Bluefin Tuna Regulations" 1978.
4. "Virginia Marine Game Fish Records" 1978.
5. "Virginia Marine Game Fish Records" 1979.
6. "Menhaden Season and Fishing Areas" 1979.
7. "Bluefin Tuna Regulations Amended" 1979.
8. "Low Salinities Threaten Oysters" 1979.
9. "Salinities Recover on Oyster Beds in the James River" 1979.
10. "Menhaden Season and Fishing Areas" 1980.
11. "MSX and Salinity Update" 1981.

CHAPTER 22

FISH PROMOTIONAL BROCHURES

FISH PROMOTIONAL BROCHURES

To date, 13 seafood promotional leaflets have been produced. Written for the general public, the brochures contain the condensed life history, commercial harvest figures, method of capture and food preparation information for each species. Selected recipes provide a practical touch. Thus far, highlighted species have included shad, bluefish, seatrout, spot, croaker, flounder, black sea bass, hard clam, oyster, blue crab, bluefin tuna, monkfish and soft crab.

Cook, D. Bountiful bivalve, the hard clam.

Cook, D. Chesapeake King, the blue crab.

Cook, D. Making the most of your catch, the bluefin tuna.

Cook, D. Pearl of the Chesapeake, the American oyster.

Cook, D. and K. Webb. Poor man's lobster, the monkfish.

Dias, R. K. Offshore delight, the black sea bass.

Estes, A. D. and F. J. Wojcik. Bottom dwelling delicacy, the flounder.

Johnson, J. Summer special, the seatrout.

Kriete, W. and J. Merriner. Spring resource, the American shad.

Oesterling, M. J. Succulent seafare, the soft-shell crab.

Richards, C. E. Nearshore staple, the croaker.

Smith, J. Summer bounty, the bluefish.

Wojcik, F. and A. D. Estes. Mid-summer treat, the spot.

CHAPTER 23

FOCUS

FOCUS

A one-page circular, produced on an as-needed schedule, used to announce important marine-related events that require public awareness and/or participation. "Focus" is sent out to publicize meetings, conferences and workshops on a select target group basis.

1977 2 Issues:

"Notice of Public Hearings on Proposals for Coastal Resources Management in Virginia" November 1977.

"Notice of Public Hearings on Proposals for Coastal Resources Management in Virginia" September 1977.

1978 4 Issues:

"Notice of Public Hearings for the Senate Committee on Agriculture, Conservation and Natural Resources" December 1978.

"Notice of Public Hearings for the Joint Subcommittee on Coastal Resources Management" July 1978.

"Marine Education Workshop '78" May 1978.

"Marine Recreational Fisheries Symposium" February 1978.

1979 1 Issue:

"Marina Design Conference Set" February 1979.

1980 1 Issue:

"Business Investment Tax Credits for Energy Properties" Part I October 1980.

1981 8 Issues:

"Boating Industry Seminar and Workshop" October 1981.

"Attention Offshore Fishermen: Two One-Day Courses on Fish Detection and Trawling" April 1981.

"Virginia Sport Diving Workshop" April 1981.

"Boating Safety Workshop" March 1981.

"Attention Watermen: Community Education Forums for Watermen" March 1981.

"Cold Water Survival Seminar" February 1981.

"Business Investment Tax Credits for Energy Properties" Part II
January 1981.

"Attention Watermen" Workshop to Discuss Virginia Fishermen and
the Farm Credit System" January 1981.

1982 3 Issues:

"Survey Course in Fisheries Electronics"

"Marine Education -- Reflections and Responsibilities" September
1982

"Sport Diving Workshop" April 1982

1983 2 Issues:

"SeaVUE '83 - Southeast Virginia Underwater Expo '83"

"First Annual Sport Fishermen's Forum"

CHAPTER 24

TIDE GRAPHS

TIDE GRAPHS

In January 1981, free subscriptions to a quarterly Tide Graph service were available to the public. Two sets of Tide Graphs are printed - one based on Hampton Roads, Virginia and the other based on Wachapreague, Virginia. Both are set in calendar format and come with tidal difference tables that indicate tides at many other places in Virginia. Tide Graph information is compiled by the VIMS Department of Geological Oceanography and the VIMS Department of Numerical Analysis and Information Services. Current distribution is 250.

1981 4 Issues: Hampton Roads and Wachapreague: October, November, December 1981 Tide Graphs; July, August, September 1981 Tide Graphs; April, May, June 1981 Tide Graphs; January, February, March 1981 Tide Graphs.

1982 2 Issues: Hampton Roads and Wachapreague: April, May, June 1982 Tide Graphs; January, February, March 1982 Tide Graphs.

1983 2 Issue: Hampton Roads and Wachapreague: January, February, March, April, May, June 1983 Tide Graphs.

CHAPTER 25

MONTHLY REPORT ON THE STATE OF RIVERS

MONTHLY REPORTS ON THE STATE RIVERS

(Sponsored by VIMS and State Water Control Board)*

Kuo, A. Y. Monthly Report on the State of Rivers. [series was begun in 1981; 20 issues have appeared since. Not published in winter months (Dec, Jan, Feb).]

*Distributed to state agencies and public officials. For additional information contact Dr. A. Y. Kuo, VIMS.

CHAPTER 26
EDUCATIONAL SERIES

EDUCATIONAL SERIES

Number

- *1. Anonymous. Introduction to the Study of Virginia fisheries.
3 p.
- *2. Newcombe, Curtis L. 1944. The Nutritional Value of Seafoods.
17 p.
- *3. Newcombe, Curtis L. 1943. The Biology and Conservation of the
Blue Crab. 15 p.
- *4. Newcombe, Curtis L. 1945. The Biology and Conservation of the
Blue Crab, Callinectes sapidus Rathbun. 39 p.
- *5. Anonymous. 1955. Wealth from the Sea. 4 p.
- *6. Anonymous. 1955. Treasures from the sea. The Virginia
Seafood Industry. 12 p.
- *7. Bailey, Robert S. 1955. The Adventures of Little Oyster.
11 p.

**Bailey, Robert S. and Fred C. Biggs. 1968. The Adventures
of Little Oyster. Rev. ed. 23 p. 40 .
- *8. Bailey, Robert S. 1958. Let's Be Oyster Farmers. 69 p.

**Bailey, Robert S. and Fred C. Biggs. 1968. Let's Be
Oyster Farmers. Rev. ed. 59 p. 45 .
- *9. Bailey, Robert S. 1955. Saltwater Aquaria For Use in the
Classroom.

*Bailey, Robert S. 1958. Saltwater Aquaria For Use in the
Classroom. Rev. ed. 20 p.

*Bailey, Robert S. 1959. Saltwater Aquaria For Use in the
Classroom. 3rd ed. 20 p.

*Bailey, Robert S. and Fred C. Biggs. 1961. Saltwater
Aquaria. 4th ed. 20 p.

**Single copies are supplied to libraries at no cost.
Extra copies are as listed.

*Supply exhausted; photocopies can be made for \$.10 per page plus
\$.1 handling fee.

- *10. Bailey, Robert S. 1959. Treasures From the Sea; the Virginia Seafood Industry. Rev. ed. of the Educational Series No. 5 and 6. 22 p.
- *11. Bailey, Robert S. 1960. Inhabitants of Chesapeake Bay. Part 1. Animals of jelly. 32 p.
- *12. Mulford, Richard A. and Morris H. Roberts, Jr. 1965. Key to Some of the Marine Diatom Genera in Virginia Waters. 22 p.
- *13. Niemeyer, Virginia B. and Dorothy A. Martin. 1967. A Guide to the Identification of Marine Plants and Invertebrate Animals of Tidewater Virginia. 82 p.
- *14. Bailey, Robert S. 1970. Preparing for a Career or Profession in Marine Science. 9 p.
- *16. Andrews, Jay D. 1971. Fish for Beauty in Dismal Swamp (One Man's View of the Swamp). 8 p.
- *17. Hargis, William J., Jr. 1968. Oceanography in Virginia. Virginia Forward. 6(1):8-22.
- 18. Lanier, James A., III and Fred C. Biggs. 1974. Tips on Keeping Saltwater Aquaria. 4 p.
- 19. Silberhorn, Gene M. 1976. Tidal Wetland Plants of Virginia. 86 p. \$3.00.
- 20. Smith, Joseph W. and J. V. Merriner. 1978. Biology and Identification of Rays in the Chesapeake Bay. 22 p.
- 21. Odell-Fisher, Ellen and Ronald N. Giese. 1978. Sensing the Sea - a Curriculum Guide in Marine Education for Grades Two and Three. 53 p. \$2.
- 22. Gammisch, Susan C. and James A. Lanier. 1978. Guide to the Marine Educational Materials System (MEMS). 130 p. \$5.
- 23. Odell-Fisher, Ellen and Ronald N. Giese. 1979. Sensing the Sea - a Curriculum Guide in Marine Education for Grades Kindergarten and First. 44 p. \$2.
- 24. Musick, J. A. 1979. Marine Turtles of Virginia. 17 p. \$1.
- 25. Lucy, Jon, T. Ritter and J. LaRue. 1980. The Chesapeake: A Boating Guide to Weather. 22 p. \$1.

26. Lucy, Jon. 1980. Handle With Care: Mid-Atlantic Marine Animals that Demand Your Respect. 14 p.
27. Developing Crab Creek: Fifteen Points of View on Economy and Ecology in an Estuary. (High School) 32 p. \$2.
28. Fishy Activities for Your Small Fry. 36 p. \$2.
29. Not assigned.
30. Not assigned.
31. Hardaway, Scott and Gary Anderson. 1980. Shoreline Erosion in Virginia. 25 p.
32. Cornell, Elizabeth A. 1981. Nontraditional Marine Education Activities: a planning guide".

CHAPTER 27

WAVELETS

WAVELETS

A one-page insert to the Marine Resource Bulletin, "Wavelets" is enjoying continued enthusiastic support among the 10-14 year old age group. Now in its fourth year, "Wavelets" is being used in science programs in an increasing number of Virginia Schools, and since it is published in the Bulletin, has increased the exposure for this publication.

Number

1. Sparrow, Mary E. 1978. Adventures in Inner Space, Part I.
2. Sparrow, Mary E. 1978. Adventures in Inner Space, Part II.
3. Lanier, Jim. 1979. Aquarium Fishes of the Chesapeake Bay.
4. Peebles, Pamela. 1979. Sediments and Sea Level.
5. Silberhorn, Gene. 1979. Tidal Wetlands - Salt Marshes.
6. Silberhorn, Gene. 1979. Tidal Wetlands - Brackish Marshes.
7. Silberhorn, Gene. 1979. Tidal Wetlands - Freshwater Wetlands.
8. Kelsey, Linda and Elizabeth Cornell. 1980. How Indians Lived in Tidewater.
9. Sparrow, Mary E. 1980. Homemade Oceanographic Equipment: the beach seine.
10. Cornell, Elizabeth A. 1980. Steps to a Better Science Fair Project, Part I.
11. Cornell, Elizabeth A. 1980. Steps to a Better Science Fair Project, Part II.
12. Cornell, Elizabeth A. 1981. Beachcomber's Worksheet.
13. Cornell, Elizabeth A. 1981. Exploring the World of Water.
14. Sparrow, Mary E. 1981. The Clam Clan Caper.
15. Lawrence, Frances L. 1982. How High is Your Shark IQ?
16. Sparrow, Mary E. 1982. Circle-Spin Puzzle.
17. Cornell, Elizabeth A. 1982. Incredible Edibles from the Sea (Part I).
18. Cornell, Elizabeth A. 1982. Incredible Edibles from the Sea (Part II).

19. Sparrow, Mary E. 1983. Squid: The Super Mollusk.

CHAPTER 28

MARINE SCIENCE METHODS FOR THE CLASSROOM

MARINE SCIENCE METHODS FOR THE CLASSROOM

To date, nine Marine Science Methods for the Classroom have been produced. Adapted for use by teachers, the MSM series contains information on process skills such as observing, inferring, hypothesizing and other thinking skills through marine education materials and activities.

1980 9 Issues:

Number

- 1 "Observing and Inferring" Adapted from "Sensing the Sea," Grades K-1 and Grades Two-Three (1978) by Ellen Odell-Fisher, Ronald N. Giese and Mary E. Sparrow.
- 2 "Classifying" Elizabeth A. Cornell
- 3 "Investigating" Dr. Ronald A. Giese
- 4 "Hypothesizing and Identifying Variables" Dr. Ronald N. Giese
- 5 "Measuring" Dr. Ronald A. Giese
- 6 "Defining" Dr. Ronald A. Giese
- 7 "Developing Concepts" Dr. Ronald N. Giese
- 8 "Communicating" Dr. Ronald N. Giese
- 9 "Reading" Dr. Ronald N. Giese and James W. Beers

CHAPTER 29
VIMS NEWS RELEASES

INTRODUCTION TO CHAPTER ON NEWS RELEASES

The Institute (and its predecessor organization, the Virginia Fisheries Laboratory) are charged with the responsibility of educating the public on marine resources, the marine environment, maritime problems and marine science. Also it must inform the public of its activities. Consequently, preparation and distribution of news releases have been a continuing public educational and information program since 1940.

This chapter, which enumerates the news releases by year, shows that prior to 1951 activity in any one year was relatively sparse, amounting to little more than 1 release per year. However, beginning in 1951 releases approached 2 per month. Since that time more than 2 per month have been produced in most years. Years of heavy activity have seen 3 or more released. The peak year, 1959, during which almost 4 a month were distributed, coincided with the development of severe disease-related mortalities in oyster populations of the lower Chesapeake, and with the beginning a period of rapid development of the Institute. These two features probably account for much of the increase!

This list presents only those public news releases generated and disseminated by the Institute, which are considered to be products of the organization. Hundreds of separate newspaper articles have resulted. Many special features have appeared in the newspapers of the state and region and a number of news items and longer presentations have been presented by radio and television stations of the state and region. Some have appeared nationwide. An extensive file of newspaper clippings is stored in Institute archives.

VIMS NEWS RELEASES

<u>Year</u>	<u># OF RELEASES</u>
1940-51	14
1951	19
1952	36
1953	22
1954	36
1955	34
1956	35
1957	39
1958	41
1959	51
1960	33
1961	46
1962	36
1963	38
1964	24
1965	38
1966	25
1967	41
1968	29
1969	36
1970	42
1971	37
1972	22
1973	33
1974	22
1975	18
1976	21
1977	33
1978	22
1979	41
1980	40
1981	43
1982	45
1983	17

*1983 complete through April.

CHAPTER 30

ADMINISTRATIVE OR ANNUAL REPORTS

ANNUAL REPORTS

- * Chipman, Walter A., Jr. 1939. Report of the Yorktown Marine Biological Laboratory (Immediate Predecessor of Virginia Fisheries Laboratory, which later become the Virginia Institute of Marine Science). - 1938-1939. Pp. 30-31 in 40th and 41st Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1939 and June 30, 1939. Commonwealth of Virginia, Richmond.

- * Newcombe, Curtis L. 1941. Report of the Virginia Fisheries Laboratory. Pp. 28-31 in 42nd and 43rd Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1940 and June 30, 1941. Commonwealth of Virginia, Richmond.

- * Newcombe, Curtis L. 1943. Report of the Virginia Fisheries Laboratory. Pp. 18-23 in 44th and 45th Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1942 and June 30, 1943. Commonwealth of Virginia, Richmond.

- * Newcombe, Curtis L. 1945. 1944-1945 Report of the Virginia Fisheries Laboratory. Pp. 21-30 in 46th and 47th Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1944 and June 30, 1945. Commonwealth of Virginia, Richmond.

- * Marshall, Nelson. 1947. 1946-1947 Report of the Virginia Fisheries Laboratory. Pp. 23-27 in 48th and 49th Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1946 and June 30, 1947. Commonwealth of Virginia, Richmond.

- * Marshall, Nelson. 1949. Report from the Virginia Fisheries Laboratory to the Commission of Fisheries of Virginia for the period June 1947 through September 1949. Pp. 28-35 in 50th and 51st Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1948 and June 30, 1949. Commonwealth of Virginia, Richmond.

- * McHugh, John L. 1951. Report from the Virginia Fisheries Laboratory to the Commission of Fisheries of Virginia for the period July 1949 through June 1951. Pp. 26-35 in 52nd and 53rd Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1950 and June 30, 1951. Commonwealth of Virginia, Richmond.

*Not available for distribution.

- * McHugh, John L. 1954. Report of Virginia Fisheries Laboratory. Pp. 29-64 in 54th and 55th Annual Reports of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1952 and June 30, 1953. Commonwealth of Virginia, Richmond.
- * McHugh, John L. 1955. Report of the Virginia Fisheries Laboratory. Pp. 27-56 in 56th and 57th Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1954 and June 30, 1955. Commonwealth of Virginia, Richmond.
- * McHugh, John L. 1957. Report of the Virginia Fisheries Laboratory. Pp. 27-61 in 58th and 59th Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1956 and June 30, 1957. Commonwealth of Virginia, Richmond.
- * Hargis, William J., Jr. 1959. Report of the Virginia Fisheries Laboratory. Pp. 28-58 in 60th and 61st Annual Report of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1958 and June 30, 1959. Commonwealth of Virginia, Richmond.
- * Hargis, William J., Jr. 1960. Report of the Virginia Fisheries Laboratory. Pp. 28-66 in 62nd and 63rd Annual Reports of the Commission of Fisheries of Virginia for the fiscal years ending June 30, 1960 and June 30, 1961. Commonwealth of Virginia, Richmond.
- * Hargis, William J., Jr. 1964. 22nd Annual Report of the Virginia Institute of Marine Science, Gloucester Point, Virginia, for the period ending June 30, 1963. Commonwealth of Virginia, Richmond.
- * Hargis, William J., Jr. 1966. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 24th and 25th (sic, 23rd and 24th) annual reports for the period ending 30 June 1965. Commonwealth of Virginia, Richmond.
- Hargis, William J., Jr. 1967. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 25th and 26th annual reports for the periods ending 30 June 1966 and 30 June 1967. Commonwealth of Virginia, Richmond.
19 p.
- Hargis, William J., Jr. 1969. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 27th annual report for the period ending 30 June 1968. Commonwealth of Virginia, Richmond. 28 p.

- Hargis, William J., Jr. 1970. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 28th annual report for the period ending 30 June 1969. Commonwealth of Virginia, Richmond. 28 p.
- Hargis, William J., Jr. 1971. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 29th annual report for the period ending 30 June 1970. Commonwealth of Virginia, Richmond. 28 p.
- Hargis, William J., Jr. 1972. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 30th and 31st annual reports for the periods ending 30 June 1971 and 30 June 1972. Commonwealth of Virginia, Richmond. 61 p.
- Hargis, William J., Jr. 1976. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 32nd annual report for the period ending 30 June 1973. Commonwealth of Virginia, Richmond. 33 p.
- Hargis, William J., Jr. 1977.* Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 33rd, 34th, and 35th annual reports for the periods ending 30 June 1974, 30 June 1975, and 30 June 1976. Commonwealth of Virginia, Richmond. 51 p.
- Graves, Thomas A., Jr. 1980. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 39th annual report for the period ending 30 June, 1980. Commonwealth of Virginia, Richmond. 152 p.
- Graves, Thomas A., Jr. 1981. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 40th annual report for the period ending 30 June, 1981. Commonwealth of Virginia, Richmond. 148 p.
- Graves, Thomas A., Jr. 1982. Virginia Institute of Marine Science, Gloucester Point, Virginia 23062; 41st annual report for the period ending 30 June, 1982. Commonwealth of Virginia, Richmond. 65 p.

*The Virginia Institute of Marine Science was realigned with the College of William and Mary, Williamsburg, Virginia on 1 July 1979 by action of the General Assembly. The President of the College who thus became Chief Executive Officer as a result transmitted the Annual Reports for 1980 and 1981. Annual reports for the interim period had been prepared but were not published. Copies cannot be located in VIMS archives.

ADDENDUM

Contributions Chapter 2 page 17

997. Hargis, William J. Jr. 1983 (1982). The danger to our shores: a consideration of the historical perspective and the need for a strong and continuing maritime policy, program and presence. Oceans Policy Study 2(7):47-58.

1140. Bender, Michael E., D. J. Reish and C. H. Ward. 1980. Re-examination of the offshore ecology investigation. Rice University Studies. Vol. 65, Nos. 4&5.

Essays, Testimony and Special Reports page 398

Orth Robert J., Kenneth A. Moore and Jacques van Montfrans. 1983. Project Summary: Submerged aquatic vegetation: distribution and abundance in the lower Chesapeake Bay and the interactive effects of light, epiphytes, and grazers. Publication EPA-600/S3-43-019. U.S. Environmental Protection Agency.

SRAMSOES Chapter 3 page 121

244. Cerco, Carl F. and Albert Y. Kuo. 1983. Water quality in a Virginia Potomac embayment. Hunting Creek-Cameron Run.

245. Diaz, R. J., ed. 1982. Examination of tidal flats. Volume II, identified values review. Report FHWA/RD-80/182. U.S. Department of Transportation, Federal Highway Administration.

255. Diaz, R. J., ed. 1982. Examination of tidal flats. Volume I research report. Report FHWA/RD-80/181. U.S. Department of Transportation, Federal Highway Administration.

256. Diaz, R. J., ed. 1982. Examination of tidal flats. Volume III evaluation methodology. Report FHWA/RD-80/183. U.S. Department of Transportation, Federal Highway Administration.