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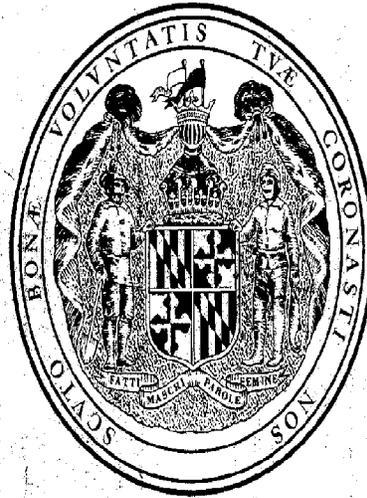
Dept. of Natural Resources

1975

**COASTAL ZONE
INFORMATION CENTER**

Annual Activities Report of the Department of Natural Resources

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M263
1975



STATE OF MARYLAND

Marvin Mandel
Governor

Louis L. Goldstein
Comptroller

William S. James
Treasurer

DEPARTMENT OF NATURAL RESOURCES

James B. Coulter
Secretary

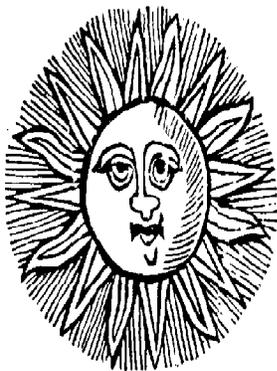
Louis N. Phipps, Jr.
Deputy Secretary

Maryland Department of Natural Resources

Annual Activities Report

1975

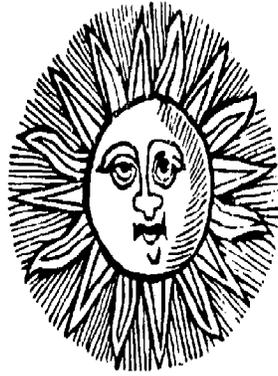
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But when the good soil, and all those resources of coal-ore, with the immense quantity of timber, and unsurpassed water-power, shall be brought into use, Maryland will then not only be a very different State, but unequalled by any portion of the Country in her natural productions, resources, and enterprise.

U. S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

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An Introduction

As we approach the National Bicentennial it is appropriate to look at the accomplishments of the Maryland Department of Natural Resources in historical perspective.

During most of the twentieth century Marylanders have regarded our Natural Resources as a precious heritage, to be used wisely, and enjoyed — but at the same time to be conserved and enhanced for transmittal to subsequent generations.

While the agency now known as the Maryland Department of Natural Resources dates only from 1969; official recognition of our obligation to cherish our natural resources had its beginning more than a century before. Early records show the establishment of shellfish management programs. In 1830 the legislature acted to prevent the encroachment into Chesapeake Bay of the oyster boats that had already wiped out the shellfish beds of New England. In fiscal year 1976 the Forest Service will observe its seventieth anniversary. Game regulations and licensing of hunters also dates seventy or more years back in Maryland history.

The consolidation of many state agencies having responsibility for a multitude of natural resource efforts has given Maryland a unique opportunity to provide more effective natural resources management services.

Fiscal year 1975 has seen efforts to make DNR services more easily accessible through expansion

of activities at regional service centers. Opportunities for citizen participation in planning and decision making have increased. And with recognition of the long term problems of energy supply, re-assignment of staff responsibilities within the department has occurred.

Although wise management of our natural resources is an established tradition in Maryland; many of the management techniques and concepts are new and still evolving. But there was a time when the bounty of the bay and the forests was available for the taking.

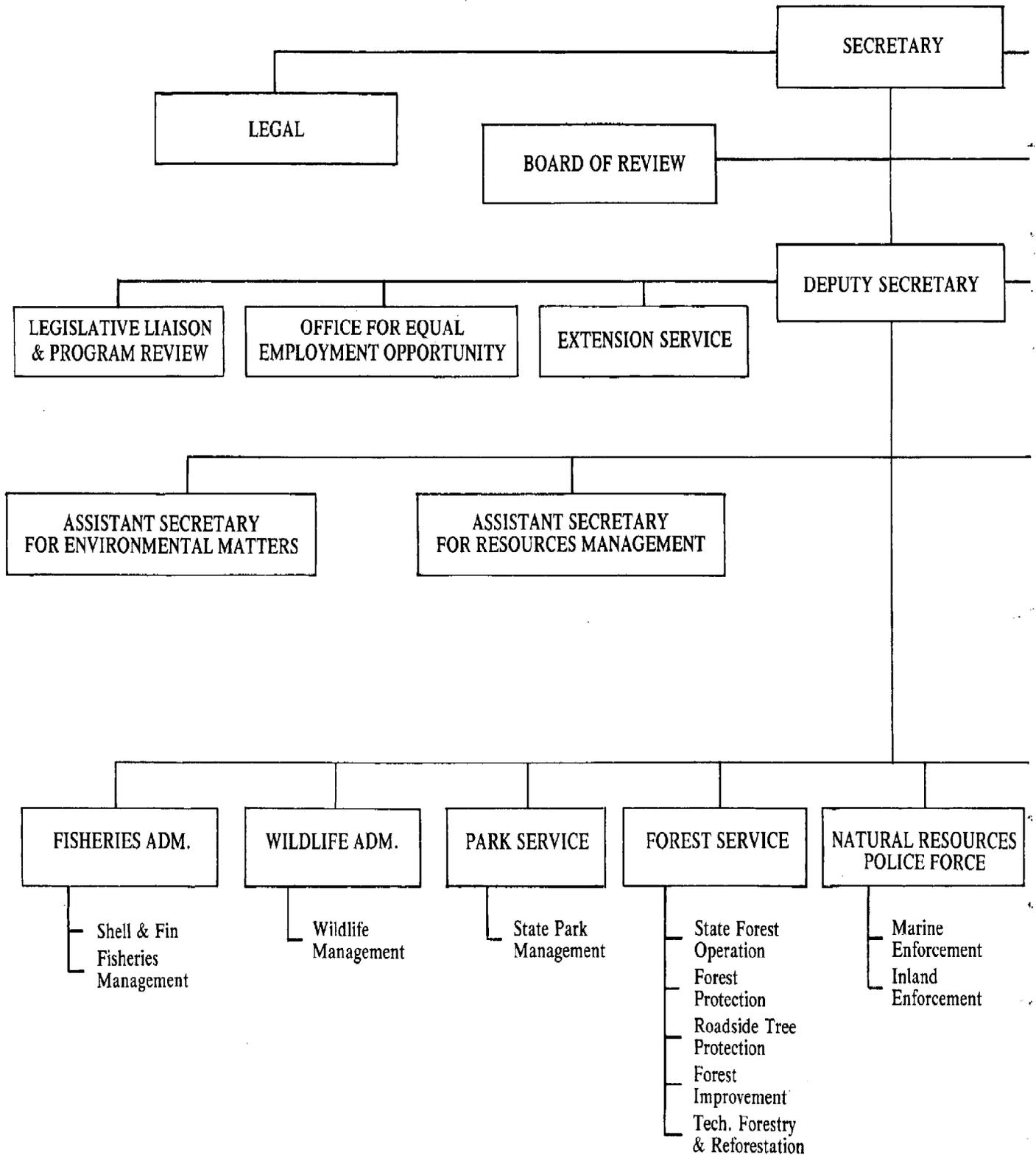
A Maryland man, Meshach Browning was born in Frederick County in 1781 — only five years after the Declaration of Independence. Mr. Browning became a hunter, trapper and student of natural history in the Western Maryland counties. He chronicles his life in a fascinating autobiography . . . "Forty Four Years in the Life of a Hunter." His account gives us a rare and exciting look into a time when the game and the fish and the forests were so plentiful that no one needed to think twice about using what was needed.

Throughout this report we have excerpted quotes and illustrations from Mr. Browning's autobiography to help the reader better appreciate the changes that have occurred in our natural resources history, and to understand that . . . "the more things change, the more they are the same."

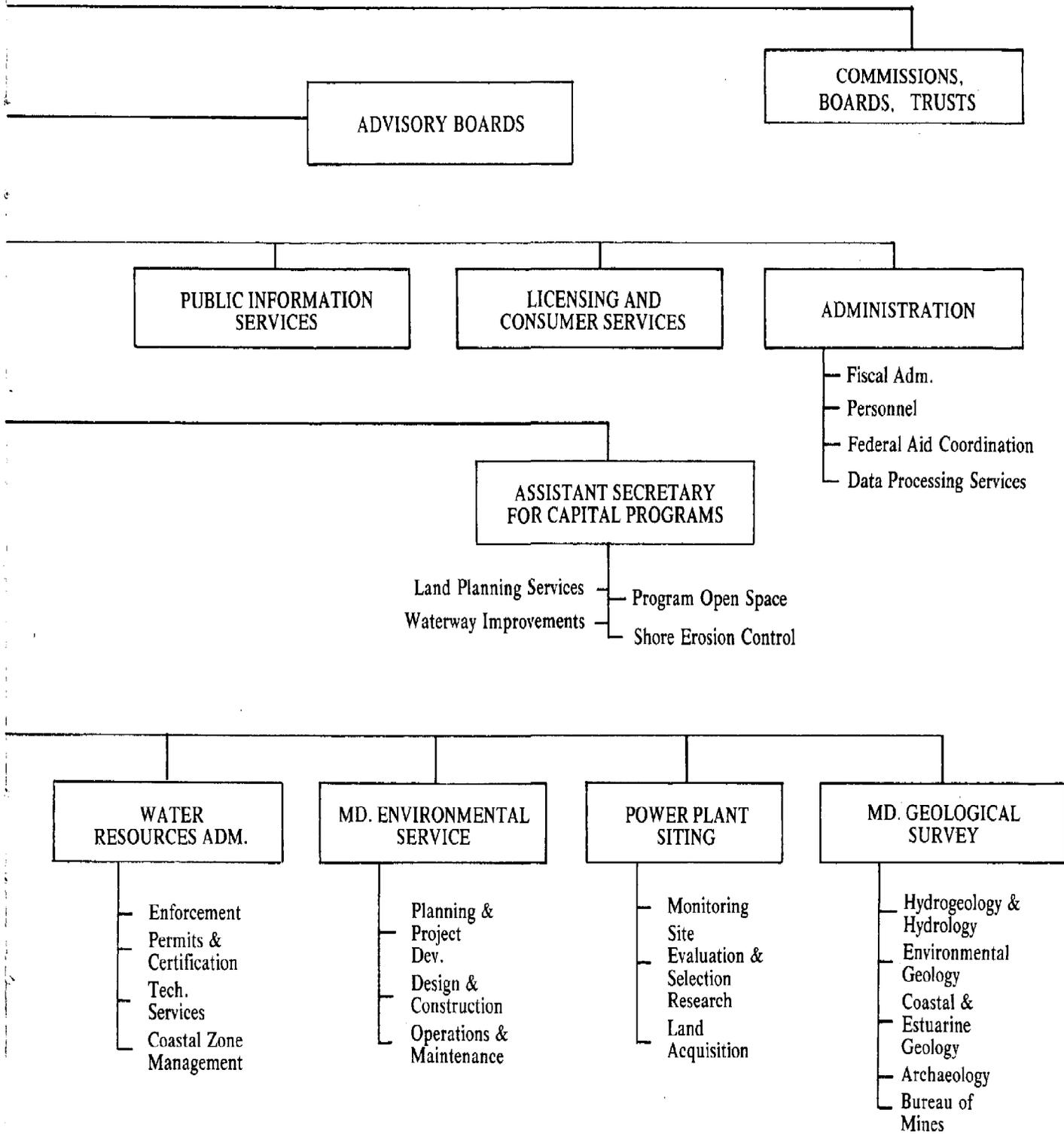
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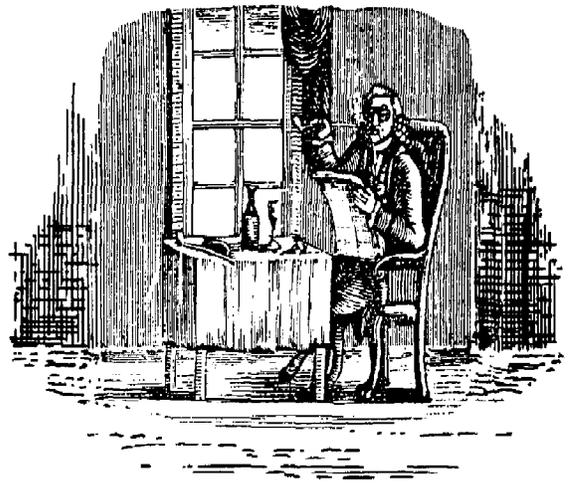
Department of



Natural Resources



Office of the Secretary



We always held an election on the first Monday in October; when would be seen a goodly array of hunting-shirts and mocasins, and almost every man with a big knife in his belt.

GENERAL ACTIVITIES

Policy direction and supportive services at many levels are provided to the agencies of DNR. Fiscal administration, budget, purchasing, personnel administration, program review, data processing, mail and duplicating services and auto maintenance are provided through General Administration.

Extension Services and technical advice and assistance are provided to the general public to encourage wise use and management of natural resources. Through this program, the Department publishes the Commercial Fisheries News which is distributed to a mailing list of 25,000 persons. Extension services produces motion picture films and slide presentations. In FY 75 the film, "How to Field Dress a Deer" was produced. All extension films are available for showing to interested groups.

Natural Resources Information provides accurate and rapid dissemination of DNR information through the mass media to the interested public. Pamphlets, brochures, press releases of timely news and information are produced and distributed. The MARYLAND CONSERVATIONIST, sold by subscription reaches 5,000 readers, six times each year. A calendar of special events, initiated midway in FY 75 reaches approximately 750 readers every month. Incorporation of the DNR library into Public Information Services has resulted in an expanded library, offering increased numbers of publications to staff of the agency as well as interested individuals in the community. The library is the repository and distribution center for some 50 DNR films. A Forestry Newsletter and a Fish and Wildlife Newsletter are also published by Natural Resources Information. The Forestry Newsletter is published quarterly and is received by 2,500 readers. 23,000 copies of Fish and Wildlife Newsletter are published and distributed 6 times a year. An in-house film processing capability was developed in FY 75, resulting in a 60% savings over previous years expenditures.

LICENSING AND CONSUMER SERVICES

The Office of the Secretary also provides for the *Licensing and Consumer Services* activities including the operation of regional service centers at:

Annapolis — Tawes State Office Building
Annapolis, Maryland 21401

Bel Air — 103 North Main Street
Bel Air, Maryland 21014

Laurel — P.O. Box 70
29 C Street
Laurel, Maryland 20810

Centreville — P.O. Box 96
Queen Anne's County Building
Centreville, Maryland 21617

Cumberland — Highland Estates
Naves Crossroads
Cumberland, Maryland 21502

Salisbury — 910 Cooper Street
Salisbury, Maryland 21801

Licensing and Consumer Services is responsible for titling and registering boats; and the recordation of security interests in vessels, the administration of the licensing and permit requirements of the Natural Resources Laws and for special tax reports and collection requirements. This section is responsible for the sale of the Guide for Cruising Maryland Waters and other Departmental publications.

The responsibility for the operation and management of the Department's five regional service centers is also in this program. Licensing and Consumer Services is a support function to units of the Department of Natural Resources; also providing opportunity to the general public to purchase any DNR license, title or permit from Annapolis or one of five Regional offices of operation. The field offices provide clerical support, and disseminate general information.

The program is responsible for the issuance of boat titles, hunting and fishing licenses, commercial fishing licenses and permits, collection of boat title tax, oyster severance, inspection and export tax, and clam severance and inspection tax.

In FY 75 implementation of the automatic data processing system on boat title and registration was accomplished. The design for the accounting system on boating and seafood systems was completed. Contracts for finalization of a complete accounting system which include an inventory of sport licenses, resource tax collection, and lease ground billing were executed. Design of a data processing system to account for pre-numbered forms was begun, but not completed due to limited manpower.

Public response to the Regional Service Center concept was encouraging. Capability for issuing temporary licenses was achieved.

Program objectives have been met in regard to service to the public.

Law and Regulations impacting activities in FY 1975 were:

1. requiring persons 14 years old or less to acquire a license (free of charge) to catch oysters and clams.
2. allowing agents to receive hunting and fishing licenses for retail on consignment by providing a bond.
3. requiring waterfowl hunters to purchase a Migratory Waterfowl Stamp.
4. requiring persons to purchase a special license to set and fish crab pots in Worcester County.

In fiscal year 1975 this program registered 120,000 boats, issued 37,000 boat titles, licensed 22,000 watermen and serviced 23 distributors, 23 clerks of court, 26 consignment agents who sold approximately 450,000 hunting and fishing licenses and stamps, increased sales of DNR

publications by 300%, provided clerical assistance to serve 7 field units of DNR at 5 regional service centers and collected approximately \$7,500,000.

Since all data processing systems are not complete the statistics, reports, etc. are not published as of this date. The objective of providing each applicant with a temporary license effective on the day of application has been met.

	Total Receipt
Titles:	
Boat titles	\$ 73,723
Registrations: (Annual Jan. 1)	
Boat registrations	498,856
Off-road vehicle	505
Licenses	
Boat Dealers	12,205
Commercial Fishing:	55,990
Gill net	
Pound net	
Fyke or Hoop net	
Haul Seine	
Fish Pot	
Hook and Line	
Atlantic Ocean Otter or Beam trawl	
Oyster & Clam Tongers:	112,199
Oyster Shaft Tong	
Shinnecock Rake	
Clam Shaft Tong	
Oyster Patent Tong	
Clam Patent Tong	
Oyster Dredge	6,435
Clam Dredge	1,015
Clam Hydraulic Dredge	23,525
Private Plant-oyster dredge	680
Terrapin	245
Commercial Crabber	42,675
Worcester County Crab Pot	3,188
Crab Pot license	40,628
Collapsible Crab Trap	3,300
Crab Bank	402
Crab Pound	65
Crab Packer & Shipper	1,070
Oyster Buyer	8,975

Non-resident Seafood Dealer	1,190
Oyster Packers	2,275
Clam Dealers	860

Recreational licenses	
Statewide Hunting	912,050
Statewide 65 & Older	
Statewide — Junior	52,929
Non-resident — Statewide	352,629
Duck Blind	16,355
Restricted Gill net	3,965
Statewide Fishing	461,452
Statewide 65 & Older	
Non-resident — Statewide	56,039
7 Day Tourist	14,516
Potomac River (DC, VA, W.VA)	772
Live Bait Dealers	30

Stamps	
Md. Waterfowl	52,926
Deer Turkey	508,425
Deer Turkey (65 & Older)	
Trout Stamp	55,543

Permits	
Roadside Tree Permit	838
Regulated Shooting Area	784
Sneak Boat — Pusher	1,170
Scientific Collecting	114
Possession Permit	1,120
Dog Training Area	290
Taxidermist or Tanners	765
Fur Dealer	375
Falconry	530
Non-resident trapper	130
Park-Hunting	272
Discharge Permits	240

Taxes	
Title Tax	2,996,179
Oyster Tax	761,182
Clam Tax	33,563

Leases — Oyster Ground	
Application fee	75

Recording fee	455
Resurvey fee	500
Survey fee	260
Rent	17,969

Miscellaneous Income

Duplicate:

Replacement titles	2,346
Registrations	1,467
True copies	333
Replacement stickers	1,259
Fee for Bad Checks	866
Duplicate Oyster tongers	42
Over-limit oysters	741
Duplicate Fishing licenses	187
Duplicate Hunting licenses	450
Hunters Guides	840
Leg Bands	127
Sale of signs	37
Trapping Rights	5,456
Publications	110,691
Building Sales	50
Timber — Wildlife	4,312
Cooperation Funds	5,109
Fire Suppression claims	11
Tree Expert license	10
Forest Products Operators license ...	100
Registration Forest Product	230
Garden Plot rental	1
Tree Planter rental	360
Timber sale (Forestry)	89,423
Sales and Service (Forestry)	27,281
Budget Credits	423
Performance Bonds	3,185

Total Receipt \$7,450,750



MESHACH BROWNING.

MARYLAND ENVIRONMENTAL TRUST

A separate unit of the Department, The Maryland Environmental Trust promotes conservation, improvement, stimulation, and perpetuation of the aesthetic, natural, health and welfare, scenic, and cultural qualities of the environment, including but not limited to land, water, air wildlife, scenic qualities, open spaces, and buildings.

SPECIAL AGREEMENTS

The following activities were conducted by the Office of the Secretary under terms of agreements with other States:

Susquehanna River Basin Compact — Formulates a comprehensive plan for the conservation, utilization, development, management and control of water resources of the Susquehanna River Basin.

Interstate Commission on the Potomac River Basin — Coordinates, tabulates and summarizes existing data on the character, pollution and condition of tributary streams; conducts investigations; promotes adoption of uniform legislation for the control of stream pollution; and cooperates with other organizations in studies of treatment methods for sewage and industrial wastes.

Potomac River Basin Advisory Committee — Coordinates and advises the heads of government on the best possible permanent interstate organization to plan, develop and manage the water and related resources of the Potomac River Basin.

Potomac River Fisheries Commission — Conserves and maintains the fishery resource of the River.

Atlantic States Marine Fisheries Commission — An outgrowth of the "Eastern Conservation Conference". Seven states, including Maryland, ratified the compact in 1941. The Commission advises only, aiding in the development of joint

programs dealing with particular species of fish or bodies of water common to two or more states.

Coastal States Organization — Established to contribute to the development of common policy regarding national coastal zone management.

Interstate Oil Compact Commission — Formulates plans to conserve oil and gas.

Ohio River Basin Commission — Coordinates comprehensive planning for the development of water and related land resources.

Interstate Conference on Water Problems — Established to act in an advisory capacity to the Water Resources Council to the Environmental Protection Agency and to represent the Council of State Governments on issues before Congress.

BOARDS AND COMMISSIONS

In addition to an advisory board to the Secretary, the Department receives advice and guidance from numerous boards and commissions. These include:

Board of Review

Board of Well Drillers

Coastal Zone Advisory Commission

Commercial Fisheries Advisory Commission

Forest Advisory Commission

Parks Advisory Commission

Sports Fisheries Advisory Commission

Water Resources Advisory Commission

Wildlife Advisory Commission

Commission on Mining Laws

Mine Examining Board

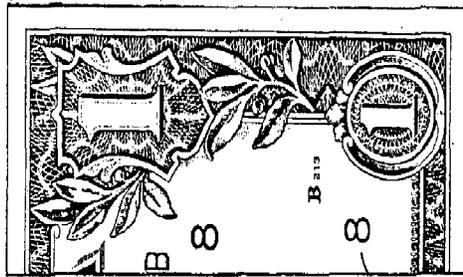
Program Open Space Apportionment Committee

Scenic Rivers Review Board

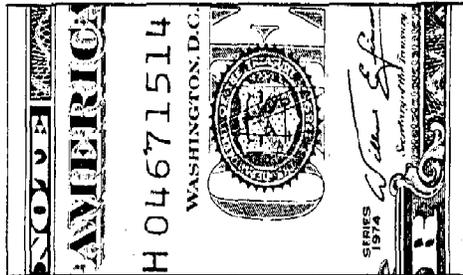
Land Reclamation Committee

Public Advisory Councils for River Basins — 16 units, MES

Natural Resources Budget



Capital Programs Administration — 18%
\$6,127,813



Power Plant Siting — 18.3%
\$6,228,227



Maryland Park Service — 12.4%
\$4,226,237



Natural Resources Police Force — 10.9%
\$3,720,106



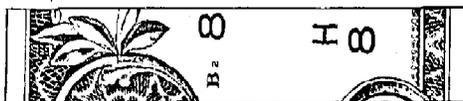
Office of the Secretary — 8.6%
\$2,941,873



Fisheries Administration — 8.4%
\$2,884,414



Maryland Forest Service — 7.4%
\$2,536,188



Water Resources Administration — 6.8%
\$2,316,147



Wildlife Administration — 3.7%
Maryland Environmental Service — 2.4%
Maryland Geological Survey — 2%
Board of Well Drillers — .1%

Total Budget — \$34,009,231

Capital Programs Administration



Capital Programs Administration is responsible for the land planning, design and construction activities of the Department and administration of Program Open Space, shore erosion control and water-way improvement.

LAND PLANNING SERVICES

Land Planning Services is responsible for the acquisition and development planning for all DNR Lands. Its main products are master plans for Maryland State Parks and approved take-line maps (acquisition plans) for all DNR Land Units. The Section was formed in September, 1974.

Late in the fiscal year, the responsibility for the Maryland Wild and Scenic Rivers Program was assigned to this Division. The products of that activity will be inventories and studies for all designated rivers (there are currently nine), and an inventory of all other rivers in the State for possible inclusion in the system.

The Division conducts all of its planning activities on individual land units by first considering the plan of that unit in a regional and State-wide setting. Much of the early work of the Division, therefore, involved collecting diverse information on over 100 DNR Land Units of the

following classes: State Parks, State Forests, Natural Environmental Areas, Wildlife Management Areas, Natural Resources Management Areas, and miscellaneous areas.

The second major emphasis of planning is that all work must be firmly grounded on sound site analysis. Much of the work of the Section has therefore focused on collecting basic information on vegetation, soils, geology, etc. on the site, as well as land-use, demographic data, utility corridors, etc. on the surrounding land.

A third emphasis of the Section is to broaden the participation of the public and other units of government in the planning process. Much time has been devoted to establishing advisory committees on State Parks and scenic rivers, and on holding public information meetings and hearings on various phases of take-line or master plan development.

The primary accomplishment of the Section has been to establish a clear and orderly process for developing park master plans and take-lines. With the formation of the Section in this fiscal year, all acquisition and development planning for DNR Lands has been integrated for the first time. Also for the first time, plans are being developed according to a standard procedure that provides ample opportunity for public involvement.

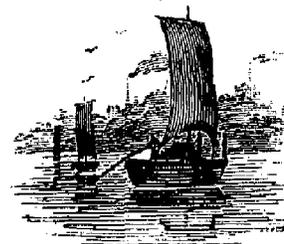
The staff has numbered approximately 20 throughout the year, including 12 professionals, 4 draftsmen, 3 clerical, and 1 planning assistant, 3 natural resources planners, 2 park planners, 1 natural resources specialist, and 1 capital improvements programmer.

Budget

Salaries and related expenses account for approximately 55 percent of the total budget; 10 percent is expended for contracts relating to take-line development (aerial photography and planimetric mapping); and 33 percent is for contractual services and staff augmentation to assist on specific planning projects.

Products

- Established a master planning process for Maryland State Parks
- Initiated planning on 11 State Parks
- Completed concept plans for 7 State Parks
- Completed regional framework plans (inhouse format) for entire State
- Inventoried all potential wildlands in Western Maryland
- Completed a study of natural and recreational features of DNR Lands in Garrett County
- Established a park user survey
- Assisted the Forest Service in developing a forest management planning handbook.
- Completed environmental assessment on all items in the Fiscal Year 1977 Capital Budget (19 projects)
- Completed take-lines for 9 DNR Land Units
- Reviewed 16 areas for possible addition to the DNR Land System



WATERWAY IMPROVEMENT

This program is responsible for activities attendant to the improvement of State waterways for public benefit. The program encompasses four primary work divisions: Hydrographic Operations, Dredging, Waterway Grants, and Marine Service Operations.

The Dredging Division is responsible for waterway projects involving the dredging of channels and harbors and the construction of jetties and breakwaters pursuant to the provisions of the State Boat Act. Approved projects of the above types are financed through the Waterway Improvement Fund.

In Fiscal Year 1975, the dredging division completed four projects at a total cost of \$514,000. At the end of FY 75, this division has an additional six projects in progress at a total cost of \$983,079. Additional projects in various stages of development total \$2,234,014.

The Hydrographic Operations Division provides hydrographic survey engineering services in support of Department of Natural Resources' fishery agency conservation and management. In Fiscal Year 1975, the engineering associates assisted the Fisheries Administration in charting the location and determining the acreage of approximately 90 areas covering about 4000 acres for the purpose of planning dredged and fresh shell and seed oysters. Approximately 910 acres of public oyster ground was also investigated and reclassified as soft shell clamming ground with the engineering associates locating each sample station and calculating the acreage and correcting the oysterbar charts.

During the year, approximately 480 floating buoys used for navigational aids and regulatory purposes were maintained bi-annually while in some instances regulatory buoys had to be replaced as many as five times.

One hundred eighty-five fixed aids to navigation were also maintained.

Approximately 15 shore signals used for offshore surveying purposes were rebuilt along with the establishment of 13 new triangulation stations. Fifteen Federal government triangulation stations were recovered and marked to provide additional offshore surveying points.

Thirty-three private oyster ground leases were renewed and resurveys of 265 corners of private oyster ground leases were conducted.

Engineering associates appeared as witnesses in court trials fifteen times.

The Waterway Grants Division is responsible for recreational development of the Chesapeake Bay. In Fiscal year 1975 this Division approved 82 projects and disbursed \$476,168.87 for completed projects. One hundred thirty-five projects are incomplete with an obligated fund value of \$2,582,852.34. Since the inception of the Waterway Improvement Program, this Division has completed 433 projects with an expended total value of \$2,096,294.31. In FY 75 those completed were composed of thirty-four for facility improvements, five for ramps, three for piers and three for bulkheading.

The Marine Service Operations Division is responsible for general waterway maintenance conducted in channels, harbors and areas that are not maintained by the U.S. Corps of Engineers. Activities include the removal of debris and derelict vessels from the Chesapeake Bay and tributaries; installation of daymarker piles used as aids to navigation; the repair and maintenance of various public-owned facilities such as piers, bulkheads, launching ramps, and small dredging operations.

In Fiscal Year 1975 debris has been removed from Back Creek in Calvert County and Back River in Baltimore County for a total of \$5,600. Three hundred and twenty-eight derelict vessels were removed from county waters at a cost of \$205,788.58. Seven hundred and seventy pilings that were removed were included in this figure.



PROGRAM OPEN SPACE

With a realization that there was a responsibility to provide citizens of Maryland, both present and future, with adequate open space and recreational opportunities, the General Assembly, in 1969, enacted legislation titled the *Outdoor Recreation Land Loan of 1969* better known as "*Program Open Space*." This program was made a part of the Department of Natural Resources and its function is to acquire land and to develop capital improvements on these lands. An essential part of this function is to maintain and control records on all Department owned and leased land. Since Program Open Space is administered at two levels, state and local, this program is also responsible for working with the twenty-three counties of Maryland and Baltimore City, to enable them to acquire grants from this program to help acquire local open space areas and develop local recreational facilities. In addition, this program also has the responsibility for administering the funds received from the Federal governments' Land and Water Conservation Fund.

The long range goal of Program Open Space is to provide the general public with adequate open space and recreational opportunities by continuing the acquisition of open space areas and the development of recreational facilities at both the state and local level.

The Program Open Space staff of thirty-two include personnel with backgrounds in engineering, construction, park planning, recreation, land negotiation, administration, and clerical activities.

Funds are appropriated by the General Assembly for the acquisition of land and development of recreational facilities, at both the state and local level. The fund sources for this appropriation are a bond authorization and the collection of a tax in the transfer of all real property within the state. In fiscal year 1975, 7,063 acres were acquired for use by this department. Of that amount, 3591 acres were acquired for parks, 80 acres for forests, 2,292 for wildlife management areas, 1327 for natural environment areas, and 480 for fish management areas.

SHORE EROSION CONTROL

According to studies prepared by the Maryland Geological Survey, the tidal shoreline in the Chesapeake Bay area amounts to 3,887 miles of which 2,000 miles are actively eroding and 428 miles are eroding at a severe rate of more than 4 feet per year. The maximum rate of erosion observed by this office has been 12 feet per year. Through the efforts of the program during fiscal years 1971 to 1975 inclusive under the Loan Law, 75 projects have been completed, involving 188 individuals and representing approximately 3.0 miles of protected shoreline with new structures.

The projects undertaken by the program vary in size greatly. The minimum project undertaken to date has been \$5,000 and the maximum \$420,000.

The first shore erosion legislation was enacted in 1964 by the General Assembly with funds being appropriated under the *1967 General Construc-*

tion Loan, in the amount of \$136,900. The State provided a grant of 25 percent of the total cost of construction and the property owner provided 75 percent. Four projects were accomplished during the first year.

Effective on July 1, 1971, the Shore Erosion Control Revolving Loan Fund became law. The law provides for free technical services as well as 25-year, interest-free loans applied to construction costs of shore erosion control projects which qualify under the established priority system. Yearly appropriations have been provided by the General Assembly.

The 1975 fiscal year appropriation was \$300,000. These funds are charged to the annual operating budget. In addition through the General Construction Loan of 1973, Item 22, \$1,000,000 was made available for use in the Revolving Loan Fund and through Senate Bill 812, effective July 1, 1975, another \$1,000,000 will be available in fiscal year 1976. Under the Revolving Loan Fund and through fiscal years 1971 to 1975 inclusive, 75 projects involving 188 property owners have been accomplished.

Number of Shore Erosion Projects Constructed	39
Number of Property Owners served through these projects ..	142
Footage of shoreline protected	
Stone	3658'
Timber	5344'
Aluminum	626'
Groins	150'
Amount of State Loan Funds expended	\$904,700
Number of applications received and processed:	
High	80-50%
Medium	55-34.4%
Low	25-15.6%

These figures show a significant increase of accomplishments over the previous fiscal year.

Maryland Park Service



It is the responsibility of the Maryland Park Service to promote, administer, and manage every state owned or leased park, scenic preserve, natural area, parkway, historical monument and recreational area; and to administer laws, rules and regulations relating to these areas.

In order to satisfy the many interests of park users, a wide variety of programs and activities are conducted within the parks. One of the popular programs was the interpretive program, which was designed to provide an opportunity for the park visitor to learn more about nature and history in the parks through a variety of special programs and events. Twenty-three parks offered these programs, two (Calvert Cliffs and Rocky Gap) were added during the past year. Approximately 200,000 park visitors participated in the 1,200 programs conducted. These included campfire programs, nature walks, arts and crafts, movies, and slide presentations.

Major steps in historical interpretation are under way at Fort Frederick and Cunningham Falls State Parks. At Fort Frederick, where week-end programs of the Revolutionary War period have been conducted during the summer months, two enlisted men's barracks are nearing completion. When completed (FY 76) one barrack will house displays, models and dioramas tracing the fort's history from 1756 to the present, and the other will be furnished and used to tell the story of

soldier life on the colonial Maryland frontier. At Cunningham Falls restoration of the Catoctin iron furnace, which began during the year, will be used as an interpretive tool for telling the story of the iron ore industry during the Civil War period.

The Volunteers in Parks (VIP) and Youth Conservation Corps (YCC) assist the Maryland Park Service in providing additional services to the public and completing small work projects for the improvement of park facilities. The VIP program involves individuals or organizations who donate their time, serving as interpretive assistants and giving arts and crafts demonstrations. In appreciation for this volunteer work, the Maryland Park Service has presented certificates and pins to forty individuals this past season.

The YCC is a federal program available to the Park Service on a matching fund basis. This program is designed to complete worthwhile projects in the parks, create employment and provide conservation education for the forty individuals who participated in the program this year. An estimated \$53,000 worth of projects were completed in four state parks at a cost of \$35,000 to the Park Service.

A five-year research project conducted by the Maryland Park Service and the Northeast Forest Experiment Station, United States Forest Service, was initiated. This study is designed to measure

the effects on the soil and vegetative cover in heavily used park areas. The results will be beneficial in making decisions relative to the management resources in the parks. Study areas are located at Cunningham Falls and Greenbrier State Parks.

In order to maintain high quality service it is necessary to continually improve the caliber of training given to park service employees. New rangers receive 16 weeks on the job training. This training includes all facets of park operation and maintenance, public relations, law enforcement, and information on the Department of Natural Resources. In addition, employees selected to receive Law Enforcement Officers Commissions, receive seven weeks of training in law enforcement procedures.

Considerable effort has been put forth by the Park Service and Capital Programs Administration in attempting to keep pace with the need for additional recreational facilities. Additional facilities completed during the year include:

- Cunningham Falls* .. bathhouse, comfort station, pavilion
- Greenbrier* 71 camping site areas
- Gunpowder Falls* ... additional 1100 feet of beach
- Patapsco Valley* road relocation
- Point Lookout* shore erosion control
- Rocky Gap* office, contact station, boat concession, pier and slips
- Smallwood* office and information center

- Susquehanna* boat concession building, 71 campsite complex
- Swallow Falls* waste water treatment facility

Projects under construction include:

- Cunningham Falls* .. camping facilities
- Deep Creek Lake* ... boat loading facility
- Greenbrier* shower building (camping)
- Patapsco* road system, shop and storage building
- Rocky Gap* camping facilities, day-use roads and parking facilities
- Sandy Point* boating facilities, shoreline improvements
- Seneca* 90 acre lake
- Shad Landing* additional day-use facilities
- Tuckahoe* 15 acre lake and shop building

The Maryland Park Service manages 49 state park areas totaling 72,297 acres. Over seven million people used the 32 parks maintaining attendance records.

The Park Service budget of \$4,426,590 was comprised of \$3,157,744 general funds and \$1,268,846 special funds (service fees).

Maryland Forest Service



This glady region abounds with thousands and hundreds of thousands of the finest kinds of trees, comprising all descriptions of pine, both white and yellow, curled maple, wild cherry, curled white oak, and curled birch, as also black and white walnut, wild cucumber, and chestnut.

Forest, streams, valleys, wetlands, parks, scenic, historic and recreation areas of the State are basic assets. Their proper use, development, and preservation are necessary to protect and promote the health, safety, economy and general welfare of the people of the State. It is the policy of the State to encourage the economic development and use of its natural resources for the improvement of its local economy, preservation of the natural beauty, and promotion of the recreational and leisure interest throughout the State.

A system of State Forests adequate in size, location, resources and amenities to meet the long term needs and desires of the people of Maryland is the goal of the Maryland Forest Service.

During Fiscal 75 the Service constructed 9 new recreational trails, 9 new scenic vistas. State Forests accommodated 60,000 visitors, mainly hunters, campers, hikers, birdwatchers.

Protection was provided from wildlife, insect and disease on 118,000 acres. Ten fires of sixteen total acres were controlled, 608 acres were treated against various forest pests and diseases.

Timber Culture — Improved timber on 800 acres. Timber sales were made on 1400 acres

Wildlife — Habitat was improved on 1,850 acres through forest management practices

Watershed — Forest hydrology on 118,000 acres was maintained and improved

Maintenance — Some 300 miles of forest roads, trails, boundaries were built, improved or maintained

Management — Completed forest inventory of Doncaster State Forest (1,485 acres), Cedarville State Forest (3,200 acres), Potomac and Swallow Falls State Forests (19,300 acres). Completed computerization of field data on Savage River State Forest (52,000 acres).

The Forest Service provided educational and work experience for 24 high school students in conservation projects on Green Ridge, Savage River, Potomac and Swallow Falls State Forests.

Provided year round employment for 5 full-time forest workers on State Forests, Garrett County through C.E.T.A. program.

Provided State Forest personnel as instructors for Forest Education Workshop Camp Greentop.

Cooperated with University of Maryland on State Forest visitation study (a 2 year program) to determine number and kind of forest users and carrying capacity of forests.

During 1975 a long-planned change in State Forest administration took place with the appointment of a Forester IV position for Savage River State Forest.

During 1975 recreational facility development on the State Forests received new and additional emphasis, while some former practices were curtailed.

Staff*

- 5 Professional Foresters M.S.*
- 4 Technical Foresters A.S.
- 3 Practical (Forest Superintendents)
- 1 Clerical
- 20 Skilled Labor

*All 5 professional foresters are registered Maryland Professional Foresters.

Budget

General Funds	\$375,787.00
Federal Funds	20,000.00
Special Funds	122,165.23
TOTAL	\$517,952.23

Timber harvests were down by almost 50% due to poor demand and prices resulting from generally poor economic conditions.

Land acquisition was negligible in 1975, only 20 acres were acquired.

ASSISTANCE TO PRIVATE FOREST LANDOWNERS

2.8 million acres or approximately 46% of Maryland's forest land area is in commercial forest land. The small private landowner controls 90% of the commercial forest area. The Maryland Forest Service assists these landowners. The main objective of this private land management section is to assist woodland owners to maintain and improve the economic, social and cultural well being of the State.

Project foresters assist citizens in planning the total environment in the development of resource management plans. Increased emphasis is being

placed on not only timber production but on individual trees and groups of trees and how they fit into the urban community. Assistance is also given to developers and planners so that trees can continue to be beneficial.

Twenty-three project foresters also provide assistance in utilization and marketing to the forest industry. A watershed Specialist works closely with the project foresters throughout the state.

Requests for advice and services have been received from 6,114 individuals over the past year. Most of the activities of the private forest management section are incorporated in giving examinations, timber marking, timber stand improvement, watersheds (both 566 Small Watersheds and Potomac Flood Control projects), erosion, and sediment control, utilization and marketing, strip mine reclamation and nursery and reforestation projects.

Detailed examinations and resource management plans were made and furnished to 431 landowners on 32,344 acres. This is a decrease in number of ownerships but an increase of about 50% of acreage over the past year.

Approximately 5,000,000 board feet and 3.3 thousand cords were marked on 1,747 acres. This resulted in a stumpage value of \$336,000 to the landowners of the State. If this is figured into the finished product the value can be increased approximately 80 times.

Foresters also assisted an additional 54 landowners in the sale of approximately 2,700,000 board feet and approximately 1,000 cords on 722 acres.

The Maryland Forest Service participates in two watershed programs in conjunction with the U.S. Forest Service and private landowners through out the state. The PL 566 Small Watershed Program assists private landowners within the five active watersheds throughout the state in technical assists for private resource management plans, timber stand improvement, tree planting and timber inventories.

The Potomac Flood Control Program occupies the area from Conococheague Creek to the Western Boundary of Maryland. Technical assistance is provided much the same as it is for other private land assistance throughout the state. Concentration is, however, in the areas of flood and sediment control with more trails and roads being laid out. Strip mine revegetation also plays an important part in this area. There were some 414 acres planted in the strip mine revegetation program.

The State Forest Tree Nursery provides trees for roadside planting as well as conservation and wildlife plantings throughout the state. There were 1,095 private land plantings made of approximately 4,000 acres for conservation purposes. These trees have in past years been distributed to the citizens of the state of Maryland without any charge. For the Bicentennial year of 1976 the Maryland Forest Service intends to provide every school child in the state with one seedling. Approximately 1,250,000 trees are scheduled to be shipped to the schools during the 1976 planting season. The State Forest Nursery also provides roadside trees for planting along public rights-of-way with approximately 2,500 trees sold to the public over the past year. The Nursery has also produced materials for the packets distributed by the Wildlife Administration. These packets contain wildlife material and trees that will serve as food and cover for the wildlife of the State of Maryland.

Strip Mining changes were made in the revegetation requirements; the bond was raised from \$400 to \$600 per acre and new methods were developed for determining when bond is to be released.

Several new developments worth noting in revegetating strip mine areas were the use of helicopters for fertilization and seeding, private contractors being used for revegetation and finally the coal operators are realizing that it is extremely important to save top soil to assure planting successful during the time of revegetation.

During the year 414 acres were planted to trees, 9 acres to shrubs and 330 acres to grasses. A mile and a half of coal haul roads were also stabilized to reduce sedimentation in the streams.

Utilizing and Marketing — The Forest Products Utilization Program continues to expand. The sawmill improvement program has shown considerable returns to the industry for a small input by the Forest Service's Utilization Marketing Specialist. This section is involved in a total inventory of Maryland's forest resource. This is being done in cooperation with the U.S. Forest Service and we hope that by 1976 a preliminary report will be available.

Twelve training sessions were held for the public and for inhouse personnel in safety, cost accounting, log bucking, grading, and other items relative to utilization and marketing.

302 assists were given by the FPU Specialist with an extension of the resource of 25,000 cubic feet for a value of \$70,000.

FOREST PROTECTION

The fire season was normal with only a few periods of extreme fire weather. There was a higher than average number of fires reported, however, due to better reporting procedures. In all we had a total of 986 fires which burned 2,132 acres. A fire analysis was begun which should help our prevention and suppression efforts. Over 3,000 children participated in the Smokey Bear Junior Forest Ranger program.

We have continued to cooperate with the U.S. Forest Service and have received much valuable equipment through the excess property program.

The detection network has reported minor insect and disease activity in fiscal year 1975. The presence of Gypsy Moth in the Northeast portion of the State is of great concern. In cooperation with the Maryland Department of Agriculture, the service conducted numerous egg mass surveys and a statewide trapping program to determine the Gypsy Moth population.

Maryland Environmental Service



By aiding local governments, counties, regions and industries to solve problems of water supply and the disposal of liquid and solid wastes, the Maryland Environmental Service helps to improve and enhance the quality of our environment. Land and water resource protection and improvement are the primary functions of MES.

As a public utility enterprise, MES furthers the concept of resource recovery by promoting, developing and participating in funding of innovative recovery and re-use projects with materials previously regarded as *wastes*.

In Fiscal 1975 the service supported such innovative concepts as the construction of an off-shore fishing reef near Ocean City, using discarded auto and truck tires; a Baltimore County resource-recovery plant which is being designed and constructed to recover and sell glass, ferrous and non-ferrous metals and other substances found in ordinary trash. Environmentally sound and *productive* uses for the sludge resulting from treatment of sewage is a continuing concern, with research begun at Beltsville in 1973 still being conducted by the U.S. Agricultural Research Service and MES.

MES continued to develop during 1975, with increases in the number of projects, personnel and services provided. In cooperation with the Department of General Services an extensive search has been made for office space. A move by early fiscal 76 is anticipated.

PLANNING

This section is responsible for 3 basic planning areas:

1. River basin planning
2. Solid waste planning
3. Water supply planning

Most of the study of existing conditions for 15 river basins has been completed. The Potomac River-Metropolitan Washington plan was completed, adopted by the Governor and approved by EPA in FY 75; and the Baltimore regional solid waste planning study was begun.

DESIGN AND CONSTRUCTION

The sludge composting operation at Beltsville continues to operate in the 50 tpd range. A federal grant of nearly \$2 million for a two-year period was obtained supporting research on raw sludge composting. A raw sludge containment program handling approximately 200-250 tpd was initiated and brought into operation.

The Governor broke ground in Baltimore County August 28, 1974 for the nation's first fully integrated major solid waste reclamation resource recovery facility. Construction on the Baltimore City Pyrolysis plant and the Freedom District AWT plant was nearly completed in FY 75.

A fly ash landfill design was completed. The Central Patuxent AWT plant RFP was prepared and released and the consultant selection process was nearly completed in FY 75.

The number of projects under MES supervision continued to increase with the addition of 7 additional facilities. At the end of FY 75 MES had operational responsibility for 18 water treatment facilities and 37 waste water treatment facilities. The water quality monitoring program was considerably improved and many facilities were upgraded within the limits of the operating budget.

TECHNICAL SERVICES

On May 21, 1975, Technical Services was formed by combining three projects.

During FY 75 the following studies and projects were carried out:

- a. Waste oil recovery and reuse program (under way).
- b. Hazardous waste regulation and disposal program (started).
- c. Feasibility study on returning power plant fly ash to Western Maryland for mine reclamation (completed).
- d. Wastewater treatment facilities plan for George's Creek area, Western Maryland (completed).
- e. Waste treatment and disposal from seafood processing plants (started).
- f. Tire reuse program — baling of tires for artificial fishing reef construction (facility now operational in cooperation with Ocean City).
- g. Baltimore County/MES resource recovery/solid waste management program (facility now under construction).



Power Plant Siting



This glade country is celebrated as a potatoe-raising region, producing from eighty to one hundred bushels on a single acre. It also abounds in coal and iron-ore, and has ample water-power to propel all kinds of machinery.

The Power Plant Siting Program has centered its activities on the evaluation of proposed power plants, the acquisition of potential power plant sites and the assessment of the true environmental impact of existing power plants. Since its initiation in 1972, the Program has reached a budget level of \$7,432,728 for FY '76 with an Environmental Surcharge of .21724 mills/KWH. There is a staff of eight professionals and four secretaries and a contractual structure involving approximately 150 scientists.

MONITORING

Assesses, monitors and models the true environmental impact of existing power plants. (Plants Monitored: Calvert Cliffs Nuclear Plant, Morgantown, Chalk Point)

SITE EVALUATION

Calculates the impact of future power plants at proposed sites for consideration at the hearings on *Certificates of Public Convenience and Necessity* and conducts a detailed site investigation of all potential power plant sites. The Site evaluation work forms the basis of program recommendations to the Public Service Commission for conditions relating to the design, construction, and operation of a power plant that are necessary for the protection of the environment. This Program works

closely with Federal agencies (particularly the Nuclear Regulatory Commission) in their activities relating to power plant siting. (Sites evaluated: Easton, Douglas Point, Summit (Delaware) and Sollers Point.)

RESEARCH

Research is geared to developing an understanding of Maryland's environmental resources, and socioeconomic structure which is necessary to successfully site and operate power plants with a maximum benefit to society and minimum detriment to the ecosystem.

SITE ACQUISITION

Identifies, investigates, acquires, and holds in the Land Bank a minimum inventory of four sites suitable for the construction and operation of power plants. (Elm's Property, St. Mary's County was acquired.)

Effective 1 July 1975, the Secretary of Department of Natural Resources, issued an order creating the Energy and Coastal Zone Administration (E&CZA), transferring all energy-related activities (Power Plant Siting Program, Coastal Zone Management, Bureau of Mines and Mine Reclamation) within the Department to this new Administration. Amendments to the code are being submitted to the legislature to ensure proper alignment of authority under the E&CZA.

Staff includes four PhD's.

BUDGET

Special Fund	
Appropriation	\$7,432,728
Federal Funds (Energy	
Research & Development	
Administration	100,000
Environmental Protection	
Agency (pending)	125,000
Electric Power Research	
Institute	154,000
Total	\$7,811,728



Water Resources Administration

The Water Resources Administration protects, enhances and manages the water resources of the State through planning, permitting and enforcement programs. These programs are technically supported by Water Quality and Laboratory Service programs.

ENFORCEMENT

The Enforcement Division is responsible for the inspection and enforcement of the law and regulations for the Water Resources Administration under the Natural Resources Articles. The Enforcement Division also *maintains* a 24 hour duty roster through the Natural Resources Police radio watch.

The activities of the Enforcement Division can be summarized as follows:

Activity	Total for F.Y. 75
1. Enforcement actions	707
2. Inspections	17,791
3. Complaints received	891
4. Permits, licenses, and approvals received for enforcement	1,805
5. Average number of insp./man/month	56.1

The primary responsibility of this division is enforcement. The following table indicates those enforcement actions in more detail:

Enforcement Actions	Total for F.Y. 75
a. New administrative enforcement action	686
b. Civil penalty decisions	6
c. Court decisions	15
Total	707

(Note — 37 administrative cases were referred to the Attorney General for legal action.)

Penalties Collected	Total for F.Y. 75
a. Fish kill assessments	\$ 924.71
b. Administrative civil penalties	3,000.00
c. Court fines	13,725.00
Total	\$17,649.71

The actual operating expenditure for this program in fiscal year 1975 was \$499,386. Eighty-three percent of that figure was attributable to wages and salaries. Of the total expenditure for this program, approximately 23% came from EPA as part of the agency's Water Pollution Control Program Grant for fiscal year 1975.

PERMITS DIVISION

The Permits Division has been reorganized to achieve more effective coordination of operations. Permit approvals or denials are based on technical information gathered by this division and on information obtained at public hearings held for most permits and licenses.

Activities of this division by unit are reflected in the table below:

<u>Wetlands</u>	<u>F.Y. 75</u>
Board of Public Works Licenses	475
DNR Permits	16
DNR Approvals	25
Water Quality Certifications	629
Water Quality Reviews	1,150
<u>Water Quality</u>	<u>F.Y. 75</u>
Discharge Permits	387
Toxic Material Permits	80
<u>Oil</u>	
Oil Vehicle Operators Certificates	1,214
Oil Handler's Permit	316
Oil terminal Facility Licenses	140
<u>Groundwater</u>	
Well Construction Permits	9,343
Appropriation Permits	276
Discharge Permits	14
<u>Surface Water</u>	
Appropriations	15
Sediment Control	137
Waterway Permits	195
Small Ponds	6

The Permits Division total professional, sub-professional and clerical staff in fiscal year 1975 numbered 46, but as a result of reorganization, in fiscal year 1976 will number 54. The actual operating expenditure for this program in fiscal year 1975 was \$963,466. Of that amount, \$107,038 were Federal Funds received from EPA to assist in the funding of the Water Quality Discharge Permit Program. Another \$269,785 were State Special Funds used to operate the agency's Oil Permit, Licensing, Containment and Cleanup.

TECHNICAL SERVICES

Water Quality Technical Services has had under survey and investigation many water areas within the State. Below are highlights of F.Y. 1975 activities:

1. **305(b) Sub-Basin Reports.** Completion of 305(b) reports as required as part of the FWPCA-1972.
2. **Blue Plains Sludge Disposal Monitoring — Montgomery and Prince George's County Sites.** Monitoring of water and groundwater on a monthly basis for one year.
3. **Ebaughs Creek (Deer Creek) Monitoring**
4. **Waste Load Allocation Study — Coastal Zone**
All paper work necessary for obtaining federal grant completed.
5. **Upper Wicomico River Drainage, Wicomico County, Maryland — Salisbury Pond Study.**
To evaluate the extent and probable cause for the eutrophication of the Salisbury Pond.
6. **Primary Network Sampling (Mainstream Potomac Stations from the Monocacy River to Morgantown).** Monthly sampling at 21 stations.
7. **Primary Network Sampling (Chesapeake Bay Stations).** Monthly sampling was conducted at both primary network and EPA stations. The study has been discontinued.

8. **Coding State Health Department Shellfish Sampling Stations for Inclusion on WRA Computer Program.** Completion of inventory forms for approximately 1,500 stations.
9. **Biological Sampling.** Biological sampling was initiated at stations on the Potomac and in areas in which intensive surveys are to be conducted.
10. **Antietam Creek, Washington County, Maryland.** Extensive cross-sectional measurements made of the Creek.
11. **Mobile Lab Trailer.** Efforts have been initiated to convert one of six trailers to a mobile field laboratory.
12. **Preliminary Sampling of the Approaches of the C & D Canal.** C & D Canal approaches monitored to verify sediment data.
13. **Upper Potomac Intensive Water Quality Sampling.** Sampling to provide essential data to the Upper Potomac Mathematical Model.
14. **Initiation of Mathematical Modeling of Chesapeake Bay.** Modeling utilized extensive data from 5 different Bay monitoring groups collected over 20 years, covering an area from Conowingo Dam to the Ocean.
15. **Completion of Intensive Sampling of Eastern Shore for Preparation of Assessment of Existing Water Quality Reports (305(b)).** Sampling included physical, chemical, bacteriological and biological analysis.
16. **Hart-Miller Island Monitoring.** Routine background data collected and analysis continued (initiated in 1971).
17. **State Dredging Projects.** Monitoring conducted at selected proposed project sites where decisions regarding environmental impact were needed.

The Technical Services Program is comprised of 55 personnel. Total operating expenses for fiscal year 1975 was \$1,363,115. Two significant Federal Grants were received by this program. They are: The Coastal Zone Management Program in the amount of \$280,000 and the

Water Quality Services Monitoring Program which received a portion of the agency's total grant (\$201,679).



Laboratory Services

Instrumental in providing supportive data for most other Water Resources divisions. Laboratory Services are located in Annapolis, Tawes State Building and Western Maryland at Westernport.

Chemical Analyses

Annapolis laboratory	70,105
Western Maryland laboratory	20,634
	Total 90,739

Bacteriological Analyses

Annapolis laboratory	3,567
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HYDROLOGIC SERVICES

The Hydrological Services Section has been directly involved in Flood Control, Sediment and Erosion control and Storm Water Management. In addition, Hydrologic Service projects have included surveys and investigations outlined below:

1. Work has begun with the Subcommittee on Flood Control.
2. Distribution has been made of the stormwater management manual.
3. Anacostia Study — Additional computer work was provided to Maryland-National Capital Park and Planning Commission.
4. Drafted outline for research-demonstration project for stormwater management and soil loss.
5. National Flood Insurance Program — All subdivisions of the State have met their target dates for joining the flood insurance program.

6. Standards and Specifications for sediment control completed.
7. Corps Flood Control Report, Town of Elkton.
8. Lonaconing Water Company — A technical report was prepared describing the Lonaconing system.
9. Review of statement on Cedarville Natural Resource Management Area.
10. Herring Run Study, Gwynns Falls Study, Mattawoman Study, Little Catoctin Study, Susquehanna RBC, Rocky Gap Dam.

COASTAL ZONE MANAGEMENT SECTION AND SPOIL DISPOSAL

The Coastal Zone Management Section is responsible for developing a management program for the Coastal Waters of the State and the adjacent shoreland. The fiscal year projects have included:

1. Establishing the inland coastal boundaries with the exception of Baltimore City and the urbanized portions of Baltimore, Harford and Anne Arundel Counties.
2. Adopting a conceptual approach to determine permissible uses and critical areas.
3. Completing phase I "Recreational Boating Needs and Carrying Capacity Study". Initiated work on phase II.
4. Wetland Study: refining and expanding information on the State's wetlands.
5. Archeological Resources Management Study, identifying all available information and identifying archeological sites.
6. Shore Erosion Mapping Study.
7. Study of Inland Natural Areas in Maryland's Coastal Zone.
8. Extensive public participation activities involving various programs and presentations.

9. Estuarine and Marine Sanctuaries Program.
10. Offshore Resources Evaluation and Studies.
11. Dredging, Channelization and Disposal of Materials; investigation of open water disposal operation.
12. Ocean Dumping Permits Review Program.

REPORTS/PAPERS PREPARED BY WATER RESOURCES ADMINISTRATION STAFF

1. Water Supply Management Program for the State of Maryland. Staff report, Oct. 1975.
2. "Report to the Legislative Council, Disposal of Hazardous and Industrial Wastes in Maryland," Oct. 1975.
3. "Designing Stable Stream Systems in an Urban Environment," presented at the American Society of Agricultural Engineers, Chicago, December 1975.
4. "Enforcement Requires Education," presented at the American Society of Agricultural Engineers, Chicago, December 1975.
5. "Urban Sediment Control Design Criteria and Procedures, presented at the American Society of Agricultural Engineers, Chicago, December 1975.
6. "Resources Identification Study For the Anacostia River Basin, presented at the North Atlantic Region of ASAE Annual Meeting, Ithaca, New York, August, 1975.
7. Unconfined Aquifer Test in Atlantic Coastal Plain Sediments, presentation at the American Geophysical Union spring meeting, Washington, D.C., June, 1975.
8. "Maryland's Experience In Oil Spill Prevention and Control", presentation at the National Conference on Control of Hazardous Material Spills, San Francisco, California, March, 1975.

Fisheries Administration



The western part of this county differs much from the lower part; the face of the country being more elevated, the climate colder, the water clear and cold, and in all the considerable streams trout are found in abundance.

The Fisheries Administration is responsible for all aspects of the preservation, enhancement, development, and use of all of Maryland's fishery resources. Management programs are carried out for both finfish and shellfish populations and for both sport fishing and commercial fishing interests. Administrative functions and collection of fisheries statistics are also carried out by this program.

FINFISH MORTALITY

The staff investigated a total of fifty fish kills in Fiscal 1975. There were 32 kills in tidal waters, 10 mortalities in flowing streams and 8 kills in ponds. This compares to a Fiscal 1974 total of 20 fish kills; 8 in tidal waters, 6 in streams and 6 in ponds.

A major oil spill in tidal Spesutie Narrows and the introduction of highly chlorinated raw sewage to the flowing Hawlings River each required in excess of 100 man-hours to complete field investigations.

Investigations of an unprecedented number of major fish kills (4, totaling 101 million juvenile menhaden and 80,000 white perch) in Back River this year concluded that the fish died from anoxia associated with the discharge from the Back River Wastewater Treatment Plant. As a result of the mortality investigations, a redesign of the treatment and discharge is anticipated.

A contingency force to remove dead fish has been formed cooperatively between Baltimore City and Baltimore County agencies.

Reparations of \$924.71 have been paid for fisheries losses resulting from four mortalities in Fiscal 1975. Reparations from other kills are pending.

An agreement for diagnostic work with the Southeastern Cooperative Fish Disease project at Auburn University is funded 75% by Dingell-Johnson Federal money and 25% from State special funds. The total cost of the Fiscal 1975 agreement was \$7,160.

Research at the University of Maryland, School of Medicine to determine the clinical symptoms of fish subjected to acute and chronic levels of pollution is also supported by 75% Dingell-Johnson Federal money and 25% State special funds. The total cost of this research for Fiscal 1975 was \$38,400.

CHANNELIZATION EVALUATION

This project seeks to determine the effects of agriculture channelization on the aquatic resources in small streams on the eastern shore of Maryland. Specific areas of investigation include physical and chemical alterations, benthic organisms, detrital input, organic and in-organic suspended solids, terrestrial and aquatic plant survey, and fish population survey. The evaluation team helped draft mitigation measures on the channelization of Adams-Reed, Marsh Farms, Dividing Creek, and Middle Branch streams.

Staff includes three professionals, two holding masters degrees in Fishery Biology.

Budget is \$66,520 of which 75% are Federal Funds and 25% General funds, State of Maryland.

SHELLFISH PROGRAM

Oyster Propagation. This is the largest project of the Shellfish Program. Primary activities include the planting of oyster seed and shells, sampling the oyster population to determine growth, condition, and population density of the oysters.

Personnel from the oyster project work on the Bay Bottom Survey currently surveying the tidal waters to determine the location and boundaries of the oyster and clam bars.

Blue Crab. Monitoring the arrival and movements of the crab population. From such activities predictions as to abundance and expected harvest are prepared.

Soft Clam. The surveying of clamming areas to determine the extent of the harvestable resource is the primary task of this project. Personnel from this project also assist on the bottom survey.

Hard Clam. The planting of seed clams and monitoring their growth and eventual harvest is the task of this project.

Marine Animal Disease Investigation. The primary task is to monitor clams and oysters for indications of disease that could cause extensive or localized mortalities of the resource. Should such diseases be identified it is often possible to take managerial steps to minimize effects.

1975 Catch

Catch	Amount	Dockside Value
Oysters	2,560,796.79 bushels	\$11,667,379.93
Crabs		
Hard	24,622,709 lbs.	4,054,666.00
Soft & Peelers	1,827,487 lbs.	1,030,502.00
Clams		
Soft	2,097,680 lbs.	1,779,000.00
Hard	46,424 lbs.	29,945.00

Budget

Source — Fisheries Research and Development	
	\$1,997,369
Federal Funds	\$ 147,735
	\$2,145,104

ESTUARINE FINFISH PROGRAM

The Estuarine finfish program provides information necessary for tidewater finfish management . . . resident species, anadromous species and marine species. Work includes: Annual survey of estuarine fish populations, pilot work and operation of striped bass hatchery, fish spawning surveys, technical assistance for the construction of fishways and other structures affecting fish populations and power plant siting activities.

Inventory of anadromous and other species, spawning runs and areas for all fluvial waters. Determine deterrence to fish passage and the reproduction cycle such as stream blockages, pollution, and alteration.

Document and refer stream conditions needing mitigation or removal.

Harvest studies of finfish species.

Environmental review of the impact of construction and development activities on the resource.

Staff personnel include 14 members holding 13 degrees in fields relating to natural resource management. Six summer technical assistants are usually employed.

The budget is from several funds and by project they are:

Marine Finfish (Special)	\$ 56,809
Anadromous Fish (Special and Federal)	\$125,524
Resident Finfish (General)	\$ 65,098

Maryland has 1.6 million acres of tidal estuarine habitat and borders the Atlantic Ocean. The finfish populations dependent upon these waters have a tremendous impact on Maryland's and other Atlantic Coastal State's economy and recreational activities. Maryland issued 2,914 commercial finfish licenses, 904,000 people who participated in recreational fishing in Maryland

tidewater. Fisheries management activities in Maryland affect 10,850,000 people who fish for finfish outside of Maryland in coastal waters. *For example, 92% of the striped bass which spawn in Maryland are harvested outside of Maryland waters.*

Fishing expenditures generate \$35.00 per day/participant. Therefore, the economic impact of fishing for tidal species exceeds \$350 million in Maryland and \$4 billion on a coastal basis. The Maryland commercial fin fishery harvest was valued at \$2,417,954 in 1973 which calculates to an annual economic value of 12 million dollars in the form of food for human consumption. The economic impact of angling for finfish produced in Maryland can thus be assigned an annual value greater than \$4,362,000,000.

COLD WATER FISHERIES

Trout Stocking

Catchable Size 180,000

Fingerling 200,000

(During fiscal 1975 there was a slight decline in the number of catchable size trout stocked due to construction at the Albert M. Powell State Trout Hatchery which temporarily reduced its production capability.)

Stream Survey Project

Approximately 100 streams representing 9 watersheds within Baltimore and Montgomery Counties were surveyed relative to their potential for use with the trout program. A Federal Aid Report of this work is now being prepared.

Staff includes nineteen persons: two biologists, seven conservation associates, one conservation aide and seven full and part time laborers.

Budget derives from Special and Federal funds totalling \$248,160.

WARMWATER FISHERIES

The Maryland Warmwater Fisheries Program is responsible for the management of inland fishery resources in all streams, rivers, ponds, lakes and canals, publicly or privately owned, extending to the tidal boundaries, designated by law.

Fourteen persons in this program includes four biologists. During FY 75, Maryland had over 140,000 licensed anglers fishing in 49,993 surface acres of non-tidal fresh fishable water. Included as part of this figure are 26,196 surface acres of fishable non-tidal streams and rivers. An estimate of total production of these non-tidal waters has been calculated to be 10.7 million pounds.

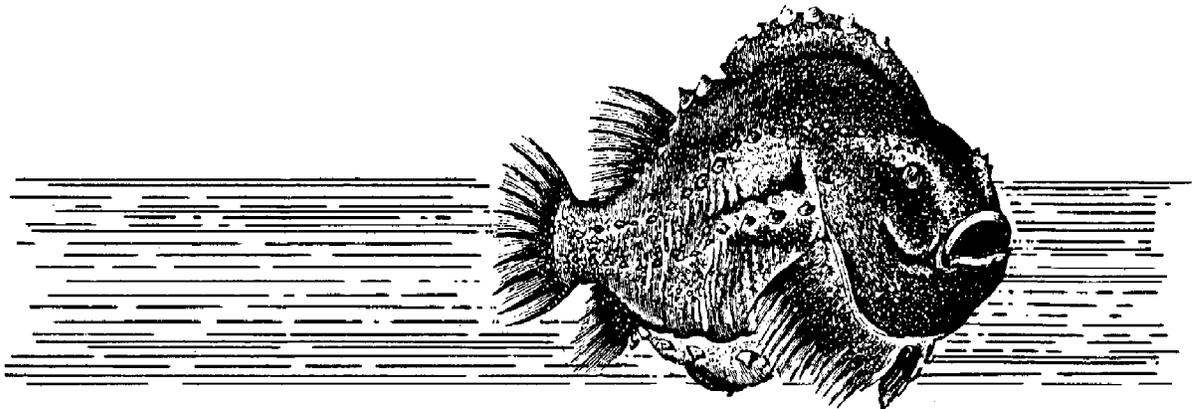
Special fund monies generated from the sale of freshwater fishing licenses were \$560,373 in FY 74. These funds are divided equally between the Warmwater and Coldwater Fisheries Programs. The approved FY 1975 budget for Warmwater Fisheries was \$259,820. In addition, this program receives Federal Funds for reimbursement of special funds monies which have been used for fishery surveys, inventories and development activities.

Fish Stocking FY 75

Age	Species	Numbers
Adults	Channel Catfish	22,000
Fingerling	Largemouth Bass	60,000
Fingerling	Bluegill Sunfish	300,000
Fingerling	Redear Sunfish	20,000
Fingerling	Channel Catfish	15,000
Advanced Fingerling	Largemouth Bass	10,000
	TOTAL	457,000

Federal Aid Projects

- Potomac River Study
- Deep Creek Lake Walleye Study
- Warmwater Fishery Investigations
- Warmwater Fishery Development



Wildlife Administration



Here we were in the place I had so long been looking for with so much anxiety; and I must say that what my uncle had told me as a truth was fully realized; for the country abounded with deer, bears, panthers, wolves, wild cats, catamounts, wild turkeys, foxes, rabbits, pheasants, partridges, wild bees, and in all the streams trout without number.

October being the beginning of the hunting season, my uncle commenced his task of laying in the winter's provisions; some days he would hunt for deer, other days for bees; . . .

The Wildlife Administration's goal is "the maintenance of sufficient wildlife populations to meet the demands of wildlife oriented recreation and to ensure the continued survival of all wildlife species in the State".

Program objectives have been adopted which identify the public use of the wildlife resources and the condition of wildlife populations in the State. These include:

Evaluation of public demand for wildlife oriented recreation — based on projections from previous years' license sales, annual hunter survey questionnaire and public input solicited at regional hearings.

Evaluation of wildlife population harvest parameters — based on hunter survey data and population studies by program biologists.

Evaluation of environmental factors affecting wildlife populations status — including habitat conditions, population, health and weather conditions.

Promulgation of rules and regulations controlling wildlife harvest — including methods, location, timing, and extent of harvest.

Application of scientific management techniques to State-owned Wildlife Management Areas — including technical assistance on request to private and institutional land owners.

Acquisition and management of land for wildlife oriented recreation purposes — including other purposes such as protection of watershed and endangered species habitat, and preservation of open space.

Conduct of wildlife research — in such areas as impact of lead shot on waterfowl, muskrat food habits, etc. — is carried out through the activities of the program directors and is frequently coordinated with federal agencies and university researchers.

Information and education services — are provided to the public through onsite technical assistance to landowners, dissemination of research reports and open discussion at public hearings.

To achieve the objectives listed, the Wildlife

Administration conducts activities in the seven projects listed below:

1. Forest Wildlife. The Forest Wildlife section continued gathering population dynamics data for deer and turkey. It also continued two grouse studies that were started in 1974. Maryland hunters have been instrumental in gathering data for us by providing a record of their hunting experiences. The annual segments of these studies have been successfully completed.

2. Upland Wildlife. The Upland Wildlife section has completed the annual segments of studies aimed at determining population status for mourning doves, woodcock, rabbits, quail and pheasants. This is the second year of a woodcock banding study which has been in operation at the Millington Wildlife Management Area. The study is aimed at determining harvest rates, sex and age ratios and hunter's success. A total of 110 woodcock were banded during the year.-This is an exceptionally high rate of capture considering the elusiveness of the woodcock and the small work crew.

Another significant change has been made in the analysis of the hunter mail survey. This was done to give the Administration personnel an indepth view of past and present trends in the number of hunters hunting, the amount of effort expended and the numbers of animals harvested.

3. Waterfowl Management. Of the 18 individual studies and surveys conducted by the Waterfowl Mangement section there have been significant new data generated in the following:

The Canada Goose Inventory showed that goose numbers declined slightly as a result of below average production on the nesting grounds.

In the Winter Waterfowl Inventory it was discovered that total waterfowl increased slightly in January of 1975, in comparison to January of 1974. That was due primarily to increases in some of the diving duck species and Canada Geese. Dabbling ducks, particularly the Black Duck and Mallard decreased markedly in 1975.

The Hunter Performance Survey showed that most Sea Duck hunters tended to concentrate in the Eastern Bay section of the Eastern Shore. Lead shot, with regard to crippling loss, was evaluated in cooperation with the U.S. Fish and Wildlife Service under this study.

The Survey of Estuarine Vegetation (in cooperation with the U.S. Fish and Wildlife Service) showed distribution of submersed plants made significant recoveries in 1974 throughout much of the bay area. High turbidity continued to have serious effects on submersed plants in many areas.

4. Furbearer and Marine Mammal Program. During the year the program has added two new studies, bringing its total to nine. These studies have been undertaken to provide extensive research on the Nutria and Otter to determine population status and value as a fur resource. The other study is aimed at determining the effect of steel leg-hold traps on animals. This was done in response to public concern about the use of steel traps as a method of harvesting animals. In order to examine completely the trapping issue from all sides a committee (The Maryland Trapping Advisory Committee) was established by the Agency during the year.

5. Non-Game and Endangered Species Program. A new survey includes involvement in the Annual Bald Eagle Survey of the Chesapeake Bay. This survey is one which is conducted in cooperation with the U.S. Fish and Wildlife Service.

The program director has been appointed the leader of the Delmarva Fox Squirrel Recovery Team and to membership on the Peregrine Falcon Recovery Team. Both of these appointments were made by the Director of the U.S. Fish and Wildlife Service.

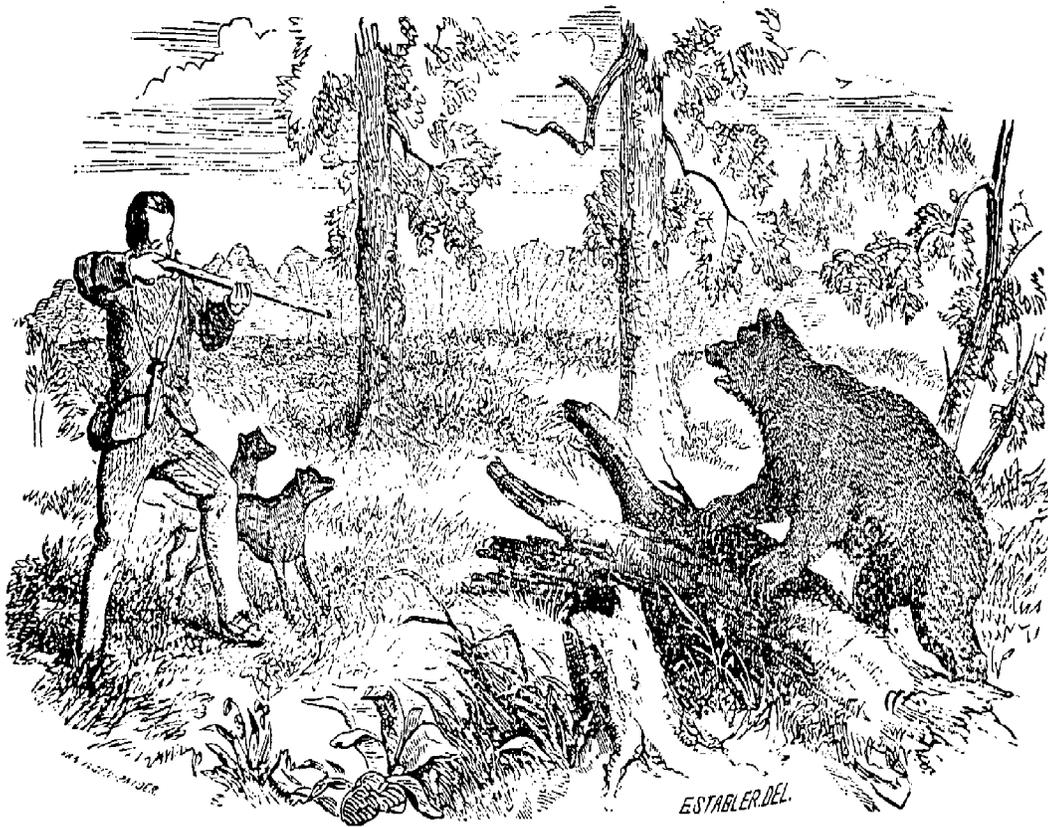
6. Land Management and Technical Services. This program is responsible for developing, maintaining and operating all State-owned and cooperative Wildlife Management Areas, providing a technical advisory service for private land owners

for the enhancement of their properties and relief from nuisance animal species; and for Coordinating the Wildlife Management Field Program with local, state, county, and federal agencies, preparing comprehensive management plans for the systematic development of all wildlife management areas, preparing environmental assessments on proposed public and private projects and providing personnel and equipment pools for temporary assignment to various staff projects.

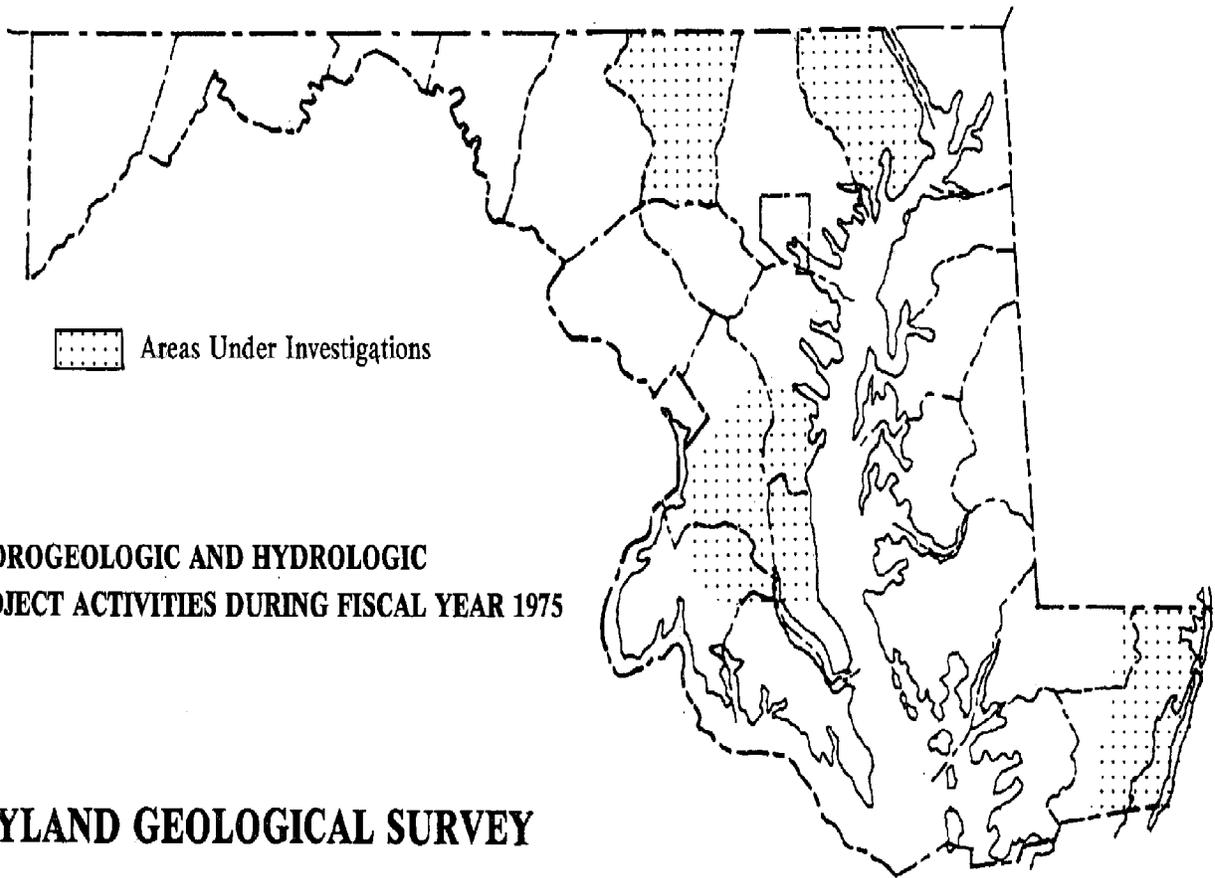
7. The Environmental Review and Resources Planning Program. This new program was added to the Administration's activities this year. The program has as its main goal the environmental assessment of federal, state and local projects and activities, particularly as they impact on wildlife resources of the state. Projects which were reviewed

during the year include:

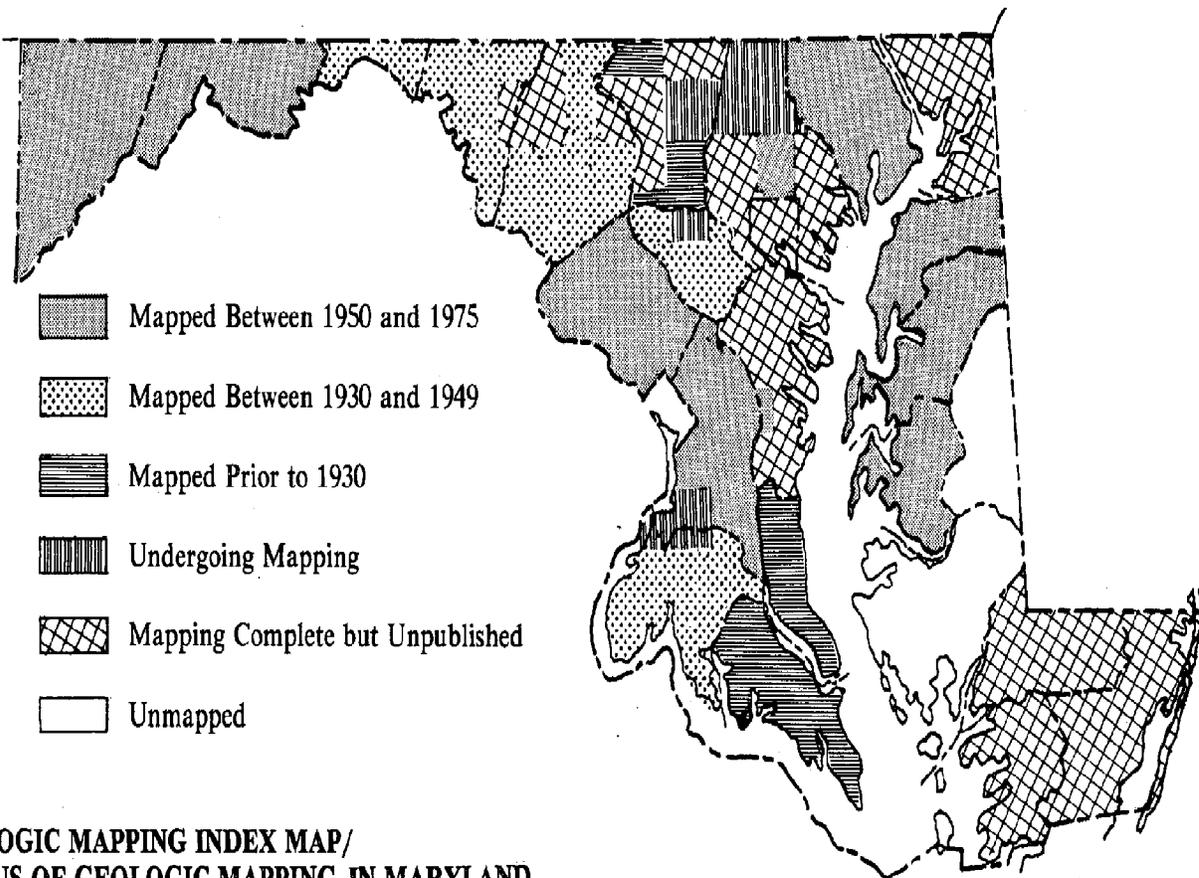
- Approximately 40 highway corridor studies and route assignments.
- Methods of disposal of dredged spoil for shipping channel maintenance in Baltimore Harbor and the Chesapeake and Delaware Canal.
- Design and impact on wildlife of a dike spoil containment area for Hart-Miller Island in Baltimore County.
- A water supply impoundment on Piney Run Creek in Garrett County.
- Location of a sewage treatment plant in the flood plain of Mattawoman Creek in Charles County.
- Impact on wildlife of a nuclear-powered generating plant at Douglas Point, Charles County.



SHOOTING A LARGE BEAR.



MARYLAND GEOLOGICAL SURVEY



Maryland Geological Survey



"By far the largest quantity of iron-ore is found, however, in the coal-fields of the Yough. River and in its tributaries, which lie in the coal-basin. This river cuts through the coal-seams and exposes the raw edges of the coal-beds, and thus makes natural sections of them, which offer great facilities for the examination of this section of the county. These natural sections show the coal-beds which I have mentioned above as existing here, and disclose at the same time very rich and abundant beds of clay iron-stone [carbonate of iron.] . . ."

The mission of the Maryland Geological Survey is to:

1. Conduct topographical, geologic, hydrographic, and geophysical surveys;
2. Prepare topographic, geologic, and other types of maps to meet specific needs;
3. Prepare reports on the extent and character of the State's geology, mineral, and water resources;
4. Supervise provisions relating to the Bureau of Mines;
5. Supervise provisions relating to Archeology; and
6. Investigate and recommend plans and policies for protection of the waterfront of the State against erosion and deposit, and carry into effect plans for development of the waterfront property of the State.

The Survey also supervises a Division of Archeology which was established by the Maryland Archeological Resources Act of 1968. Its purpose is to engage in, sponsor, and coordinate archeological resources, and to disseminate information about the archeology of Maryland.

MGS also supervises the activities enumerated in Title 6, *Oil and Gas*, Title 7, *Mines and Mining*.

The Survey carries out its mission through five programs under the supervision of the General Direction program.

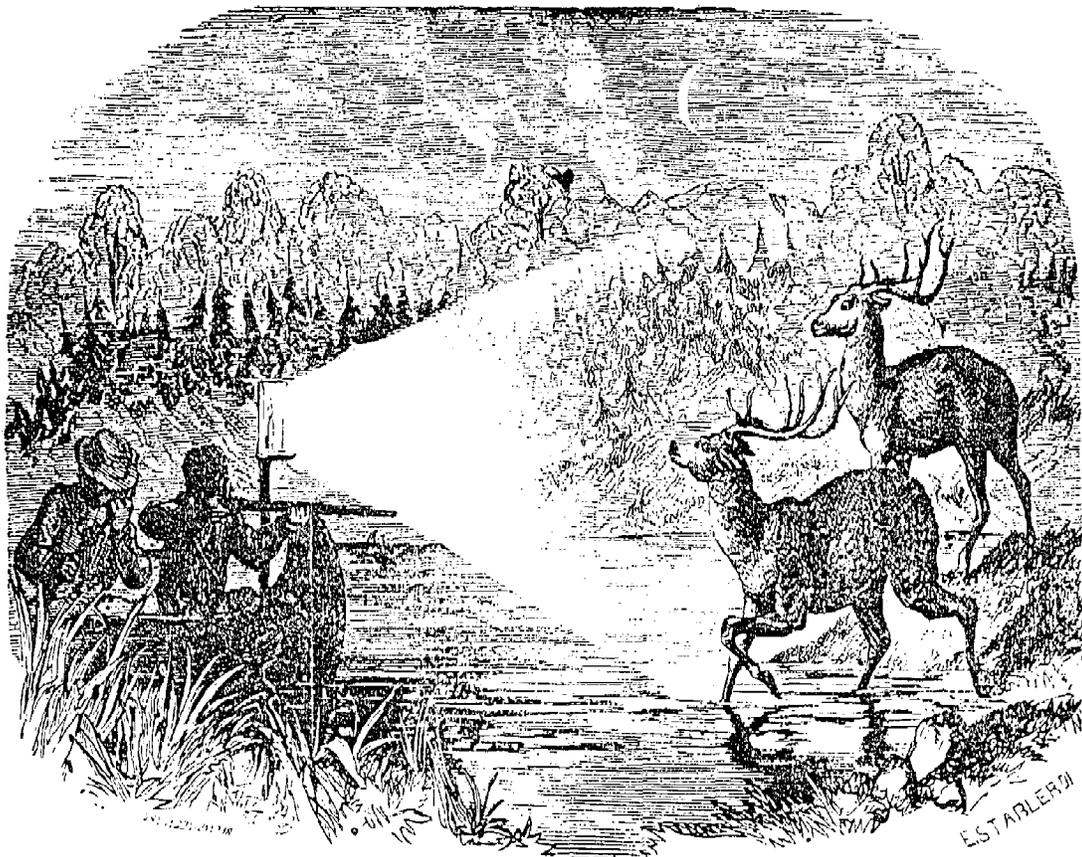
The Bureau of Mines is the only strictly regulatory program of the Survey. The other programs deal with various aspects of scientific investigation, research, and monitoring. The products of these investigations are published as reports and maps which are distributed widely in Maryland, the United States, and many foreign nations.

The Survey is one of the oldest continuously operating units of the Department, having been established in 1896. Throughout its 79 year history, it has been housed on the campus of The Johns Hopkins University.

Through scientific investigation and analysis, the Survey seeks to obtain a better understanding of the State's geology, archeology, water resources and mineral resources; and to apply this knowledge to practical problems related to the earth sciences. Examples of such applications include water supply, water pollution, assuring continuing supply of mineral resources, the many ramifications of land use, the use of the Bay and Bay bottom, shore erosion and shore protection, and the preservation and study of archeology sites threatened by development.

PUBLICATIONS

Publications during the report year include one Report of Investigation, one Information Circular, one Bulletin, three Topographic maps, one Mined Land Inventory and one Atlas.



SHOOTING DEER BY FIRE-LIGHT.—Page 210.

Shooting deer by firelight, a common practice in the days of Meshach Browning, has been illegal since the enactment of conservation laws.



Natural Resources Police

The deer used to come into the creek to drink, and to eat the moss, which grows on the bottom. I would take the canoe up the creek in the evening, and be ready to drift down as soon as the deer entered the water; all the time sitting unobserved under the shade of the bank, though I could in that position see to shoot by the light of the candle.

The concern for Maryland's natural resources that resulted in the creation of the Natural Resources Police Force as it exists today surfaced in the early 19th century. The oyster beds of the northern states had been wiped out and the schooners responsible for that devastation were moving into the Chesapeake Bay and its tributaries.

The Natural Resources Police Force today consists of two operational divisions, (Marine and Inland) and an Administrative Section (General Direction). It is responsible for enforcement of laws and regulations concerning the natural resources of Maryland and for enforcement of the State Boat Act on both tidal and non-tidal waters.

The Marine Division's complement of 137 concentrates its activities on the tidal waters of Maryland, primarily enforcement of conservation laws and regulations and the State Boat Act.

The Inland Division, with a complement of 70, is primarily responsible for laws relating to game, wildfowl and fresh water fisheries.

The Administrative Section plans and provides services for the operational divisions.

The Natural Resources Police Academy, the Aviation Section, and the Maintenance and Supply Section make up *General Direction.*

MARINE DIVISION

Field Enforcement

Arrests:

Conservation	1,616
Boating	2,537

Warnings:

Conservation	400
Boating	3,224

Confiscations	650
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Inspections:

Boat	137,996
Seafood Establishments ...	24,227

Assists	1,456
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In addition 888 man-hours were expended searching for drowning victims.

Investigation Sections

General Investigations:

Boats Stolen	265
Motors Stolen	83
Boats Recovered	82
Motors Recovered	26

Investigations:	
Abandoned Boats	50
Larcenies	31
Miscellaneous	85
Warrants Served	150
Total Cases Closed	308
Accident Investigation:	
Accidents	200
Boats Involved	250
Deaths:	
Drowning	25
Heart Attack	1
Injuries	65
Boating Safety	
Courses distributed by mail	3,550
Courses delivered by	
Department personnel	10,537
Schools using courses	16
Films delivered and used	36

INLAND DIVISION

Field Enforcement	
Phone calls received	53,593
Complaints	2,933
Arrests	2,460
Warnings	411
Assists	654
Search and Recovery	
Operations	7
Investigation Section	
Inspections	160
Special Investigations	32
Aerial Reconnaissance	
Jacklighting	30 hours
Baiting	8 hours
Communications	
Mobile Installations	25
Mobile Repairs	58
Base Repairs	37
Hunter Safety	
Training:	
New Instructors Certified	61
Assistant Instructors	
Certified	3
Maryland Safe Hunters	
Certified	6,416
Attendance at Lecture-	
Demonstrations	8,592

County Workshops	
Conducted	18
Accidents:	
Fatal	3
Non-Fatal	49

GENERAL DIRECTION

Police Academy

Activity	Man-Days	Man-Hours
Recruit Training	1,039	3,312
In-service Training:		
Marine Division	236	1,888
Inland Division	95	760
Miscellaneous:		
Instruction-Ellicott		
City Fire Dept.	1	8
Seminar-conducted		
by Cadets	4	32
TOTAL	1,375	6,000

In addition, the Natural Resources Police Academy Firearms Range was used for 15 days by the Harbor Tunnel Police.

Aviation Section

Total Flights	104
Hours Flown:	
Enforcement:	
Natural Resources Police	69.8
Water Resources	35.0
Search and Rescue	5.8
Service (Photo.,	
Trng. Maint.)	25.8
Other (Survey and	
Photo)	25.2
TOTAL	161.6

Maintenance and Supply

Job Orders Completed	571
Services of Supply Section	
Repair Job Orders	571
Store Requisitions	1,203
Receiving and	
Inspection Reports	155
Supply and Equipment	
Stock Orders	51
Emergency Purchase Orders	616
Out of Schedule	128
General Contracts	71
TOTAL	2,795

ACKNOWLEDGMENT

The Maryland Department of Natural Resources wishes to thank Mr. Charles R. Browning of Raleigh, North Carolina for permission to reprint excerpts and illustrations from "*Forty Four Years in the Life of a Hunter*" Being the Reminiscences of Meshach Browning, A Maryland Hunter Roughly Written Down By Himself. Illustrated by C. Stabler

The facilities and services of the Department of Natural Resources are available to all without regard to race, color, religion, sex, age, national origin, physical or mental disability.

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