



The BFA Fall 2019 NEWSLETTER

Hope Everyone finds themselves and their loved ones doing well as the days grow shorter, darker and the cooler temperatures of fall take over our region.

Please mark your calendar for our Annual Fall Picnic & Fundraiser

Saturday, 9 November 2019

11:00 AM – 2:30 PM

1615 East LaRua Street, Pensacola

As we approach the end of the year & close-out the decade, the **Bream Fishermen Association (BFA)** will also be celebrating the **50th Anniversary** of being *officially* organized. The BFA is an all-volunteer organization, which promotes environmental stewardship through water quality monitoring by implementing programs that educate and improve the quality of our environment for all persons, plants and animals; from the headwaters of creeks to the Gulf of Mexico. Loosely organized in the 1960s due to catastrophic fish kills, the BFA was chartered in January 1970 – four months before the first Earth Day and eleven months before the USEPA was commissioned.

The BFA has been active in this community as a partner with several state and federal agencies and coordinates a water quality monitoring program that continues to this day. Simply put ***“BFA represents and promotes the science side of environmental stewardship”***.

Like the landscape and community, our organization is undergoing some growing pains. And as the community continues to grow in population and density, the accompanying development and type(s) of development (clear cutting natural areas for high density subdivisions) are often reflected in nearby surface waters when they become impaired due to **stormwater runoff**.

Times have changed in that the concerns with water quality in the 1960s and 1970s were identified as ***point source runoff***. In concept, that was the low-hanging fruit, which resulted in observable issues which the Clean Water Act was in-part designed by USEPA to address. The image of an industry with the end-pipe discharging dirty water into a creek

*Bream Fishermen Association is a 501(C) 3 Organization Chartered in 1970
Fall 2019 Newsletter – Visit www.BreamFishermen.org for more articles and information*

or river, is more obvious than rainwater sheet-flowing across a landscape towards a ditch, wetland, or surface water. The latter is ***non-point source runoff*** also known as ***stormwater runoff***, which as we will learn in this newsletter is difficult to capture, hold, and adequately treat yet can impair water quality and aquatic ecosystems by delivering excess sediment and nutrients into waterways.

Stormwater runoff is rainfall that flows over the ground surface. It is created when rain falls on roads, driveways, parking lots, rooftops and other impervious surfaces that do not allow water to soak into the ground. **Stormwater runoff is the number one cause of stream impairment in urban areas.** Where rain falls on paved surfaces, a much greater amount of runoff is generated compared to runoff from the same storm falling over a forested area. These large volumes of water are swiftly carried to our local streams, lakes, wetlands and rivers and can cause flooding and erosion, and often wash away important habitat for animals that live in the stream. It should be noted that soft rain does little to no damage compared to hard summer downpours which are known to cause erosion.

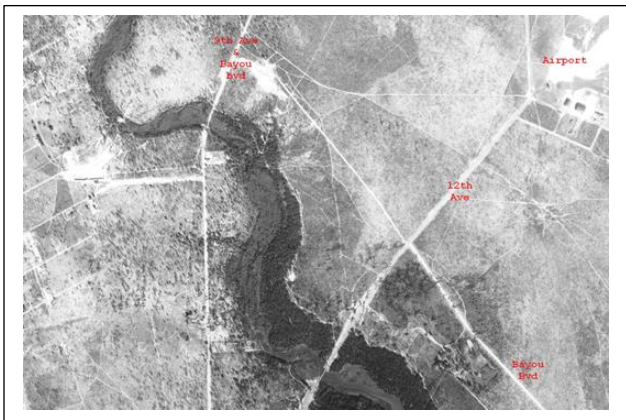
Stormwater runoff also picks up and carries with it many different **pollutants that are found on paved surfaces** such as **sediment, nitrogen, phosphorus, bacteria, oil and grease, trash, pesticides and metals.** These pollutants come from a variety of sources, including pet waste, lawn fertilizer, cars, construction sites, illegal dumping and spills, and pesticide application. Researchers have found that as the area of paved surfaces increases (a.k.a. impervious cover) in the watershed, stream health declines accordingly. (cwp.org)

Trees and forests improve stream quality and watershed health primarily by decreasing the amount of stormwater runoff and pollutants that reach our local waters. Trees and forests reduce stormwater runoff by capturing and storing rainfall in the canopy and releasing water into the atmosphere through evapotranspiration. In addition, tree roots stabilize soil and along with leaf litter create soil conditions that promote the infiltration of rainwater. This helps to replenish our groundwater supply and maintain streamflow during dry periods.

The presence of trees also helps to slow down and temporarily store runoff, which further promotes **infiltration**, and **decreases flooding and erosion downstream.** Trees and forests reduce pollutants by taking up nutrients and other pollutants from soils and water through their roots, and by transforming pollutants into less harmful substances. In general, trees are most effective at reducing runoff from smaller, more frequent storms.

In addition to these stormwater benefits, **trees provide** a host of other benefits such as **improved air quality, reduced air temperatures in summer, reduced heating and cooling costs, increased property values, habitat for wildlife, soil stabilization, recreation, and aesthetic values.** A heritage tree next to a home is considered a selling point, a positive.

Carpenter Creek Development Challenges



Aerial Photographs comparing the lower end of Carpenter Creek ~1940s (left, *Historic Pensacola*) and 2019 (right, Google).

Point source and nonpoint source runoff have resulted in degraded water quality in Carpenter Creek and Bayou Texar for decades. The photo on the left (above) demonstrates the width of the riparian zone adjacent to the creek and was taken prior to any dense development in the immediate vicinity of the creek. The early terrain was likely sandhills (Cordova Mall and Sacred Heart Hospital are co-located on hills) dotted with longleaf pine and wetlands and bogs. The roads, including 9th Ave, 12th Ave, and Bayou Blvd were all well-traveled dirt roads to areas like the airport, labeled in red. The upland timber in this area was likely clear cut for building purposes, but even back then (80 years ago) the trees near the creek were left undisturbed.

The photo on the right illustrates the extent of growth and accompanying fragmentation which has occurred in the watershed over the past 80 years. The airport, Target-Winn Dixie, and Publix-Rave Shopping Center/Theater virtually abut and line the north side of the creek system. These developments coupled with Cordova Mall and the Sacred Heart Campus have all contributed to the demise in the health of the creek through stormwater runoff and sedimentation.

Long term area residents who recall the creek from their youth describe the creek as crystal clear with a gravel bottom. The creek had runs, riffles, pools, and glides. Some pools were 4-8' deep with runs through narrow banks, such that a grown man could stand in the creek and touch both banks from the center. Gravel mined from the many nearby creeks may be found downtown in the form of sidewalks. The entrance to Pensacola City Hall and the surrounding sidewalks are examples of this once abundant resource.

Today, the creek is less than 2' deep and sands have smothered the gravel bars leaving a wide and scoured system. Thankfully, some trees remain as sentinels offering shade to the flowing water, although many of the remaining native species have been displaced by invasive non-native species.

The transformation and degradation of the once healthy creek was slow and likely went un-noticed at the time when the ***solution to pollution was dilution***. It was a mantra that many of us were raised hearing and were taught in school.

Today's technology along with biology and science applications married, give us a much better understanding of ecology, soil health, hydrology, and fire ecology. We understand that healthy uplands are connected to healthy waters. What seems to be lagging is the implementation of this recent knowledge to make sustainable improvements.

The Carpenter Creek and Bayou Texar Revitalization Project was developed to apply a ***Landscape-scale, Community-based Conservation Method*** to an urban watershed. This project was well received by the engaged community in part because it applies a holistic approach to watershed restoration, from the littlest headwater creek to the bay. Many projects are suggested and funded, but in small piecemeal portions also known as ***Random Acts of Restoration***. And while demonstration projects are useful and beneficial to demonstrate concepts (Project GreenShores) the environment (landscape) rarely receives the level of funding required to approach the issues holistically, logistically and comprehensively.

The **Carpenter Creek Project** (visit BFA website) was one of ten projects that the Escambia County Restore Program selected. Phase I of this project will cost \$1.3M and provide a restoration plan including tree buffer zones, native grasses and plantings as filter strips, restoring wetlands to functioning ecosystems. The consultant selected is not local and will be relying on local knowledge and past reports. The painfully slow process of getting started, will begin in **January 2020 with a kick-off meeting**, finally! Hooray!

Opportunities and Challenges to Achieve Sustainable Growth

As the population continues to grow, a one-to-two story house today may be replaced by a five-to-six story development tomorrow, thus growing skyward. The City of Pensacola is embracing this approach and applying it to

many of the remaining downtown properties. This method can serve to compound water quality problems further by the conversion of natural lands to hardened surfaces, if the community doesn't wake up and address the issues.

Tragically we have the knowledge and the know-how to avert additional impacts, but it seems we are missing the ***political will*** to implement the necessary steps. Often the simple and obvious fixes, such as spanning a creek or river to include the flood plain and riparian zone are met with statements that such measures would be ***prohibitively expensive***. This short-sightedness is partially responsible for the continued and even additional impacts; and for the record, today's cost estimate will always be less than tomorrows.

A healthy ecosystem is a complex organism with many moving parts. In the case of Carpenter Creek and Bayou Texar, prior to the explosive development that sprawled and then encompassed the watershed (see photos above), one can easily make out the sinuous band of vegetation that meandered through the area bordering the creek. In a natural state, these systems are always adjusting themselves, repairing themselves like a wound healing. Sandbars and gravel bars reshape themselves as they move downstream thru rain events and build up the floodplain. All the while, these pulses of water carry woody material, leaf matter and seeds, unless the water flow becomes altered. Seeds sprouted on sand bars serve to stabilize these highly erodible sandy soils. Many of today's alterations occur through habitat fragmentation.

Fragmentation of watersheds is a costly problem to retrofit. Fragmentation on the landscape often occurs thru development including road and creek impoundments. Often bridge design engineers are ***old school*** and not aware of recent methodologies and current science which design structures with the local ecology, sediment and soil types and weather patterns in mind. This results in **poorly designed bridges**, sometimes with bridge supports in the mainstem of a creek, **inappropriately placed culverts** which became chokepoints – resulting in **flooding areas upstream**, or simply do not consider and design for sand-bottom creeks meandering. As a result, state and county managers are falling behind, often putting Band-Aids on aged infrastructure all the while growth is accelerating.



Photo of Brushy Creek bridge (left) Perdido Watershed, in northern Escambia County, FL, and Jackson Creek and New Warrington Road (right) Bayou Chico Watershed, in southern Escambia County.

The photo above left, Brushy Creek bridge is an example of a **poorly designed bridge with bridge supports located in the mainstem of the creek** and rip-rap rock dropped to protect the bridge supports. This relatively new bridge (2014) has created such a **choke point** that will cause Brushy Creek to likely realign during the next tropical event and breach the road slightly upstream.

The photo above on the right is an example of a **highly eutrophic urban creek which has been channelized with bulkheads into a double box culvert**. The culvert has trapped sediment and is impeding flow. This creek is one of

several that feeds **Bayou Chico**. Escambia County has recently selected an environmental consulting firm to characterize and remove sediments from the Bayou Chico basin, but this effort will be a wasted exercise if the **source of sedimentation is not addressed in tandem to sediment removal in the basin**. These are known environmental issues which continue to go unattended by county and state managers.

Which brings us to the ***essence of elephant in the room***. In 2010, the BP Oil Spill impacted the Gulf States, from Louisiana to Florida. In 2012, the RESTORE Act was signed, resulting in a complex process whereby the **affected states received large sums of money** (Pots I, II, III, IV, & V) to be used towards projects that **enhance the entire community** and essentially ***float all boats*** within the county (*-Josh Womack, 2014-15*). Escambia County is set to receive **approximately \$70 million from RESTORE Pot 1 over the 15-year payout** period (through 2031).

The **bureaucratic systems** that each agency functions under presents challenges to integrated efforts. From the outside looking in, it seems there are many hurdles to overcome among these organizations and one might assume that there is collaboration and communication given the many written agreements they share (Memoranda) but they would be mistaken. **The bureaucracy might be more palatable if the environment were the beneficiary of this lengthy process**. And therein lies part of the conundrum. The mistakes we made 25-, 35-, and 50 years ago are still occurring today, despite modern technological advances. What's worse is that many of the state, county and city officials (bureaucrats) and their consultants are aware of these shortfalls. When questioned, many officials suggest financial resources are limited.

In the ten years since the oil spill which resulted in these funds for the community and this project, the **BFA has sampled the Carpenter Creek Watershed 40 additional times** (quarterly for a decade). These state data can be found in the Water Quality Portal. https://acwi.gov/monitoring/pubs/WIS_2017_fs/WQP_Step_by_step.guide.pdf In addition, **UWF students** (many from **Dr. Jane Caffrey's lab**) and citizen scientists have complimented the BFA dataset by adding **Chlorophyll a** (alga in water column) at all stations since 2015 and **E. coli (bacteria)** at all stations quarterly during 2016-2017. **BFA Project Oyster Pensacola** (POP) which began in 2018 is still underway providing a valuable glimpse as to the condition of various local waters (visit BFA website).

The Water Quality Portal is a cooperative service sponsored by the United States Geologic Survey (USGS), the Environmental Protection Agency (USEPA), and the National Water Quality Monitoring Council (NWQMC). The portal serves data collected by over 400 state, federal, tribal, and local agencies. As the population continues to grow, our land use changes are reflected onto area waters. This information and data can be teased out of the data set and is available to the public at the Water Quality Portal (link above).

The New 3-Mile Bridge

The old 3-mile bridge our community has used for the past few decades was opened in 1960 and allowed two lanes of traffic to flow north and south. The bridge was hit by a barge and deemed unsafe in the late 1980s, causing a 75-mile detour which rerouted drivers living in Gulf Breeze and working in Pensacola on a lengthy tour of what was low-lying wetlands, east, down Hwy 98 to Hwy 87 in Navarre, north to I-10 and west to Pensacola. The bridge was eventually repaired and widened at that time and served to showcase the inconvenience and difficulty of losing the main route to and from small, bridge-connected communities.

Fast forward from 1960, when Florida's population was just under 5M, the population today is estimated to be at ~22M. Add to that another 115M visitors, and that's a lot of pressure on the natural resources, in a state once called the land of swamps and quagmires.

Thank goodness that we have good governance, or do we?

The first stormwater pond in Escambia County was built in 1985 on Bold Ruler Drive, along Ten-Mile Creek, a tributary of the Eleven Mile Creek System, part of the larger Perdido Watershed. **Many engineers had been designing stormwater runoff into nearby wetlands and creeks for years and often referred to these living systems as stormwater conveyances.**

But in this corner of Florida, in 2019, the state department of transportation, FDOT, is spending **\$417M on a new 3-mile bridge**. The new bridge will consist of **two parallel structures**, each equipped with three travel lanes, adjacent inside and outside shoulders and 10-foot multi-use paths for pedestrians and bicyclists.

Each span will be **66' wide and 3 miles long, which translates into ~30 acres of hardened surface per span**. A one-inch rain event on a single acre would generate 27,150 gallons of water. A one-inch rain event on one span of the new bridge will generate 814,500 gallons of stormwater. To put this in perspective, an Olympic size pool holds 660,000 gallons of water. **However, there is NO stormwater treatment built into this brand-new bridge.**

The **Federal Highway Administration's** websites indicate that when precipitation occurs over highways and other impervious surfaces, the resulting stormwater can carry debris, sediment, and chemicals into water sources, diminishing their quality. In addition to the stormwater runoff that carries sediment and pollutants into water sources, highway construction and maintenance activities have potential to affect nearby bodies of water*.

Northwest Florida receives ~65" of rain annually. In 2017 the area received 97", in 2018 – 90", and now, 9 months into the year 2019 – the region is in a drought, roughly 25" below the average. Couple that information with unbridled development, the clear cutting of vast tracks of low-lying lands (all that remains after the choice areas have been developed) containing the forests and wetlands that support the waterways, and we are looking at trouble.

The new 3-mile bridge has been designed and is being built to have a 50- to 60-year lifespan. An obstacle and consideration bridge engineers are scheduling around is the annual **migration of Gulf Sturgeon**. This federally protected species, a living dinosaur, comes inshore and travels up rivers in the fall. Where is the consideration for this species and the smallest crustaceans they feed upon in context with stormwater management? How do these considerations get overlooked?

How do 'we' raise the collective bar for local, state and federal governments? **Self-policing and compliance assistance haven't worked.** Aged infrastructure, habitat fragmentation, development in riparian zones and wetland areas, sedimentation, stormwater runoff, and trash, are but a few of the many issues our community faces today and will become compounded in the future.

We need critical thinking as well as the political will to do better. The complex organizational system, the bureaucracy, which appears to be brokering the environment to justify funding their structure, seems **to have thrown the baby out with the bathwater**. What's more, the **City of Pensacola received funding of \$4.5M and City of Gulf Breeze received \$5M** from FDOT to offset the pollution elsewhere. In the case of Pensacola, some funding went towards expanding the stormwater pond at the airport for the new ST Engineering Campus – which is great for Carpenter Creek and Bayou Texar but doesn't begin to address the current 55,000 cars that use the bridge daily. Traffic is projected to increase with the new bridge. Can innovation be applied to retrofit the new span, and correct the second span before construction convenes?

At the very least, the FDOT could purchase and support street sweepers that would vacuum many of the contaminants that will eventually make their way into surface waters with each rain event. Or perhaps open the challenge to the private sector and the many academic institutions who are addressing these issues through education. A monetary prize (~\$500K) would serve to get the conversation started and could be the game changer that addresses this important

issue. **What is unacceptable in 2019 is that a state agency (FDOT) aware of stormwater runoff and the negative impacts which contribute to impaired surface waters is not a part of the solution.** Why not?

This Community is Ready for Change

During the past few years, our community has been invited to participate and provide feedback about shaping the future growth of our city, our county and our general landscape. Through many of these venues (CivicCon, UWF Lecture Series, WSRE Public Square, and IHMC STEM Talk) portions of our community have become more 'Information Fluent'. Thereby raising the collective bar for our region.

Now is not a time to relax environmental laws, given that water borne illnesses both locally and statewide are making the national news weekly. The BFA has a long legacy of assisting county, state and federal partners in area-wide water quality monitoring. Through these monthly efforts, citizens have become aware and engaged in their area waters and are becoming better stewards for the environment. This information must be conveyed from the ground up, as repeating the same mistakes will not improve the situation. And, throwing money at the problem does not solve the problem. Rather, what is needed is a paradigm shift, to address these issues for the next and coming generations.

Bayou Chico Sediments

Much of the state and local effort to improve conditions in Bayou Chico will center on the contaminated sediments which have been accumulating in the basin since the last dredging event (early 2000s). Escambia County has accepted the responsibility and oversight of monitoring many surface waters in the area, including the **Bayou Chico Contaminated Sediment Remediation Project**.

Bayou Chico has a long history of impairment and is the states' first **Basin Management Action Plan (BMAP)**. Escambia County has secured funding for this project to accomplish another goal in the BMAP Process. The goal of this project is to remove contaminated sediments from Bayou Chico. The agreement with AECOM, contractor, is to conduct preliminary studies to identify contaminants (quantity and concentrations) which will allow chemists to make informed decisions and follow up with the various state and federal permitting agencies needed to initiate dredging.

This level of effort is a multi-phased process and includes investigative services, land rights investigation, survey and data collection, public involvement, engineering and design, hydrologic modeling and analysis, utility coordination, environmental permitting and associated fees, and project administration and coordination. This will include determining the quantities and spatial location of contaminated sediments, and the potential application of remediation and disposal of the dredged sediments. Disposal of sediments in the Clark Sandpits is still an option at this point.

Funding for this project is through the RESTORE Grant at \$335,510, remainder to be funded through future Grants, Additional Basic Services at \$54,010, and Optional Tasks at \$1,191,385, for a project total of \$1,580,905. This will not include costs for the dredging of sediments that is to come after the AECOM project is completed. Hopefully, someone from AECOM will look at the source of the sediments, stemming from the small creeks and address that issue before the dredging begins.

Politics Shouldn't Drive Environmental Protection

But sadly, it does! The US Environmental Protection Agency and the US Department of the Army published a final rule in October, reversing a 2015 rule that had in effect widened the definition of water bodies that are regulated under the Clean Water Act (CWA). The Agency's explanation lies in part in state's rights, and a link to a brief history of this legal battle and the final rule can be found here:

<https://www.epa.gov/wotus-rule/definition-waters-united-states-recodification-pre-existing-rules>

Under this new rule, wetlands are greatly impacted by exclusion from regulation under the CWA despite their demonstrated value according to economic analysis by academic scholars and these same agencies <https://www.sciencedaily.com/releases/2017/10/171005141811.htm>.

Additional legal action to challenge this decision is anticipated. <https://www.eenews.net/stories/1061365079/print>

What's our purpose?

The Bream Fishermen Association (BFA), an all-volunteer organization, promotes environmental stewardship through water quality monitoring by implementing programs that educate and improve the quality of our environment for all persons, plants and animals; from the headwaters of creeks to the Gulf of Mexico.

The efforts of our organization may not be apparent but our contribution to the region is noteworthy. Monetizing these efforts and services prove difficult; much like monetizing good health, we often take our health for granted until problems arise. Thank you for your past support and hope you will continue to endorse our efforts and organization.

The vision for the Bream Fishermen Association is the re-connection of communities to their watersheds through a thriving regional watershed monitoring approach. The activities of citizen volunteers through this organization foster the appreciation, conservation, restoration, and appropriate management of our area waters. The desired outcomes for the resources are increased biological diversity and productivity from head-water streams to our panhandle bays.

Membership is open to all individuals who support these objectives. Please join the BFA by sending us your contact information (name, mailing address, phone, and email) be sure to notify us if you prefer to receive notices and announcements by mail or email, and \$20 annual dues to our mailing address:

Bream Fishermen Association, 1203 N. 16th Ave, Pensacola, FL 32503