Spring 2014

THE RIVER RUNS

News from the Cowpasture River Preservation Association

Fish of the Cowpasture River

By Stephen J. Reeser

Virginia Department of Game and Inland Fisheries

Smallmouth Bass are one of the most popular sport fish on the Cowpasture. Recent VA-DGIF fish sampling data show that these fish are now present in greater numbers in the river compared to five years ago. Steve Reeser will speak on the "Fish of the Cowpasture River" at the upcoming Annual Meeting, May 10 .

The Virginia Department of Game and Inland Fisheries (VDGIF) began to monitor the fish population in the Cowpasture River in the 1990's. Prior to that, the Department did not have the proper equipment to adequately assess the river's fish community. However, monitoring smaller streams in the Cowpasture River Watershed was conducted. The size and average depth of the river limits reaches that can be sampled with a small electrofishing boat. VDGIF has collected sportfish population data at several locations on the Cowpasture River over the previous twenty-three years. Sampling locations from upstream down to the mouth include the Wallace Tract, Riverside, Sycamore Bend, Windy Cove, Nimrod Hall, Walton Tract, Lynchburg Camps, and Griffith. However, sampling effort and consistency has varied over that time period. This lack of consistency (year, season, location) has made it difficult to accurately document changes in sportfish populations. The best way to document changes in the fish population is to minimize sampling variability by choosing permanent sampling locations and returning during the same season on an annual or semi-annual basis. VDGIF has added a electrofishing raft to our arsenal of sampling equipment. This new raft will allow us to sample more of the river giving us a better picture of the river's fish population. VDGIF's boat electrofishing equipment is biased toward sampling larger fish, and it is also not very effective in surveying shallow (riffle) habitats where many fish species live.

Also In This Issue

VDGIF also targets sportfish during our surveys of the Cowpasture River. Therefore, we have more accurate information on species like smallmouth bass, rock bass, redbreast sunfish, white sucker, and musky than other small, non-game species like shiners, minnows, and darters. Fortunately, there have been two comprehensive fish community surveys completed on the Cowpasture River, one by Mohn and coworkers in 1973 and one by Olden in 2004, that looked at the entire fish community. In the future VDGIF plans to incorporate additional sampling gear to monitor species and habitats currently being overlooked. This data should be comparable with the 1973 and 2004 surveys. **(continued on page 2)**

The Fish of the Cowpasture River (continued from page 1)

Species richness and diversity are commonly used as measures of river health. The fish community in regard to species richness appears to be relatively unchanged over the past forty years (Figure 1; page 3). Mohn et al. (1973) collected 25 different fish species from main Cowpasture River sample locations. Olden (2004) observed 28 different fish species in the main Cowpasture River in his study. VDGIF collected 19 different species in 2009 and 24 in 2013. Species lists from over the years do not contain the same species. Since different sampling gear was used and habitats surveyed differed, it is unknown if the overall fish species assemblage has truly changed since 1973. A list of fish species collected by VDGIF in 2013 can be found in Table 1 (page 3).

VDGIF has never conducted an angler creel survey on the Cowpasture River. However, recent Department surveys on the James and Maury River indicated that anglers prefer smallmouth bass above all other species. This is probably also true for the Cowpasture River. VDGIF uses the number of fish collected per hour of electrofishing as a measure of abundance. It appears that relative abundance of smallmouth bass has increased in recent years (Figure 2, page 3.). The recent increase in abundance can be attributed to smallmouth bass spawning success in 2008 and 2009. Smallmouth bass in the Cowpasture River are slow-growing and long-lived. It takes 6-7 growing seasons for a smallmouth bass to reach 12 inches in length and they may live to the age of 12-15 years old.

Most of the smallmouth bass that VDGIF collects are between the ages 0-5. Large (over 14 inches) smallmouth bass are not that numerous in the Cowpasture River. Due to water chemistry, underlying geology, and the low productivity of the river this is not surprising. In 2013 only 2% of the bass sampled were larger than 12 inches in length.

A disease and mortality event occurred in adult smallmouth bass during the spring of 2007 throughout the Cowpasture River. Similar, less intense disease/mortality events occurred in the smallmouth bass population in 2008-09. The cause of these disease/mortality events was determined to be a coldwater bacteria (*Aeromonas salmonicida)*. Biologists use a metric called proportional stock density (PSD) to describe the proportion of quality size fish in the population. The majority of the smallmouth bass mortality 2007-2009 was seen in the older and larger smallmouth bass. VDGIF electrofishing data reveals a significant decline in PSD between 2005 and 2013, with the most dramatic decrease occurring after the 2007 fish kill event. However, VDGIF does not have enough historic smallmouth bass population data to know if this decline in PSD is a consequence of the fish kills or natural variability. Regardless of the fish kill events, the Cowpasture River does not have a high percentage of larger smallmouth bass in the population as compared to other Virginia rivers. More consistent surveys of the smallmouth bass population will be necessary to identify the extent of natural fluctuations in smallmouth bass abundance and size structure before biologists can attribute population changes to abnormal events.

The most abundant species throughout the Cowpasture River are rock bass and redbreast sunfish. Smallmouth bass are generally a close second in numbers to these other members of the sunfish family. Rock bass prefer cooler water temperatures than smallmouth bass and redbreast sunfish. Because river temperature increases from the headwaters downstream to the mouth, rock bass abundance declines moving downstream from the headwaters to the mouth of the river. Redbreast sunfish prefer warmer water temperatures than rock bass and their abundance tends to increase from the headwaters downstream to the mouth. Productivity and physical habitat also affect sunfish abundance so density of both species is lower in the extreme headwater reaches of the Cowpasture River. The disease/mortality events 2007-2009 were also observed in adult rock bass and redbreast sunfish throughout the Cowpasture River. A decline in redbreast sunfish abundance was observed after the most intense fish kill year. However, the redbreast population appears to have returned to "normal" levels. The trend in rock bass abundance is not as clear. Combining all survey locations, rock bass abundance appears to be increasing 2007-2013, but the population appears to have remained relatively unchanged over the past twenty years while looking at one specific reach. Overall the Cowpasture contains the highest density of rock bass of all Virginia Rivers surveyed by VDGIF.

(figures and graphs are on page 3; the text continues on page 4)

Table 1. Fish Species Collected by VDGIF During the Fall Electrofishing Surveys in 2013 (N=24).

Smallmouth Bass	Northern Hogsucker	Chain Pickerel
Largemouth Bass	White Sucker	Cutlips Minnow
Rock Bass	Creek Chubsucker	Common Shiner
Redbreast Sunfish	Brown Bullhead Catfish	Black Jumprock
Bluegill	Yellow Bullhead Catfish	Margined Madtom
Green Sunfish	Torrent Sucker	Rainbow Trout
Pumpkinseed Sunfish	Fallfish	Brook Trout
Muskellunge	Central Stoneroller	Mottled Sculpin

Figure 1 Total Number of Fish Collected During Electrofishing Surveys

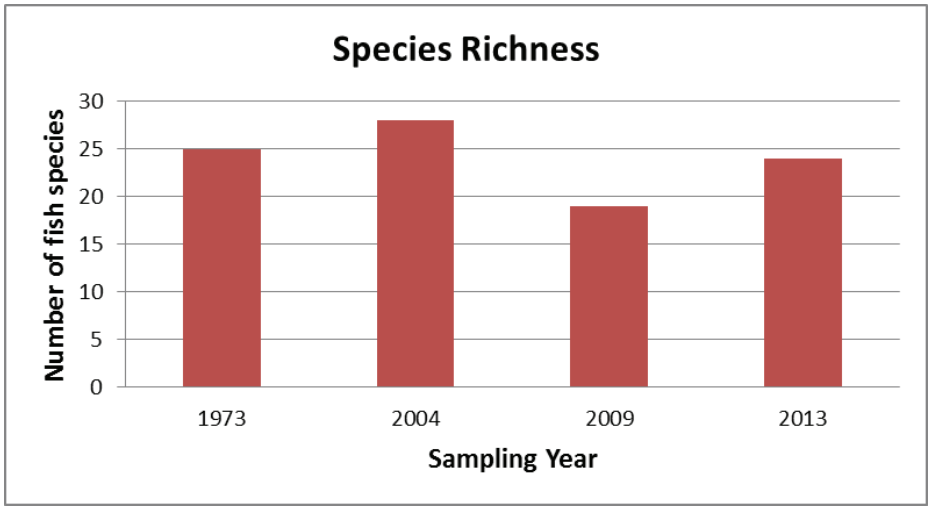
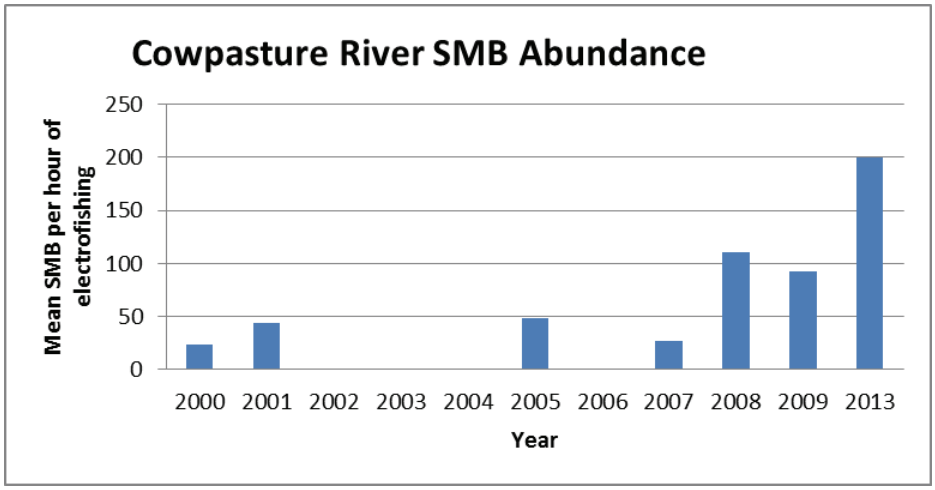


Figure 2 Number of Smallmouth Bass (SMB) Caught Per Hour of Electrofishing



The Fish of the Cowpasture River (continued from page 2)

Fish populations in the Cowpasture River reflect those from other small to medium size, low productivity rivers. Species richness remains relatively unchanged over the past forty years. VDGIF uses boat electrofishing catch data to assess fish populations in the Cowpasture River. Water temperature, river flow, turbidity, time of year, physical habitat, and even changes in sampling gear can affect the catch rate of fish. There is also a high degree of natural variability in fish abundance (for all species) from year to year. Most of this variability in abundance is caused by spawning success. Spawning success is influenced by environmental conditions (mainly river flow). Most of the changes in fish abundance over the past twenty years could be considered within the range of what these populations experience naturally. There appears to be some evidence of a reduction in the abundance of larger smallmouth bass following the fish disease/ mortality events of 2007-09. However, the numbers of larger bass appear to be increasing in recent years. Distribution and relative abundance of other sportfish species are within the expected range for a river with the Cowpasture's characteristics. More consistent monitoring will be necessary to determine if significant changes can be attributed to abnormal conditions or events. Overall, VDGIF finds the fish populations in the Cowpasture River to be in good condition.

References Cited

Mohn, L.O., Raleigh, R.F. and F.L. Carle. 1973. Biotic Survey of the Upper James River, Virginia. VPI&SU Special Report, 105 pp.

Olden, J.D. 2004. Biological Survey of the Cowpasture River, Virginia. Report Prepared for the Cowpasture River Preservation Association, 57 pp.

Rock Bass

Rainbow Trout

Redbreast Sunfish

Brown Bullhead Catfish

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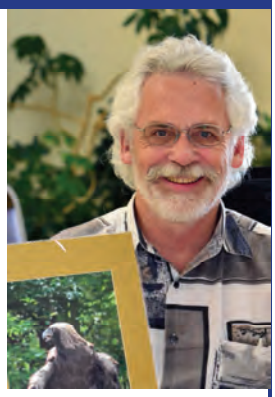
From the President

A pleasant spring greeting to you all … I think by the time you read this it will have arrived. While shooting sporting clays today I realized that I was quite comfortable outside even though it was only 45 degrees. I guess this winter has toughened us up a bit. Neighbors are displaying Brook Trout taken in the watershed on Facebook, which proves that I am not that tough. All species of game and fowl have been seen on the river as the balance of nature takes its course. Seeing Baltimore Orioles at my feeder is a first. Now I need the Purple Martins to find my newly placed condos. I sincerely recommend this year's Annual Meeting. We have a speaker whose subject matter is on point and will answer many questions about the river. His study Cowpasture River Fish Assessment 2013 covers over 20 years of data on the fish in the river. The good news is that fish populations appear to be increasing in recent years after the fish kill years back in 2007-2008. Hard copies of this report will be available at the Annual Meeting and Keith can send you a digital copy at your request. See you May 10 at the Annual Meeting.

Executive Director Update



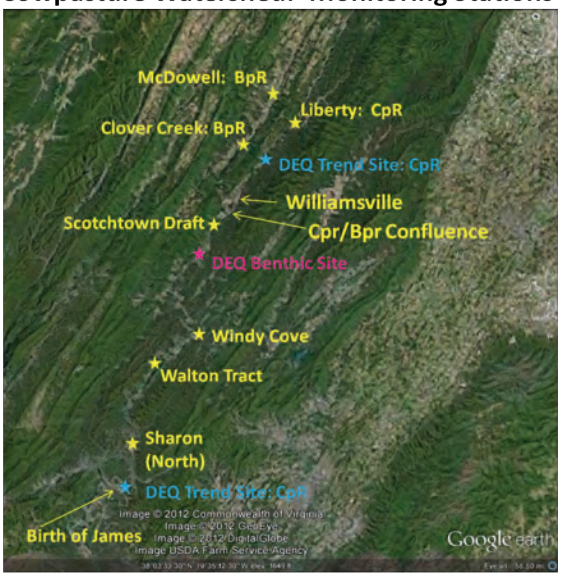
I believe that due to the Board's continued vigilance the CRPA is stronger than ever and will be a voice for river stewardship for many years to come. The future will bring new challenges, so the most important resource of the CRPA - the membership - will have to continue to stay involved and keep an eye out for potential threats to local water quality. Our volunteer river monitors out there counting bugs and collecting water samples to measure *E. coli* are a great example of how the membership protects the river. The recent national recession has put job creation at a premium, but jobs in a degraded environment will not be of long-term benefit. Pressure is building to reduce environmental regulations that are currently protecting our air and water. This is short-sighted and bound to have significant consequences to human health in the future. Local storm water regulation and the blueprint to clean up the Chesapeake Bay are two areas where pressure is already being brought to bear to restrict pollution controls in the name of jobs, development and agriculture. For decades both agriculture and the business community have not paid all the costs to do their business especially to dispose of their waste and control the release of pollution. Tax payers have been forced to make up the difference if they want a clean environment and that is unlikely to change in the near future. Finding the balance between economic factors and protecting the environment will be one of the most important challenges to be met if the quality of life in the Alleghany Highlands is to continue for future generations.

Health Matters: Nutrient Levels Add Important New Information

By Polly Newlon, Project Director

Volunteers for the CRPA's WallaQualla program of monitoring the watershed continue to go above and beyond the call to collect data for the organization. As spring finally arrives on the scene, these folks will be out in droves collecting the spring macroinvertebrate samples to determine Virginia Save Our Streams multimetric indices. Winter critter samplings were rarely to be had this year due to cold, ice, and high water. But the CpR watershed generally boasts high scores in this area as reported previously. Bacterial samples have been gathered without fail despite conditions. The winter months typically show annual lows in bacteria given water temperatures which approach freezing along with general reductions in agricultural land use density.

Cowpasture Watershed: Monitoring Stations



This map, courtesy of Google Earth, shows the existing CRPA monitoring stations, along with DEQ sites monitored over the years. The majority of sites lie along the main stem of the Cowpasture (CpR) and its primary tributary, the Bullpasture River (BpR).

In the last *River Runs*, data were provided on some of the new measures being obtained monthly as part of the expansion of water quality monitoring. At that time, a brief synopsis of the nitrogen and phosphorus levels derived from nitrate and phosphate was provided with a promise of more detail in this issue. While we do not yet have a full year's cycle of data on these nutrients, we can now provide data from June of 2013 through March of 2014 with one caveat, an absence of data for January. The weather conditions and prolonged icing over of the river prohibited sampling that month. Otherwise, samples were taken during the last week of each month in the interval noted above. In both December, February and March, water levels were quite high due to snowmelt and rain, providing a good opportunity for us to compare high, seasonal, and low water conditions during the sampling period. As reported in the last issue, most measured values vary somewhat with flow level and dilution by rain and snow and these varying conditions allow us to capture a more complete picture of what we might expect along the watershed throughout a full year's collection period. Detailed results for nutrients are shown on page 7.

Shout Out - Norm and Sara Bell

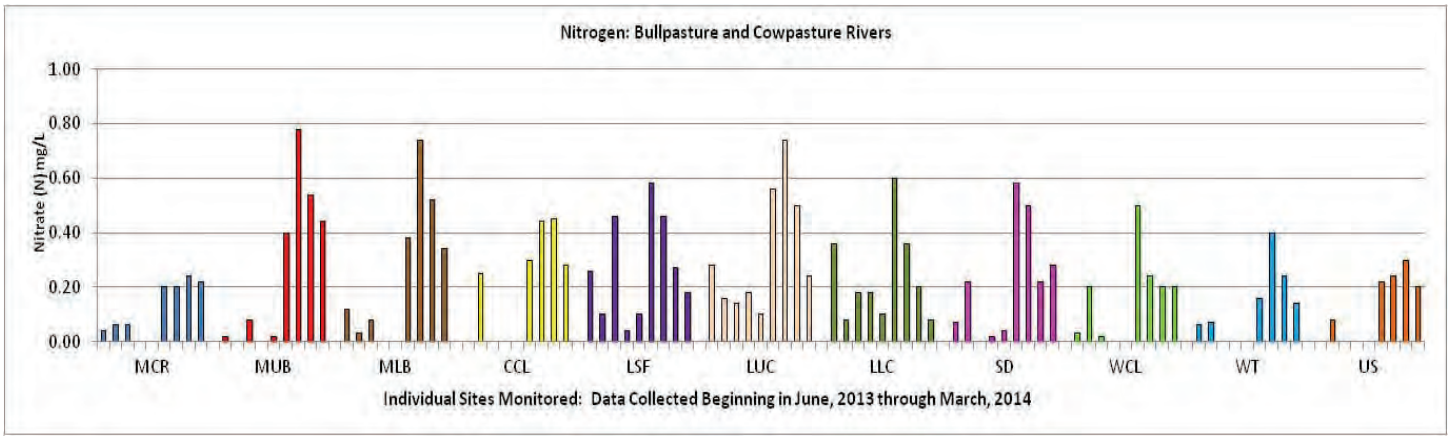
Right: Station Manager Norm Bell takes a sample to measure bacterial levels at the Scotchtown Draft site, a few miles below the confluence of the Bullpasture and Cowpasture Rivers. Norm and wife Sara Bell are dedicated volunteers for the CRPA and have taken responsibility for the Scotchtown site since 2012. Both are very experienced in water quality monitoring. Sara, shown below with Norm constructing rain barrels at a 2010 CRPA workshop, recently retired after 31 years with Dominion Power's Pumped Storage Station in Bath County. When she retired, Sara was serving as the Environmental Compliance Coordinator for Dominion. Norm and Sara are both certified master naturalists and have spent many years conducting macroinvertebrate monitoring. Residents of Highland County, their love of our local waterways and concern for the environment have kept them both active over the years in many volunteer activities related to preserving the natural resources of our region. Norm is also the long-standing president of the Bolar Ruritan Club and both are charter members of the Bath-Highland Bird Club.

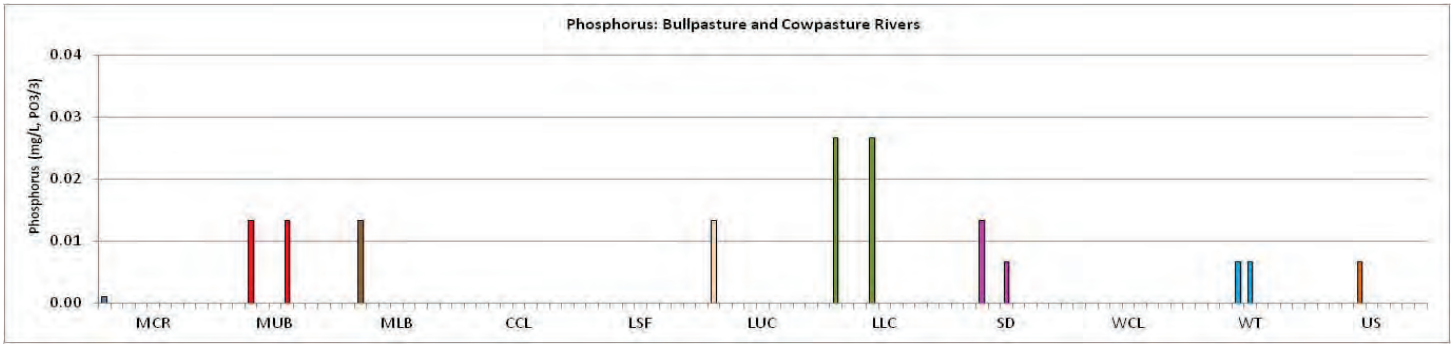
Health Matters: Good News on The Nutrient Front

For nitrogen and phosphorus, we utilized Hach field test kits, NI-14 and PO-19. Water samples were taken and refrigerated until they could be analyzed offsite, within 24 hours. As mentioned in the Winter newsletter, nitrogen and phosphorus are naturally occurring elements that, in abundance, can impact stream life. They may serve as nutrients for undesirable plant or animal life that can directly interfere with native life forms, or compete for oxygen resources in a waterway. Similar to bacterial levels, especially in agricultural regions, one can expect variation in nitrogen levels throughout the year based on changes in agricultural intensity as well as precipitation and runoff and their effects on overall water volume. The same is true of phosphorus although bans on phosphates in household and garden products have had positive effects on stream levels of this element.

Tools of the trade. Measuring devices for physical and chemical analysis of streams are compact and can fit into a toolbox. In the foreground are a conductivity meter (left, YSI Instruments) and a small, flashlight-sized Hobo temperature data logger (right), along with a docking station that allows onsite downloads of data sets from the logger (Onset Corp.). The chemical test kits in the background (Hach, Co.) include phosphate (back), nitrate (center left) and pH using Bromthymol Blue (center right). While not as sensitive as laboratory tests, these kits are practical, easy to use, and provide a reliable and relatively low cost tool for use by citizen groups.

The graphs below show nitrogen and phosphorus amounts, expressed as milligrams/liter, found over the collection period. A "pristine" freshwater stream devoid of human influence could be expected to have nitrogen levels < 0.1 mg/L. Levels exceeding 5 mg/L are cause for concern. Our levels routinely rest between 0 to 1 mg/L across sites although there is variation. Fall and winter months when water volume is increased by rain and snowmelt demonstrate increased nitrogen levels which peaked in November or December and then began trending downward again. Happily, we have found that phosphorus rarely reaches detectable levels with the methods being used. Levels of concern for phosphorus are 0.1 mg/L and above. That is 4 times higher than the highest we have observed to date.





Key: Bars are measures made each month from 6/13-3/14 (excluding 01/14, not done). Absence of a bar within a site indicates a reading of zero. **MCR**: McDowell, Crab Run; **MUB**: McDowell, Upper BpR; **MLB**: McDowell, Lower BpR; **CCL**: Clover Creek (BpR); **LSF**: Liberty, Shaw's Fork; **LUC**: Liberty, Upper CpR; **LLC**: Liberty, Lower CpR; **SD**: Scotchtown Draft; **WCL**: Windy Cove; **WT**: USFS Walton Tract, **US**: Upper Sharon.

Fencing Waterways Can Improve Herd Health

"Why do farmers fence their livestock from ponds, streams and wetlands? Of the hundreds of farmers I have talked to that have done it, these are the top four reasons," says Bobby Whitescarver, a natural resources management consultant in Augusta County, Virginia. " First, they need more water and better water distribution over the farm. Second, to improve herd health and reduce bio-security risks. Third, to eliminate calving risk areas. Fourth, to facilitate rotational grazing and ease of livestock movement. Here are the top four reasons they don't participate in government programs to exclude livestock from streams. First, they fear government intrusion. Second, they don't trust the government. Third, red tape involved in program participation. Fourth, they don't feel that their current practices are causing a problem." According to the Chesapeake Bay Foundation, sediment, phosphate and nitrate are the most important water pollutants damaging the Bay today. The largest single source of those pollutants is agriculture. A healthier environment or a restored Chesapeake Bay are not high on the priority list for farmers. Saving a calf from freezing to death in a wetland or from scours are high on their list. One calf today is worth over $1,000. Folks attempting to convince farmers to fence their livestock out of streams need to keep this in mind. To sell this Best Management Practice to farmers it is important to showcase how the practice will benefit the farmer not the environment. Testimonials from respected farmers also help. One of the most respected cattle producers and large animal veterinarians in the Shenandoah Valley is Dr. John Wise. Dr. Wise, a large animal veterinarian, beef cattle farmer and co-founder of the Westwood Animal Hospital in Staunton has practiced what he preaches, "Abundant clean water is essential for the health of cattle. Lepto, E.coli and mastitis are the main health problems with cattle drinking dirty water. Streams and the river on our home place were especially dangerous during calving, so we fenced them off too. I recall pulling a calf out of Middle River almost every year, many of them dead. Rotational grazing helps pastures recover quicker." Dr. Wise has participated in many federal programs to help address all of these livestock issues. According to him, the benefits to the farmer of having abundant clean water and stream exclusion include better weight gains, lower vet bills, healthier livestock, better forage utilization, lower mortality and ease of herd movement. These are farmer benefits and these are what sell conservation programs. More information on these programs and additional testimonials can be found at Bobby Whitescarver's website, www.gettingmoreontheground.com.

Upcoming Events

Spring River Clean-Up at the Walton Track, Sunday, May 4, 2014, 2 PM. Note the change of date. Meet at the Rt. 42, Crizers Gap Road intersection at 2 PM sharp to receive supplies and location assignments. Wear sturdy shoes or boots and bring work gloves.

Annual Meeting, Saturday, May 10, 2014, 5 PM at the Fairview Community Center near Millboro Springs. The speaker will be Stephen Reeser, Virginia Department of Game and Inland Fisheries. See page 10 for the Annual Meeting registration form.

Training: Benthic Macroinvertebrate Assessment, Saturday, May 31, 2014. Contact Polly Newlon at keepherclean@gmail.com or 540.474.2858 for details on this opportunity to become a WallaQualla monitor and become certified by Virginia Save Our Streams.

Summer Picnic, see the Summer Newsletter (to be published in late June) or website for details.

For further information on any CRPA event, call Keith Carson at 540-474-2858, or email directorcrpa@gmail.com.

People Matter: Thank You and Welcome New Members

This list includes dues and gifts received between January 16, 2014 and March 8, 2014. If you have not paid your dues yet for 2014, they are overdue.

Correction
In the previous newsletter (Winter 2014), Lucius and Pam Bracey should have been listed in the Bedrock Patrons category of membership. In addition, Daniel Bracey should have appeared in the Headwaters Circle listing.

Bedrock Patrons

Bill and Christie Hardbarger
George and Frances Phillips
The Waller Family

Wallawhatoola Society

Nelson Hoy and Elizabeth Biggs

Watershed Stewards

John and Caryl Cowden
Michael and Patricia Christian
Marshall and Jane Higgins
Tal and Christine Kemper
Joe and Kathy Wood

Headwaters Circle

Al Cleveland
John Fowler
Jean Howell
John Hutcheson
Jonathan Jencks
Amanda McGuire
Dave and Sandra Peters
Mary Powell-McDaniel
Mike and Peggy Van Yahres
Walnut Tree Farm
Robert C. Watts, III
Robin and Mina Wood

River Guardians

Donald G. Arnold
Tim and Bonnie Carpenter
Sonny and Bea Clark
David Higgins
Patrick Higgins
Jim and Katherine Morris
Rachel Johnson and Carl Pattison
Mac and Beverly McLaughlin
Jim and Sarah Redington
Bill and Eleanor Washburn

River Guardians (continued)

Camille Baudot Wheeler
Roy and Ann Wright

Members

Ann Caldwell
Candice Dupoise
Katherine Dupoise
Wade Evans
William Lipscomb
Phil and Charlotte Lucas
Dick and Jean Miller
Barbara Newlon
Amanda Owen
Eddie Stinespring
Paige Pistell Witte

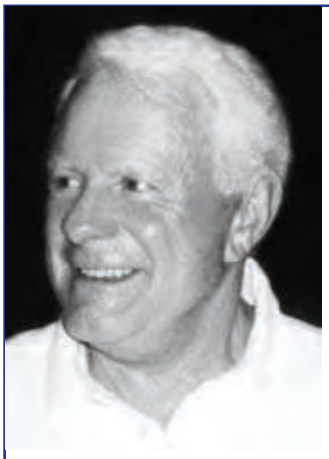
Welcome New Member!

Al Cleveland

Did we get it wrong? We're sorry for any errors or omissions in this list. We are happy to correct errors.

Email directorcrpa@gmail.com or call 540-474-2858

Farewell To A Dedicated Friend Of The River



CRPA Past-President Thomas James Lobe, 86, of 29 Ashwood Drive, Hot Springs, passed away on Monday, January 27, 2014 at his residence. He was President of the CRPA in 1995-96. He was born December 30, 1927 in Cleveland, Ohio, the son of the late Louis Lobe and Anna Saber Lobe. Tom was a 1946 graduate of Saint Ignatius High School in Cleveland, Ohio, where he was a three-sport athlete. He made All-State football and was known as "Touch Down Tommy." He was the first one to be inducted into the Athletic Hall of Fame at Saint Ignatius. He was a 1950 graduate of West Point Military Academy where he also played varsity baseball and football. He played on the undefeated football team that included the famous Heisman Trophy winners, "Doc" Blanchard and Glen Davis. After graduating and serving his military commitment, he returned to civilian status. He was the director of the American Electric Co. in Mexico, and later moved to Houston, Texas, where he joined RCA Corporation, working there until 1984. He lived in numerous states and countries including Fairbanks, Alaska; Thule, Greenland; Boulder, Colorado; Daytona Beach, Florida. and Washington, D.C., where he met his future wife. On December 1, 1975 he married DeWitt "Dee" Edwards while in Tehran, Iran. They later moved to Hong Kong and the corporate headquarters of RCA in New York City, where he was the director of marketing planning. Upon retirement he settled at Briarcroft Farm in Millboro Springs, in 1984, where he played golf at The Homestead, rode horses and then went on to raise cattle. He was always surrounded by his many Labrador retrievers. He attended Saint Luke's Episcopal Church and taught the acolytes for the church. He is survived by his wife, DeWitt "Dee" Edwards Lobe of Hot Springs; a step-daughter, Paulette Greene of Houston, Texas; and five nephews.

CRPA Annual Meeting Reservation Form

Saturday, May 10, 2014
Fairview Community Center — Rt. 39 at intersection with Rt. 629, west of Millboro Springs

5 p.m. Registration - Meet and Greet
6:00 p.m. Business Meeting
6:30 p.m. Dinner
7:15 p.m. After Dinner Program with Guest Speaker: Stephen Reeser, Fish Biologist, Virginia Department of Game and Inland Fisheries, who will speak on "Fish of the Cowpasture River"

IMPORTANT - Make Your Dinner Reservation Early!
Space is limited at this location and once the room capacity has been reached we will have to stop accepting reservations.

Cost: $15 per person, $10 children 12 and under
Please send this reservation form along with checks payable to CRPA by **April 28** to:
CRPA, PO Box 215, Millboro, VA 24460; you may also pay at the door
If you choose to pay at the door, please email or phone in your intentions by May 2 at the latest: directorcrpa@gmail.com, 540-474-2858

Name (as you wish it to appear on nametag)	Dinner Cost ($15 adult, $10 children 12 & under)
Total	

40th Anniversary Commemorative Merchandise is now available on the CRPA Website.

Gift a friend or relative with a CRPA membership and a treat such as a t-shirt, a mug or a tote bag.

T-Shirts
100% Cotton
Available
in
Green or Blue

$15 each
(SM, MED, LG, XL, XXL)

Large Cotton Tote Bags $15

Mugs (14 ounce) $10

Visit the CRPA website at www.cowpastureriver.org for photos of additional merchandise, including our popular Wallawhatoola t-shirt and CRPA caps. Click on the "Merchandise" link at the top right and follow the directions to place orders.

Not a member? Want to help make another 40 years happen? Join today!

❒ $20 Individual (minimum annual membership donation)
❒ $50 River Guardian
❒ $100 Headwaters Circle
❒ $250 Watershed Steward ❒ Other_____
❒ $500 Wallawhatoola Society
❒ >$500 Bedrock Patron
❒ Junior Membership(s): 15 years and under; Cost—4 hrs./year volunteer service

NAME(S) As You Want Them Published

ADDRESS

CITY — STATE — ZIP

PHONE E-MAIL

❒ I prefer not to have my name published as a contributor.
❒ I am interested in becoming a volunteer river monitor
❒ I want to help save valuable resources, please send my newsletter by email

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