Virginia Seaside Heritage Program

Hope Revived for a Seaside Treasure

Restoration success has brought new hope to the Eastern Shore through a public-private restoration partnership created by the Virginia Coastal Zone Management Program in 2002 - the Virginia Seaside Heritage Program (VSHP). The VSHP focused on restoration of the aquatic resources of the barrier islands, bays, and salt marshes along the Atlantic coast of the Eastern Shore. This area holds tremendous potential to demonstrate appropriate management of economic development and habitat restoration within a rare and fragile ecosystem. The Virginia CZM Program and its partners have secured continuous funding (mostly from NOAA) since 1997. Restoration efforts continue but the partners also are now working on management techniques and policies that will ensure appropriate uses and protect this global treasure through a Special Area Management Plan.

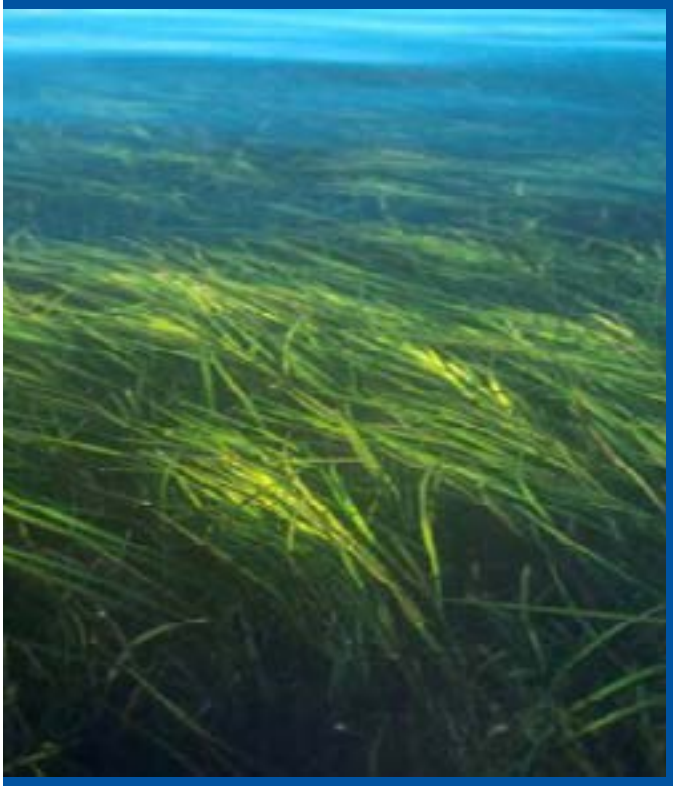
By fall of 2013, NOAA will have awarded over $6 million in funding for marine restoration and management of Virginia's seaside bays. The Seaside partners are bringing back eelgrass, bay scallops and oysters, protecting water quality for both wild and aquaculture fisheries, and stimulating the ecotourism industry.

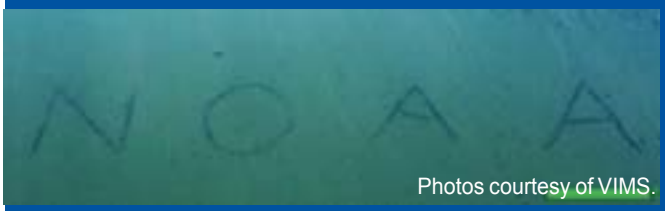
One of the primary goals of the restoration has been to catalyze nature's ability to heal itself. This is clearly happening on the Seaside of Virginia's Eastern Shore, where over 250 acres of planted eelgrass have now spread on their own to almost 5,000 acres. Investments in habitat restoration like these will help protect the long-term economy of Virginia's Eastern Shore by stabilizing the coastal resource on which many industries depend, from fishing to aquaculture to ecotourism.

Virginia Coastal Zone
MANAGEMENT PROGRAM

Protecting, restoring, strengthening our coastal ecosystems & economy.

Photo courtesy of Patrick J. Hendrickson / Highcamera.com.





Photos courtesy of VIMS.

Photo courtesy of TNC.

Seagrass Restoration Results

After the hurricanes of the 1930's and a devastating disease, eelgrass disappeared from the Seaside of the Eastern Shore, and with it bay scallops and other fish that depend on it as a protective nursery. The Seaside Bays drain about 300 square miles through at least eight openings to the Atlantic. This geography keeps Seaside water cleaner and the temperatures cooler, allowing for good eelgrass growth. Cooler water also retains more dissolved oxygen which is critical for finfish and shellfish. The Chesapeake Bay on the other hand drains 64,000 square miles through only one opening, making water quality and cooler temperatures harder to achieve.

So the Virginia Institute of Marine Science began planting test plots of eelgrass on the Seaside with NOAA funding from the Virginia Coastal Zone Management (CZM) Program in 1998 to see whether it could be brought back. Based in part on the success of that effort, the Virginia CZM initiated a multi-partner Virginia Seaside Heritage Program (VSHP) in 2002. Between fall of 2002 and fall of 2008 the Virginia CZM funded planting of about 200 acres of eelgrass seeds by the Virginia Institute of Marine Science (VIMS). With the help of The Nature Conservancy (TNC) Community Restoration Program, funded by the NOAA Restoration Center, reproductive shoots of eelgrass are collected each spring, protected in tanks of circulating seawater over the summer, and then the seed is scattered overboard in various test configurations each fall.

Amazingly, by 2007 those 200 planted acres had spread to over 3,800 acres and by spring 2013, almost 5,000 acres and the work continues. The two dispersal strategies of eelgrass (floating flowering shoots transported out of the bed with viable seeds to areas far from its source, and seeds that float on the surface with an air bubble when released from the plant) have contributed to its rapid spread.

Oyster Restoration Results

Seaside oysters are a bit different from Chesapeake Bay oysters. They are saltier and often take on a more elongated shape. They also have found refuge in the hard to navigate small creeks that wind through the Seaside marshes. In 1998, Virginia CZM began providing NOAA grants to the Virginia Marine Resources Commission to construct oyster reefs on the Seaside. By summer of 2008, there were over 10 acres of Virginia CZM funded reefs and over 11 acres of reef constructed by TNC with funding from the NOAA Restoration Center, the Norfolk Foundation and the Virginia Aquatic Resources Trust Fund. A VSHP inventory of oyster biomass completed by VIMS in December 2008 revealed 3.2 billion oysters on the Seaside, a number that far exceeded population estimates for the Virginia portion of Chesapeake Bay.

Scallop Restoration Results

Perhaps due to the great success of the VSHP, NOAA awarded VIMS, VMRC and TNC a two-year, $2 million American Recovery and Reinvestment Act of 2009 grant to continue eelgrass, oyster and scallop restoration. VMRC had begun a few small scallop experiments under the VSHP, but this grant allowed VMRC, VIMS and TNC to undertake a much more concerted effort. In 2011, Virginia CZM reinstated funding to VIMS for eelgrass and bay scallop restoration, allocating $514,000 through 2014. So far, the bay scallops are doing well as VIMS has ramped up its onshore hatchery/ nursery capacity. Bay scallops have been placed out in cages in the restored eelgrass beds to serve as spawning stock for the next generation. Tens of thousands of scallops have been released into the eelgrass beds. But it will take several more years of effort to firmly establish this “ephemeral” species which has a short life span of only about two years.

Photo courtesy of VIMS.

Shellfish Aquaculture Results

To promote the sustainability of shellfish aquaculture, Virginia CZM funded VIMS and Virginia Sea Grant to develop a set of “Best Management Practices” that were endorsed by the shellfish growers. The practices include 30 items such as proper disposal of nets used to cover clams to protect them from predation, proper disposal of material cleaned from nets, assurance that motorized equipment is not leaking oil into the water, ensuring sediments are not overly disturbed during harvesting, and inspecting shellfish regularly for signs of disease. Removal of derelict clam netting (and crab pots used in harvesting wild crabs) was helped by the efforts of the Eastern Shorekeeper, also supported through the VSHP.

Are shorebirds being affected by the large tracts of intertidal and shallow water clam farms on the Seaside? After a year of studying abundance and distribution of shorebird prey in the mudflats with and without clam farming operations, VIMS concluded there was no observable negative effect on the birds. In fact many birds seemed to be eating organisms that were growing on the nets used to cover the clams – perhaps a mutual benefit to the shorebirds and growers.

Another benefit of these efforts is that the shellfish growers have re-formed a Shellfish Grower’s Association. Seaside SAMP efforts by Virginia CZM and its partners are also showing how wild shellfish harvests, shellfish cultivation and seagrass restoration could all be increased through changes to current regulatory boundaries.

Photo courtesy of DCR.

Phragmites Control Results

Virginia CZM funding to the Virginia Department of Conservation and Recreation, a partner agency, allowed for Phragmites on the Seaside to be censured, mapped and removed. The largest patch was found on Wallops Island and covered 186 acres. About 2,000 acres of Phragmites were detected and mapped during each census, demonstrating that successful treatments and reductions are being offset by expansion of untreated patches and on-going establishment of new patches. From 2005 to 2008, over 4,630 acres of Phragmites were treated by DCR; however, areas where no control measures were taken showed annual increases of up to 17% in Phragmites cover. Clearly this will be a constant battle. Priority areas for control are those where rare bird habitat is most threatened since Phragmites-infested marshes become useless for many marsh-nesting birds.

Shorebird Restoration Results

The Seaside's barrier islands and marshes provide hemispherically important habitat for many rare and declining bird species. One reason for declines of beach nesting birds on the barrier islands is predation, particularly by foxes and raccoons. Red foxes are not native, they were brought over from England and while raccoons are native, their population has grown as humans have provided more food. Both pose a severe threat to the birds' eggs and chicks. The Museum of Natural History, with grants from Virginia CZM and help from The Nature Conservancy, was able to track the movements of these predators from mainland to islands and island to island through the use of radio collars. Once islands with minimal "traffic" were identified, the USDA began removing predators from those islands. Almost immediately the numbers of surviving chicks increased.

Several Virginia CZM grants to the Center for Conservation Biology have shown that Red knots and Whimbrels (*Numenius phaeopus*) are relying quite heavily on the Seaside as a "rest stop" where they feed heartily before migrating long distances. One Whimbrel, outfitted with a satellite transmitter on her back, left the Seaside in May 2009 and flew more than 17,000 miles in less than a year. She went from the Seaside of Virginia to Hudson Bay, on to Alaska and then on to the Virgin Islands for the fall and winter and then returned to the Seaside. This bird, aptly named "Hope," wore her transmitter for several years, repeating the same migration route, always stopping at the same spot on the Eastern Shore.

Ecotourism Results

The ecotourism potential of the Seaside is tremendous. Supporting its growth has been a focus of Virginia CZM, which funded a Seaside Water Trail, four canoe/kayak floating docks, a Wildlife Observation Platform, interpretive signage at four locations and other amenities. One way to help make ecotourism sustainable is to have certified Ecotour guides leading trips. Virginia CZM funds to VIMS and the Eastern Shore Community College supported creation and delivery of an Ecotour Guide Certification Program. These classes resulted in 23 certified ecotour guides and 5 certified ecotour guide instructors. The Eastern Shorekeeper conducted a feasibility study of "on the water" camping platforms along the Virginia Seaside Water Trail. This would allow kayakers to paddle all day, sleep on a platform, and paddle on the next day. The Accomack Northampton Planning District Commission is continuing to investigate the construction and management of a system of camping platforms that would allow paddlers to plan a multi-day trip that would extend the entire length of the Water Trail from Fisherman Island to Chincoteague. Providing public access and investing in the conservation of special coastal places go hand in hand. Virginia CZM funds also helped create the Magothy Bay Natural Area Preserve and expand Mutton Hunk Fen Natural Area Preserve. Tourism revenue in Northampton County increased 11.2% in 2011, the highest jump in revenue in the state.

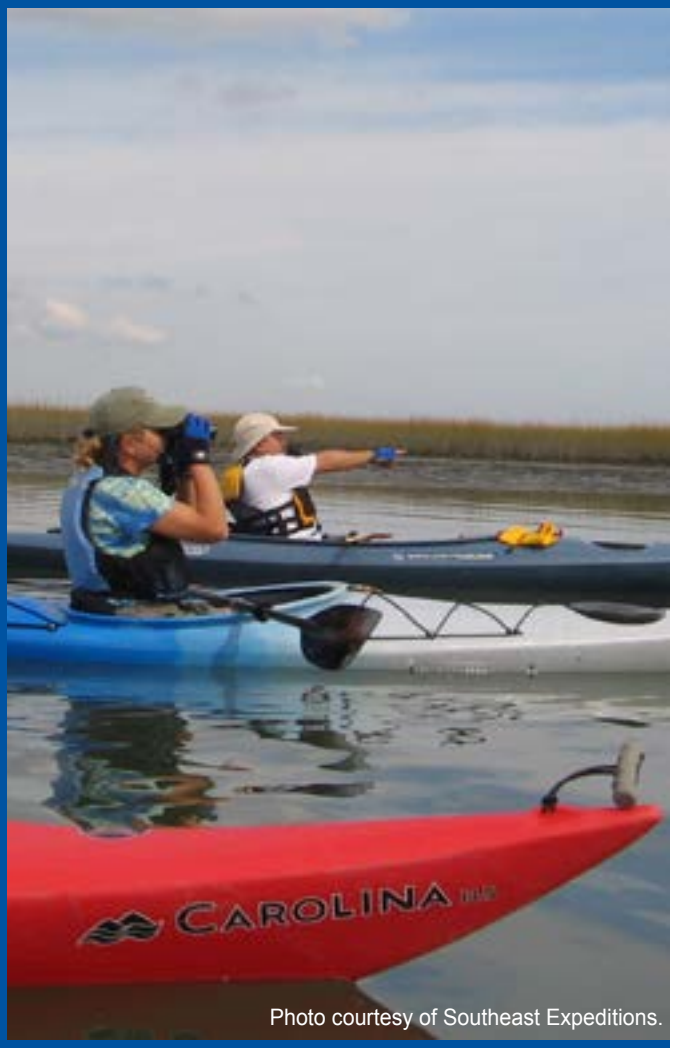


Photo courtesy of Southeast Expeditions.

Eastern Shorekeeper Results

The Virginia Eastern Shorekeeper monitored oyster reef sanctuaries, eelgrass beds and seasonal nesting bird areas on the barrier islands and assessed human impacts on these and other seaside resources under the VSHP. Of particular note is the Shorekeeper's work to assess the potential cumulative and secondary impacts of discarded clam netting to the Seaside's fragile ecosystem. Results indicated that the netting has little short term environmental impact and acts in a very similar fashion to beach wrack. However future study is warranted due to the longevity of the netting and its possible long term cumulative impacts. A Clam Net Hotline, peer pressure from larger growers, and a willingness by the growers to accept the discarded net as an image problem, has reduced the amount of discarded netting. The Shorekeeper also created a "Ghost Pot Busters" Program to locate and remove derelict crab pots before this marine debris could have further detrimental impact by entrapment of marine animals. The Shorekeeper also helped spread the word about the amazing paddling opportunities on the Seaside using the Seaside Water Trail, and emphasized the importance of responsible ecotourism.

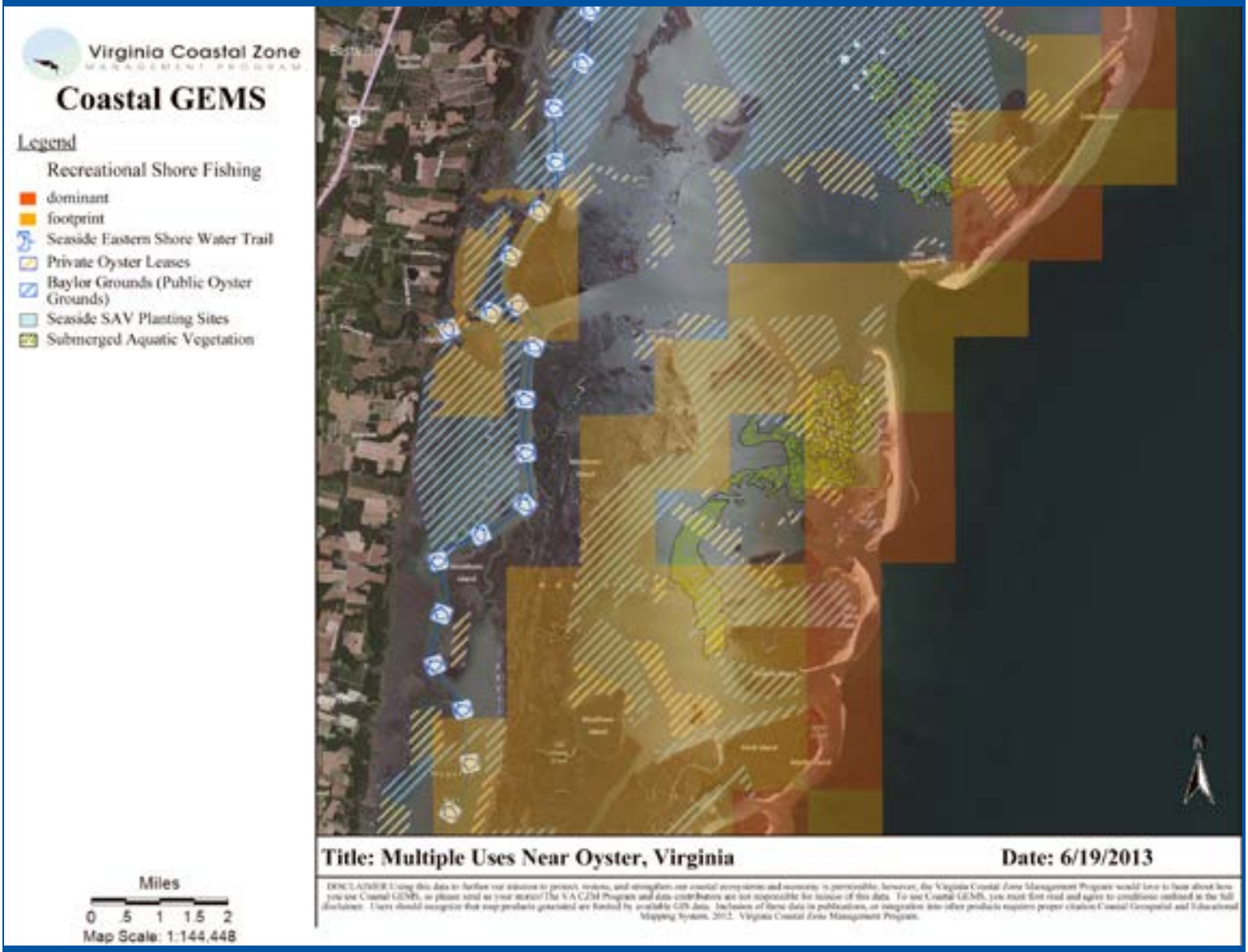
Increasing Native Plant Use

In spring 2009, the Virginia CZM Program launched the "Plant ES Natives" community-based social marketing campaign. The campaign was designed after listening to Shore residents and identifying the barriers that were inhibiting the planting of Eastern Shore natives. The campaign, which uses a multi-media approach to sell natives and make planting fun, easy and popular, is having the desired effect. Garden centers are carrying more natives and sales are increasing. Demo gardens showcase the beauty of native plants, and residents who have visited the gardens say that it influenced their purchase of native plants. A colorful and extremely popular guide to Eastern Shore native plants, and plant tags at point of sale, make it easier to identify and buy native. The Campaign's "Community Leaders" are helping to make planting natives a new social norm that will lead to long-term protection of water quality and habitat. The campaign is serving as a model for campaigns being implemented by Virginia CZM in other coastal regions.

Mapping Our Future Efforts

In addition to being a hemispherically important ecosystem, the Seaside of Virginia's Eastern Shore provides a multitude of services to humans. We use it for recreational boating and fishing, kayaking, wildlife watching, harvesting wild finfish and shellfish, and culturing shellfish. Its barrier islands protect the mainland from storms and erosion. Its wild beauty has the power to "re-create" us. So as follow-up to these partner restoration successes, Virginia CZM is focusing on how to sustain the compatibility of all these uses and ensure that we "protect the goose that lays the golden eggs" through a "Special Area Management Plan" (SAMP). This involves looking at how we manage the shallow waters inside the barrier islands from a fresh, new perspective--a more flexible perspective that allows human boundaries (such as where public and private shellfishing and habitat restoration/protection occur) to shift in concert with nature's ever-shifting boundaries as storms and other factors re-shape this area.

Analyzing maps of current and potential uses on the Seaside has shown, for instance, that within the boundaries established in the 1880s for public shellfishing, only 56% of that underwater habitat is now suitable for oysters and only 43% of natural oyster reefs actually lie within the public grounds. More could be made of the space so that opportunities for more seafood production and more restoration are not wasted. And in summer of 2012 Virginia CZM sponsored "participatory GIS" workshops where for the first time, stakeholders mapped 22 different recreational uses in and around the Seaside



(go to www.coastalgems.org to view the maps). This information can now also be used in decision-making processes. Several workshops have been held to present these maps and analyses to the public but it will likely take further public discourse before any current policies are changed.

The Seaside SAMP is the Virginia CZM Program's first foray into "marine spatial planning." Lessons learned through this effort will help with larger planning efforts that are beginning in the Mid-Atlantic Ocean. The ocean uses will differ (e.g. shipping, military practice, offshore wind farms) but a new, stakeholder-driven, marine spatial planning process that allows citizens to help create greater efficiency, flexibility, productivity and sustainability for our marine ecosystems is on the horizon.


Photo courtesy of VIMS.

For maps depicting seaside resources and uses, including Virginia CZM's newly created maps of 22 different recreational uses, go to: http://coastalgems.org.

$4.5M+ in VA CZM/NOAA SEASIDE GRANTS

FY 1997 - FY 2013

(Additional funding from other sources: ~$2M from NOAA via ARRA; ~$1.15M from VMRC & Saltwater Fishing License Funds; ~$500k from NOAA/Community Restoration Program; $230k from private sector); $170k from TNC; $157k from USACE)

Virginia Coastal Zone MANAGEMENT PROGRAM

	Grantee	FY 1997	FY1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total
Magothy Bay Restoration (1997-98) & Oyster Heritage Program (1999-01) (CZM Section 306)																			
Oyster Restoration	MRC	$40,000	$40,000	$30,000	$30,000	$30,000													$170,000
Seagrass Restoration	VIMS	$66,317	$74,181	$15,000	$15,000	$15,000													$185,498
Total Magothy Bay/Oyster Heritage Projects		**$106,317**	**$114,181**	**$45,000**	**$45,000**	**$45,000**													**$355,498**
Seaside Heritage Program (CZM Section 306)																			
Coordination of Program Activities	CZM						$30,324	$14,076	$9,963	$11,556	$15,383	$11,474	$11,588	$5,762	$6,011	$6,026	$6,124	$6,272	$92,776
Seaside Management Plan	UVA									$44,100									$44,100
Monthly Seminar Series	UVA										$5,000								$5,000
Aquaculture & Shorebirds	CCB						$30,000	$20,000											$50,000
Habitat Suitability Assessment	CCB							$45,000	$55,000										$100,000
Colonial waterbird data compilation	CCB								$8,000			$10,000							$18,000
Impact of Phrag on high marsh birds	CCB								$30,000										$30,000
Census of rare birds in high marsh	CCB									$50,496									$50,496
Winter use of high marsh patches	CCB										$50,000								$50,000
Red knot stopover ecology	CCB										$15,000								$15,000
Shorebird Prey Characterization	VIMS						$21,000	$21,745	$21,853										$64,598
Water Quality Data	VIMS						$8,000												$8,000
Aquaculture BMPs	VIMS						$13,000	$13,255	$13,147										$39,402
Oyster Inventory (Year 1 of 2)	VIMS										$69,900	$70,000							$139,900
SAV Mapping & Restoration	VIMS						$85,000	$90,000	$95,000	$100,000	$100,000	$100,000							$570,000
Isotope Analysis of Trophic Structure	VIMS/UVA							$40,000	$44,000										$84,000
Oyster Reef Restoration	VMRC						$55,000	$50,000	$50,000	$50,000	$61,500	$98,000							$364,500
Evaluation of Dredge Fishing Activities	VMRC									$30,944									$30,944
Eastern Shorekeeper	SK							$20,000	$20,400	$20,000	$26,000	$25,000							$111,400
Avian Action Plan Accomplishments Report	SK							$5,800											$5,800
On-water Camping Platform Feasibility	SK										$5,000								$5,000
Phragmites Mapping	DCR						$58,834	$48,000				$15,000							$121,834
Phragmites Control & Education	DCR							$20,000	$57,397	$70,000	$70,000	$55,000							$272,397
Avian Habitat Enhancement	VMNH						$20,000	$23,475	$33,625	$40,000	$50,000								$167,100
Ecotourism Inventory/Water Trail	AN PDC						$25,000												$25,000
Ecotourism Improvements - Floating Docks	AN PDC						$25,000	$25,000	$54,100										$104,100
Ecotourism Improvments - Interp.Signage & Plant ES Natives Campaign materials and demo gardens at ESNWR, Chincoteague, Willis Wharf & Wachapreague	AN PDC										$34,055		$15,500						$49,555

Updated June 2013

Seaside Heritage Program (cont'd.) (CZM Section 306)	Grantee		FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total
Ecotourism Improvments - Willis Wharf Observation Deck	DGIF					$31,500									$31,500
Ecotour Guide Certification	VIMS/ESCC		$12,250	$20,000				$12,500							$44,750
Village of Oyster Vision /Plan	CBES		$4,500												$4,500
Social marketing: Plant ES Natives Campaign *(shorewide multi-media strategy implementation)*	DEQ						$1,790	$18,458	$60	$8,274	$7,092	$2,265	$4,000		$41,939
Plant ES Natives Campaign Coordination	DEQ							$15,186	$15,691	$11,024	$9,628	$9,628			$61,157
Total SHP Projects			**$387,908**	**$456,351**	**$492,485**	**$448,596**	**$503,628**	**$430,618**	**$42,839**	**$25,060**	**$22,731**	**$17,919**	**$10,124**	**$6,272**	**$2,844,531**
Seaside Projects (CZM Section 309)															**Total**
Shellfish Aquaculture BMPs	VIMS	Task 92.03					$14,000	$14,000							$28,000
Seaside Estuarine Conservation Areas	VIMS	Task 96.01						$24,650							$24,650
CommunityViz Build-out Scenarios	AN PDC	Task 96.02						$13,380							$13,380
Bay Act to Seaside	Acc. Co.	Task 96.03						$14,072							$14,072
Seaside Whimbrel Migration & Staging	CCB	Task 93.03							$16,000						$16,000
Seaside SAMP - Project Coordination & Avian Distribution	TNC	Task 96.01							$59,342	$34,923					$94,265
Seaside SAMP - Shellfish & SAV	VIMS	Task 96.02							$32,896	$45,077					$77,973
Seaside SAMP - Recreation Use Data	ShoreKeeper	Task 93.04							$10,000						$10,000
Seaside SAMP - Phase 3 Technical Assistance & Rec Use Mapping	AN PDC										$11,457	$60,000	$60,000		$131,457
Seaside SAMP - Habitat Suitability & Evaluation	TNC										$21,000				$21,000
Sesaide SAMP - Synthesis & Evaluation	VIMS										$21,043				$21,043
Seaside SAMP - Private Lease GIS Data	VIMS										$26,500				$26,500
Total Seaside 309 Projects							**$14,000**	**$66,102**	**$118,238**	**$80,000**	**$80,000**	**$60,000**	**$60,000**		**$478,340**
E. Shore Blue/Green Infrastructure Grants (CZM Section 306)															
Priority Cons Areas into Community Viz (Northampton County Pilot Project)	DCR/DGIF								$8,800						$8,800
Accomack Blue-Green Infrastructure Protectic	Ac County								$33,500	$20,000	$35,000				$88,500
Northampton Blue Infrastructure Protection	No County								$10,000	$20,000	$18,580				$48,580
Total E. Shore BGI									**$42,300**	**$40,000**	**$53,580**				**$135,880**
Seaside Restoration (CZM Section 306A)															
Eelgrass & Bay Scallop Restoration	VIMS									**$200,000**		**$173,000**	**$180,000**	**$161,000**	**$714,000**
GRAND TOTAL of CZM Funds															**$4,528,249**

For more detail on the accomplishments of the Virginia Seaside Heritage Program and future restoration and marine spatial planning efforts:

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http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/VirginiaSeasideHeritageProgram.aspx

Accomplishments of the Virginia Seaside Heritage Program made possible in part through federal funding from NOAA.

Unless otherwise noted, photos by Virginia CZM Program staff.

Satellite image courtesy of NOAA.