

# Essex County Countryside Alliance

## 2013 Report

**ECCA Works to Preserve, Protect, Retain and Enhance the Farms, Forests, Fisheries, Wildlife Habitat and Other Productive Natural Resources of Essex County on Virginia's Middle Peninsula**

### Find These Stories in This Report:

- 12 The First-Choice Woods of Essex
- 22 Why The Rappahannock Runs So Muddy Above Tappahannock
- 25 "Showboat's A-Coming..."
- 27 Rural Historic Districts in Essex County
- 42 Changing Tides, Changing Times
- 50 The Rappahannock, In the Beginning And More!



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Table of Contents

Leader in Tax Credit Projects . . . . . 4  
 Tax Benefits . . . . . 6  
 Letter from the President . . . . . 10  
 The First-Choice Woods of Essex . . . . . 12  
 Friends of the Rappahannock  
 Rainscape Retrofits Program . . . . . 17  
 Exploring the Upper  
 Rappahannock River . . . . . 18  
 Why The Rappahannock Runs So  
 Muddy Above Tappahannock . . . . . 22  
 “Showboat’s A-Coming...” . . . . . 25  
 Rural Historic Districts in Essex County . . . 27  
 Komfustian Odes . . . . . 31  
 Essex Memories – Part 1 . . . . . 32  
 ECCA 2012 Fall Meeting . . . . . 34  
 ECCA 2013 Fall Meeting . . . . . 35  
 County Map/Easement Chart . . . . . 36-37  
 Benefits of Land Conservation  
 in Virginia . . . . . 38  
 Changing Tides, Changing Times . . . . . 42  
 The Rappahannock In The Beginning . . . . 50  
 Hoskins Creek: A Personal Story . . . . . 56  
 ECCA Financial Report . . . . . 66  
 ECCA New Board Member:  
 Mac Garrett . . . . . 67  
 Rising Tides or Climate Change . . . . . 68  
 Roster of Donors . . . . . 70  
 May Board Meeting . . . . . 71

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# Leader In Tax Credit Projects Revitalizing Communities in Virginia

By Trip Pollard

Virginia’s historic rehabilitation tax credits have been a tremendous success. Year after year, we have ranked first or second among the states for the number of historic tax credit projects proposed and certified. Under both the federal and state tax credit program the results are impressive.

According to the Virginia Department of Historic Resources, \$809 million in state tax credits have been awarded for over 2,000 building projects throughout the Commonwealth since the inception of the tax credit program. The investment spurred by the credits has supported an estimated 32,000 jobs and generated well over \$3.6 billion in overall economic impact to the Commonwealth as well as \$1.44 billion in wages and benefits.

The General Assembly adopted legislation championed by the preservation community in 1996 that grants a tax credit for 25 percent of eligible expenses to those who renovate historic buildings. This credit is in addition to a similar 20 percent federal preservation tax credit, and together they offer a powerful incentive to the private sector. These innovative policies have provided a range of benefits, including preserving historic resources, spurring economic development, creating jobs, increasing property values, enhancing tourism, reducing the environmental cost of development by reusing buildings, and helping to revitalize communities.

The state tax credit is only available for projects that spend at

least 50 percent of the value of the property prior to rehabilitation (or 25 percent if the building is owner-occupied). It typically is used only for properties needing significant repair and renovation. As a result, the credit is often used to restore vacant and deteriorating buildings as it is easier to meet the 25 percent or 50 percent renovation expenditure. Virginia Commonwealth University’s Center for Public Policy has reported that in most cases the expenditures to restore these properties would not have been made without the tax credits—the projects simply would not have been financially feasible.

The federal rehabilitation tax credit has been very successful as well, leveraging over \$100 billion in investments nationwide since it was created in 1978. Over 38,000 buildings have received the federal credits, and an estimated 2.2 million jobs have been created. Research by Rutgers University shows that the program more than pays for itself.

Despite the successful track record of federal and state rehabilitation tax credits, there have been proposals to reduce or eliminate these credits. At the federal level, Preservation Virginia has worked with the National Trust to counter proposals to eliminate or curb the tax credit, and has helped gather endorsements from mayors across the state for a bill that would strengthen the credits. [Please see our website for updates on this and other policy issues].

At the state level, a recent Joint Legislative Audit and Review

# Changing Tides, Changing Times in Essex County

By M. Mitchell, J. Herman, and C. Hershner

Twice every day the tide rises and falls along the Rappahannock River. At its highest, it covers the intertidal area, creating a unique habitat and driving the distribution of plant and animal life along the shoreline. The tide is driven by the level of the seawater entering the mouth of the Chesapeake Bay and flowing up to the rivers. Only the most hardy and well adapted plants and animals can live in the lower part of the intertidal zone, an area that is covered with water more than half the day. On the upper end of the tidal zone, marsh plants gradually give way to bushes, forests, and lawns. Just as the tide creates a gradient of life across the shore, the mixing of seawater with fresh river water creates a gradient of life along the river. A few plants and animals are capable of crossing the threshold from fresh to salt-water, but many are strictly adapted to stay in one habitat.

Each year, the tide moves a little higher along the shoreline and the brackish waters push a little further upstream. The change isn't visible in one year, or even five, but longtime residents know how much the river has changed over the past thirty, or even sixty years.

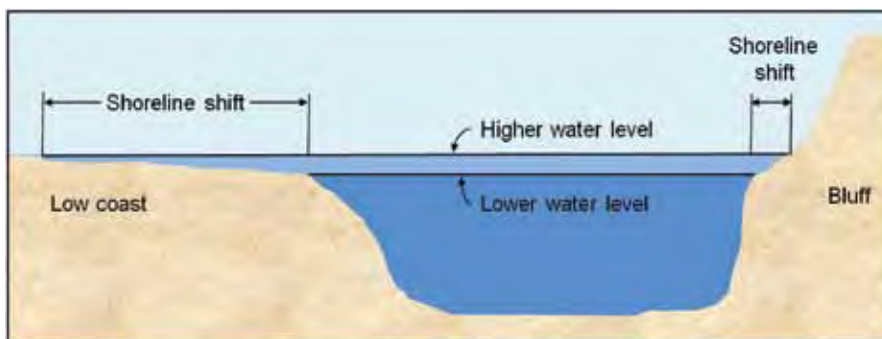
The sea level is rising in Virginia at an approximate rate of 4.4 mm/year (~0.2 inches/year), and that rate is predicted to increase in the future (Mitchell et al., 2013). It doesn't sound like much, but over time, the increase in sea level affects the distribution of plants and animals throughout the river system, swallows low-lying land, and contributes to flooding and shoreline erosion. It affects the way in which humans live in harmony with the river, altering recreational opportunities, properties, and our preparation for and reaction to storm events.

## Sea Level Rise

The tides are rising faster in Virginia than the rest of the Atlantic shoreline, making it a bigger concern in Virginia than other Atlantic states. The reason for the relatively higher rates of rise in Virginia is that Virginia is experiencing subsidence (land sinking) in addition to rising water levels, making the relative increase in sea level quite high.

Subsidence in Virginia is primarily caused by a process known as "isostatic rebound." At one time (during the last Ice Age), the New England area (which shares a continental plate with Virginia) was covered by a huge ice sheet. The weight of the ice sheet pushed down on the earth's crust, causing New England to sink slightly, and Virginia to rise slightly. After the ice sheet melted, the crust began to slowly rebound causing New England to rise, while Virginia sinks. Therefore, in Virginia, as the water slowly rises, the land is continuing to slowly sink, causing the tides to come up faster relative to the elevation of the land. Other causes of subsidence include compaction along faults caused by the meteor that impacted the lower Chesapeake Bay, and some local pockets of subsidence due to groundwater extraction.

Impacts of sea-level rise on coastal communities depend greatly on the elevation of the communities and may include:



**Figure 1.** Land elevation greatly affects the amount of flooding associated with changes in sea level. On flat shorelines, small changes in sea level can flood wide areas. On narrow shorelines, small changes in sea level only affect narrow areas.

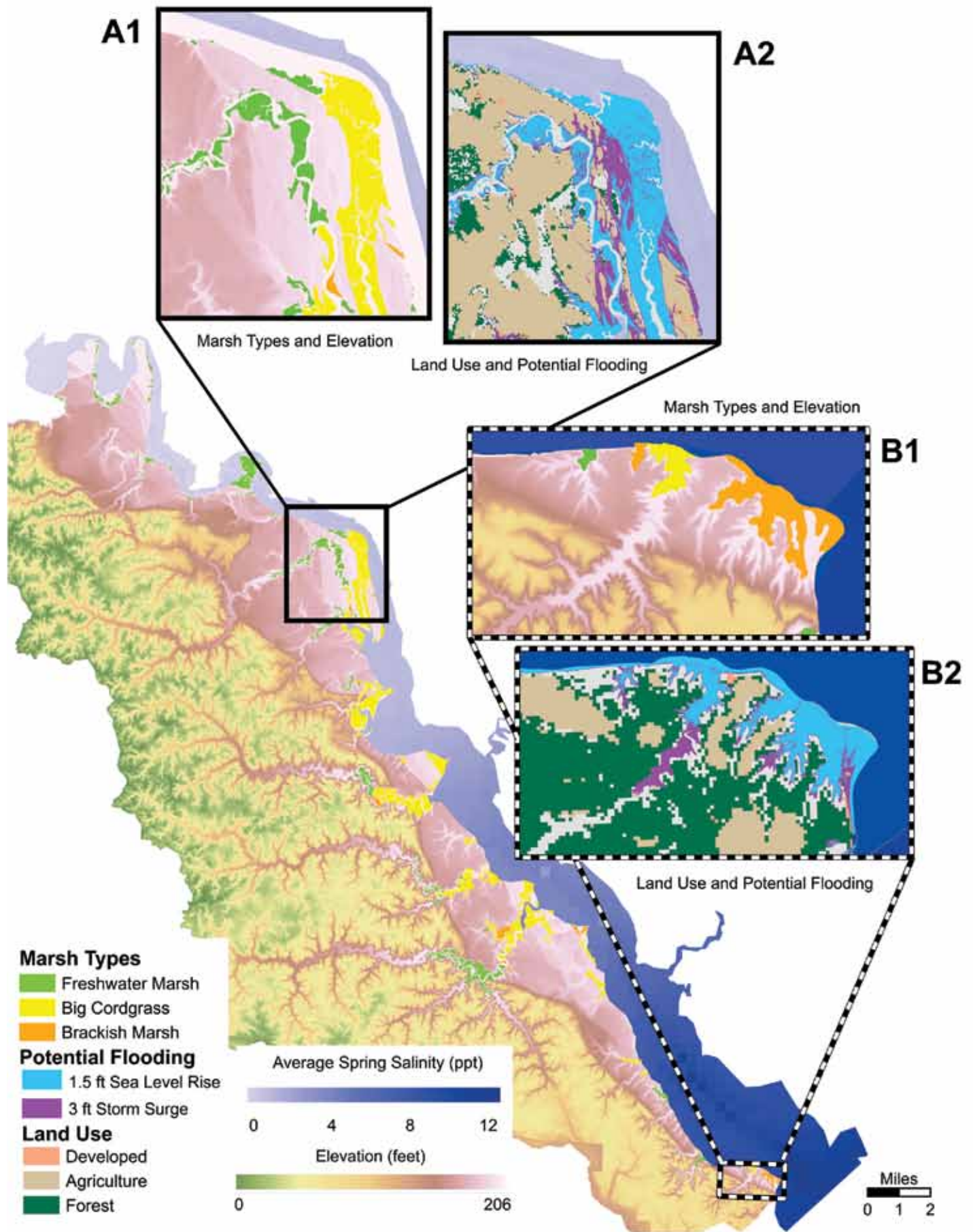


Figure 4. Ecological changes in Essex County.

1. Exacerbation of storm surges, coastal flooding, and resultant loss of property;
2. Increased shoreline erosion;
3. Saltwater intrusion into drinking water aquifers and septic fields;
4. Reduced capacity for some storm water systems;
5. Increased potential for some wastewater system overflows;
6. Reduced capacity for stormwater absorption into the groundwater system resulting in longer ponding or increased overland flows;
7. Loss of ecosystems, including: tidal freshwater systems, barrier islands, bay islands, coastal dunes and shallow water habitats.

Higher elevation communities (such as Essex) may experience more shoreline erosion, saltwater intrusion, and loss of coastal ecosystem than direct flooding. However, there are low-elevation areas of Essex County that are likely to be inundated by rising tides.

The June Parker marina on the north end of Tappahannock is one low area that is often inundated by high tides. Currently, water creeps up onto the parking areas of the marina during spring tides each month. Within fifty years we expect this to become a daily event.

The floodplain is typically considered to be the area flooded by the 100-year storm (or where there is a 1 percent chance of flooding in any given year). Approximately 10 percent of Essex County (16,807 acres) is located within the floodplain (National Oceanic and Atmospheric Administration [NOAA] Coastal County Snapshots). Essex County currently

has little development within the floodplains (they are predominately marsh). However, according to NOAA's Flood Exposure Snapshot for Essex County (NOAA Coastal County Snapshots), about 15 percent of the population lives in the floodplain. Of the new development (2001–2006), 14 percent occurred within the floodplain.

What does it mean to live in the 100-year floodplain? It means that over the lifetime of a typical mortgage (30 years), there is a 26 percent chance that the property will be flooded. Over a ten-year time span (a reasonable length of home ownership), there is a 10 percent chance that the property will be flooded. As the sea level rises, the floodplain will expand, increasing flood frequency and threatening new development and agriculture lands.

### Marsh Migration

Essex County has beautiful shorelines, fringed with marshes and filled with birds and aquatic life. Tidal marshes are one of the most productive habitats on earth and contribute to productivity throughout the river. Marshes provide homes for young fish, offering food and protection from predators. In turn, those fish provide food for other fish, forming the basis of the recreational and commercial fisheries in the Chesapeake Bay. Although capable of using other habitats, blue crabs use marshes throughout their life. The contribution of marshes to blue crab populations is well documented and the connection has been used to set economic “values” for marshes. Marshes are also home to many species of birds, some of whom nest in the

	Intertidal or Underwater	Storm Flooding	Dry Land
Roads (ft.)	15,440	64,132	5,028,726
Developed land (acres)	106	76	3,279
Agricultural land (acres)	58	507	44,033
Forested land (acres)	179	340	92,885
Marshes (acres)	6,598	1,450	16,218

**Table 1:** This table shows the amount of land covered with water in Essex County with a rise in sea level of 1.5 feet, predicted to occur 40–60 years in the future. The second column shows the additional amount of land covered by water during a storm that created a 3-foot storm surge. The third column shows the amount of land dry land remaining during a storm event following sea-level rise.

marshes and are therefore dependent on the continued presence of marshes in the landscape.

Currently, approximately 14 percent of land in Essex County (23,191 acres) is wetlands, which are estimated to result in approximately \$181,000 in revenue (NOAA Coastal County Snapshots). As with most coastal localities, the majority of the wetlands are tidal marshes that are located in the floodplain, putting them at risk from rising water levels. Although marshes can easily handle temporary flood events (and can even help protect the upland from flooding by absorbing floodwaters) their ability to cope with rising water levels is more tenuous.

As water rises, the change in water level redistributes the marsh plants, moving the low marsh plants into the high marsh and the high marsh plants further inland. In an area of low elevation and without bulkheads or revetments, it is possible for the marshes to “migrate” or move inland, keeping pace with the rise in sea level. In areas with barriers to migration (e.g., tall hills, bluffs, shoreline erosion protection structures) the marsh must either keep pace with the rising water by accreting sediment (catching and holding sediment and marsh peat), or drown.

The question throughout Virginia is whether our marshes will be able to keep pace with the rate of sea-level rise. Research on the York River (Mitchell et al., 2011), indicates that at least some of the marshes are not keeping pace with the sea level. Marshes at the midpoint of the York River (where the banks are too high to allow for migration) have converted from half high marsh and half low marsh to entirely low marsh. This suggests that the high marsh was covered with too much water to maintain high marsh plants and the low marsh plants expanded to fill the entire area. If the remaining low marsh cannot keep pace with the rising tide, the marshes will eventually drown and disappear.

The marshes along Hoskins Creek at the southern end of Tappahannock are one area in which the change in the marsh community, driven by the rising sea level, should become obvious. The Hoskins Creek marsh community at the Route 17 bridge is dominated by the tall, common reed grass, *phragmites australis*. Longtime residents of the area will remember the efforts to eradicate this invasive plant with herbicides many years ago. Those efforts ultimately failed as the reeds re-established themselves across the entire marsh surface. The sea-level rise may ultimately accomplish what herbicides failed to do. *Phragmites* does not

survive in the lowest parts of the intertidal range, and the marshes in Hoskins Creek are among those that are not keeping pace with the rising sea level. This means that slowly but surely the *phragmites* in Hoskins Creek is finding itself lower and lower in the intertidal zone, and ultimately it will be replaced by native plants that can tolerate daily submersion by tides. Eventually, many years in the future, even these plants will give way to rising tides and the entire area will transition to shallow mud flats.

The conversion of high marsh to low marsh changes the dominant height of the plants, which primarily affects the ability of the marsh to serve as habitat for birds. In brackish and saltmarshes, the high marsh plants tend to be shorter than the low marsh plants, so the overall shift is toward taller plants. In freshwater marshes, the high marsh plants tend to be shorter than low marsh plants, so the overall shift is toward shorter plants. This reduces the amount of cover provided by the marsh plants.

Over the past fifty years there have been noticeable shifts in the bird community in response to the changing system. Overall, there have been declines in duck populations, which predominately feed on aquatic plants and animals, and increases in goose populations, which often feed in agricultural fields (Mid-Atlantic Regional Assessment Team [MARAT], 2000). One duck species, the canvasback, has adapted to changing conditions by shifting from eating marsh plants to eating clams (MARAT, 2000), but not all species have the ability to adapt.

Birds that rely on tall freshwater marsh plants for shelter, such as the king rails and least bitterns, have small and declining populations, due in part to the loss of marsh habitat (Wilson and Watts, 2010). Projections indicate that three feet of sea-level rise could decrease populations by 48 percent (Wilson and Watts, 2010). Birds that rely on saltmarshes are at even higher risk, with populations of clapper rails, Virginia rails, willets, marsh wrens, and seaside sparrow predicted to decline approximately 75 percent with three feet of sea-level rise (Wilson and Watts, 2010). Black rails and salt-marsh sparrows, which breed in high marsh, salt-marsh habitats, are projected to essentially disappear, declining by 90–99 percent (Wilson and Watts, 2010).

In the Rappahannock River system sediment comes from several sources. It is carried downstream from eroding lands in the watershed. It also enters the river

from shoreline erosion. And some sediment is actually carried into the mouth of the river from the bay. Sediment is deposited and stored in stream and river channels for long periods of time, centuries in the case of the Rappahannock. The Rappahannock River is renowned for the very large amounts of sediment accumulated in the reaches along Essex County. These are the sediments that get stirred up—during storms, giving the river its characteristic muddy appearance.

Sediment has both detrimental and beneficial effects. Fine sediment in the water is typically considered a negative environmental impact. It clouds the water, decreasing the depth at which plants can survive. However, sedimentation (when sediment drops out of the water) helps mitigate the impact of sea-level rise. It effectively makes the river shallower, and it can aid marsh accretion, helping marshes to grow vertically.

### Freshwater Marsh Conversion

Essex County is located at an ecological turning point on the Rappahannock River. Along the Essex shoreline, the salinity drops from brackish water to freshwater creating a gradient of marsh communities. At the downriver end of the county, marsh communities are brackish water, mixed species communities that gradually transition to freshwater, mixed species communities. The intermediary marshes are, for the most part, dominated by big cordgrass. Each type of marsh provides habitat for a slightly different animal community. Brackish water, mixed species marshes are highly productive, containing plants such as saltmarsh cordgrass, saltmeadow hay, black needlerush, threesquare, big cordgrass, and cattails. They provide a diversity of food for wildlife, particularly waterfowl, and are spawning and nursery grounds for several aquatic species. Big cordgrass is also highly productive and provides good habitat for least bitterns and king rails and food for geese. However, it grows at higher elevations than some of the species found in the mixed communities, limiting its value to fish and other aquatic animals. Freshwater, mixed communities are composed of plants such as bulrushes, sedges, water dock, pickerel weed, arrow arum, and wild rice. These marshes are also very productive and support a diversity of animals, particularly waterfowl. They serve as spawning and nursery grounds for striped bass, shad, and river herring.

As the paragraph above illustrates, all the marshes along the Essex County shoreline serve as food and habitat for aquatic



**Figure 2.** Picture of a typical brackish fringe marsh. Notice the taller plants are at the water's edge and shorter plants grow further into the land. Photo by Center for Coastal Resources Management, VIMS, 2011.



**Figure 3.** Picture of a typical freshwater marsh. There are many different plants growing in the marsh and the plants at the edge of the water tend to be the shortest ones. Photo by CCRM, VIMS 2010.

animals and birds. However, there are frequently differences in the species that benefit from each type of marsh. For example, king rails use big cordgrass extensively but are not found in arrow arum communities (Wilson and Watts, 2010). Anadromous fish (fish that spawn in freshwater but live their adult lives in seawater) require freshwater marshes to complete their life cycles. Without freshwater marshes to spawn in, these fish species (e.g., shad, herring) will stop reproducing

and disappear. For this reason, a shift in salinity distribution along the river changes both the marsh communities and the animals that benefit from them.

As the sea level rises, it pushes the saltwater further upstream changing the salinity of the river. A study of salinity in the Chesapeake Bay suggests that salinity has increased 0.5 ppt since 1949 due to sea level rise (Hilton et al., 2008). This shifts the marsh habitats, causing

brackish marshes to move slowly upriver. In Virginia rivers, this upstream migration is problematic since our tidal fresh waters end at the fall line, preventing upriver migration of tidal freshwater marshes. Over time, we expect the extent of the freshwater marshes to diminish and potentially be squeezed between the brackish water marshes and the fall line, diminishing the plant and animal populations that inhabit this unique environment.



## Impacts to Property and Lifestyle

In addition to impacts on the natural system, sea-level rise will affect human activities as well. Essex County has large areas of agricultural lands. In many areas throughout the world, the sea-level rise has permanently altered agricultural areas through the intrusion of salt water onto agricultural fields. Saltwater can enter fields during storm events (due to flooding) or continually, by seeping into the groundwater. Essex County's position on the river means that this is unlikely to be a concern in the near term but should be considered when looking at long-term impacts. If marshes are lost, there will be economic impacts to the fisheries and losses of both recreational fishing and bird watching opportunities.

A study of potential sea-level-rise impacts to the town of Tappahannock and Piscataway Creek suggests that, by 2050, several houses, a couple of private wells, sections of road, and water and sewer lines will be flooded (Middle Peninsula Planning District Commission, 2009). The total cost of impacts was estimated at \$4,872,962. Over 2000 feet of Route 17 (a hurricane evacuation route) is also predicted to be flooded, requiring the road to be raised at an estimated cost of \$347,170 (MPPDC, 2009). Efforts to conserve land are also at risk from the sea-level rise. A map in the 2011 the Essex County Countryside Alliance magazine shows conservation lands along portions of the shorelines. Unfortunately, portions of those parcels are in areas that will likely be intertidal by 2050 and underwater sometime after that.

## The Future

While the predicted increases in sea level will result in significant changes in coastal systems, the rate of sea-level rise is still slow enough to allow time for both planning and adaptation. Knowing where changes will occur allows property owners and local governments to modify current land uses in advance of the rising waters. In some areas current uses can be maintained for a period if plans are made to minimize the impacts of occasional flooding. Roads can be elevated to maintain access and/or evacuation. Homes can be raised to avoid flood waters. In small areas with high value development it may be possible to actually defend against the rising sea level with levees and flood walls. These are typically very expensive strategies with limited utility in rural communities. The best strategy

is generally to plan for the ultimate relocation of activities and development that will be affected by the rising sea level. Implementation of these plans can be deferred until moving is essential, and for many areas that time is decades in the future. The important thing is to know where this will eventually become necessary and to begin planning now so that those changes can be managed. Scientists, managers, and planners are working together to help coastal localities, like Essex County, understand the future changes and consider options for dealing with them.

### Cite:

- NOAA Coastal County Snapshots, [www.csc.noaa.gov/snapshots/CCRM](http://www.csc.noaa.gov/snapshots/CCRM), Shoreline Inventory, 2001, [http://ccrm.vims.edu/gis\\_data\\_maps/shoreline\\_inventories/virginia/essex/Essex.pdf](http://ccrm.vims.edu/gis_data_maps/shoreline_inventories/virginia/essex/Essex.pdf)
- Hilton, T. W., R. G. Najjar, L. Zhong, and M. Li (2008), "Is There a Signal of Sea-Level Rise in Chesapeake Bay Salinity?" *J. Geophys. Res.*, 113, C09002, doi:10.1029/2007JC004247.
- Middle Peninsula Planning District Commission. 2009. Assessing the economic and ecological impacts of sea level rise for select vulnerable locations within the Middle Peninsula
- Mitchell, M., C. Hershner, J. Herman, D. Schatt, E. Eggington, and S. Stiles (2013), "Recurrent Flooding Study for Tidewater Virginia." Virginia Senate Document no. 3 (report), Richmond, Virginia; [http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/SD32013/\\$file/SD3.pdf](http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/SD32013/$file/SD3.pdf)
- Mitchell, M. M., M. R. Berman, H. Berquist, J. Bradshaw, K. Duhring, S. Killeen, and C. H. Hershner (2011), "Strengthening Virginia's Wetlands Management Programs," final report to US EPA, Region III, Wetlands Development Grant Program.
- Mid-Atlantic Regional Assessment Team (MARA) (2000), "Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change," report. 68pp.
- Wilson, M. and B. Watts (2010), "Sea-Level Rise and Tidal Freshwater Marsh Birds"; <http://www.ccbirds.org/2010/03/08/sea-level-rise-and-tidal-freshwater-marsh-birds/>

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