

# NAPS News

Northumberland Association for Progressive Stewardship  
"Northumberland is going to grow. Let's help it grow with order and beauty."

Spring 2015

Volume 24, Issue 2



Welcome to the Spring Issue of NAPS News.

Here's what's on tap for NAPS activities this season:

**First Earth Day Festival is a Winner.** From the 5K Race to the YMCA kids runs, to the busy Earth Day exhibits at the Farmers Market, it was a big win for the community. > >

**NAPS Awards Scholarships.** Four Northumberland High School seniors were selected.

**NAPS Awarded Another \$3,000 for STEM Effort.** Lee Allain reports on his STEM effort to prepare and submit the grant proposal.

**Climate "Briefs" Going to Local Newspapers.** The Northern Neck Chapter of the Climate Change Lobby has drafted several "Do-You-Know" fillers. Read them and send your own.

**Highway Pickup and Redi-Whip Mystery.** Every road pickup has some strange trash, but this one stumped the NAPS team.

**NAPS Offers Free Bay Eco-Tour.** Let's see who bites on this generous bait.

**What Does 4° C Warmer Mean?** Dr. Greg Haugan explains how it will change our world.

**NAPS Financial/Member Reports.** The message is Keep Your Membership Up to Date.

**Memo from Bill.** NAPS President Bill Estell summarizes the Spring Season.

**And for the Fall Season.** . . NAPS has in the works the Creek Clean-Up on September 26. We need captains to take the "crews" along Cockrell Creek to do the job. See the help-wanted ad inside.

**And That's Not All.** . . October 17 is the Annual Social once again at the Bay Quarter Shores Club House to honor the Distinguished Citizen Award recipient and enjoy a buffet dinner.

**Moreover, NAPS is not napping this summer, either.**

To keep up with NAPS on a regular basis, check out our web site: [www.napsva.org](http://www.napsva.org).

Jay Walker, Editor

## EARTH DAY

### First Earth Day Festival is a Winner

By Jay Walker

From the starting horn at 8 a.m. to the finish at 1 p.m. the NAPS Earth Day 5k Race/Walk and Earth Day exhibit at the Heathsville Farmers Market, Saturday, April 18 was a winning combination of community events. It was sponsored by the Northumberland Assn. for Progressive Stewardship (NAPS) in conjunction with the Northumberland Family YMCA, the Northumberland Public Library, and Rice's Hotel/Hughlett's Tavern. Lured by the Earth

Day and Farmers Market events, as well as the annual Northern Neck Wine Fest, approximately 1,000 people attended.

After 5K Committee President Bill Kirby opened the proceeding and Channing Reynolds sang The National Anthem,



They're off and running at the start of the NAPS Earth Day 5K.

some 72 race participants of all ages, including families pushing baby strollers, took off from the starting line in front of the Historical Society on a course that followed Back Street across Route 360 and on to Spring Street and back, under perfect weather conditions.

"We could not have asked for a better day. Everyone was having a good time," said Kirby. As the runners began crossing the finish line, committee member Joe Thompson exclaimed, "It's working!"

Next on the race schedule was the Tot Trot that included 10 trotters ages 4 and under, and the Healthy Kids 1K Run for Fun, ages 4 to 10, organized by the Y. These future Olympians proved to be a determined group. The tots needed some sideline encouragement from moms and dads, while the 12 1K runners showed how healthy they are. All the participants in both groups received prizes.

"The kids had a very good time," said Cristian Shirilla, Branch Executive Director, adding that he was pleased that three of the runners who did the Y's "Couch to the 5K" training program finished the race in good shape.

The exhibition organizations were unanimous in their appreciation, especially for the number of young people who spent time  
(Continued on page 2...)

## Earth Day Festival *(from page 1)*

asking questions and learning about the environmental activities of such groups as the Native Plant Society, the Master Naturalists, and the Northern Neck Soil and Water Conservation District, to name a few.

Typical of the exhibition comments was Ann Graziano, President of the Rappahannock Wildlife Refuge Friends, who said, "We are happy that NAPS invited us to attend. I was surprised by the positive reception we got and will definitely be back next year."



**Healthy Kids 1K runners gathered at the Y booth to collect prizes.**

Citizens Climate Lobby representative Bob Lindsey said that CCL got more names of interested people than at any previous exhibits. He also pointed out that environmental writer Steve Nash will present a discussion of his book, "Virginia Climate Fever," at the Northumberland High School, Monday, April 20, and again at the United Methodist Church in Heathsville at 7 p.m. At the NAPS stand, Vice-President Lee Allain demonstrated the solar energy project that NAPS provided the Northumberland High School.

Northumberland Library Director Alice Cooper said that the two authors who discussed their books at the library booth were "very satisfied" with the attention they got. In addition, Ye Olde Book Shoppe near-by had a special sale of gardening books. The store also celebrated its first birthday with a cake.

Awarding prize mugs wrapped up the 5K event at 9:30. The overall winners for the men were Donald Letizia, first; Bruce Hulse, second; and Matthew McLaughlin, third. Winners for the women were Amy Jones, first; Rain Eguiguren, second; and Emily Sprague, third. Prizes also went to age-group winners. (See panel for results.)

"It was an amazing day. The upbeat atmosphere was as wonderful as the weather and I think the Earth Day theme has hit a note that will endure," said NAPS President Bill Estell, adding that a lot of volunteers made it all work. He gave special thanks to Omega Protein for its support, including its team of runners.

The only complaint from the exhibitors was the band was too loud.

## Resolution Earth Day

At its April 9 meeting, the Northumberland County Board of Supervisors unanimously voted for an Earth Day Resolution. The proclamation stated that the Board "hereby pledges that Earth Day, April 22, 2015, and the entire week starting on April 18th with a 5K run, to support environmental initiatives in Heathsville, Virginia and to encourage others to undertake similar actions."

The Attest with the gold county seal was signed by Kenneth D. Eades, County Administrator and Clerk.

Omega Protein, which was a donor and occupied two booths, took the opportunity to describe the company's waste water purification system and show some of its commercial products. Here too, young people were listening intently as Vice President Operations Monty Deihl described Omega's environmental programs.

Citizens Climate Lobby representative



**NAPS Secretary Ida Hall made a large Schedule of Events sign.**



**Omega Vice President Monty Deihl explained the company's environmental programs at the Earth Day exhibitors area.**



**At its booth NAPS offered LED light bulbs to new members.**

### Results for the Top Finishers

#### Overall Men/Time

Donald Letizia/22.06

Bruce Hulse/22.08

Matthew McLaughlin/23.52

#### Overall Women/Time

Amy Jones/21.13

Rain Eguiguren/24.10

Emily Sprague/26.44

#### Winners by Age Group - Men

Under 19 Matthew Sprague

20-29 Burton Thrift

30-39 Mike Baker

40-49 Seth Howard

50-59 Mike McKenney

60-69 Phil Moore

70+ Jeff Carlton

#### Winners by Age Group - Women

Under 19 Shannon Chapman

20-29 Hannah May

30-39 Stephanie Baker

40-49 Kathryn Edgar

50-59 Jane Crowther

60-69 Nannette Smith

70+ Kathy Brodtman

## NEWS

## NAPS Awarded Another \$3,000 for STEM Effort

By Lee Allain

Hold the presses! The River Counties Community Foundation has just informed us that NAPS has again won a Grant to support Northumberland Schools in the Science, Technology, Engineering, and Math (STEM) learning.

Our Grant Proposal recommended that LEGO kits (STEM Support Kits) be provided to Middle School 'at risk' students as well as teacher selected students with expressed interest in technology. Both groups will be engaged with LEGO kits purchased under the RCCF Grant during after school sessions. As an incentive, LEGO constructions will win various prizes. This effort follows our highly effective STEM Boost Project at the Elementary summer school last year.

If you haven't noticed, NAPS has been active for the last several years with encouraging students to become involved with Science and Math as they pursue their dreams. From the construction of Solar Arrays, familiarization of flight dynamics of Drones, and simple robots in High School to the "Imagineering" and construction of buildings using LEGO at the Elementary level – NAPS has been actively involved with stimulating student interest.

And you can help. Many of our projects require Mentor support. If you have a background in Engineering that could support Robotics or any of the new technologies, please give us a call. If you would like to help with mentoring students during a 40 minute LEGO session, that also could be a great help. Further, if you have a closet storing LEGO kits from your children's past, we could certainly use the 'bricks' as our repertoire of LEGO capability grows.

NAPS is fully aware that all of the other elements of education are also important. A balanced education for our students is what we all strive for. Still, where there is latent technology ability, we need to nurture that capability, and turn back the antipathy toward Science and Math that has developed across the country. Engineering and Scientific career paths are both stimulating and provide excellent economic rewards. NAPS goal is simply to assist students with natural interest gain an appreciation of 'how spaceship earth works.' It is only through an understanding of science and appreciation of our finite earth resources that mankind's future can be sustained.

## EDUCATION

## NAPS Awards Scholarships

By Jay Walker

The Northumberland Association for Progressive Stewardship awarded four scholarships of \$500 each at the Northumberland High School Senior Recognition ceremony in the school auditorium, Wednesday, May 20.

The winners, chosen from 13 applications, were Cassandra Collins, Rebecca Kues, Adam Parker, and Audrey Williams. In making the presentation, NAPS President Bill Estell noted that NAPS has sponsored other programs at the high school including a solar energy projects for seniors.

According to Myrtle Phillips, scholarship coordinator, there was excellent cooperation from the school during the selection process. "The kids came prepared for their interviews. They were ready to explain their goals, thanks to Melissa Hipple (Director of School Counseling)."

The NAPS selection committee consisted of Phillips, Joe Thompson, Sue Haugan, and Sandy Henbest.



*NAPS scholarship winners were (left to right) Cassandra Collins, Rebecca Kues, Audrey Williams, and Adam Parker.*



## ENVIRONMENT

## Highway Pickup and Redi-Whip Mystery

Janice Mahoney led a band of 15 NAPS-ers for the spring highway pickup purposely scheduled for Earth Day, April 22. All hands wore the new NAPS Earth Day t-shirts, all size large.

Along Route 200 between Wicomico Church and Tipers Bridge, they came across six cans of Redi Whip – unopened – spread out. It was another litter mystery. The team welcomed new-comer David Hughes.

Pictured at the start were (left to right):

Kathy Brodtman, Lynton Land, Walter Brodtman, John Lunsford, Sandy Henbest, John Henbest, Bill Estell, Bryna Brennan, Janice Mahoney, Eve Jordan, Ray Hitch, and David Hughes, plus Skye and Sonny on leashes. Not pictured were Alice and Don Imbur, who pick up the road to the fishing pier.

## CCL

**Did You Know...?**

The Northern Neck Chapter of the Climate Change Lobby is drafting a list of “briefs” that are submitted to local newspapers. Editors are asked to use them as fillers when space is available

We are looking for more topics, so please help with your own text or suggestions. The current list follows, to give you an idea of what “Did you know...” is all about. Send your input to Mike Harwood, mikehar26@juno.com; Greg Haugan, greghaugan@gmail.com; or Lynton Land, jandl@nnwifi.com.

The sentence “Keep this in mind as you read about climate change” can be added if worth the space.

**Did you know...**

...that “climate” and “weather” mean different things? Climate is the statistical description of the long-term and planet-wide condition of the atmosphere and oceans; weather is a short-term description of local conditions. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that “climate change” can only be documented from long-term weather data or natural records like tree rings or ice cores? (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that globally averaged near-surface air temperatures rose by 0.8 degrees Centigrade (1.4 degrees Fahrenheit) between 1850 and 2012? The rate of warming increased in the mid-1970s, and each of the most recent three decades has been warmer since 1850, with the most recent decade being the warmest. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that the number of record high temperature events in the United States since 1950 has increased, while the number of record low temperature events has decreased? The U. S. has also witnessed increasing numbers of intense rainfall events. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that in Florida, 28 locally transmitted cases of Dengue Fever were reported in a 2009-2010 outbreak, the first there in more than 40 years? As global temperatures increase, rainfall patterns change, summers become longer and insects like mosquitoes can remain active for longer seasons, and in wider areas, greatly increasing the risk of diseases. (National Resources Defense Council) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that in 2010 and 2011, plants in the eastern U.S. produced flowers earlier than at any other point in recorded history? (National

Geographic Society) Have you noticed any change in the growth patterns of your plants? (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that more than 90% of the total heat accumulated in the climate system between 1971 and 2010 has been stored in the oceans? The upper 75 millimeters of the ocean has warmed by an average of 0.11 degrees Centigrade (0.2 degrees Fahrenheit) each decade between 1871 and 2010. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that the salt content of the surface of the coastal ocean in rainy parts of the world is decreasing because of fresh water dilution from increased rainfall? (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that the small observed increase in atmospheric carbon dioxide concentration, from 280 parts per million (PPM) before 1800 to over 400 PPM today, is sufficient to quantifiably explain the observed ocean and atmospheric warming? (This takeaway is provided by the Citizens Climate Lobby.)

**Did you know...**

...that a 2013 survey of thousands of peer-reviewed papers in scientific journals found that 97.1% agreed that climate change is caused by human activity? (The Guardian) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that fossil fuel combustion accounts for nearly all of the measured global increase in atmospheric carbon dioxide concentration, from 280 ppm before 1800 to over 400 ppm today. Cement manufacture and deforestation contribute small additional amounts. Natural volcanic emissions are only about 1% of human-induced emissions. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that by mid-century, when temperature increases and precipitation extremes are further intensified, yields of major U. S. crops are expected to decline, threatening both U. S. and international food security (NOAA). (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that climate disruption may kill off 60 to 100 percent of all coral reefs before the end of this century. They, in turn, support between 9 and 12 percent of the world’s total fisheries (National Academy of Sciences). (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that over 900 of Virginia’s wildlife species are believed to be imperiled by ongoing loss or degradation of their habitats. During the coming decades climate change will exacerbate and intensify these impacts. (VA Dept. Game and Inland Fisheries.) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

**Did you know...**

...that tree migration rates are now known to be below those required to keep up with climate change. That leads to the scenario we may already be witness-

*(Continued on page 5...)*

Member Report	2015
Business	3
Family	47
Individual	26
Patron	2
Sustaining	22
Student	1
<b>Total</b>	<b>101</b>

## NAPS MEMBERSHIP REPORT MAY 30, 2015

The table presents the current paid-up membership status. We have currently heard from 60% of our membership. We need the other 40% to enable us to continue our work to support Northumberland County in “growing in order and beauty.”

## Did You Know...? *(from page 4)*

ing in the West: a catastrophic die-off due to beetle infestation and fire, before warm-adapted trees can move in. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that A 2005 survey of 442 glaciers found that 90% are shrinking as Earth warms. Melting accelerated significantly in the 1990's. At the current rate of retreat, all of the glaciers in Glacier National Park will be gone by 2070. (World Glacier Monitoring Service.) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that 314 bird species are at risk from global warming. 126 of them are classified as climate endangered and are projected to lose more than 50 percent of their current range by 2050 (Audubon Society). (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that as the climate continues to warm, we can expect sub-optimal conditions for tree growth and reduced tree vigor, leading to outbreaks of forest insects, particularly at the margins of tree ranges. Elevated temperatures at high elevations across western North America have allowed mountain pine beetle populations to develop in a single year in areas where two or more years were previously required. (USDA Forest Service.) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that climate change's impact on corn price volatility could outweigh the volatility caused by changing oil prices or government energy policies mandating biofuel production. The U.S. corn belt could be forced to move north to escape heat waves brought on by rising global temperatures. Corn (maize) is the most widely grown crop on Earth. (research at Stanford and Purdue Universities.) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that global warming is already reducing wheat yields at a majority of wheat-growing locations. Global wheat production is estimated to fall by 6% for each degree Centigrade of further temperature increase and become more variable over space and time. Wheat is the third most widely grown crop on Earth, after corn (maize) and rice. (Natural Resources Institute, Finland) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that the overall impact of climate change on rice production is likely to be negative, causing 20% reduction in yields over Asia per degree Centigrade of temperature rise. Not included in this forecast is the loss of production in coastal areas due to rising sea level and increased flooding. Rice is the second most widely grown crop on Earth, after corn (maize). (International Rice Research Institute.) (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that if the Greenland ice sheet were to melt, sea level would rise about 20 feet. If all the ice above sea level on the continent of Antarctica were to melt, sea level would rise about 200 feet. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that the physics of the "greenhouse effect" is extremely well understood. The small observed increase in atmospheric carbon

## NAPS Calendar

NAPS Board Meetings are held on the second Wednesday of each month, starting at 9 a.m. at the Union First Market Bank on Rt. 360 in Burgess, unless otherwise changed.

July 8, Wed..... NAPS Board Meeting  
 Aug. 12, Wed..... NAPS Board Meeting  
 Sep. 9, Wed. .... NAPS Board Meeting  
 Sep. 26, Sat. .... NAPS Creek Clean-up  
 Oct. 14, Wed..... NAPS Board Meeting  
 Oct. 17, Sat. .... NAPS Social and Distinguished Citizen Award  
 Nov. 11, Wed..... NAPS Board Meeting  
 Dec. 9, Wed. .... NAPS Board Meeting

dioxide concentration, from 280 parts per million (ppm) before 1800 to over 400 ppm today, is sufficient to quantitatively explain the observed ocean and atmosphere warming. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that Earth has experienced ten cycles of glaciation and deglaciation in the last million years. The cycles were caused by small variations in Earth's orbit, causing small variations in the amount of heat received from the Sun. This proves that the climate is very sensitive to small perturbations, including small increases in the concentration of greenhouse gasses in the atmosphere. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that air in the atmosphere and water in the ocean are in motion because heat buildup in the tropics must be dissipated by physical transport toward the poles. More heat must be transported as the planet warms, causing more violent weather systems. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that we have already burned about 300 Gt (Gigaton, or one billion tons) of oil, gas and coal, and Earth's temperature has increased about one degree Centigrade. The known fossil fuel reserves are on the order of 3,000 Gt. The consequences of burning everything will obviously be disastrous. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that German and Canadian researchers have found dead zones in the open Atlantic ocean off Africa? The dead zones were formed inside massive whirlpools called eddies hundreds of feet tall with rotating diameters of 60 to 94 miles. A 2014 report published in Global Change Biology found that 94 percent of the ocean's dead zones are in areas expected to warm up by at least 2 degrees Celsius by the end of the century. The number of dead zones, now more than 400, has doubled every decade since 1960. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

### Did you know...

...that, according to the California Department of Fish and Wildlife, California forests contain fewer large trees than was true in the 1920s? Water stress from higher temperatures and more frequent droughts are thought to be responsible. Additionally, pine is being replaced by oak, which is more tolerant of hotter and drier climates. (This takeaway is provided by the nation-wide Citizens Climate Lobby.)

## ECOLOGY

**NAPS Offers Free Bay Eco-Tour***By Jay Walker*

The Northumberland Assn. for Progressive Stewardship has announced it will sponsor a free Eco-Tour of the Bay area waters for the first organization that applies for a student group tour. The cost of a tour is \$500. Churches, clubs, and other groups can enlist a group of school kids for an excursion to learn about the ecology and commerce of the rivers and creeks.

NAPS also announced that it will underwrite up to \$300 of the \$500 cost for any organized adult tour.

"Eco-Tours led by Chesapeake Watermen provide a great opportunity for students and adults to become familiar with our Bay and river environment. It's a way to experience first-hand the wet lands, waterways and wild life, in and out of the water, that make up the Chesapeake," said NAPS Vice President Lee Allain, who is heading the program.

Allain explains that Eco-Tours were born after the collapse of the crab population in 2008 when federal and state funds were directed to ease the plight of the watermen. Some 80 watermen were trained and certified to lead educational tours.

During a typical tour, he added, participants get to meet more than 20 species of Bay life including varieties of crabs, oysters, finfish, ot-



*Last year, NAPS sponsored a student Eco-Tour aboard Capt. David Rowe's boat.*

ters, gulls, osprey and eagles in their natural environment.

Last year NAPS sponsored two eco-tours, one for local students and another for Boy Scouts conducted by Captain David Rowe. His Chesapeake dead-rise workboat carries about 20 passengers. Captain Danny Crabbe is also a certified Eco-Tour operator in the area.

For more information, call Lee Allain at (804) 529-5491.

### **HELP WANTED CAPTAINS FOR NAPS CREEK CLEAN-UP**

*On Saturday, September 26, we need boats to take high school students and Boy Scouts along Cockrell Creek to pick up and haul trash to a staging landing for dumping.*

*The project runs from about 9 a.m. until noon when the crews get lunch. For more information and to join the Creek Armada, contact Lynton Land at (804) 453-6605 or jandl@nnwifi.com*

### **NAPS FINANCIAL REPORT - JUNE 1, 2015**

The total NAPS annual working budget is approximately \$6,000.00. Of that amount, \$2,000 was budgeted for four \$500 scholarships for deserving Northumberland High School graduating seniors. This is discussed elsewhere in the Newsletter. The remainder of the budget goes to other worthwhile activities such as eco-tours, creek clean-up and supporting STEM activities at the public schools, our Earth Day festival and our mailings. Below is a simple table of where we currently stand regarding the 2015 financial activities. As we can see from the Revenue line, we are running behind in our Budget. We have been fortunate in past years that Omega Protein has supported many of our activities, and responsible financial management has enabled us to have a positive financial carryover as shown in the starting balance. We ended up with a loss of \$325 on the 5K Race but received donations of \$60.00 designated directly to the Library and the Endowment through the on-line registration. The big disappointment was the small number of participants. We had hoped a significant number of NAPS members would have participated as walkers, but very few chose to support us this way.

The Earth Day activities expenses are included in the financial statement below. While the Race did not live up to the expectations re net income, it was a big success as an Earth Day event. We also sponsored the author Steve Nash to present an overview of his new book at the high school and at the Heathsville United Methodist Church. Part of the requirement of his participation was the purchase of 25 copies of his book at a deep discount. We have sold 9 to date and donated 2 copies to libraries. The disposition of the remainder is currently undecided. If you are interested in purchasing a copy at a significantly discounted price, please let me know and it will be arranged.

We have funds set aside for matching endowment donations. The value of the Endowment is approximately \$11,000 which includes the starting amount of \$10,000 plus donations and matching amounts and the net changes in value of the investment account with Wells Fargo. We have received \$50.00 in Endowment contributions since the last newsletter was published.

#### **5/30/2015**

Starting Balance	\$5,944.06
Revenues	\$5,037.30
Expenses	\$5,950.70
Current Year Net	-\$913.40
Operating Funds	\$5,030.66
<i>Submitted by: Gregory T. Haugan, Treasurer; June 1, 2015</i>	

## TECHNOLOGY

**What Does 4° C Warmer Mean?***By Dr. Greg Haugan*

In the last edition of the NAPS News, I explained the “Net Zero” concept in discussions of climate change mitigation as the point in time there is a net of no carbon emissions from human sources.

This means no more are fossil fuels being burned: coal, oil, natural gas. The result would be that the total CO<sub>2</sub> in the atmosphere as measured in parts per million would tend to level out and establish a heat balance at some number that relates to a stable earth temperature. To keep the total impact within the 2° C target identified by the governments of the world as the safe limit, the maximum concentration needs to be approximately 450 ppm or below. The current concentration is 400 ppm and it is increasing at 2+ ppm per year. (You can do the arithmetic to see when 450 ppm would be reached.)

In my bland discussion there was no emphasis on the importance or sense of urgency of achieving this goal. A recent UN report (4 May 2015 FCCC/SB/2015/INF) stated that: “..., to stay within the 2° C warming limit, global CO<sub>2</sub> emissions need to decrease to net zero between 2055 and 2070, and all GHGs emissions need to decrease to net zero between 2080 and 2100. The longer we wait to bend the curve of currently increasing global emissions of GHGs, the steeper we will have to bend it down later. Even a 3° C limit requires a substantial reduction in global GHG emissions, a fundamental transformation of the energy system and global GHG emission levels towards zero by 2100.”

**We are currently on the path of achieving 40° C (70° F) of warming before the end of the century.**

Our climate is currently changing due to the high emissions of CO<sub>2</sub> and the likelihood of the world taking the actions needed to stay within the recommended limit of 450 ppm is very low. (We have already increased the world temperature by 0.85° C since the Industrial Revolution, and we are at a concentration of 400 ppm of CO<sub>2</sub> in the atmosphere.)

In a world 4° C warmer, many adverse ecosystem impacts would occur. Climate change velocity would be much too high for terrestrial and freshwater species to move sufficiently fast. Biodiversity losses would take place, including substantial species extinction and disruption of ecosystem services. The impacts of combined ocean warming and acidification would become very high. The catch potential of fisheries would be greatly reduced, and crop produc-

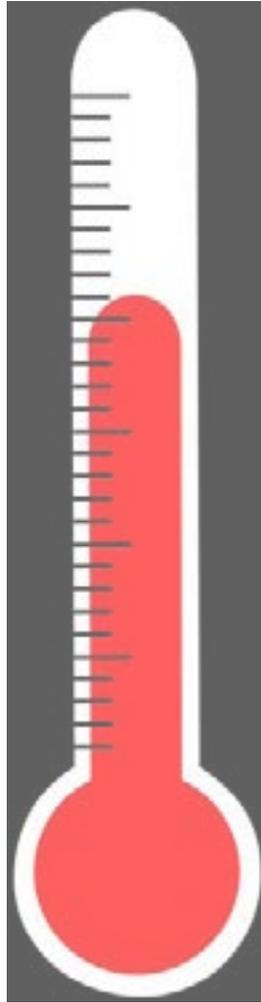
tion would be at very high risk with no potential for adaptation. In many places it will become dangerous to work outside in parts the summer. Long-term sea level rise would far exceed the 1 meter expected with a 2° C increase in temperature and storm surges could be catastrophic. And Arctic summer sea ice would be lost. The risks from extreme weather events would become very high. (Like parts of India today where the temperature has been reaching 117° F and over 1,000 have died already.) This would put people who are socially, economically, culturally, politically, institutionally or otherwise marginalized at most risk.

World Bank experts underlined the serious risks and impacts as we move from 2° to 4° C of warming, in particular in relation to water availability, heat extremes or the bleaching of coral reefs. With close to double the impacts in a world 4° C warmer compared with one 2° C warmer than in pre-industrial times, very different adaptation needs are required.

Most of us here in Northumberland County will adapt readily to the longer heat waves and stronger and wetter storms. Remember, for each 1° increase in temperature, the atmosphere can hold up to 7% more water. This then comes down as downpours and causes flooding such as recently occurred in Texas/Oklahoma. We also can move back from the shore in areas threatened by rising and surging seas. We can forego clams and oysters as their numbers are reduced by increasing levels of acidification and we can change our fishing strategies as species shift to follow changing water temperatures. It also is expected that our grandchildren on the Northern Neck will be gardening in a climate shifting toward that currently experienced in the Carolinas. This is what is already occurring. Also, as indicated above, families at the lower end of the economic scale are most at risk to all climate change phenomena.

So, what do we do about mitigating climate change? Hopefully the meeting this coming December in Paris will bring positive answers. The Net-zero requirements requires governmental level actions since approximately two-thirds of current fossil fuel reserves need to be left in the ground. We

can encourage Representative Wittman, and Senators Kaine and Warner to support putting a price on carbon emissions. You can join the Citizens Climate Lobby (go to [citizensclimatelobby.org](http://citizensclimatelobby.org)). You can reduce your use of fossil fuels and switch to solar panels on your home. It is time to get serious if you feel any responsibility for leaving a world for your descendants that is as nice as the one we have lived in.



**Join the NAPS Creek Clean-up Party!** Ferry workers on your skiff, help out with lunch, or dig out the trash along Cockrell Creek – Saturday, September 26 about 9 a.m. – noon. Contact Lynton Land at (804) 453-6605 or [jandl@nnwifi.com](mailto:jandl@nnwifi.com)



**N**orthumberland  
**A**ssociation for  
**P**rogressive  
**S**tewardship

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## Memo from Bill

The First Annual NAPS Earth Day Festival celebration was a huge success. Along with the Northumberland Family YMCA and the Northumberland Public Library the date chosen coincided with the first Heathsville Farmers Market of the season. The separate environmental exhibition

organizations numbered 14 and included such stalwarts as the Native Plant Society, the Master Naturalists, the Northern Neck Master Gardeners, Northern Neck Soil and Water Conservation District in their fascinating trailer, the Citizens Climate Lobby organization and Omega Protein. Also the Northumberland Elementary School demonstrated musical instruments made from recycled trash they collected.

The gathering of these environmentally important organizations in one venue provided the public a detailed look at the efforts being made to make a difference in our Northern Neck. The Board of Supervisors issued an official proclamation of Resolution Earth Day dedicating the week starting April 18th including Earth Day April 22nd to support environmental issues in Heathsville, Virginia. The community had a wonderful day to enjoy Rice's Hotel/Hughlett's Tavern outstanding market as well as the Northern Neck Wine Fest and the Tavern Quilt Show.

NAPS foray into the 5K Race world proved to be a disappointment in the number of participants, but apparently this is typical for a first event. I believe we learned a great deal and those who did participate enjoyed the work and effort

that the planning committee put forth.

The first Road Clean-Up of the year on our portion of Hwy 200 went off without a hitch on Earth Day, 22 April. Our dedicated leader Janice Mahoney and her Merry Band of NAPSters, all outfitted in our NAPS Earth Day 5K green T-Shirts, made short work of the trash on the roadside. Thanks to all the volunteers; our next effort in the Fall could always use your help, think about joining this august group.

NAPS presented four \$500.00 scholarships to outstanding Seniors at the Senior Recognition night at the High School on 20 May. The students were interviewed and selected by our scholarship committee headed by Myrtle Phillips and included Joe Thompson, Sue Haugan and Sandy Henbest. The students were Cassandra Collins, Rebecca Kues, Adam Parker and Audrey Williams. An impressive group of graduates in the year 2015.

Plans for the next Creek Clean-Up, 26 September, and Annual Social, 17 October, are in the works. We will be putting the word out as soon as plans are firmed up. In the meantime we need captains for the Creek Clean-Up in the Reedville area.

Finally, I want to reemphasize how much NAPS needs your support and DUES. We are a non-profit and no one gets paid but there are many expenses to cover in our projects, especially with the schools. If you find a letter to this effect in your Newsletter please respond. Volunteers are always welcomed, nothing ever happens by itself.

Best to you and yours.

*Sincerely,*  
**Bill Estell, President**

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