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The Virginia Wetlands Report No. 94-9

Virginia Institute of Marine Science

Center for Coastal Resources Management

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Wetlands Program

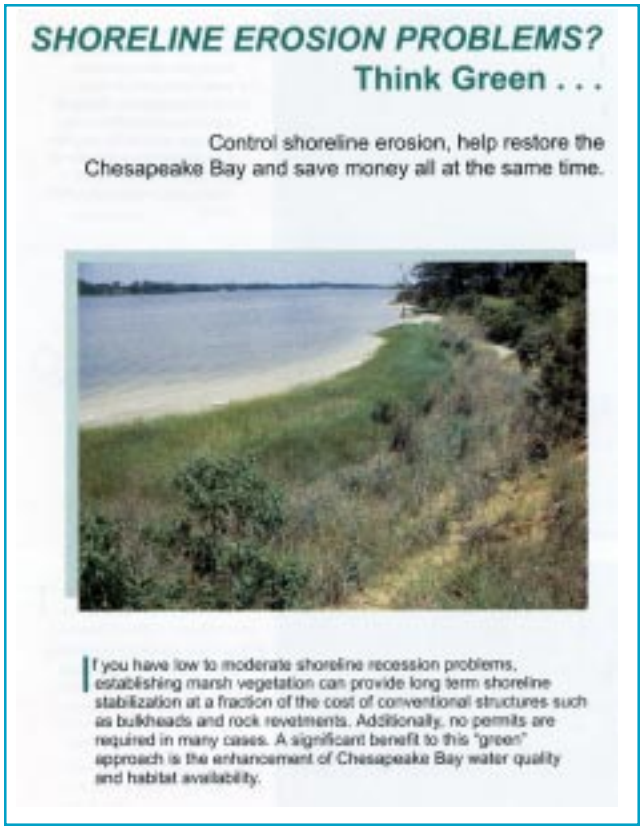
New Brochure Encourages "Green" Solutions to Shoreline Erosion

Jill Barnard

Shoreline erosion has the frightening potential to destroy a significant portion of Virginia's wetlands and uplands. While erosion has claimed many acres of shoreline in recent years, the destructive effects of this process can be minimized. One method of halting the erosion process is to construct control structures such as bulkheads and riprap. Unfortunately, in many cases, these structures simply divert the erosion processes to adjacent unprotected shoreline.

According to the *Wetlands Guidelines* developed by the Virginia Marine Resources Commission and the Virginia Institute of Marine Science, "for shorelines experiencing mild to moderate erosion, the planting of marsh grasses is a preferred means of stabilization." Creating a fringe marsh enables the shoreline to build up naturally as sand and other sediments are trapped along the length of the property. Cordgrass and saltmeadow hay planted in a marsh deplete the energy of waves before they can reach the upland bank and cause erosion. In addition, establishing a fringe marsh provides habitat for marine birds and other animals. The result is a shoreline with a much longer life expectancy.

Because of the exceptional potential of planting marsh grass as a method of erosion control, a brochure was published for waterfront property owners and others interested in the method. The eight-page color brochure, produced by Scott Hardaway and Tom Barnard of VIMS, will be available to the public through local wetlands boards and Planning District Commissions. The brochure was funded in part, by the Virginia Marine Resources Commission, the Virginia Institute of Marine Science, and the Department of Environmental Quality's Coastal Resources Management Program through Grant #NA27OZ0312-01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resources Management.



Entitled *Shoreline Erosion Problems? Think Green...* the brochure shows the progression of fringe marsh projects from the initial planting to months and years later. It also provides helpful information on cost-comparison and guides on planning and evaluating.

It is important to keep in mind, however, that marsh grass is an appropriate form of shoreline erosion control "for shorelines experiencing mild to moderate erosion" (*Wetlands Guidelines*). The more severe cases often warrant bulkheading or riprap. In these instances, planting a marsh would not provide sufficient shoreline protection.

Scott Hardaway estimates that marsh grass is an adequate means of shoreline erosion control for 60-70% of shorelines in Virginia. Copies of the brochure are also available from VIMS and The Shoreline Erosion Advisory Service office in Gloucester Point.

VIMS Wetlands Education Program Notes

Maryann Wohlgemuth

We are pleased to announce that, after reviewing our course offerings, the College of William and Mary Continuing Education Program is awarding one Continuing Education Unit (CEU) for each wetland self-taught education unit completed. Four self-taught units are now available: Wetlands Ecology, Wetlands Values and Functions, Coastal Structures, and Human Activities, Impacts, and Alternatives. Each self-taught unit contains a text, an exam, and a videotape. There is a ten dollar fee for processing CEU credits. To apply for CEU's, simply return your exams with a note including your name, address, social security number and a check for ten dollars and state how many CEU's you would like. If you want all four CEU's do not mail a check until you have completed all four units. Please make checks payable to The College of William and Mary.

Because our copies of self-taught units are limited and demand is increasing steadily, we would greatly appreciate the prompt return of self-taught units. We prefer that units be returned within two weeks. If you circulate them to friends or show the video to a group please let us know. This information is critical in evaluating the usefulness of the program. If you do wish to use one of the units to teach others or share with friends, you need only call one of the phone numbers below or send us a card to receive a time extension.

Currently, we are planning the addition of two more curriculum units in the lecture form and four more self-taught units. We are open to suggestions on your needs or ideas for future topics to cover in our education program. Please write us with your ideas or we can talk at upcoming seminars.

Don't forget the big two day workshop October 11 and 12 at VIMS. Please help us meet your needs by filling out the registration sheet on the seminar announcement you should have received last week. A laboratory class will be set up in Watermans Hall this year. The lab will have on display plant and animal specimens from local wetlands.

The goal of our education program is to have all wetland board members complete all core curriculum units (as listed in the seminar brochure) and eventually a few of the advanced units. The core curriculum is designed to provide the basic information a board member needs to know to make informed decisions regarding tidal wetlands, in Virginia. These core courses include education units on the basic ecology and values of wetlands as well as the role of the wetland board and operational procedures for a board meetings. Advanced courses may be particularly beneficial to board members considering more complicated projects such as marina devlopment or large dredging projects. If a board feels a particular need for one of these units because of an upcoming project and would like one presented at a board meeting, please contact us and we will try to accomodate that need. The advanced unit entitled Natural Resources Management in Coastal Virginia provides a very good review of the environmental legislation and mangement programs which affect the natural resources of Virginia's coastal plain.

To borrow a self-taught unit and apply for CEU's please contact Phyllis Mayo 642-7380 or mail to VIMS Wetlands Program, Gloucester Point, Virginia 23062.

We have come to realize that our readers often have questions about wetlands and related issues. Beginning in our next issue, "Wondering about Wetlands" will become a regular feature in the *Virginia Wetlands Report*. The column will be dedicated to answering your specific questions concerning wetlands and related issues. Please help us make this a success by submitting your questions to: William Roberts, Wetlands Program , Virginia Institute of Marine Science , Gloucester Point, VA 23062

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Birds of the Eastern Shore

Julie Bradshaw

Virginia's Eastern Shore is an important stopover for neotropical migratory songbirds in fall migration. These birds breed in the United States and Canada in the summer and spend their winters south of the United States in the Caribbean and Central and South America. Many of the birds migrate south along the Atlantic coast and are funneled to the southern tip of the Eastern Shore, where they refuel before continuing their long journeys south. In fall, diverse species of birds can be found on the southern tip of the Delmarva peninsula. An observant birder should be able to spy nearly 100 different species of birds during the upcoming birding festival on the Eastern Shore (see related article in this issue).

Dr. Bryan Watts of William and Mary's Center for Conservation Biology has been studying fall songbirds on the Eastern Shore for the past few years and has found that, of the neotropical migrants, three species are particularly abundant during this time. These are the American redstart (*Setophaga ruticilla*), black and white warbler (*Mniotilta varia*), and black throated blue warbler (*Dendroica caerulescens*). Adult male redstarts are primarily black with bright orange patches in wings and tail. The adult females are olive green and brown and have yellow patches similar to those of the male. Adult male black throated blue warblers are blue-gray above, with black throat and sides, and white below. Black and white warblers, as the name suggests, sport stripes of black and white, including a striped crown. All three species are primarily insect eaters. The black and white warbler is unique among warblers in its habit of creeping along tree branches and trunks like a nuthatch. Redstarts are very active pursuers of flying insects and have been described as "butterfly-like." A keen observer should expect to see all three of these warbler species, and a host of other migrating birds, in deciduous woods on the Eastern Shore during the upcoming birding festival.

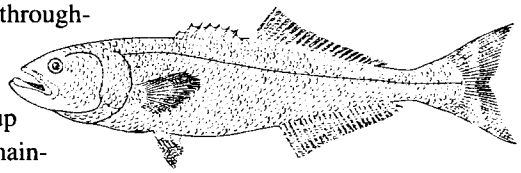
Bluefish

(Pomatomus saltatrix)

Lyle Varnell

Generally, bluefish can be found in the Chesapeake Bay and Virginia's coastal waters from April to November. Peak abundance usually occurs between July and October. A popular gamefish found in nearly all warm seas, bluefish are traditionally considered a sport fish in the mid-Atlantic region. It is believed that over 75% of the bluefish harvested in the Chesapeake Bay are landed by sports fishermen. Bluefish are seasonally important in the pound net and gill net fisheries.

P. saltatrix is the only member of the family *Pomatomidae* found in the Chesapeake Bay region. A few rather deep-dwelling species, mainly inhabiting rocky slopes throughout the world, make up the remainder of this family's members. All members of this family are voracious feeders. Bluefish are characterized by their torpedo shaped body and two separate dorsal fins. The posterior dorsal fin is larger and longer than the anterior dorsal fin and parallels the anal fin, and the caudal fin is broad and prominently forked. Young fishes of 7-9 inches generally appear deeper and more flattened than adult fishes. The head is characterized by a moderately pointed snout, a large oblique mouth with a projecting lower jaw and prominent, razor sharp teeth. Body coloration is generally blue-green above shading to a silvery-white on the belly. Pectoral fins usually have a black blotch at the base. Maximum size may reach nearly four feet in length and about 30 pounds, although they are generally not found to exceed three feet in the Mid-Atlantic region. Longevity is believed to be 11 to 12 years.



Although the bluefish most often inhabits estuaries, it is basically a pelagic species found worldwide in most temperate and semi-tropical coastal regions, and usually occurring in large schools. Along the western Atlantic, bluefish commonly range from Cape Cod Bay to southern Argentina. Occurrences have been recorded as far north as Nova Scotia.

Juvenile and adult bluefish overwinter in deep offshore waters. Migration by adults to estuarine foraging

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Natural Places to Visit

York River State Park

Pam Mason

Location: James City County. To reach the park, take the Croaker exit off of Interstate 64. Follow Route 607 about one mile and turn right onto Route 606. The park entrance is about 1.5 miles on the left.

Details: Owned by the Virginia Division of Parks, the park is open from 8 a.m. until dusk. There is a parking fee. The park has hiking and biking trails, boat launching facilities and an educational center. Taskinas Creek Trail is about two miles long. Park personnel conduct guided canoe trips on the weekends. It is not necessary to bring a canoe; however, reservations are recommended. For more information call (804) 566-3036.

The park landscape is comprised of deep ravines, high ridges and exposed bluffs along the York River. Formed by erosion and cycles of sea level rise and fall, the varied landscape features provide diverse habitats for plants and animals.

The Taskinas Creek Trail begins at the parking lot and passes through the forest community found growing on the top of the ridges. Many species of oaks grow with beeches, tuliptrees and sycamore. Small trees, dogwood and American holly, as well as common shrubs like mountain laurel and huckleberry, populate the understory.

The trail provides a great view of Taskinas Creek. A boardwalk goes out into the marshes. Zonation of the vegetation in the brackish portion of the creek is evident from the saltmarsh cordgrass growing in the intertidal zone and the high marsh covered with saltmeadow hay and big cordgrass.

The best way to see Taskinas Creek is from the water. A trip on the creek offers the opportunity to observe some of the many wetland types found in tidewater Virginia, from brackish to freshwater species. Beginning at the mouth of the creek at the York River, the brackish wetlands are dominated by saltmarsh cordgrass and saltmeadow hay, with stands of big cordgrass, Olney threesquare and other brackish plants. Moving upstream, cattail and buttonbush are found growing along the upland edge of the marsh. Upland runoff and freshwater seeps allow for the presence of these less salt tolerant plants. Even further upstream, freshwater plants take over. The dominant intertidal species are arrow arum and pickerelweed. Other species common in the freshwater community include cattail, wild rice, and marsh hibiscus.

Marsh wrens nest in the saltmarsh grasses and the diverse marsh provides habitat for several rail species. Large flocks of diving ducks gather in the winter. Look for buffleheads, canvasbacks, and ruddy ducks. Fall and spring migrations bring songbirds including vireos and warblers. Red-shouldered hawks, red-tailed hawks, and turkey vultures are commonly seen in the park. Ospreys are found along the river in the summer. Keep your eyes open for the bald eagles!

Bluefish
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grounds occurs in the spring. Bluefish can generally be found in shallow inshore areas after water temperatures reach about 55° Fahrenheit. After a brief stay, adults depart the estuary to spawn in the ocean, which occurs in warm surface waters over the outer half of the continental shelf. Eggs have, however, been reported as far inshore as the southern Chesapeake Bay. In the Mid-Atlantic region spawning occurs June through August. A single female may release between 100,000 and 200,000 eggs.

Young bluefish begin to move inshore after transformation from the larval stage is complete; usually during the early summer. Estuaries and shallow coastal beach areas are used as nursery grounds by young bluefish, although they occasionally ascend considerable distances up rivers. Adults often re-enter estuaries in late summer to feed. Juveniles and adults depart estuarine waters by autumn for offshore overwintering grounds.

Both juveniles and adults are voracious feeders. Prey include most all fishes inhabiting bay and coastal waters, including other bluefish. Schools of bluefish typically follow large schools of menhaden, feeding at will.

Bluefish do not directly rely on coastal wetlands during their life cycle, but rely on the products of wetlands for food. Many of the prey species of bluefish are dependent on tidal wetlands during their life cycles as habitat, and foraging and nursery areas.

Structurally Speaking...

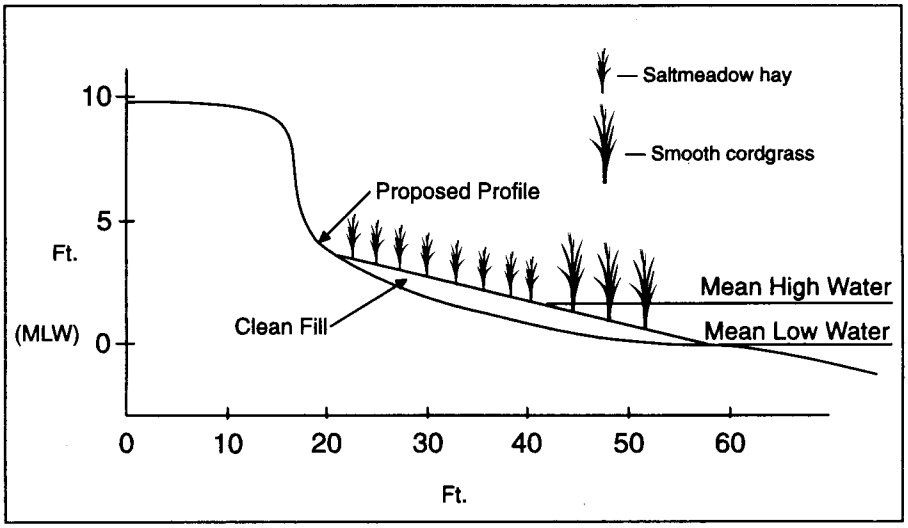
Marsh Grass Planting: Shoreline Stability Without Structure

Walter I. Priest, III

Sometimes the best solution to a shoreline erosion problem is not a structure but rather a lack of structure. This lack of structure can allow the normal dissipative ability of a natural shoreline to provide erosion protection without the cost and liabilities of a hardened structure. The natural protection is derived from both the slope of shoreline and its vegetative cover which allow waves to break across the shore with a minimum amount of erosion potential.

Although marsh grass planting is not the answer to every erosion problem, it definitely has a place in the spectrum of shoreline protection strategies available to property owners. If you are experiencing erosion along a reasonably protected shoreline where the maximum exposure is less than one mile and the shoreline is sloped or can be graded back to an even slope, vegetative stabilization may be an option.

Once it has been determined that marsh grass planting is the option to be pursued, there are a number of specific of steps that need to be followed. First and most important is shaping or grading the shoreline so that an area at least 10 - 20 feet wide can be established in the intertidal area (See Figure). The next step is determining the planting zones and plant species to be planted in each. The most commonly used species in brackish areas are saltmarsh cordgrass, *Spartina alterniflora*, and saltmeadow hay, *Spartina patens*. The elevation at which these plants are placed is absolutely critical for their survival. Saltmarsh cordgrass grows at the lower elevations between mean tide level (MTL) and mean high water (MHW) while saltmeadow hay grows from MHW to the upper limit of wetlands (ULW) and above (See figure above). The easiest way to establish these planting zones is to extrapolate from adjacent marshes using the water level in the creek as a level. To help ensure the appropriate plants are being placed in the transition zone at MHW, it is often recommended to alternate the species along several rows at this elevation.



The location of specific marsh grass species relative to tidal water elevations is absolutely critical to the successful establishment of a fringe marsh.

The plant materials themselves can be readily obtained from a number of local nurseries as bare root seedlings, in cell packs or peat pots. If only a very limited number of plants are needed, they can be transplanted from nearby marshes, but *only if* the material can be taken without having an appreciable impact on the donor marsh. The plants are usually planted on 18" centers, but can be planted closer if faster coverage is desired or farther apart to reduce costs. To help stimulate the growth of plants in a new marsh, each plant should be planted with one ounce of high nitrogen slow release fertilizer belowground.

Once the grading and marsh planting are finished, it is equally important to implement appropriate erosion control measures on the adjacent uplands disturbed during construction. Best management practices, such as erecting silt fences and seeding and thatching, should be employed to prevent upland erosion from impacting the newly planted marsh.

Additional information on marsh planting for erosion protection can be obtained from new brochure, *Shoreline Erosion Problems? Think Green...* recently published by VIMS or by calling the Shoreline Erosion Advisory Service in Gloucester Point at 804-642-7121.

Virginia's Eastern Shore: Gone to the Birds

Jill Barnard

Traveling along the east coast of the United States, they number in the thousands. Their annual flight which originates in New England, concludes when they finally reach their Central and South American destinations. They make several stops along the way to rest and rejuvenate for the remainder of their journey, meanwhile attracting the attention of curious bystanders.

No, they are not tourists or travel fanatics spending their vacation time leisurely making their way down America's eastern shoreline. They are neotropical migratory songbirds fleeing the cold winter climate of the northeastern United States for the warmer temperatures of Central and South America.

Fortunately, a common stop on their travel route is Virginia's Eastern Shore where, through the creation of a festival in their honor, residents have begun to take advantage of the birds' temporary presence there.

The second annual Eastern Shore Birding Festival will be held on October 8 & 9, 1994, and appears to be a precursor of many more to come. The festival is sponsored by The Eastern Shore of Virginia Chamber of Commerce and is based at the Sunset Beach Inn in Kiptopeke, in Northampton County.

An example of the increasingly popular form of travel—ecotourism—the festival is part of an attempt to improve the community's economy, and at the same time, preserve the natural resources of the area upon which the migratory songbirds depend for their annual journey.

The popular phrase, sustainable development, has also commonly been used in reference to the changes on the Eastern Shore. Simply put, sustainable development constitutes "economic growth that doesn't damage the environment" (Davis, 1994). It is an environmentally friendly alternative to the harmful industrial build-up which commonly accompanies a prosperous economy.

Based on the report summary, *Economic Impacts of the First Annual Eastern Shore Birding Festival*, Northampton County can certainly use the increased revenue. The report states that the county has "one of the smallest and poorest economies in Virginia, falling well below the state average for many indicators of economic strength."

Last year's festival attracted almost 2,000 birders, ranging from experts to amateurs. It was reported that several local restaurants and hotels were filled to capacity as a result of the festival's impressive turnout (Mayondo and Dawes, 1993). The "impact of the Birding Festival on total income was estimated to be $28,500," the economic report reads. Although the number is relatively small, "the fact that the festival did produce positive economic benefits for the county is significant" (Resource Analytics Inc., 1993).

Project organizers are taking specific precautions to minimize the environmental impact of the significant influx of people created by the festival. During last year's weekend of events, participants parked their vehicles in the parking lot of a local hotel and continued their trip on school buses provided by Northampton County to keep traffic to a minimum. Experienced and knowledgeable tour guides led small groups—20 or fewer—through the fragile environment. Vending booths were placed outside of the birds' fragile habitat to minimize harmful natural impacts.

Obviously, project organizers do not want to harm the environment, but communicating the importance of conservation and preservation to the local residents is of even greater importance. The simplest means of doing this is to demonstrate to them the monetary benefits possible if the environment is sufficiently cared for and maintained. Migratory songbirds require the specific habitat found in the lower end of Northampton County, and unless these areas are protected and perhaps enhanced, the birds will gradually disappear. Without the songbirds, birders will not be enticed to visit the Eastern Shore, and without birders, there is less money pumped into the economy.

Communities are realizing now, more than ever, the potential economic benefits of nature tourism. Cape May, New Jersey for example, is a site known among birders as a birding "hot spot," according to an article entitled "Bird watching means big bucks for Eastern Shore" in the October 6, 1993 edition of the *Eastern Shore News*. Through a study conducted at the Cape May Observatory, researchers were able to compile substantial demographical information about the park's visitors. Based on the Cape May findings, the article states that in Northampton County "fewer than 100 birders per day could make a significant contribution to the local economy."

The participants attracted to the bird festival are given a variety of options for how to spend their time. Lecturers discuss such topics as Eastern Shore butterflies, wetlands management, and colonial nesting birds, while workshops are offered on bird photography, environmentally-sound landscaping, and how to attract birds to your own backyard, just to name a few.

The lectures and workshops are in addition to tours intended to pro-

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Geographic Information Systems

The Virginia Geographic Information Network (VGIN)

Marcia Berman

This column has repeatedly emphasized the important roles that geographic information systems (GIS) are playing in natural resource management and the development of policy surrounding resource issues. Until now, past efforts within the Commonwealth to develop and manage geographic databases statewide have had limited success. Successful enterprises have largely been limited to individual users and programs either at academic institutes or within specific agencies. The expanded use of GIS data for landuse and transportation planning, expansion and maintenance of public utility systems, census tracking, and emergency response programs calls for a unified mechanism through which data can be shared, and transferred among the various users within the Commonwealth. Likewise, a central repository under the guidance of strict quality control and assurance protocols to archive and distribute data is also required. The new Virginia Geographic Information Network (VGIN) has been established, in part, to accomplish these goals.

The birth of VGIN is largely credited to the efforts of the Commission on Population Growth and Development. Today the program is administered through the Department of Planning and Budget (DPB), with the Council on Information Management (CIM) playing a cooperative role in the program's coordination. In the strategic planning process to set goals, standards, and procedures for VGIN, members from various state and local government offices have been called to assist. These include, but are not limited to the Department of Transportation, the Department of Environmental Quality, the Department of Mines Minerals and Energy, the Chesapeake Bay Local Assistance Department, the Virginia Institute of Marine Science, University of Virginia, the Northern Neck and Middle Peninsula Planning District Commissions, the County of York, and the City of Newport News. Coordination

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Eastern Shore
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vide birders with the opportunity to observe the fowl in their natural habitat. Canoe trips, driving tours, and hikes through the forest are further examples of the festival's offerings.

Not only are there activities planned for the adults, but there are also those specifically geared toward children. Contests, games and programs are intended to educate young people about birds, the migration process, and the role that the Eastern Shore and Chesapeake Bay habitats play in that process.

Local as well as national vendors are invited to participate in the festivities. Commonly sold during last year's festival were various types of bird-watching paraphernalia, arts and crafts, and plants native to the Eastern Shore.

Last year's festival received positive feedback from most participants and overwhelming interest in returning for future birding festivals in the area. Hopes are that this year's festival will be equally successful. With a year of experience behind them, festival organizers hope to improve upon the weaknesses of the past and retain the strengths.

Ecotourism can be of considerable value when managed correctly. Its two primary objectives, economic development and environmental preservation, are major concerns of virtually all communities, although not all of them possess the natural resources necessary to support a successful program in nature tourism. However, communities such as Northampton County stand to benefit substantially from it. In many areas of the world, traditional tourism serves as a primary source of revenue. Unfortunately, this economic gain commonly displaces a regard for nature. Ecotourism unifies the two to create a sort of symbiotic relationship: increased economic prosperity serves as a catalyst for local residents to maintain their unique surroundings, and simultaneously the additional revenue makes this maintenance, among other things, more financially feasible.

The Eastern Shore Birding Festival is one step in the direction of effective nature tourism in Northampton County. Its expansion into more extensive ongoing tourist attractions could mean a brighter outlook on the future of the County's economy.

For more information on the Eastern Shore Birding Festival, contact: Eastern Shore of Virginia Chamber of Commerce, P.O. Drawer R, Melfa, VA 23410.

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and cooperation with these and other agencies will build a consensus to guide VGIN in the development of the geographic network.

A GIS Management Unit has been established within VGIN to oversee the development of the geographic information network. A large component of this unit, including staff and computer hardware and software, has been relocated from the Department of Environmental Quality (DEQ). Historically, this unit was known as the EcoMaps Program operating within the Council on the Environment.

The VGIN model is multi-tiered and represents three basic levels at which data will be collected; state, regional, and local levels. The state level tier includes data collected at smaller scales and are generally less detailed. The local level tier will include geographic data mapped at large scales with the highest levels of detail and accuracy. Initially VGIN is to develop common data layers essential for all three tiers.

Common data layers will be developed initially at a scale of 1:24,000 (1"=2,000'). Provisions to acquire funding to generate these data at larger scales of 1:12,000 (1"=1,000') will begin immediately. Concurrently, efforts to acquire digital satellite imagery to develop Digital Orthophotographic Quadrangles at a scale of 1:12,000 is also expected to begin. The common geographic data layers scheduled to be created within the 1994/1995 fiscal year include: transportation, hydrography, political boundaries, and topography. The development of a landuse/landcover data layer should follow.

Calendar of Upcoming Events

October 8 & 9	Eastern Shore Birding Festival Based at the Sunset Beach Inn, Kiptopeke, VA For more information write to: Eastern Shore of Virginia Chamber of Commerce, P.O. Drawer R, Melfa, VA 23410
October 11 & 12	VIMS Tidal Wetlands Education Program at the Virginia Institute Of Marine Science, Gloucester Point, VA 23062 Information and registration has been distributed by Wetlands Advisory Program. For more information, call (804) 642-7380

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