Laboratory Series
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Virginia Institute of Marine Science

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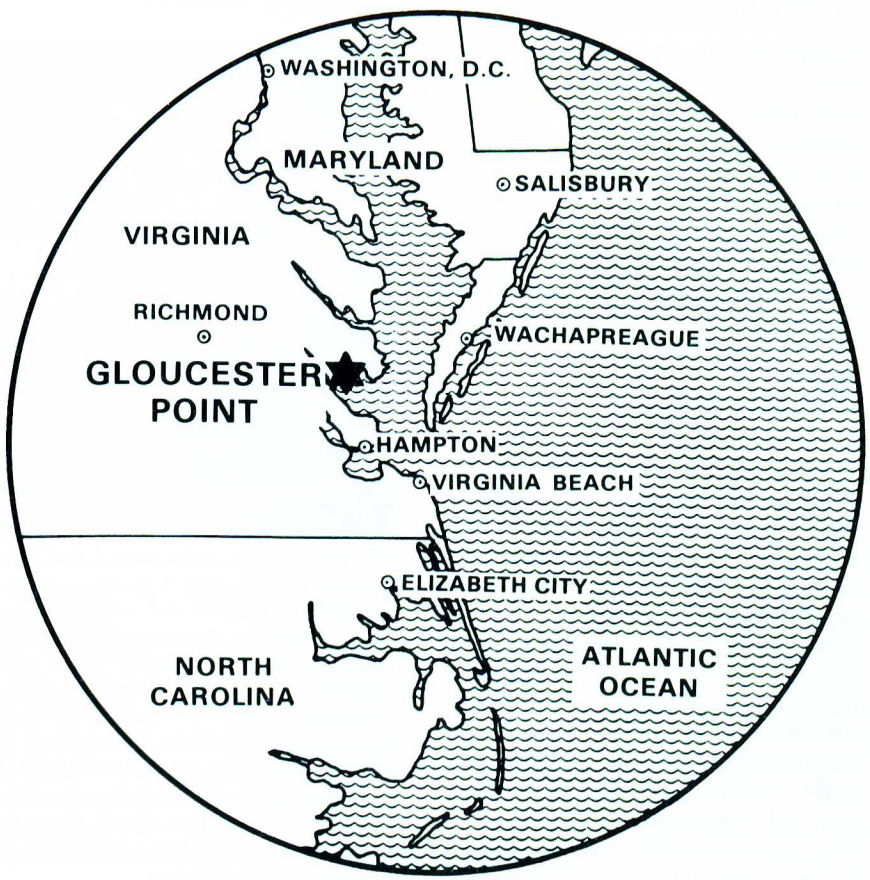
Laboratory Functions:

The principal duties of the Virginia Institute of Marine Science (VIMS) are to conduct studies and investigations of all phases of the seafood, commercial, and sport fishing industries and problems pertaining to other segments of the maritime economy; consider means by which fisheries resources may be conserved, developed, and replenished and to advise the Marine Resources Commission and other agencies and private groups on these matters; conduct studies and investigations of marine pollution and make the resulting data and possible corrective recommendations available to the appropriate state agencies; conduct hydrographic and biological studies of the Chesapeake Bay and its tributaries and all the tidal waters of the Commonwealth and the contiguous waters of the Atlantic Ocean; and engage in research and provide training, technical assistance, and advice to the Commission on Conservation and Development of Public Beaches on erosion along tidal shorelines, the Soil and Water Conservation Commission on matters relating to tidal shoreline erosion, and to other agencies upon request. Other duties, as set forth by the Code of Virginia, are to (1) advise the commissioner of agriculture on disposal of pesticides; (2) advise on Commonwealth oyster and shellfish repletion programs; (3) be consulted on operations involving removal, destruction, or damage to any underwater historic property; (4) evaluate wetlands by type and maintain a continuing inventory of vegetated wetlands; and (5) assist in the development of guidelines for activities in wetlands and primary coastal dunes.

In addition to these duties, the VIMS professional staff provides the faculty for the School of Marine Science of the College of William and Mary, a graduate professional program offering M.A. and Ph.D. programs in biological oceanography, fisheries oceanography, chemical oceanography, geological oceanography, physical oceanography, and marine resource management.



Key Personnel

Director and Dean of the School of Marine Science
- Dr. Frank O. Perkins

Associate Director and Associate Dean
- Dr. John M. Zeigler

Associate Director for Finance and Administration
- Mr. Paul V. Koehly

Assistant Directors
- Dr. George C. Grant, Head, Division of Fisheries and Biological Oceanography
- Dr. Robert J. Byrne, Head, Division of Physical Science and Ocean Engineering
- Dr. Maurice P. Lynch, Head, Division of Marine Resource Management
- Mr. Michael Castagna, Head, Eastern Shore Laboratory, Wachapreague, Virginia

Laboratory History

The Virginia Institute of Marine Science was established by the Virginia General Assembly in 1940 as the Virginia Fisheries Laboratory (VFL) under the joint control of The College of William and Mary and the Virginia Fisheries Commission (now the Virginia Marine Resources Commission). The laboratory was founded by Dr. Donald W. Davis, then head of the Biology Department at William and Mary.

The initial staff, headed by Dr. Curtis L. Newcomb, established itself in Yorktown, Virginia, and at a small laboratory in Wachapreague, Virginia, on the seaside of Virginia's Eastern Shore peninsula. The Wachapreague laboratory was closed during World War II and did not reopen until the early 1960s.

The first graduate, R. Winston Menzel, earned an M.A. degree in 1943. In 1947 Dr. Nelson B. Marshall became the second director of the VFL and initiated the post-war growth. The focus of the laboratories' activities centered on commercial shellfish and finfish in estuarine waters, although the charter was broadened by the General Assembly in 1948 to include hydrographic and biological studies of the Chesapeake Bay.

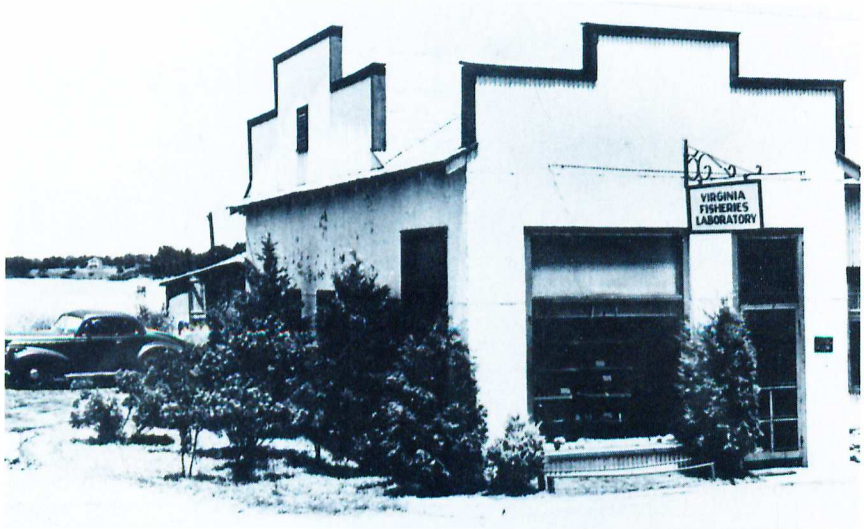
In 1949 Dr. J. Laurence McHugh became the third director and oversaw the laboratory's move from Yorktown to its present location in Gloucester Point. In 1959, Dr. William J. Hargis, Jr. succeeded Dr. McHugh and remained as director until 1981 when he returned to full-time teaching and research. The present director, Dr. Frank O. Perkins, was confirmed 1982.

In 1962 the General Assembly changed the name of the Virginia Fisheries Laboratory to the Virginia Institute of Marine Science and placed the organization under an independent Board of Administration. Although administratively separate, the Institute continued to provide faculty to the School of Marine Science of The College of William and Mary. In addition, from 1965 until 1979 (when the Institute was reorganized back into The College of William and Mary), the staff provided faculty for the Department of Marine Science of the University of Virginia. In 1965 the Ph.D. program was initiated and the first doctorate degrees were awarded to Drs. Paul E. Hargraves and Dale A. Calder.

The period from 1958 to 1978 was one of rapid growth. From a 1958 year-round staff of 21 (including students), the Institute grew to a year round staff of 492 (including 92 students), in 1978. During summers the staff was supplemented by as many as 40–70 persons. The Institute presently employs about 370 people and trains about 100–120 students, with a faculty of about 60.

The principal growth of the Institute occurred in areas of biological, physical, chemical, and geological oceanography.

Much of the growth was the result of special studies or new directions generated by the Virginia General Assembly. For example, the physical oceanography department received its initial impetus as the result of a General Assembly directive to conduct a study on the impact of deepening the James River Channel to Richmond in the early 1960s. A similar directive to prepare a report on the wetlands of Virginia in the late 1960s launched the Institute into its extensive wetlands research program, which has completed an inventory and classification by type of all of the Commonwealth's tidal wetlands. Recent General Assembly directed in-



Virginia Fisheries Laboratory, Yorktown, Virginia, circa 1941. (*Photo by VIMS photo laboratory.*)

Virginia Institute of Marine Science, Gloucester Point, Virginia, 1984. Watermen's Hall (*building on the right*) was dedicated in June 1984. (*Photo by Bill Jenkins.*)

The VIMS senior administrative staff. *Front row, left to right,* Paul V. Koehly, associate director for finance and administration; Frank O. Perkins, director; John M. Zeigler, associate dean; *second row, left to right,* Michael Castagna, head of the Eastern Shore Laboratory; Robert J. Byrne, head of the Division of Physical Science and Ocean Engineering; and, *back,* Maurice P. Lynch, head of the Division of Marine Resource Management. Not pictured here is George C. Grant, head of the Division of Fisheries and Biological Oceanography.

itiatives have involved programs in shoreline erosion, submerged aquatic vegetation reestablishment, toxic substance monitoring, additional James River studies, and improved fisheries management.

In addition to programs funded by the Commonwealth, VIMS has participated in major federal initiatives. VIMS was one of the initial Coherent Area Programs designated under the Sea Grant Program in 1968. In 1981 VIMS was designated as an institutional program, and in 1984 The College of William and Mary gained Sea Grant College status.

VIMS has a long involvement in fisheries research. It served as the principal research arm of the Commonwealth's coastal zone planning activities and also managed the Bureau of Land Management's (now Mineral Management Service) Outer Continental Baseline study for the mid-Atlantic region. In recent years the Institute has played a key role in the Environmental Protection Agency sponsored Chesapeake Bay Study and is now actively engaged in research and monitoring initiatives arising from that study.

Areas of Expertise and Current Programs

In 1983 the Institute began operating under a 10-year research plan which established 15 research programs: fisheries of Virginia; benthic animals and communities; plankton processes; tidal freshwater ecosystems; mesohaline marshes and submerged aquatic vegetation; diseases of marine and estuarine organisms; culture of marine and estuarine organisms; fate and effects of toxic chemicals in the Chesapeake Bay; nutrient cycling processes and controls; consequences of nutrient enrichment; dynamics of benthic boundary layer and associated sedimentary processes; circulation in estuarine and coastal waters; shoreface, surf zone, and beach processes; sedimentology, stratigraphy, and geological evolution of Chesapeake Bay and coastal waters; and development, utilization, and management of marine resources.

In addition, the following eight specific areas for regular monitoring were established: fisheries, plankton, bacteria, parasites and pathogens, benthic invertebrates, estuarine plant communities, coastal erosion, and physical and chemical factors. Future program development will be conducted within the framework of this research and monitoring plan.

The Institute is presently focusing efforts on Chesapeake Bay problems in support of multi-state and federal initiatives. Specifically they include physical, geological, and biological studies of the James River seed oyster areas; modeling and field studies in support of improved fisheries management; and studies of toxic compounds and their potential for impacting Virginia's seafood industry.

Cooperating Agencies

The Institute cooperates with a number of federal and state agencies, private industries, special interest organizations, and school systems.

The Institute is a charter member of the Chesapeake Research Consortium, Inc. (University of Maryland, The Johns Hopkins University, the Smithsonian Institution, and VIMS); the Virginia Graduate Marine Science Consortium (University of Virginia, Old Dominion University, Virginia Polytechnic Institute and State University, and VIMS-The College of William and Mary), which administers the Virginia Sea Grant College Program; and The Southeastern Council for Undersea Research, which provides research planning and academic oversight to the National Undersea Research Program at the University of North Carolina, Wilmington.

The Institute presently has cooperative agreements with the U.S. Geological Survey, the Cape Henry Billfish Club, and Scientific and Environmental Associates, Inc. A number of projects are being conducted for and with federal and state agencies under grants or contracts. Some of the agencies supporting projects at VIMS include the Environmental Protection Agency, National Marine Fisheries Service, Sea Grant, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Mid-Atlantic Fisheries Development Foundation, Office of Naval Research, and National Science Foundation.

Unique Laboratory Features

The Institute's main campus is located on the York River estuary with easy access to the Chesapeake Bay and the Atlantic Ocean. The Wachapreague Laboratory on Virginia's Eastern Shore provides access to the barrier islands and extensive salt marshes of the Delmarva Peninsula.

Watermen's Hall, dedicated in mid-1984, is a 40,000 square foot building at the Gloucester Point campus. It provides space for the Institute's library, computer center, graduate education laboratories, an auditorium and display area, and offices for the Marine Advisory Services staff and administrative staff.

Facilities at Gloucester Point also include a water quality laboratory, a bacteriological laboratory, state-of-the-art organic analytical capability including gas chromatography—mass spectroscopy, a sediment laboratory, a 12-meter circulating flume, scanning and transmission electron microscopy, and general purpose laboratories.

Computer facilities include a Prime 850 with extensive disc and tape memory, graphics and plotting support, and a state-of-the-art image analysis system capable of interpreting satellite imagery.

Field equipment includes EG&G side scan sonar, Neil Brown CTD's, a precision fathometer, a shallow water subbottom profiler, precision navigation equipment, a vibracorer, spade box covers, extensive current meters, bottom and midwater trawls and seines, and a raft of miscellaneous equipment.

Several of the laboratories at both Gloucester Point and Wachapreague are equipped with seawater systems. A small mariculture facility at Gloucester Point supports research in toxicity, immunology, shellfish disease, and a number of other activities.

The Institute operates a fleet of about 30 boats of various sizes. These include: the *R/V Tern*, a steel hulled former U.S. Coast Guard buoy tender equipped with a mobile gantry crane with twin booms that travels the full length of the working deck; the *R/V Langley*, a fiberglass hulled enclosed vessel with a laboratory, extensive built in electronics capability, and wet lab space; and the *R/V Captain John Smith*, a fiberglass hulled fishery vessel, with large unobstructed working deck and a 3,000 lb lifting boom.

Trailerable boats include an Albermarle hull equipped with twin 235 hp outboards to provide the capability of conducting quasi synoptic surveys over large areas (area to area running speed average 45 kts). The boat is heavily instrumented with LORAN-C, a Neil Brown CTD system, radar, and precision sounding equipment. Three single screw fiberglassed garvey hulls complete the inventory of larger vessels.

The aquaculture facilities at Wachapreague are used extensively for research on commercial aquaculture and to support research on organisms requiring higher salinities than is available at Gloucester Point.