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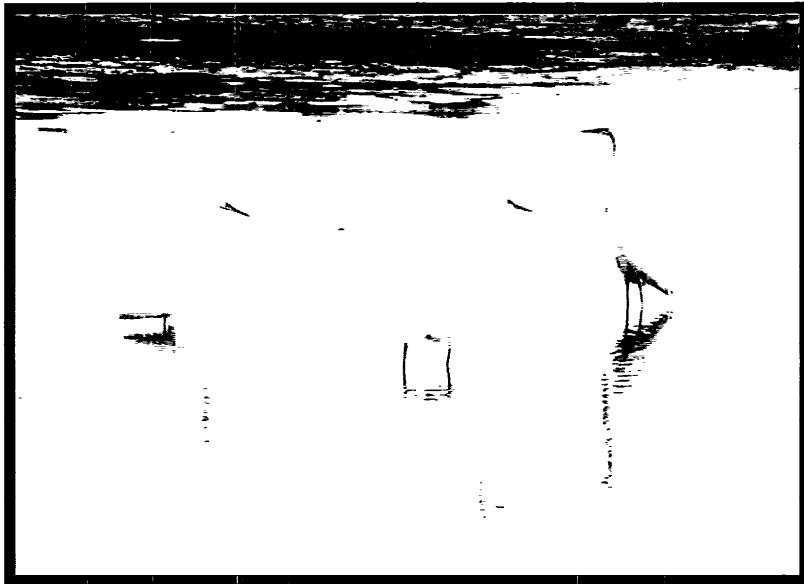
*Managing the protection, enhancement
and balanced use of our natural resources
for present and future generations*

A *FY '94*
ANNUAL
REPORT

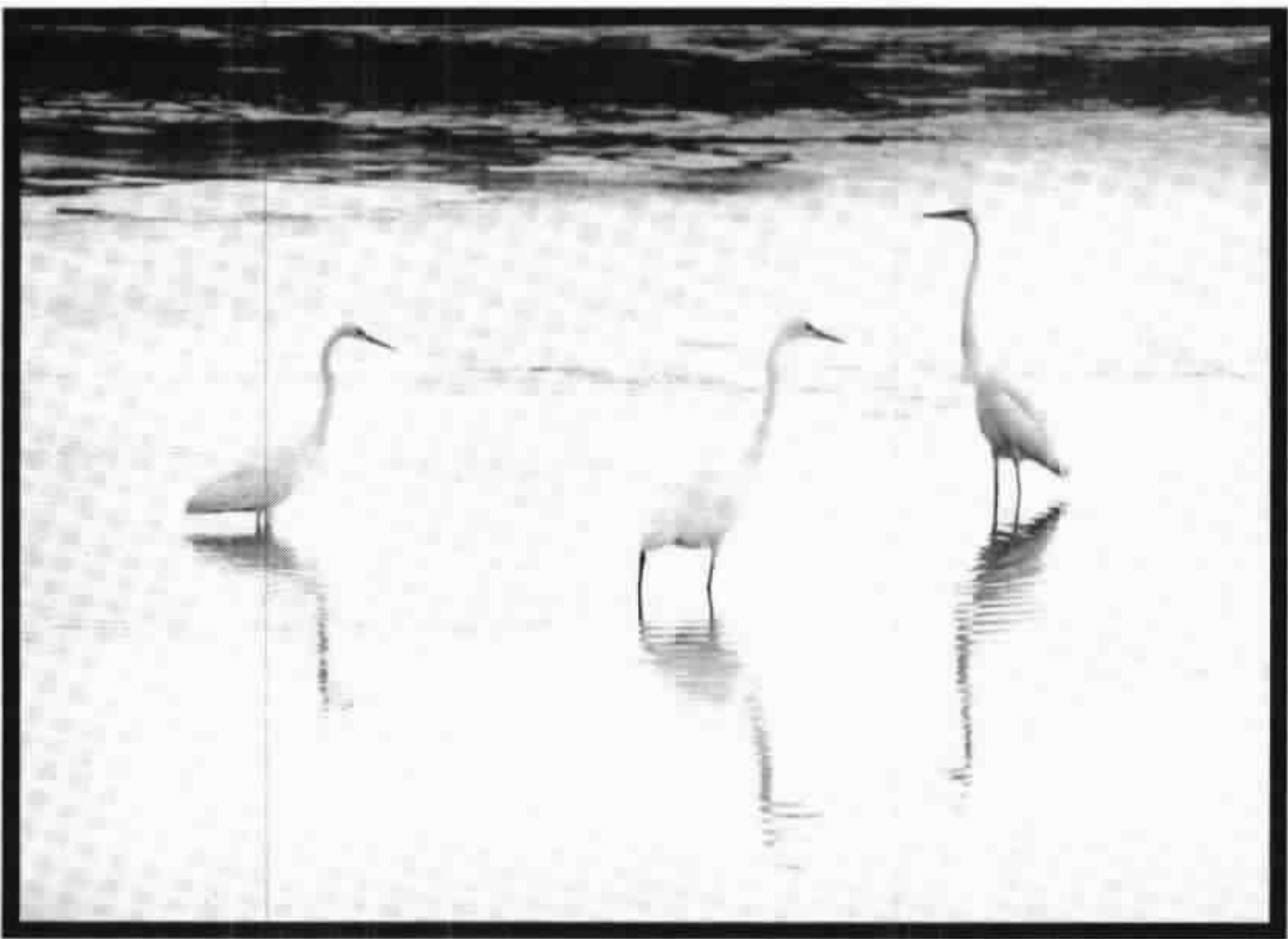
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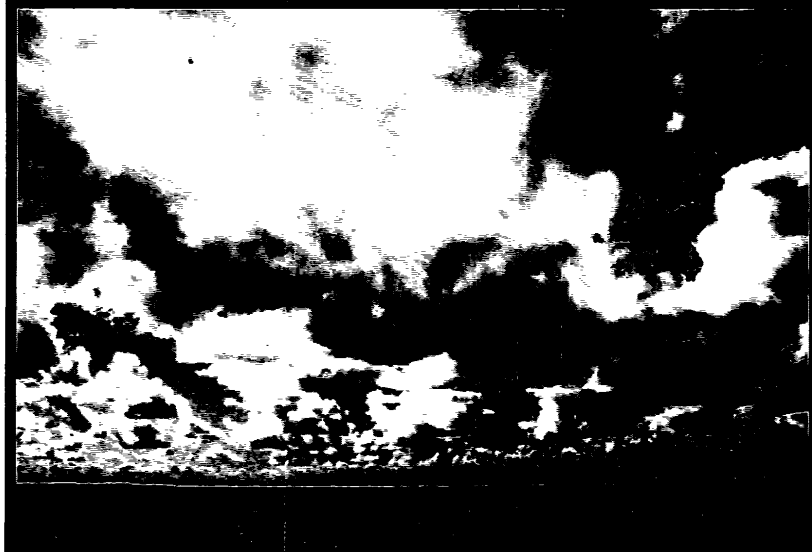
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This review of the Maryland Department of Natural Resources for Fiscal Year 1994 provides highlights of the many significant activities and functions of the agency. DNR is tasked with the management and wise use of natural resources in Maryland. The accomplishments noted in this report were achieved in partnership with a dedicated staff, environmentally aware citizens, a concerned business community and legislative support. We all need to work together to continue these efforts for preservation and prudent use of our natural resources.



WATER *in the*



Maryland's most important natural resource is the Chesapeake Bay watershed. DNR strives to manage the wise use of the waters and the ecosystems they support.

❖ A healthy ecosystem should have a diverse and abundant biological community. The Habitat Impacts Program has been working since 1988 to develop and test measures of biotic and habitat integrity. In 1994, the water quality and the quantity and kinds of fish present were monitored at 48 stations in 11 tidal tributaries.

❖ With oyster community restoration emphasized, 20 Chesapeake Bay reef structures have been developed encompassing 4,550 acres. Four major Atlantic Ocean reef sites have been developed to provide habitat for aquatic resources.

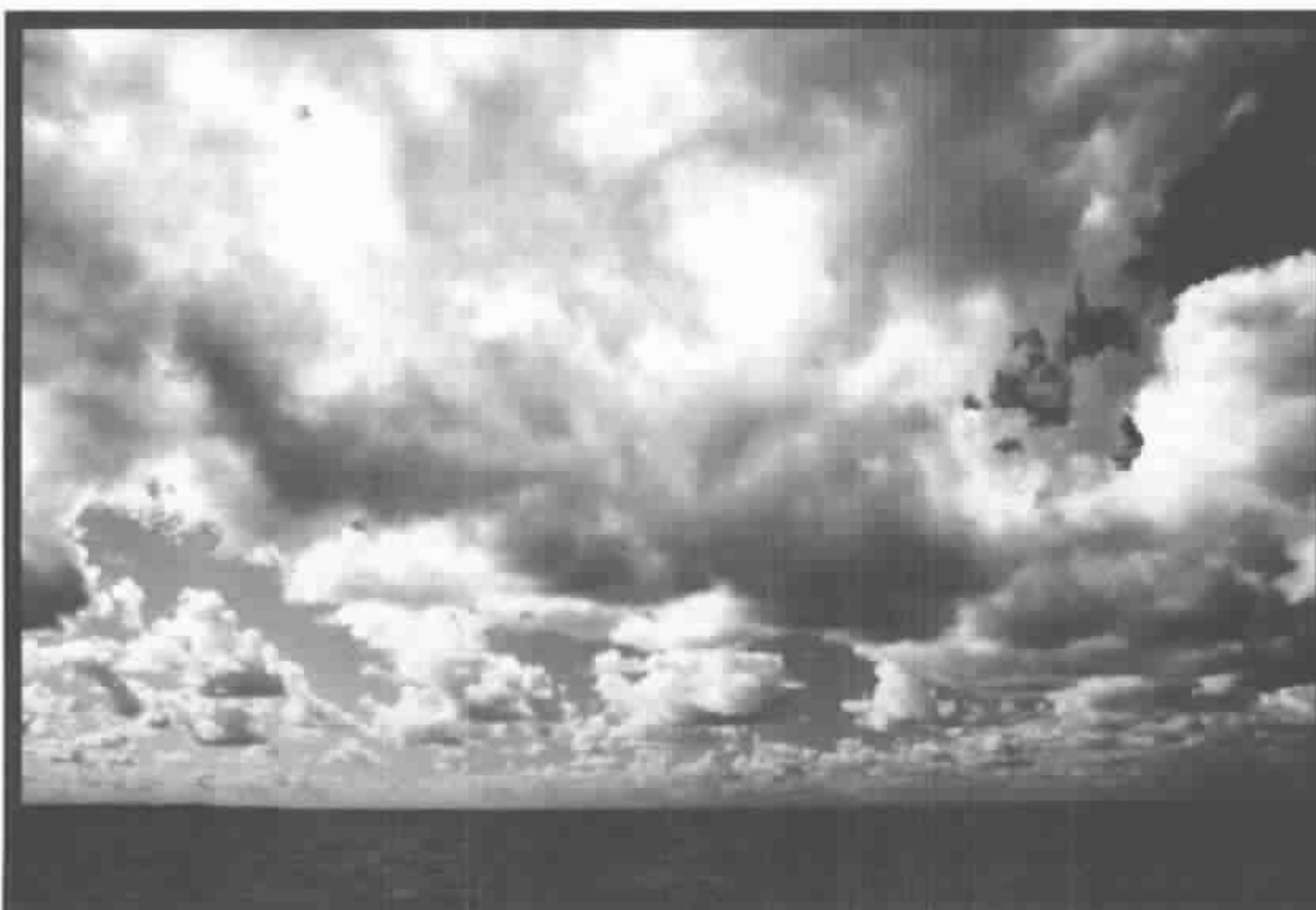
❖ The striped bass hatchery program, a cooperative effort with the U.S. Fish and Wildlife Service, Potomac Electric Company and Delmarva Electric Power Company, collected hatchery-spawned wild striped bass from the Nanticoke River and returned 250,000 fingerlings to their natal waters. These young striped bass joined 7 million hatchery-grown striped bass released baywide since 1985. The production and release of hatchery-grown striped bass has doubled the number of rockfish now reproducing in the Patuxent River.

❖ The development of new artificial spawning techniques for American shad, with assistance from the University of Maryland Center of Marine Biotechnology and innovative culture procedures with the Potomac Electric Company, resulted in the production and release of 104,000 juvenile shad in the Patuxent River.

❖ In a cooperative effort with the Susquehanna River Anadromous Fish Restoration Committee to assist in the restoration of American shad, 1.3 million young shad were hatched and marked by standard procedures and released in the Susquehanna River.

❖ The aquaculture program administers approximately 200 commercial aquaculture permits and private oyster bottom leases covering 9,000 acres of bay bottom. These enterprises are monitored to protect wild natural resources and consulting assistance is provided to private growers for producing aquaculture products.

❖ The commercial summer flounder catch was monitored on a weekly basis and the season was closed when the quota was



reached. Work began on management plans for black sea bass, tautog, Spanish mackerel, king mackerel and horseshoe crabs. An interstate workshop on spot and croaker biology and management produced a document to reevaluate coastal and bay management plans.

❖ More than 2.5 million bushels of dredged oyster shells were planted on 168 acres for state oyster seed production. Another 50,000 bushels were planted on 6 acres to produce seed for sale to private leaseholders.

❖ Since the initial participation in the Chesapeake Bay Program's Exotic Species Workgroup, DNR has been extensively involved in zebra mussel monitoring, education and outreach. While monitoring activities were begun in 1992 with a cooperative statewide effort involving both the public and private sector, to date no zebra mussels have been found in Maryland waters.

❖ DNR staff participated in the regional policy development for non-indigenous aquatic species control in the Chesapeake Bay basin. Adopted by all jurisdictions except New York, the policy provides for a technical panel to consider risks and benefits of introduction and then make recommendations to the Bay Program's Exotic Species Workgroup. The regional policy also requests an evaluation of ship ballast water as an entry route for non-indigenous aquatic species into the bay.

❖ The research vessel *Discovery* logged more than 800 hours of operation in support of scientific investigations for the Departments of Natural Resources and Environment.

❖ Approximately 66 stream barriers have been identified that prevent migratory fish from reaching their historic spawning habitat. To date, 28 barriers have been removed or bypassed with the installation of fishways. The 20 fishways constructed since 1987 have opened more than 126 miles of historic spawning and nursery habitat.

❖ The Estuarine and Marine Fisheries Program assessed the status of weakfish, striped bass, American shad, spot, Atlan-

tic croaker and summer flounder on Maryland's Atlantic Coast, aiding coastal management of these species. A workshop providing an assessment of spot and Atlantic croaker originated from this program as did development of Maryland's Blue Crab Management Initiative.

❖ Technical reports on white perch juvenile indices, status of the blue crab peeler and soft crab fishery, and crab pot escape panels were prepared. A strategy was developed to mitigate effects of a proposed power plant on the Nanticoke River. A combined DNR and power company hatchery project would replace striped bass lost and restore American shad. Habitat would be restored and preserved through a mitigation fund dedicated to the Nanticoke River. A cost-effective method of rapidly assessing striped bass spawning stock was developed and published.

❖ Fish abundance in the coastal bays was poor during 1993 but rebounded by July 1994. Fish samples during July 1994 were reminiscent of the 1970s, with increases in juvenile flounder, weakfish and Atlantic croaker. Aquatic habitat evaluations near proposed or existing waterfront developments encouraged habitat-compatible development. Coastal bay data is being indexed and this index may assist in minimizing habitat degradation.

❖ Monitoring spring fisheries of yellow perch, white perch, and white and channel catfish indicated substantial fishing pressure during their spawning seasons. A significant proportion of their populations was larger, sexually mature fish, indicating overall mortality was not excessive. Samples of summer flounder, weakfish and bluefish in the lower bay reflected the depleted status of these stocks. Most of these ocean migrants were in the youngest age classes; few older fish were present, reflecting high fishing mortality inflicted by intense coastal fishing. Sizes of spot indicated that fish were sexually mature before significant harvest began. Atlantic croaker fishing was dominated by the presence of the highly successful 1991 year-class.

❖ Crab sampling during 1993 and through July indicated an increase since 1992. Average catch of sublegal and legal crabs



DNR's TIDEWATER ADMINISTRATION evaluates, protects and manages aquatic resources through programs including: Chesapeake Bay research and monitoring; coastal zone, watershed and fisheries management; and the review of land use and power plant impacts.





in May and June trawls was slightly less than in 1993, but was within a normal range. The mature crab index is strongly related to commercial landings. A crab mortality index, developed with 1989-1994 data, indicated that mortality was not significantly higher in 1993 or early 1994 than any other year except 1989. A winter dredge survey sampled 1,200 sites during December-March. Abundance was greater than the previous survey. Data are being used with the Crab Management Initiatives.

❖ The Chesapeake Bay American shad fishery remained closed. The spawning American shad population was estimated to be approximately 48,000 during 1993, a 55 percent decrease from the previous year's estimate and a sharp reversal of the sustained population growth evident during 1985-1991. Fortunately, the June estimate rose to nearly 130,000 fish. Adult mortality rates have been relatively high in recent years. Decreasing population estimates and increasing mortality rates have been noted in other American shad stocks along the Atlantic coast. A few juvenile American shad were collected in the upper bay; none was from hatchery stock. American shad spawners were scarce in the Nanticoke River, but alewife and blueback herring spawners appeared in moderate numbers. Relative juvenile alewife abundance has increased in other bay spawning systems, while blueback herring abundance is unchanged.

❖ A dominant striped bass year-class was produced. Maryland's juvenile index was 39.8, highest in the time series and first year-class of this magnitude since 1970. Occasional strong year-classes are essential for the striped bass population to persist. Other anadromous species were at or near record juvenile indices during 1993 including, white perch, blueback and alewife herring, yellow perch, hickory shad and American shad.

❖ Adult striped bass monitoring indicates the stock continues to build. Chesapeake Bay striped bass abundance increased, as did the number of age-classes in the stock. Fishing mortality due to Maryland's 1.5 million-pound harvest was at half

the target rate. Approximately 7,000 striped bass were tagged to estimate population size and determine fishing mortality and migration rates.

❖ Fishery management plans (FMPs) were prepared for horseshoe crabs and Spanish and king mackerel. The blue crab and oyster FMPs were reviewed and revised. Since the 1987 Chesapeake Bay Agreement signing, 13 plans have been completed for 19 species.

❖ The management recommendations for horseshoe crabs were to conduct a spawning stock census in the Chesapeake region; improve collection of commercial and medical harvest statistics; and define and protect spawning areas.

❖ The oyster FMP was revised to incorporate Maryland Oyster Roundtable and Virginia Holton Plan recommendations to coordinate and direct baywide efforts for habitat restoration and disease management.

❖ The revised blue crab FMP limits and monitors effort in the commercial and recreational blue crab fisheries, reduces wasteful harvesting practices, and continues addressing stock assessment and research needs.

❖ Atlantic Coastal Fisheries Cooperative Management Act passage requires that Maryland implement recommendations of the Atlantic States Marine Fisheries Commission (ASMFC) for migratory finfish. These coastal management measures, coordinated with Chesapeake Bay FMPs, included reducing weakfish fishing mortality by 25 percent, quota systems for managing summer flounder recreational and commercial fisheries and the bluefish commercial fishery, and compatible size and creel limits for king and Spanish mackerel.

❖ Approximately 275,550 adult rainbow and 45,000 adult brown trout were stocked into a total of 230 miles in 55 streams and 6,000 acres of 51 impoundments to provide a high catch rate for the put-and-take trout fishery. In addition, 265,400 fingerling rainbow, 43,000 fingerling brown, and



DNR's BOATING ADMINISTRATION fosters the protection, enhancement and balanced use of Maryland's waterways and shorelines to insure access, control erosion and promote a cleaner and safer environment for boating interests and the general public.



21,600 fingerling cutthroat were stocked in support of a high quality put-and-grow trout fishery.

❖ The following quantities of warm water and cool water fish species were stocked in Maryland waters during FY94:

SPECIES	SIZE	NUMBERS
Largemouth bass	spring fingerlings	311,700
Largemouth bass	fall fingerlings	11,500
Smallmouth bass	spring fingerlings	145,900
Walleye	fingerlings	79,100
Bluegill	fingerlings	230,000
Striped bass	fingerlings	600
Tiger musky	fingerlings	4,000
Redear sunfish	fingerlings	27,000

❖ To provide for a diversified trout fishery, 816 miles of 130 streams are managed as natural trout streams. Populations are maintained by natural reproduction; no stocking is done.

❖ The tidal largemouth bass project continued with population studies on the Pocomoke, Chester, Patuxent and Potomac Rivers; behavior of displaced largemouth bass using radio tags and streamer tags; a bass habitat enhancement study using nesting boxes on the Nanticoke River; and a creel census on the Choptank River. The studies' results will be applied to management programs for improving or preserving tidal water largemouth bass fisheries including stocking, harvest regulations and habitat improvement.

❖ Mettiki Coal Corp. and DNR entered into a cooperative agreement to construct an innovative trout-rearing facility in Mettiki's acid mine drainage treatment plant discharge. This joint venture has about 27,000 brown and rainbow trout and 6,000 cutthroat trout in various stages of development.

❖ Highlights of the North Branch Potomac River Restoration Project were: the continuation of annual trout population surveys; stocking of trout in the North Branch above Jennings Randolph Lake for the first time; reintroduction of

largemouth bass in the river above Cumberland; and increasing the fishing opportunities on the North Branch by creating a catch-and-release area below Blue Hole and a delayed harvest fishing area and put-and-take area above Jennings Randolph Lake. Native brook trout and wild brown trout and stocked rainbow and cutthroat trout were collected in the catch-and-return area below Blue Hole. Several spawning areas, known as redds, were observed being constructed by brown trout in this area.

❖ A major restoration effort was the creation of the North Branch Potomac River Task Force, a cooperative agreement between Maryland and West Virginia as well as the Interstate Commission on the Potomac River Basin, which directed the task force to work toward creating a world-class trout fishery, along with recreational industries in the watershed. One of the Task Force's first accomplishments was a strategic plan for improving the water quality, approved by both states, titled, "Flowing to the Future."

❖ The Boating Administration's Planning & Policy Program funded and participated in a study to determine turbidity effects of boating on submerged aquatic vegetation with the University of Maryland's Horn Point Laboratory.

❖ Boating's Waterway Improvement Program maintains 4,267 regulatory buoys, aids to navigation, pound net and oyster bar markers in Maryland waters.

❖ Biological, water quality and habitat conditions were evaluated at 40 randomly selected nontidal stream sites in the Patuxent River basin, part of the Environmental Protection Agency-sponsored Patuxent Estuary Demonstration Project. Also, 69 sites were sampled for fish species diversity. Following implementation of best management practices for stormwater runoff control, DNR monitored 11 stream sites. In the tidal freshwater portion of the mainstem Patuxent River and in several tidal tributaries, submerged aquatic vegetation was quantitatively sampled at 58 stations.

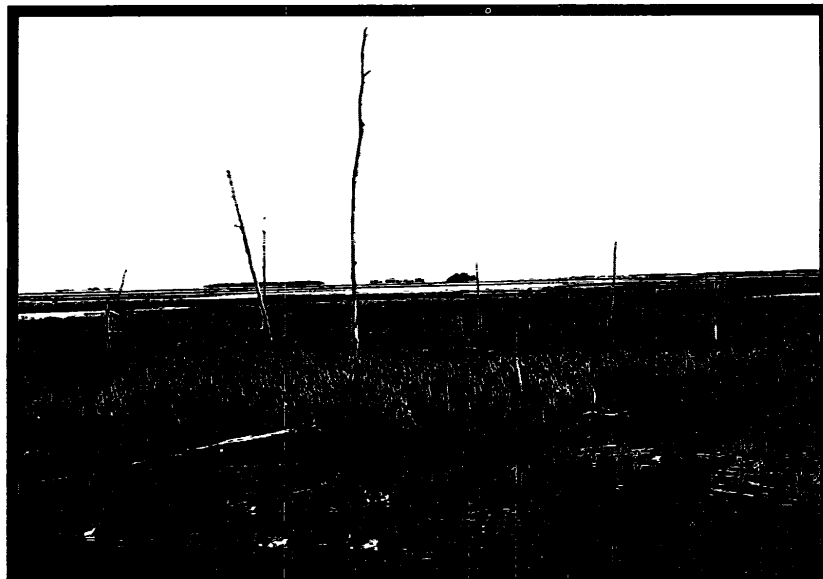


DNR's FRESHWATER FISHERIES DIVISION works to preserve and enhance the state's tidal and nontidal freshwater fishery resources, while providing varied fishing opportunities for anglers of all ages.





WHERE LAND *and* WATER MEET



The meeting of water and land—the critical area of shoreline—plays a strategic role for the habitat and health of the estuary.

❖ The Green Shores Buffer Incentive Program helped private landowners create more than 161 acres of buffer on property adjacent to streams or other bodies of water.

❖ The Chesapeake Bay Critical Area Commission (CAC) reviewed 750 local jurisdictional development proposals to ensure uniformity and consistency, and issued comments on 358 projects. CAC reviewed 27 development projects sponsored by agencies not subject to approval by local jurisdictions, and obtained compliance in excess of the minimum legal criteria. Critical Area Commission planners also conducted four-year comprehensive reviews of 13 jurisdictions' critical area plans. Five such plans won CAC approval.

❖ The CAC noted appeals from decisions of local authorities in two cases, and was named a defendant in one lawsuit. Two appeals or matters concerning the CAC were either closed or

settled in favor of the Commission. The court system has uniformly upheld the CAC on appeal.

❖ The Coastal Zone Management Program (CZMP) received approximately \$2.5 million in federal funds and awarded 30 grants for habitat and resource protection, water quality management, mapping, boating and growth management.

❖ CZMP continued its active involvement with other state agencies in the development of watershed-based plans to reduce nutrient pollution reaching the Chesapeake Bay. These "tributary strategies" were developed in consultation with state and local governments and were presented at public meetings. Teams are being formed whose membership will reflect the diverse land uses and economy of its watershed. To determine and describe their complete ecological status, the Biological Assessments Program continues to conduct the



Maryland's CHESAPEAKE BAY CRITICAL AREA COMMISSION, an independent agency housed within DNR, oversees development plans affecting the 1,000-foot bay and tidal tributary shorelines.



Maryland Biological Stream Survey. In the Youghiogheny, Patuxent, Potomac (around the Washington metropolitan area), western Chesapeake, lower Susquehanna, Choptank, and Pocomoke basins, 675 stream miles were sampled.

❖ Discovery of adverse environmental impacts in Sawmill Creek as a result of groundwater withdrawals led to an effort by DNR and Anne Arundel County to abandon the public supply well fields at Sawmill and Dorsey Roads. By curtailing the groundwater pumping, additional fresh water was made available to Sawmill Creek from natural base flow. The additional base flow provided a better quality and more reliable flow to maintain aquatic resources in the stream.

❖ DNR began operation of four limestone dosers in the Potomac River's North Branch to neutralize acid mine drainage from abandoned coal mines in the watershed. Over 26 miles of the Potomac and its tributaries upstream of Jennings Randolph Lake have been restored. The quality of the 950-acre lake and eight miles of the river downstream have also been significantly improved. Trout were stocked in the North Branch upstream of the Jennings Randolph Lake for the first time ever. The mainstem of the Potomac, from Wilson to Kitzmiller, is supporting biological communities, including macroinvertebrates and smallmouth bass, historically absent.

❖ The Boating Administration's Waterway Improvement Program, the State Highway Administration and the National Guard worked together to complete an entrance road for the proposed Jennings Randolph Lake boating facility, which will provide boating access to the Maryland side of the lake.

❖ Waterway Improvement removed abandoned boats and debris across the state. More than 100 such vessels and debris were removed in response to 80 citizen complaints.

❖ Boating's Shore Erosion Control (SEC) Program completed 10 structural and 21 non-structural projects, including stone revetments, bulkheads and breakwaters. The non-structural

projects restore, create or protect fringe tidal marshes. The projects protect 12,450 feet of shoreline and create, restore or protect 243,017 square feet of tidal marsh. Cumulatively, these projects prevent some 7,427 tons of sediment, 5,411 pounds of nitrogen and 3,566 pounds of phosphorus from entering the bay watershed. SEC staff worked at 182 locations to assist with strategies to combat erosion.

❖ SEC, which manages the Ocean City Beach Replenishment and Hurricane Protection Project, began the final stage of initial construction. The project will include 6.3 miles of vegetated dunes, 205 vehicular and pedestrian beach access crossovers and a steel bulkhead with a concrete cap to protect the boardwalk from 27th Street south to 4th Street. The Beach Replenishment Project, along 8.3 miles of Atlantic coastline, is a cooperative effort between the state, Town of Ocean City, Worcester County and the U.S. Army Corps of Engineers.

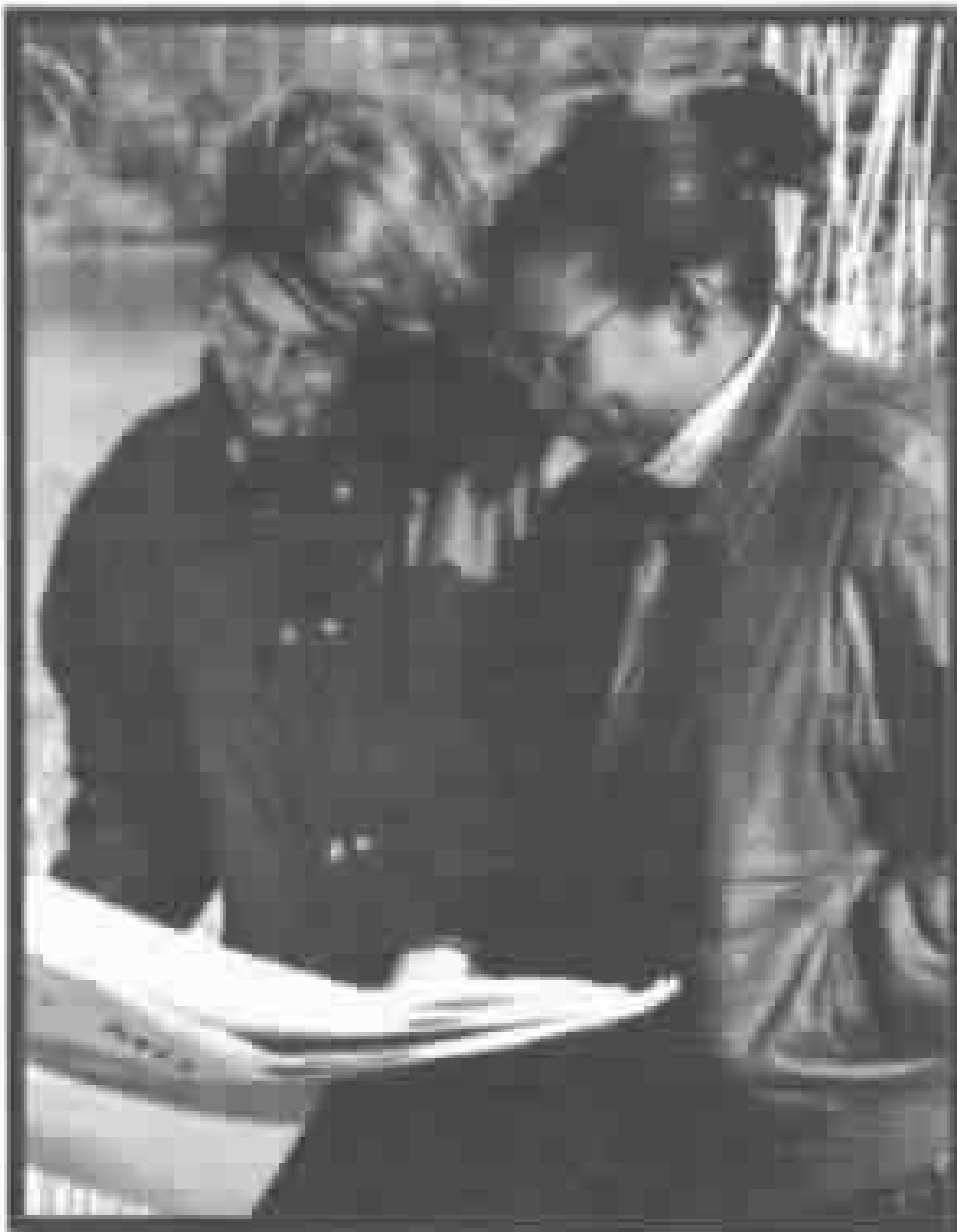
❖ Program Open Space (POS) acquired four DNR-managed Chesapeake Bay public access sites totalling more than 409 acres. Three waterfront parks owned and operated by local government were also assisted.

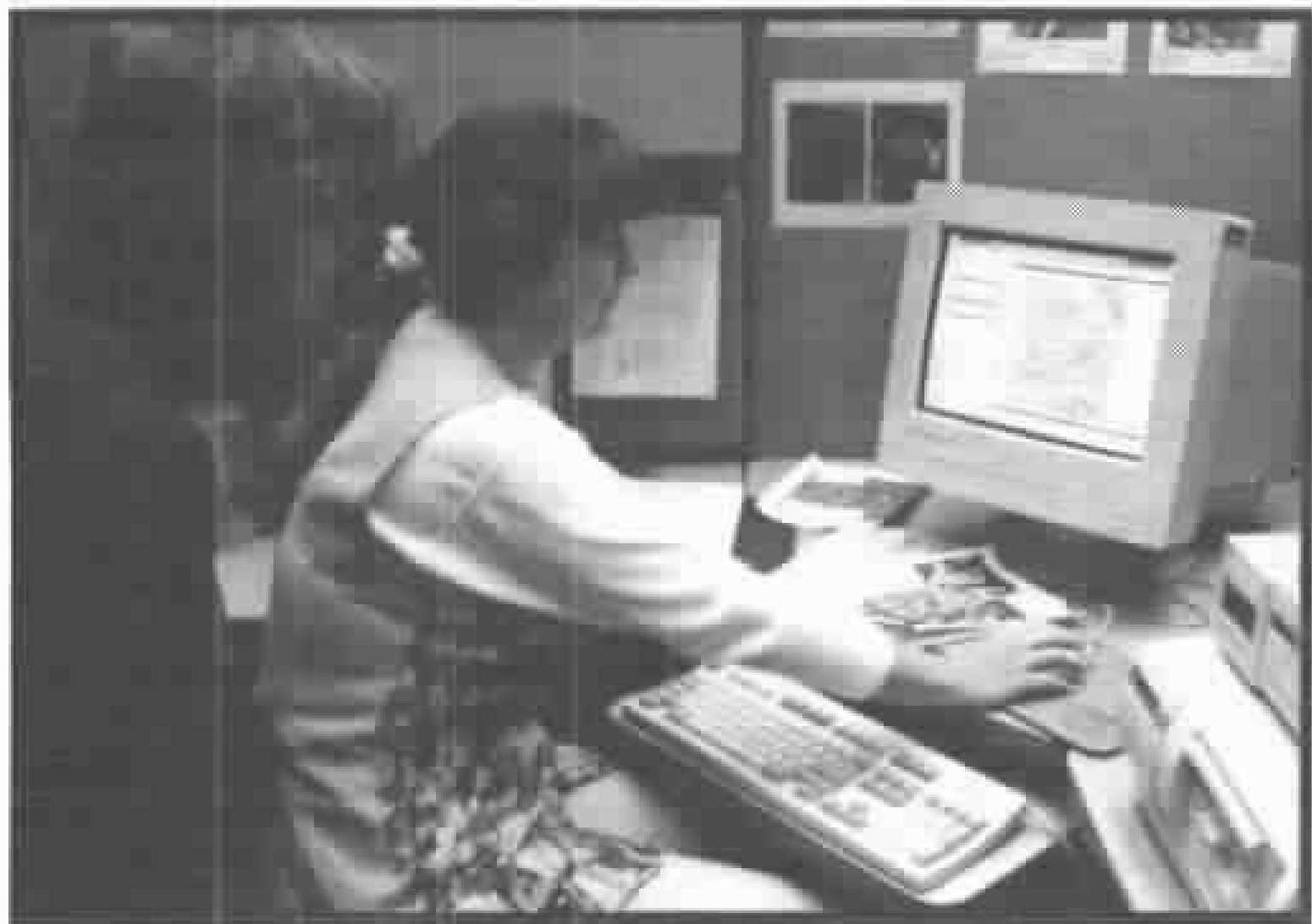
❖ The Maryland Geological Survey's (MGS) Shoreline Changes Mapping Project entails updating and automating maps that document the state's coastal shoreline positions. These maps have been produced for 45 of the 102, 7.5-minute quadrangles comprising the Maryland Chesapeake Bay and Atlantic coast. The completed maps include most of the western Chesapeake Bay and tributary shorelines, including the tidal Potomac and Patuxent Rivers.

❖ The Watershed Impact Evaluation Program (WIE) provided technical assistance and project coordination for 15 watershed restoration projects in eight counties. Working with the public and all governmental levels to resolve environmental problems which accompany agricultural, industrial and urban/suburban land use, WIE's goal is to encourage comprehensive watershed management.



DNR's WATER RESOURCES ADMINISTRATION protects, regulates and manages Maryland's water, wetlands, mineral and petroleum resources.





L on the LAND



With a growing population, land use becomes critical. DNR works to protect the environment and ensure availability of habitat requirements for life in the ecosystem.

❖ More than 240,000 acres of land—Maryland’s state forests, parks, scenic preservations, historic monuments, natural environment areas and natural resources management areas—are maintained, managed and protected by DNR. The State Forest and Park Service oversees more than 494 miles of shoreline, 2,182 miles of boundaries and 242,204 acres of public lands.

❖ TREE-MENDOUS MARYLAND worked with individuals, school groups, community associations, corporations and businesses, to again plant nearly 1 million trees this year. In its five-year history, the program has planted 5 million trees and for its efforts has been honored by the National Arbor Day Foundation.

❖ Sold this year were 3,200 gifts of trees to citizens wishing to recognize significant events—birthdays, anniversaries or memorials. Each TREE-MENDOUS “gift” is planted by volunteers on public land in the recipient’s home area. A certificate is provided to the donor/honoree to acknowledge this special planting.

❖ More than 156,500 trees were planted on 221 acres of reclaimed coal mine areas.

❖ More than 4 million seedlings, raised at the state nursery, were sold at cost to Maryland citizens for reforestation, wildlife habitat enhancement, erosion control, windbreaks and wood production. Wye Oak seedlings—7,300 offspring—were sold to people interested in nurturing an offspring of a tree that is both the state tree and the national champion white oak.

❖ Local governments were awarded \$333,213 in federal funds for matching grants to small businesses to purchase and plant trees. These funds were used to strengthen and support existing community tree care programs and encourage the initiation and development of new programs.

❖ Forest health in 1994 was affected by two forest pests. However, with extremely cold temperatures, adequate rainfall and a concerted effort by the forest industry, DNR and the Maryland Department of Agriculture contributed to the



DNR's NATURAL HERITAGE PROGRAM identifies and protects the state's rare plant and wildlife species and natural areas, the loss of which threatens the state's biological and ecological integrity.



decline of the Southern Pine Bark Beetle population. Gypsy moth infestations were up nearly 40 percent over last year, with 93,000 acres undergoing defoliating. This year, 69,000 acres were defoliated, with most damage in eight Eastern Shore counties.

- ❖ Maryland has 214 communities with ongoing tree programs and 30 cities identified as a TREE CITY, USA.
- ❖ PLANT Community Awards of either bronze, silver or gold were presented to 22 communities in the state for their community developed tree programs.
- ❖ More than 100 senior conservation centers participated in tree planting events or assisted the Forest Service in seedling packaging for Arbor Day and other seedling projects.
- ❖ Forest conservation law integrates and conserves the natural features of a site during the development process. Local and state governments and the development industry work in partnership to implement this effort.
- ❖ The State Forest Conservation Program reviewed 206 projects, including formal applications for approvals of forest stand delineations and forest conservation plans. It also reviews for applicability under the state program, including notification to local jurisdictions for state-funded projects.
- ❖ The total number of acres surveyed in forest stand delineations submitted to DNR for approval was 4,790. With 58 forest conservation plans approved by the department, only 130 acres were proposed for clearing. Land area proposed for retention was 346 acres, which includes 51 acres of afforestation or reforestation.
- ❖ DNR began using its geographic information system (GIS) to screen permit applications received by the Water Resources Administration. Accurate information about a proposed

project and its relationship to archaeological sites, special wildlife areas, wetlands and floodplains is obtained by this system which reduces permit staff workload and alerts them to potential problem situations early in the permit review process. GIS also provides a method for early coordination with other agencies with an interest in a proposed project application.

- ❖ The Power Plant Research Program (PPRP) conducted the studies necessary to determine the environmental impact of two proposed power plants in Maryland: a coal-fired plant in Dorchester County and a combined cycle plant proposed for Prince George's County. PPRP recommended conditions to minimize environmental impacts of the installation of 30 miles of overhead electric power lines.
- ❖ To allow for vegetation clearing in the construction and maintenance of electric power transmission rights-of-way, PPRP recommended and achieved permit conditions requiring vegetation replanting at alternative approved sites to improve aesthetics, provide shade and habitat and reduce energy consumption in public areas. Improved techniques for maintenance of transmission line rights-of way have resulted in new wetlands, new tree plantings and improved wildlife habitat.
- ❖ PPRP, through its evaluations of proposed power plants, conducts extensive evaluations of the impact of groundwater withdrawals required by plant operations. PPRP recently evaluated groundwater impacts and recommended conditions for two proposed power plants.
- ❖ Fifty-one wells and springs of the Ambient Ground Water Data Quality Network sites have been sampled from a wide variety of hydrogeologic settings and land uses. Water samples are periodically obtained from each site and analyzed for major ions and selected trace elements, pesticides and volatile organic compounds. An evaluation of the results is being prepared.



DNR's WILDLIFE DIVISION is responsible for the conservation of Maryland's varied wildlife resources. Its goal is to protect, manage and enhance wildlife populations at levels consistent with the capacity of the land and society's needs.





- ❖ The Ground Water Data Networks Water Level Project maintains a continuous inventory of ground water levels in aquifers and flow of selected springs and relates changes in ground water levels to withdrawals and precipitation. Of the 227 observation wells and five springs monitored, there are seven wells and one spring in the Valley and Ridge Province, two wells and one spring in the Blue Ridge, 23 wells and two Piedmont springs, six Appalachian Plateau wells, 107 Coastal Plain Western Shore wells, and 82 Coastal Plain Eastern Shore wells.
- ❖ A study of bay-water intrusion into the Aquia Aquifer, the major residential use water supply source in east-central Anne Arundel County, was concluded.
- ❖ German Branch, Sawmill Creek, Piney and Alloway Creek, and Bird River watersheds are each undergoing restoration and management. The DNR Targeted Watershed Program provides monitoring and overall coordination services to the Maryland Chesapeake Bay Program multi-agency initiative.
- ❖ In cooperation with the Maryland Departments of Environment and Agriculture and the Office of Planning, the Coastal Zone Management Program is developing a coastal nonpoint pollution control program, as required by Section 6217 of the 1990 Reauthorization Amendments of the Coastal Zone Management Act.
- ❖ Non-native nutria are causing extensive marsh damage, primarily on the lower Eastern Shore. An initiative was developed for a feasible eradication plan of this rodent.
- ❖ The Wildlife Division completed a restocking program that has established wild turkey populations in every Maryland county.
- ❖ The Wildlife Division continued efforts on the planned five-year restoration of river otters in Western Maryland by trapping and releasing eight animals near Oldtown.
- ❖ With funding from the Chesapeake Bay and Endangered Species Fund and the U.S. Fish and Wildlife Service, the Natural Heritage Program (NHP) conducted surveys for approximately 40 listed species.
- ❖ NHP responded to more than 2,000 inquiries concerning the location, biology and conservation needs of rare, threatened and endangered species. The program worked with local planning and zoning departments and developers to avoid future damage to rare and listed species.
- ❖ With the creation of the Maryland Cooperative Natural Areas Registry, nearly 400 landowners, including citizens, local governments and businesses, have been visited and more than 200 have agreed to register their sites for the voluntary conservation of rare species habitats and high quality natural communities.
- ❖ Program Open Space (POS) continued to provide funding for the protection of areas identified by the Natural Heritage program as supporting rare, threatened and endangered species.
- ❖ POS acquired 1,217 acres of land and provided \$4,086,877 in park development for DNR management. Local governments utilized \$10,198,301 in POS funding for 74 new and 11 additions to open space projects. These projects include land acquisition for open space preservation or parks and recreation facility development.
- ❖ An agreement was negotiated with the Maryland Department of Transportation to match federal funds with POS funds for greenways and rails to trails acquisition and Civil War site preservation. The two departments protected 368 acres at Antietam and 266 acres at South Mountain battle sites to lead the nation in Civil War site preservation.
- ❖ POS acquired 540 acres of forest land, at a cost of \$425,392.
- ❖ In partnership with the Maryland Greenways Commission, DNR's Greenways and Resource Planning (GRP) provided funding coordination, mapping, community outreach and technical assistance to the following greenways segments: Allegheny Highlands Trail, Allegany County; North Branch of the Potomac, Garrett County; Western Maryland Rail Trail, Washington and Allegany Counties; Marshyhope Wildlife Corridor, Caroline County; Easton Rail Trail, Talbot County; Nanticoke River, Dorchester and Wicomico Counties; Anacostia Headwaters Greenway, Prince George's County; WB&A Rail Trail, Prince George's County; Gwynns Falls Greenway Trail, Baltimore City; BWI Trail, Anne Arundel County; Lower Susquehanna Heritage Greenway, Harford and Cecil Counties; and Ma and Pa Rail Trail, Harford County.
- ❖ GRP completed these plans: Northern Central Railroad Trail Master Plan; Nanticoke River Watershed: A Summary of Resource Characteristics and Enhancement Activities; Bloomfield Farm Interim Use Concept Plan; Greenwell State Park Master Plan; and Wicomico Scenic River Plan.
- ❖ GRP processed 109 projects for environmental review including DNR-initiated capital improvements, maintenance and planning projects, as well as private, commercial and other government agency requests for DNR land use for non-DNR purposes.

Through scientific investigation, analysis and mapping, DNR's MARYLAND GEOLOGICAL SURVEY studies the geology, water and mineral resources of the state.



❖ GRP surveyed 30,000 feet of boundaries and established a horizontal control network for Dans Mountain Wildlife Management Area, including 30 control monuments in the area.

❖ GRP recovered 60,000 feet of property boundaries and 150 monuments and pipes marking property corners at Pocomoke State Forest.

❖ GRP staff, in cooperation with the U.S. Army Corps of Engineers, volunteers and other state agencies, developed an action plan for Hart-Miller Island restoration.

❖ GRP, in cooperation with the Prince George's Soil Conservation District, secured a U.S. Environmental Protection Agency demonstration grant of \$215,000 to implement agricultural best management plans on five Patuxent Natural Resource Management Areas.

❖ GRP program staff, with State Forest and Park Service staff, secured a Symms Act grant for \$90,000 in trail maintenance and related improvements at Green Ridge, Savage River and Potomac-Garrett State Forests and the Maryland portion of the Appalachian Trail.

❖ Using hydrogeologic mapping, tritium age-dating and groundwater flow modeling, MGS, in cooperation with the Department of the Environment and Anne Arundel County, investigated the recharge areas around the county's northern well fields. Potential sources of contamination were identified and computer modeling methods used to determine if the sites were within the well field "capture zone."

❖ DNR oversaw the reclamation land that had been mined for coal (390 acres) and non-coal minerals (483 acres). Lands mined and abandoned prior to current laws continue to endanger the public health and safety, degrade environmental quality and diminish beneficial land and water resources uses. DNR initiated projects to reclaim 153 acres at a cost of \$4,036,929.

❖ An abandoned mine reclamation project conducted by DNR received an "Excellence in Reclamation" award given by the Federal Office of Surface Mining (OSM). The reclamation project was on an 8-acre site in Allegany County's Eckhart community which had posed a severe flooding hazard and was contributing to the degradation of water quality. The OSM award program was initiated in 1993 and DNR has received an award each year.

❖ Reclamation of a 32-acre abandoned coal mine located partially within the Savage River State Forest included the elimination of more than 2,000 linear feet of dangerous highwalls and several hazardous water-filled pits, and the recovery and recycling of 22,800 tires that had been discarded in the pits.

❖ An abandoned mine reclamation project in the Merkle Wildlife Management Area in Southern Maryland included creation of non-tidal wetlands, a water control structure and the addition of lime to eliminate sediment-laden runoff with a high acid content from flowing into the adjacent Patuxent River.

❖ Other water resource investigations were under way in Baltimore County (groundwater quality), Harford County (groundwater flow model in Perryman area), Wicomico County (well head protection), and Kent County (groundwater assessment).

❖ Boating's Waterway Improvement Program completed five boating facility projects at state parks and provided funding and technical assistance in completing 28 local projects at a total cost of \$2.04 million.

❖ The Maryland Environmental Trust (MET) accepted conservation easement donations on 31 properties, protecting more than 3,000 acres from future development. As of July 1, 1994, 281 donations protect more than 44,000 acres in the state, including 110 miles of bay shoreline.



In partnerships with citizens, businesses and local governments, DNR's FOREST SERVICE works to conserve and enhance the forest and tree resources of Maryland.





EDUCATION



In their varied assignments, DNR staff strive to share their experience and knowledge to enable all citizens to appreciate and nurture the state's natural resources. A variety of programs are available to teach citizens of all ages.

- ❖ The Chesapeake Bay Trust gave Maryland teachers more than \$500,000 in grants to actively involve students in Chesapeake Bay cleanup projects.
- ❖ A Critical Area Primer was completed by the Chesapeake Bay Critical Area Commission (CAC) for distribution to local governments and at exhibitions and conferences around the bay.
- ❖ CAC completed a video titled "The Critical Area and You: The Chesapeake's First Line of Defense" along with a pamphlet to be used for workshops, speech opportunities and general information.
- ❖ Approximately 50,000 pine seedlings were distributed to third-graders in Maryland public schools in support of the value and importance of trees.
- ❖ The Forest Service joined in celebrating the 50th anniversary of Smokey Bear. Forest rangers statewide arranged activities in commemoration and to reinforce Smokey's message to prevent human-caused forest fires. Thirty-five birthday parties were held across the state. Smokey also skied at the Maryland Special Olympics Winter Games in Garrett County and was honored at Oriole Park at Camden Yards in June.
- ❖ Eight tree planting and tree care and maintenance workshops were held to teach 250 volunteers the proper tree selection for particular sites, as well as disease and insect control, pruning and mulching.
- ❖ Eleven Project Learning Tree (PLT) workshops trained 321 facilitators. DNR is Maryland's PLT coordinator for this environmental education program designed for teachers and other educators working with pre-K through grade 12 students. PLT,



using the forest as a “window” into natural and constructed environments, is administered nationally by the American Forest Foundation and cosponsored by the Western Regional Environmental Education Council.

- ❖ More than 175 Maryland loggers attended a series of four regional workshops on chainsaw safety and felling techniques.

- ❖ Five forest conservation courses were offered through community colleges and universities around the state drawing 112 participants interested in becoming qualified professionals to determine forest stand delineations and forest conservation plans.

- ❖ The Forest Service, assisted by Salisbury State University’s Remote Sensing and Image Processing Center, is refining results of a computerized comprehensive forest inventory. The refined information is being provided to state and local agencies to effectively implement the Forest Conservation Act.

- ❖ Under a Forest Conservation Act amendment, recommendations for streamlining the Act’s requirements generated ad hoc task forces, which were appointed by the Forest Service to provide recommendations to the Governor’s Advisory Committee on conservation methods and the existing state forest conservation technical manual; on declarations of intent and procedures for verifying exemptions; and on linear projects’ issues such as utility rights of way.

- ❖ Nineteen workshops addressing their specific regional needs were offered by the Forest Service to 323 local plan reviewers.

- ❖ The Chesapeake Bay School Reforestation Program, co-sponsored by DNR and county forest conservancy district boards, established 34 new school forests. Schools competing for monetary grants to reforest school properties are required to develop an environmental education program centered around the school forest and integrated into the curriculum.

- ❖ More than 3,000 students, teachers, parents, volunteers and Forest Service personnel participated in Forestry Awareness Month at the Wicomico Demonstration Forest in October. School children from Eastern Shore counties use the forest as a field trip destination to learn about tree and forest values.

- ❖ The Maryland Association of Forest Conservancy District Boards in cooperation with the Forest Service held its 19th Forestry, Conservation and Natural Resources Week in Garrett County at the Hickory Environmental Education Center. Forty-eight high school students representing each of

Maryland’s 23 counties and Baltimore City participated in natural resource management and career workshops, with emphasis on forestry.

- ❖ Forest stewardship landowner seminars were held in Frederick and Baltimore Counties, providing the 120 attendees with forestry information and benefit concepts.

- ❖ Uniformed Natural Resources Police (NRP) officers spent 9,773 hours participating in public outreach assignments or providing specific assistance to the public or other government agencies at a total of 3,536 events.

- ❖ The NRP Outdoor Education Division, in administering the mandated hunter education program, coordinated 548 volunteer instructors who taught 207 classes of the Maryland Hunter Education Course to 7,100 students.

- ❖ NRP officers gave 348 presentations of their “Drowning Is No Accident” program to 20,205 students. The program has different, age-specific modules for presentation to elementary through high school students. Boating safety topics are stressed, including the importance of wearing life jackets and the dangers of alcohol consumption while boating.

- ❖ State Forest and Park Service (SFPS) staff presented living history programs both at appropriate forest and park sites and in the community. A Point Lookout State Park ranger portrays Sgt. Maj. Christian A. Fleetwood, a black Union soldier and Medal of Honor recipient. The Fleetwood presentation was made to school, scouting, church and service groups as well as for the media.

- ❖ The Helen Avalynne Tawes Garden staff led 64 guided tours and assisted with nine self-guided tours for 1,318 people. Their programs and special events drew 1,487 people.

- ❖ A resource catalogue listing programs, activities, camps and special events provided by the SFPS was produced for teachers, parents and other resource professionals.

- ❖ The Scales and Tales program, presented to more than 1 million children and adults, promotes not only Maryland’s wildlife diversity but translates environmental messages to its varied audiences. The program is self-funded through fees and donations equalling \$180,000.

- ❖ Seneca Creek State Park Visitors Center added a computerized, interactive information system which allows a visitor to obtain data on all Maryland forests and parks, park fees and facilities, recreational and educational programs.

- ❖ SFPS's Drug Free Trail was among 19 programs selected in the National Recreation and Parks Association media campaign, "Not Just Fun and Games Anymore." The national campaign selected innovative programs that dealt with youths at risk. More than 2,000 participants took the Drug Free Trail in Maryland state forests and parks during the year.
- ❖ The Maryland Conservation Corps (MCC), part of the federal Americorps program, provides 50 participants, ages 17-25, with environmental restoration and community service work while developing their job training, service learning, and academic enrichment skills. The program offers participants a \$4,725 stipend to further their education in exchange for 1,700 community service hours.
- ❖ The MCC Summer Program employed 100 youths ages 14-21 to perform conservation work while learning job skills and environmental education.
- ❖ Ten thousand children participated in DNR's Junior Ranger program at Maryland state forests and parks where they enjoyed environmental education, interpretive programs, conservation projects and recreation.
- ❖ A 30-minute children's video titled "Out of the Egg" was produced as a Scales and Tales project with sale proceeds to benefit state forest and park programs and operations. The "edu-entertaining" show follows the adventures of three Junior Rangers in Patapsco Valley State Park with Ranger Bill Trautman.
- ❖ Baltimore County schools provided outdoor education instruction to more than 3,000 students at both Soldier's Delight Natural Environment Area and the Days Cove Environmental Center of Gunpowder Falls State Park.
- ❖ More than 3,000 citizens interested in attracting wildlife to their yards have joined the Wildlife Division's Wild Acres program, having turned their yards into attractive habitat for butterflies, birds and other wildlife. A Wild Acres packet, available on request, gives information on feeding birds, providing suitable habitat, and even how to build a backyard pond. Landowners with such habitats receive a certificate and the quarterly newsletter "Habichat."
- ❖ Educators were trained in Project WILD, an environmental education curriculum designed to teach kindergarten through 12th-grade students about wildlife and the environment. More than 3,000 teachers are using Project WILD in their classrooms, reaching approximately 200,000 students.
- ❖ DNR's Wildlife Division hosted Junior Hunter Days across the state for 270 young people who were given instruction in hunter safety, wildlife biology, live firing, hunting techniques and ethics.
- ❖ The Freshwater Fisheries Division staff presented 27 programs to sportsmen, civic, and educational groups and set up exhibits at 25 outdoor shows, fairs and festivals.
- ❖ The Governor's Youth Fishing Derby is privately funded through donations and contributed goods and prizes, providing young people with a one-day conservation, education and recreation program. In FY94, 11,500 children and their families participated.
- ❖ "Get Hooked on Fishing, Not on Drugs"™ fishing clinics this year provided opportunities for 2,400 young people to learn about the bay through fishing, boating and water safety.
- ❖ Some 800 teachers participated in the "Be Part of Something Big" youth activity package that evolved from the Adopt-A-Stream program. Teachers were instructed in activities and games to teach children about responsibility to their environments.
- ❖ The Maryland Aquatic Resources Education Program again awarded 74 grants to educators to help youth improve their comprehension of aquatic resources in Maryland.
- ❖ The Chesapeake Bay National Estuarine Research Reserve (CBNERR-MD) has three different components in Maryland, each representing distinct estuary habitats. CBNERR-MD is a field laboratory that supports monitoring, scientific research and education programs. Through cooperative efforts with DNR's Wildlife Division, the first "Wetlands and Wildlife Field Day" was held for 150 elementary school students in Somerset County. Participants experienced the marsh through "hands-on" activities. Funds for a visitors center for the Otter Point Creek Component in Harford County were awarded.
- ❖ DNR's Tidewater Administration contracted with Anne Arundel County Public Schools/Arlington Echo Outdoor Education Center to produce a pilot teachers guide and student workbook dealing with power plants and the environment.
- ❖ More than 4,000 copies of an Environmental Education Resources Directory were distributed to public, private and parochial schools as well as county libraries.
- ❖ Water Resources Administration staff and Frederick Douglass High School students planted 9 acres of wetlands at the Merkle Wildlife Management Area in Prince George's County.

❖ The state's water conservation program provided technical assistance and training to Myersville, Taneytown and the Town of Indian Head, resulting in a 2.5 million gallon water savings. The water conservation program relies on educating the public about water use and assisting in leak detection, metering and operational changes designed to reduce the per capita consumption of water.

❖ To increase the workforce diversity, better serve a diverse constituency and provide students with an opportunity to learn more about careers involving natural resources, a summer internship program was begun with eight participants.

❖ The Maryland Geological Survey (MGS) published "Geochemistry and Geophysical Framework of the Shallow Sediments of Assawoman Bay and Isle of Wight Bay in Maryland." Results showed that nitrogen, carbon and sulfur content for most of the shallow sediments were within the ranges expected for marine sediments and were comparable with those found in the Chesapeake Bay and other Atlantic coast estuaries that do not have heavy industries in their watersheds.

❖ MGS also published "The Surficial Sediments of Assawoman Bay and Isle of Wight Bay in Maryland: Physical and Chemical Characteristics" which summarizes the results and preliminary interpretation of textural and chemical data from the analyses of 171 surficial sediment samples collected in Isle of Wight and Assawoman Bay.

❖ MGS sold county topographic map series, with the most popular maps being Garrett County (834) and Anne Arundel County (334). The Publications Office referred 187 customers to the Maryland Earth Science Information Center Library for additional assistance.

❖ In the MGS Educational Series, "A Collection of Rocks and Minerals of Maryland" went on sale. The set has 18 rock and

mineral specimens in a plastic, partitioned box and includes a descriptive, explanatory booklet. Some 300 sets were sold during the first eight months.

❖ MGS published 14 7.5-minute quadrangle geologic maps covering parts of Allegany, Washington, Frederick and Carroll Counties. Producing the maps in black and white instead of the traditional color constituted an enormous cost savings, while allowing the Survey to disseminate the information to customers.

❖ The Responsible Boater Initiative, led by the Boating Administration's Planning & Policy Program, is designed to increase awareness of Maryland boaters to the effects of boating on the environment, other boaters and waterfront residents. Brochures were distributed at boat shows, civic meetings and volunteer organizations.

❖ Boating's staff participated in the Baltimore Cub Scout Olympics, and with the NRP, ran a land navigational buoy course and boat equipment requirements seminar with a 22-foot boat for the 1,000 participants.

❖ Working in partnership with local governments, Program Open Space provided funding for the development of state and local visitor/environmental education centers across Maryland.

❖ The Greenways Commission and Greenways and Resource Planning assisted with the development or funding for three video presentations: Patapsco Regional Greenway, Potomac Visions and the Land of Plenty (Lower Susquehanna).

❖ An In-the-Field program permits DNR employees to volunteer for special projects at locations throughout the state. Varied projects have included assisting with trail maintenance, working cross country ski trails, and sampling fish populations.



The CHESAPEAKE BAY TRUST is a nonprofit organization created to promote the restoration and protection of the Chesapeake Bay. It distributes grants funded by public and private sources to groups that undertake projects to help the bay.



PUBLIC/PRIVATE PARTNERSHIPS



DNR joins citizens, landowners, businesses and community organizations to reach the goals of protecting, enhancing and nurturing Maryland's treasured natural resources

❖ TREE-MENDOUS MARYLAND formed a partnership with Global ReLeaf, the worldwide tree-planting program of American Forests to involve more people in tree planting and tree maintenance for efforts to "releaf" cities, towns and public open spaces.

❖ Working with National Tree Trust, which provides seedlings, to promote direct planting on public lands and open space, Maryland has six "growing out stations" in Baltimore City and Baltimore County.

❖ Along with the CloverLeaf Foundation and the State Highway Administration, TREE-MENDOUS MARYLAND teamed up with volunteers and business and civic groups to replant cloverleaf areas at Baltimore/Washington International Airport and the Howard County Route 29/Broken Land Parkway intersection.

❖ The City of Frederick is one of seven original pilot sites for American Forest's Cool Communities Program. A Citizen

Forestry Workshop brought diverse representatives together to discuss a long-range plan for city treeplanting and subsequent benefits.

❖ In November 1993, with a \$500,000 appropriation, the U.S. Forest Service, Baltimore City Department of Recreation and Parks, the Parks and People Foundation, Baltimore Urban Resource Initiative, Yale University, Chesapeake Bay Outward Bound of Baltimore, Maryland Save Our Streams, the Trust For Public Land and DNR met to develop a five-year plan for "Revitalizing Baltimore."

❖ The Maryland Community Forest Council developed a three-year urban forestry action plan which the Education Committee prepared and mailed, along with an information packet to every Maryland library.

❖ The Forest Conservation and Management Agreement (FCMA) Program attracted 51 new participants and 1,448 acres. FCMA participants agree to manage their land follow-



DNR's PROGRAM OPEN SPACE distributes funds to provide open spaces and recreational areas for the present and future citizens of Maryland. It is funded by a one-half of one percent state transfer tax assessed on qualifying transfers of real property.



ing a specific plan and receive, in turn, a freeze in their land's assessed value. The program has 1,162 participants with 147,500 acres under active forest management.

❖ The Forest Stewardship Incentive Program (SIP) developed 562 stewardship plans covering 29,615 forest land acres. Landowners work with foresters to meet management objectives which include wildlife habitat development, water quality improvement, riparian or wetland protection, and other conservation goals. SIP benefits landowners with up to 65 percent cost sharing on their properties. To assist with the 159 recommended practices, \$172,576 has been allocated to assist landowners.

❖ The Forest Conservancy District Boards contributed more than 18,810 volunteer hours working to ensure and champion the interests of trees and forests across the state.

❖ A resident-curatorship program enables private parties to restore, maintain and occupy publicly owned historic structures managed by DNR. Curators, at their own expense, make improvements to public property in return for residency on the properties. Three new curatorships were added to the 24 existing curatorships which represent private commitments of \$415,000 and more than 2,000 hours of personal labor to publicly owned historic properties' enhancement. Actual curator outlays were \$386,688 during calendar year 1993, bringing the total of goods and services received by the state, from the program's inception in 1982 through the end of calendar year 1993, from all curators to \$2,331,645.

❖ The Forest Service initiated a method to streamline and standardize the forest harvesting permitting process in coordination with the Soil Conservation District. Pilot programs were established in Wicomico, Baltimore and Charles Counties. DNR foresters check sites for best management practices as well as compliance.

❖ State park programs focused on meeting needs of those with disabilities in partnerships with the Maryland Wheelchair Athletic promotions, Howard County Office on Aging, Montgomery College, Maryland Wheelchair Games, and Paralyzed Veterans of America. In other partnerships, a wheelchair-accessible pontoon boat was donated by the Maryland Bass Federation to Smallwood State Park; an accessible trail with a scenic overlook was constructed at Green Ridge State Forest by a HOST group from Rocky Gap State Park; and an accessible fishing pier was constructed at Cunningham Falls State Park as a partnership between the National Park Service, volunteers and DNR.

❖ Make Tracks '94, a cooperative fundraiser between a non-profit group, Footprints Only, Inc., and the State Forest and Park Service (SFPS) was held at Patapsco Valley and Gunpowder Falls State Parks with 2,000 participants. Scheduled activities raised \$4,000 for trail maintenance, scholarships to residential camps and environmental education programs.

❖ DNR had 29,369 volunteers who donated 268,540 hours to assist with tree planting, hunter safety education instruction, volunteer rangers in state parks and forests and other duties. These volunteers also assisted with bird banding, cleanups, office management and environmental programs at fairs and special exhibits.

❖ SFPS had 11,991 volunteers who worked 175,936 hours. The Volunteer Ranger program, which began in 1992, expanded to 60 persons, ranging in age from 18 to 78, who assisted at festivals as well as at assigned public lands.

❖ The "friends of" support groups for state parks and forests expanded to 15, with new groups for Gambrell, Ft. Frederick, Washington Monument and Smallwood State Parks as well as the Northern Central Rail Trail of Gunpowder Falls State Park. These groups helped to keep facilities open and raised funds for special projects at their sites.



The MARYLAND ENVIRONMENTAL TRUST acquires conservation easement donations on properties with recognized value that include farms, forests, waterfront, wildlife and plant habitat, and properties of educational or recreational value.







❖ The Rocky Gap Foundation was the main contributor to “Free for 93” at Rocky Gap State Park. A donation allowed the park to waive entry fees for the summer season, increasing attendance and subsequently increasing concession sales and boat rentals.

❖ The SFPS operates a variety of concessions to self-generate revenue to offset operational costs. There are 13 privatized and 16 self-operated concessions, netting \$400,000 annually, about a 25 percent return. The privatized concessions operations pay DNR about \$90,000 annually, an average 14 percent of gross contractor sales. Total gross sales are about \$2 million per year while average yearly gross sales are \$1.5 million (self-operated) and about \$600,000 to \$700,000 (contractor-operated).

❖ The Maryland Environmental Service provided the SFPS with more than 1 million bags for the state’s Trash-Free Parks program, and Heinz Ketchup also bought 100,000 trash-free bags as part of the “Top the taste of a picnic in a state park” campaign in conjunction with a Baltimore radio station WMIX promotion. Parks continued their participation in the Trash-Free Parks program, saving a total of \$325,440 in labor and materials while promoting recycling and an outdoor ethic.

❖ The HOST program (Help Our State Today) provides education, training and employment to selected citizens while they complete deferred maintenance projects in our state forests and parks. In Allegany County, skilled laborers are employed in an economically depressed area, while at Patapsco Valley State Park near Baltimore disabled and/or disadvantaged juveniles and seniors are employed. Twenty eight deferred maintenance projects—building renovations, landscaping, accessibility projects and erosion control projects—were completed at a savings of \$61,786. Over five years, more than 110 projects have been completed with a \$400,000 saving over contracted cost.

❖ Rangers Mike Brown and Daryl Anthony were appointed as SFPS recruiters to reach qualified minority candidates for

possible employment within the service. Through their efforts, 11 people were hired on contract as recruits.

❖ Recreational fishing attracts more than 500,000 anglers to Maryland waters each year. Fishing is the predominant reason that people buy and use power boats. Direct expenditures by anglers exceed \$275 million with total economic output of approximately \$526 million. Fishing piers provide 20 percent of the fishing activity in tidal waters. Seven major piers or bridge conversions have been constructed since 1985.

❖ DNR’s Tidewater Administration and Potomac Electric Power Company (PEPCO) are engaged in a long-term effort to restore populations of striped bass and American shad to the bay and its tributaries. The program utilizes DNR’s Manning Hatchery and PEPCO’s aquaculture facility at Chalk Point Power Plant on the Patuxent River. To date, PEPCO has raised and released more than 2.8 million striped bass and more than 200,000 American shad.

❖ More than 10,500 individuals representing 110 organizations and businesses participated in Adopt-A-Stream, a stewardship program to encourage active citizen involvement in monitoring and restoring waterways and watersheds.

❖ The U.S. Environmental Protection Agency provided most of the \$260,000 cost for 65 watermen to move 180,000 bushels of seed oysters for DNR. The watermen were paid on the basis of bushels moved and distance traveled.

❖ Citizen volunteers along with Save Our Streams and Chesapeake Bay Foundation staff have spent hundreds of hours assisting the Targeted Watershed Program, conducting stream cleanups, planting trees and monitoring water quality.

❖ Program Open Space (POS) provides sustained financial support to acquire open spaces and recreational areas for current and future citizens of Maryland. Funds are provided by the state’s .5 percent transfer tax plus the federal Land and



Water Conservation Fund, administered by the U.S. Department of the Interior. POS coordinates all state land acquisition for DNR, including parks, forests, wildlife management areas and greenways, and also administers grants to local subdivisions for the development of local recreation areas and the preservation of local open space lands.

❖ POS formed partnerships with Maryland's Department of Transportation, The Conservation Fund, The Nature Conservancy, Trust for Public Land and various local land trusts to preserve substantial areas of Maryland's open space.

❖ The Maryland Geological Survey consulted the Fenby Farm Quarry Lime Kiln Park Steering Committee to discuss plans for developing a recreational and educational area at an abandoned marble mine and lime kiln southwest of Westminster.

❖ The Water Resources Administration (WRA) collaborated with Riddle Farm Associates, multiple-use resort developers in Worcester County, to achieve a reduction of wetland impacts associated with the development. The original project design included impacts to more than 83 acres of wetlands on the 1,000-acre site. The final site design reduced the proposed direct wetland loss to a little more than 6 acres, all of which will be mitigated on site at a 2:1 ratio.

❖ With technical assistance from WRA, the Town of Aberdeen has installed the first state-of-the-art waterless urinals in Maryland. Participants are working with the Marriott Corporation to install urinals at the Maryland House rest stop on Interstate 95. Installation is expected to save water and reduce demands on an overtaxed Aberdeen water supply.

❖ A first-of-a-kind water appropriation and use permit was issued to the Pennsylvania Electric Company for electrical

generation at Deep Creek Lake. The current permit recognizes the whitewater recreation potential in addition to protecting instream fisheries and regulating water use.

❖ Boating's Planning & Policy Program received \$2 million in grants from the federal Clean Vessel Act for marine sewage disposal facilities installations at public and private marinas. Eighteen such facilities were installed, using 75 percent federal and 25 percent state funds. Seventy three marinas have contracted for disposal facilities installations. Funds are also being used to outline responsibilities and regulations for sewage disposal.

❖ Maryland citizens have purchased 550,000 Chesapeake Bay license plates, raising \$5.6 million for the Chesapeake Bay Trust's (CBT) grant program. The state income tax checkoff program raised \$1,036,000, with donations divided evenly between the Trust and DNR's nongame and endangered species program.

❖ CBT awarded 386 statewide grants for bay restoration and education projects. Awards totaled \$729,467, with nearly 90 percent of Trust grants for amounts of \$5,000 or less. Funded projects include \$6,000 to the Eastern Shore RC&D Council for shoreline grass for erosion control planted by volunteers at four sites; \$12,000 to the Allegany County Landfill Liaison Committee for a household hazardous waste collection program; \$1,880 to the Chesapeake Bay Girl Scout Council for educational field trips; and \$19,695 to the Sherwood Forest Naturalist Program to reestablish oyster reefs on the Severn River.

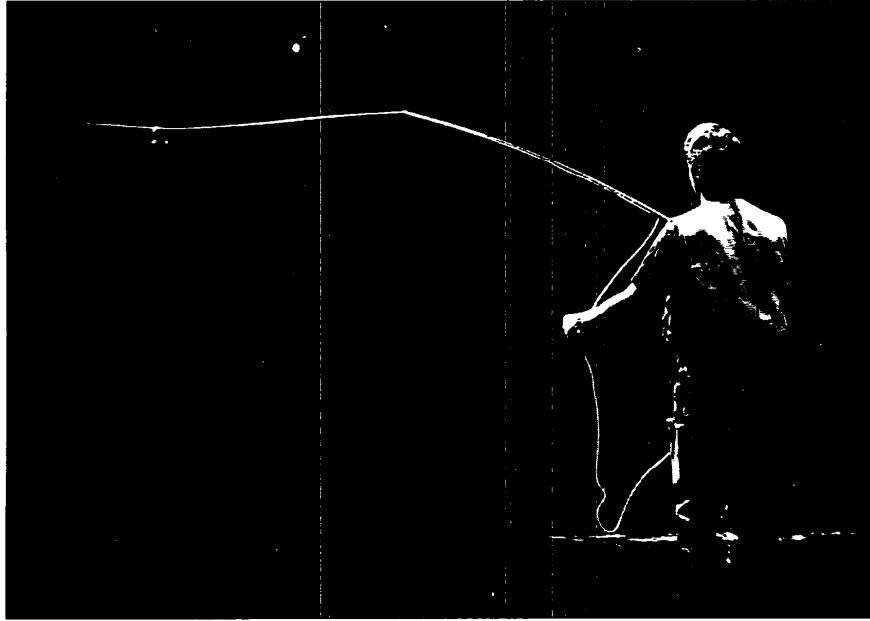
❖ Wildlife Division staff visited more than 450 meetings of sportsmen's clubs, and civic groups to listen to concerns and provide information.



DNR's GREENWAYS AND RESOURCE PLANNING PROGRAM surveys, evaluates and maps public lands, identifies resource protection needs and provides plans for compatible recreational development.



R RECREATION



The protection and preservation of Maryland's natural resources presents opportunities to enjoy varied recreational activities, benefiting individuals, communities and the economy.

❖ Maryland state forest and park visitors totaled 9,665,880, with 389,433 of those visitors at Green Ridge, Savage River, Potomac-Garrett and Pocomoke River State Forests. Fourteen swimming areas at Maryland state forests and parks attracted 676,328 visitors.

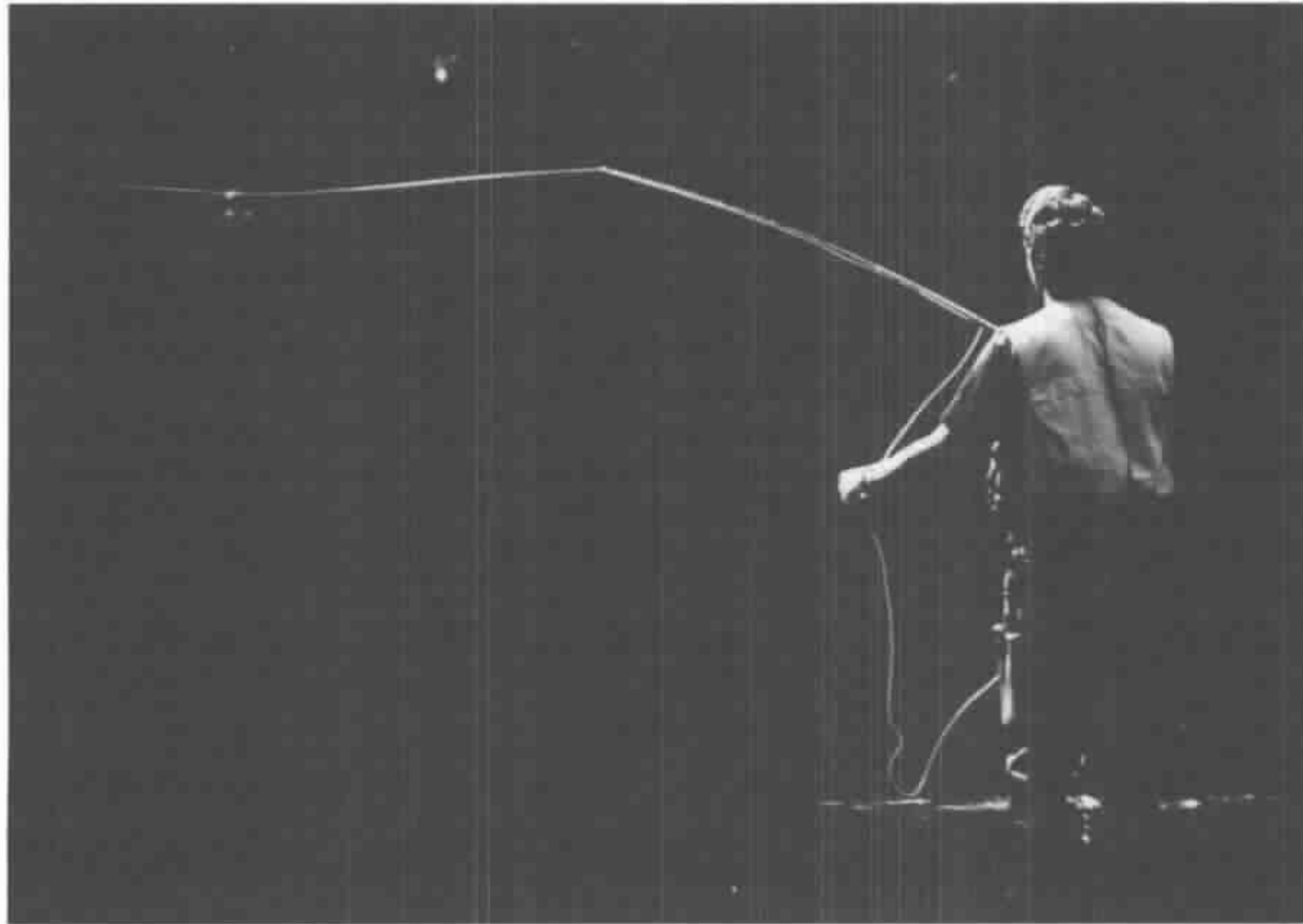
❖ Maryland state forests and parks, with 2,797 campsites in 24 of its facilities, drew 622,898 campers. Five state parks with a total of 45 cabins were used by 38,751 visitors. Four new camper cabins, with beds, tables, chairs and electricity, were added to public lands facilities to the enjoyment of 1,159 campers.

❖ Outdoor Discovery gave 500 children an outdoor experience in Maryland state forests and parks with its residential camping program for youths ages 8-17. Outdoor Discovery offers a basic camp to serve the needs of the less-experienced camper and a specialty camp to youths who have already developed an interest in the outdoors and want an opportunity

to sharpen those skills. Activities for both camps include hiking, biking, canoeing, rock climbing, fishing and a ropes challenge course.

❖ The Outdoor Adventures program offered 200 organized trips including hiking, walking, backpacking, canoeing, kayaking, camping and cycling year-round through Maryland public lands and waterways with DNR's State Forest and Park Service staff, volunteer trip leaders and naturalists.

❖ State forest and state park lands have more than 160,000 acres of land open to recreational hunting. During the appropriate seasons, licensed hunters may pursue a wide variety of game species, with some site-specific restrictions. Managed deer hunts were offered at Gunpowder Falls State Park, Fair Hill Natural Resources Management Area, Elk Neck State Park, Patapsco Valley State Park, Morgan Run Natural Environment Area and Wye Island Natural Resources Management Area.



Through its six regional service centers, DNR's LICENSING AND WATERCRAFT REGISTRATION SERVICES collects special revenues and statistical information through vessel titling and registration, off-road vehicle registration, commercial fishing licenses and hunting and sportfishing licenses.



❖ The DNR Wildlife Division's Shooting Range Committee awarded \$30,000 in grants to 10 Maryland shooting ranges for archery, trap, skeet, rifle and pistol. This program is designed to expand public shooting opportunities on both private and public ranges.

❖ Hunting provided more than 2.2 million days of recreational activity for Maryland residents and nonresidents. Economic activity associated with hunting totaled an estimated \$300 million each year.

❖ The state's 85,000-acre wildlife management area system, maintained by DNR's Wildlife Division for public use and improved wildlife habitat, provided more than 1 million days of varied recreational activity to citizens. Activities include hunting, fishing, horseback riding, boating, birding, wildlife photography, dog training, hiking and nature study.

❖ Each year, Maryland's wildlife resources provide some 6.6 million days of nonresidential (more than one mile from home) recreational activity, such as observing, feeding and photographing wildlife. Total direct expenditures associated with the nonconsumptive enjoyment of wildlife in Maryland are \$267 million annually.

❖ Maryland deer hunters checked in 34,805 deer during the firearms season, and bowhunters killed 11,251 deer. Muzzleloader hunters reported 5,178 deer taken. Total reported deer kill was 51,234, the largest state deer harvest ever reported.

❖ During calendar year 1994, approximately 190,000 boaters considered Maryland as their state of principal use and 500,000 sportsmen held fishing licenses. From August 1, 1993, through July 31, 1994, 150,000 sportsmen held licenses for hunting.

❖ Legislation creating biennial registration was proposed and enacted during the 1994 Maryland General Assembly so that

boaters now contact DNR every other year to maintain their vessel registrations. To implement the change and to equalize renewal numbers, one half of the 1994 registered vessel owners received registrations valid for one year; the other half received registrations valid for two years. Beginning in 1996, all issued registrations will be valid for two years.

❖ The Boating Administration's Planning & Policy Program, in cooperation with West Virginia, is developing boating regulations for Jennings Randolph Lake. An agreement, signed with the governors and U.S. Army Corps of Engineers, awaits congressional ratification. The lake will provide boating recreation as well as related recreational opportunity.

❖ To ensure safe boating access at state and local public boating facilities, Boating's Waterway Improvement Program completed eight projects at a value of \$443,000.

❖ Waterway Improvement staff completed six navigation projects at a cost of \$553,931, providing improved public access to Maryland's waterways. The program now has 56 actively funded projects under way with an estimated construction cost of \$13.5 million.

❖ The Elms, a 1,000-acre St. Mary's County bayfront tract managed by DNR's Power Plant Research Program (PPRP), was opened for multi-use recreational and environmental education. Recreational activities include swimming, picnicking, fishing, hiking, birding and hunting in season. Educational activities focus on bay-related programs for children and adults. Forestry and upland management conservation demonstrations are also offered.

❖ The PPRP and the Pennsylvania Electric Company, developed a plan for improving the quality, quantity and timing of water discharged from the Deep Creek Hydroelectric Project. The plan, incorporated in DNR's facility permit, will benefit whitewater boating recreation and protect a growing Youghiogheny River recreational trout fishery.



DNR's STATE FOREST AND PARK SERVICE manages natural, cultural, historical and recreational resources for the benefit of Maryland's citizens. It provides recreational and educational services in forests and parks open to the public across the state.





PUBLIC SAFETY *and* ENFORCEMENT



Maryland's natural resources are protected for the benefit of all components of the ecosystem with both civil and conservation law enforcement.

❖ Maryland reported 742 natural fuel cover fires, burning 2,100 acres. Major fire causes of natural fuel cover fires are arson, debris burning, children and equipment.

❖ Serious ice storms blanketed Maryland in February, creating major tree damage that resulted in a potentially serious wildfire problem. Downed trees and limbs provided a ready fuel source that needed to be quickly salvaged and removed. Nine counties were declared eligible for Federal Emergency Management Assistance funds and these funds were used for debris removal and clearance of fire access roads.

❖ Forest Service personnel provided 18 different types of trucks to the volunteer fire service in Maryland. Numerous smaller items such as generators, power plants and tools were also provided. Approximate value of federal excess property items was \$360,000.

❖ Fifty-one applications were received from volunteer fire companies for rural community fire program matching funds and the 39 fire companies who qualified for assistance received \$34,200. Much of the funding was used for equipment improvement like personal protective gear, SCUBA gear, pumps, radios and hose.

❖ The Forest Service received a grant from the USDA Forest Service to install 15 dry hydrants to improve fire protection in rural areas. The grant money is used for materials, with the costs of installation and equipment being provided by volunteer fire companies.

❖ There were 193 charges filed by Maryland Natural Resources Police (NRP) against subjects suspected of operating a vessel while intoxicated or under the influence of alcohol. This figure represents a 33 percent increase over similar



charges filed last year. The increase in filed charges can be attributed to special enforcement programs such as SWAMP (Safer Waterways Through Alcohol Monitoring Patrols) and Operation DWI Wet and Dry.

❖ NRP officers issued 8,892 citations and 18,214 warnings for violations of boating laws and general criminal laws. Many general criminal violations involved the possession and/or distribution of controlled dangerous substances. Activities that reflected significant decreases in violations detected include deer hunting, clamming and oystering.

❖ The NRP responded to 15,382 reported incidents for hunting, fishing and boating complaints, requests for assistance, and general criminal violations. A total of 35,893 requests for information were documented by the Annapolis Communication Center and the NRP's five regional offices.

❖ Twenty two people were killed and 241 injured in 432 boating accidents reported to the NRP. An estimated \$3,053,815 in property damage resulted from those accidents. The most notable accident was the December 1993 sinking of the fishing boat *El Toro II* near the mouth of the Potomac River, where three people were killed and 19 were injured. NRP officers assisted with the rescue and conducted an investigation.

❖ Drug-related cases handled by the NRP greatly increased. A specialized drug enforcement training program was given to all NRP officers, many of whom observed an increasing use of controlled dangerous substances by people who are fishing, hunting and boating in Maryland.

❖ The NRP conducted cooperative enforcement operations throughout the state with county police departments, county sheriff's offices, Maryland State Police, State Fire Marshall's Office, State Forest and Park Service, U.S. Coast Guard, Drug Enforcement Agency, U.S. Customs Service, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Maryland National Capital Park and Planning Commission, and Washington Suburban Sanitary Commission Police.

❖ The SFPS's Park Watch program received a governor's award for its pro-active crime prevention program, a feature of all of Maryland's state forests and parks.

❖ Arrests for violations of controlled dangerous substance laws on public lands has increased since the inception of SFPS's Substance Abuse Unit. The Substance Abuse Unit, working with other state agencies, assisted in eradicating more than 2,300 cannabis plants from Maryland's state forests and parks, half of those plants during the previous year. Unit members were recognized for their efforts, receiving certificates of recognition for the Maryland State Police Superintendent.

❖ DNR's Power Plant Research Program was involved in the environmental and safety assessment by the Nuclear Regulatory Commission's licensing of BGE's Calvert Cliffs' spent nuclear fuel storage facility. PPRP currently monitors status and issues associated with spent fuel loading and continues to conduct extensive environmental monitoring. Impact assessments of radioactivity discharged into the Susquehanna River and Chesapeake Bay by routine operation of Calvert Cliffs and Peach Bottom Nuclear Power Plants are also made by PPRP.

❖ The Water Resources Administration (WRA) retained the services of an authority on carbonate geology to evaluate sinkhole development in Carroll County's Wakefield Valley as well as other Maryland sites which might relate to quarry dewatering. The study results will be used to identify zones of dewatering influence and potential sinkhole development around quarry operations.

❖ DNR maintains a dam safety program to ensure the integrity of more than 350 dams in Maryland. In this fiscal year, 200 dams were either inspected or evaluated, with several unsafe dams identified and appropriate enforcement action taken to affect repairs. Public awareness of dams and dam safety is a strategic component of the program which conducted two public awareness workshops.

❖ WRA conducted 6,636 inspections and responded to 897 citizen complaints concerning permitted and non-permitted activities that might damage natural resources. Inspections reduce the impact of illegal activities and provide for public safety.

❖ The Boating Administration staff studied 10 areas in response to petitions requesting boating restrictions. Areas were studied for vessel traffic counts, types of boating activity, safety hazards and environmental effects. Regulations imposing some restrictions are being proposed for five areas.

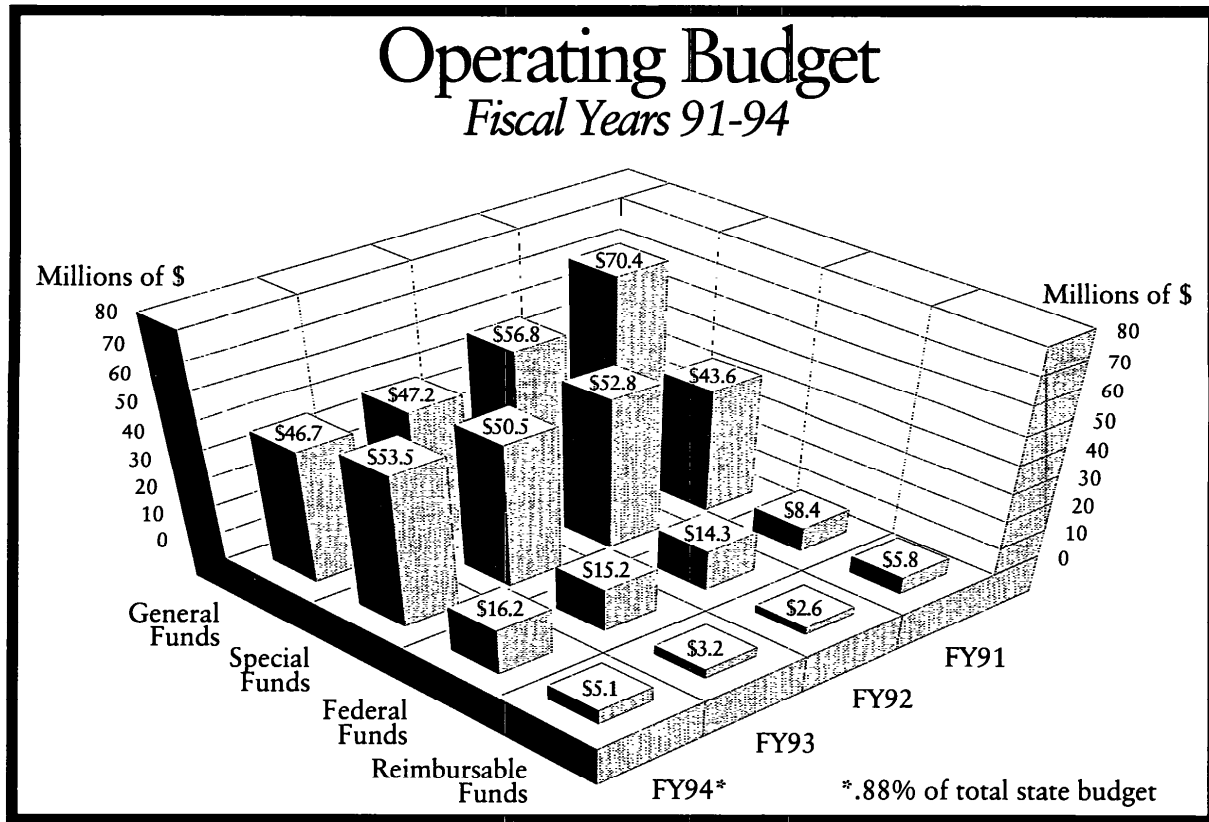


The NATURAL RESOURCES POLICE enforce all state laws, with priority focus on boating and conservation law, and serve as the primary search and rescue agency on state waters and inremote areas of the state.

A black and white photograph of a police boat moving across the water. The boat is white with a dark stripe along the hull. The word "POLICE" is printed in large, bold, black letters on the side of the hull. A person wearing a wide-brimmed hat and a light-colored shirt is standing at the helm, steering the boat. The boat is creating a wake in the water. The background shows a vast expanse of water under a clear sky.

POLICE

INSIDE *the* DEPARTMENT



❖ **Fiscal and Supportive Services** staff are implementing new accounting systems and a new procurement system for the agency. Staff are also noting an increase in Minority Business Enterprise (MBE) as accomplished by outreach programs sponsored and attended by DNR procurement personnel. DNR is one of three pilot agencies for the state in the Financial Management Information Service system.

❖ **Human Resource Services** provides unit assistance as well as support for fair practices and equal employment, benefits administration, recruitment and advancement, training and staff development, processing, and employee-employer relations. A new career development center with training materials and enhancement tools opened within the Tawes Building.

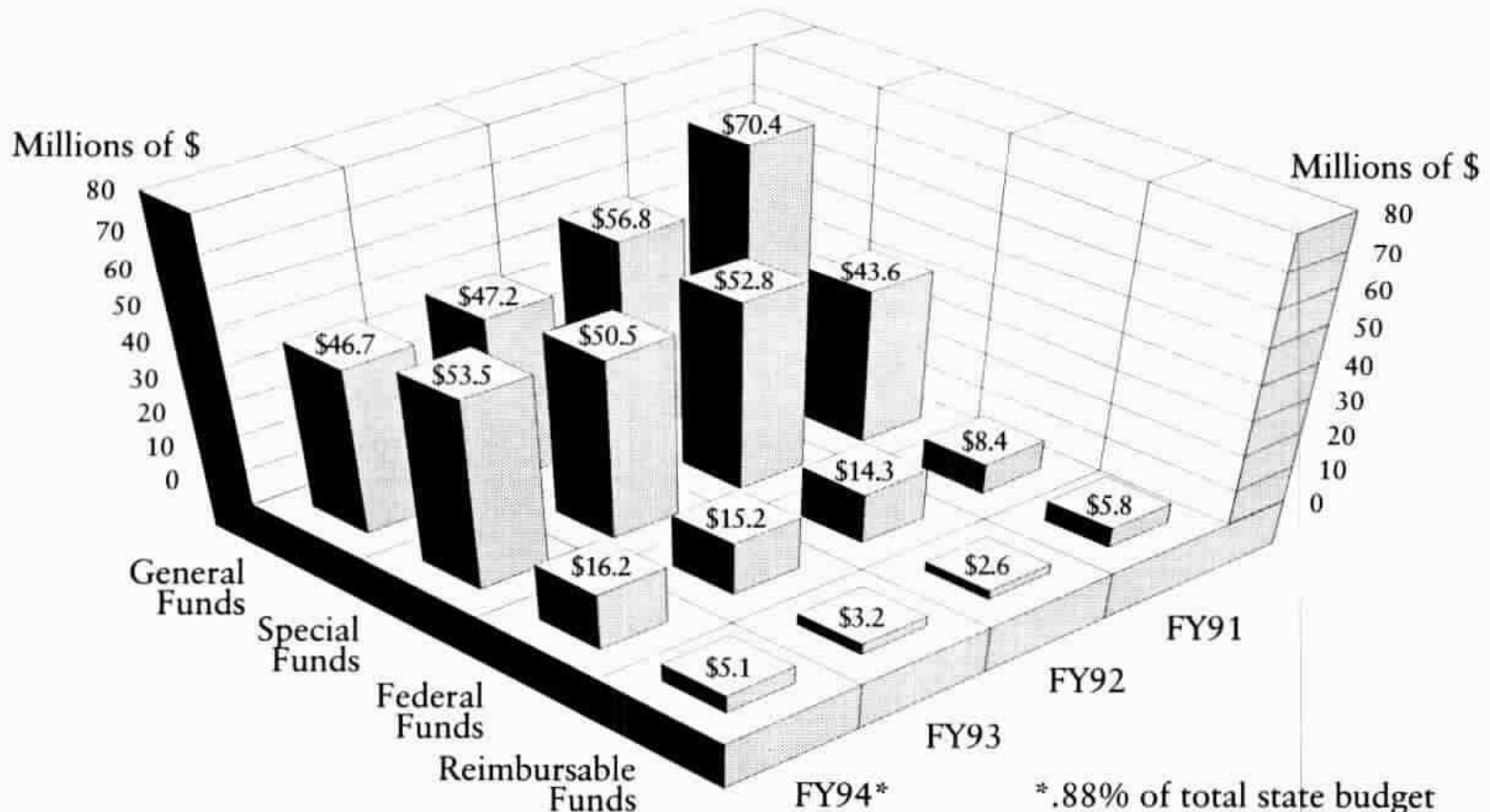
❖ **Management Analysis and Auditing** processes regulations, reviews department policies, addresses privatization, provides financial audits and carries out special assignments from the executive staff.

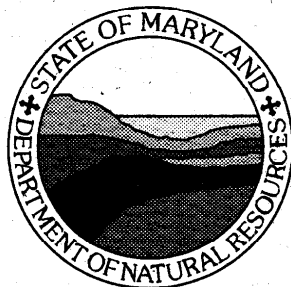
❖ **Management Information Service (MIS)** provides data processing, programming and analysis services and operates central computer facilities for DNR. MIS coordinates information processing and telecommunication activities with other state agencies. MIS coordinated a GIS demonstration project in the Annessex watershed, and added more than 200 users to the local area network. Staff also negotiated a license agreement to upgrade software at reduced cost and replaced older equipment with state of the art personal computers.

❖ **The Public Communications Office (PCO)** coordinates agency media relations, marketing and promotions and graphics. In each of four geographic regions, a representative interacts with the media, local officials and the public. PCO implements conference management and coordination as well as exhibit and display training through its marketing and promotions section. In support of all DNR units, projects like brochures, reports and newsletters are taken, in the graphics section, from concept to printed product.

Operating Budget

Fiscal Years 91-94





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