



Please mark your calendar for the next General Membership Meeting

**Wednesday, 1 May 2019**

This will be a Dinner Meeting with a Guest Speaker! Doors open at 5:30 PM. Dinner will be served at 6:00 PM. Dinner will be provided by the Apple Market and will include King Ranch Chicken, fresh roasted veggies and a garden salad  
Cost \$10.00/person

1615 East LaRua Street, Pensacola

Please join us in welcoming Haley Gancel, who was raised on the Gulf of Mexico coast in Pensacola, FL. She received a BS in Marine Biology from the University of Miami in 2013 and is currently a PhD candidate at the University of South Alabama and the Dauphin Island Sea Lab under the direction of Senior Marine Scientist Dr. Ruth H. Carmichael. Haley's dissertation work focuses on oyster larvae and wastewater distribution in Mobile Bay, AL and is funded by Mississippi Alabama Sea Grant and the Dauphin Island Sea Lab/U.S. FDA joint fellowship program.

Her presentation is entitled: **Restoration and ecosystem services of oyster reefs.**

#### **LOCAL EVENTS**

WSRE's Public Square Speakers Series brings author **Cynthia Barnett** to the Jean and Paul Amos Performance Studio on **Tuesday, 23 April 2019**. Tickets are free, but you must register.

<http://www.wsre.org/events/public-square-speakers-series/>

In her program, Blue Revolution: A Water Ethic for Florida, Cynthia Barnett will show how one of the most water-rich states in the nation could come to face water scarcity and quality woes — and how it doesn't have to be this way. She is the author of three acclaimed books on water: Mirage: Florida and the Vanishing Water of the Eastern U.S., Blue Revolution: Unmaking America's Water Crisis, and Rain. Blue Revolution was named one of the top 10 science books of 2011 by The Boston Globe, who has called Barnett "part journalist, part mom, part historian and part optimist."

## PROJECT OYSTER PENSACOLA (POP)

Project Oyster Pensacola (POP) is a **Citizen Science Project** which began in 2017 when the region received higher than usual rainfall. Citizen Science has an important role in our community and can help in collecting vital data for research projects.

As a result of that meeting, **Pensacola Bay Oyster Farms** owner Don McMahon offered to supply the BFA baby oysters (spat) to place in cages that could be hung off docks throughout the region. One oyster under optimum conditions can filter 50 gallons of water per day, what can 75 oysters accomplish for an area? Also, what kind of information could be collected to offer a glimpse into the overall condition of area waters?

Fast forward to late April 2018, when the BFA received a permit from the **FL Fish & Wildlife Conservation Commission** (FWC) to allow this pilot project in both the Escambia & Perdido Bay systems. Participating citizens enrolled in the program, attended a workshop on caring for their oysters, and agreed to 'return the oysters' at the end of the study. Data will be collected from these oysters, before final deployment onto a nearby permitted living shoreline - ideally within the same waterbody.

During the past year, **BFA volunteers** and **UWF students** visited each site several times throughout the 12-month period to collect water chemistry data (pH, dissolved oxygen, salinity, temperature and water clarity). In addition, oysters were examined for survival, and a small subsample of each were measured for growth and weight.

Now, as the pilot project is sunsetting, interested students, citizens and POP guardians are invited to help us collect additional data on the many organisms which have been recruited onto the cages and oysters. This information will offer a glimpse into the overall productivity of the area waters. **Productivity is a function of the community composition**, including feeding groups (filter feeders versus grazers), water quality and the overall quality of available *habitat*\*.

**Want to help?** Oyster cages will be collected and brought indoors for sorting. Sorting will be done in teams (made up of 3-4 people) to help sort the many different organisms which have been recruited to the cage. Each team will work on one cage at a time. We currently have roughly 25 sites.

Teams will be outfitted with gloves, pipettes, and small nets to separate shrimp, amphipods, worms, crabs, and fish into separate containers from the specific cage they are working on. Not sure what an amphipod is? No worries, we will have several experts who will help with the process.

**Interested in participating?** Please email and provide the following information: your name, email, a good number to reach you and a preference of weekend or weekday. Also, volunteers are asked to commit for a 4-hour block of time. [PanhandleWatershed@gmail.com](mailto:PanhandleWatershed@gmail.com) or [TheBreamFishermen@gmail.com](mailto:TheBreamFishermen@gmail.com)

## INTERESTED IN SEAGRASS MONITORING?

Speaking of *habitats*\*, seagrasses are one of the most important habitats in our area waters. Do you live in an area where seagrasses are present? Would you like to assist researchers with monitoring over the summer months? Jane Caffrey (UWF-CEBD), Chris Verlinde & Rick O'Conner (Santa Rosa & Escambia County Sea Grant) have developed a Citizen Science Program using quadrats to estimate seagrass coverage monthly (during the growing season), while also identifying seagrass species and macroalgae

at different locations in area waters. Next Seagrass Training is scheduled for **Friday, 26 April**, for additional details, please email [jcaffrey@uwf.edu](mailto:jcaffrey@uwf.edu) or [ChristinaV@santarosa.fl.gov](mailto:ChristinaV@santarosa.fl.gov) for times and locations.

## IMPORTANCE OF CITIZEN'S AND SCIENCE

**Citizen Science** is becoming more and more important these days. Think you need a degree in science to contribute to important scientific discoveries? Think again. All around the world, in fields ranging from astronomy to microplastics to zoology, millions of everyday people are choosing to participate in the scientific process.

- The Global Lake Ecological Observatory Network (GLEON) launched a large-scale Citizen Science monitoring program in 2016 across 28 lakes in Europe. The monitoring program focused on two lake research topics: decomposition of organic matter and plastics.
- One project, known as Tea Time for 4Lakes, involves the use of tea bags to understand decomposition of allochthonous litter in lakes across Europe.
- Another project uses homemade sampling equipment made of ordinary household objects like a spaghetti strainer and panty hose to study microplastics in European Lakes. These projects were pilot-tested in 2015 and incorporated into GLEON's global network in 2016.

Working in cooperation with scientists in pursuit of information, innovation and discovery, these volunteers are following protocols, collecting and reviewing data, and sharing their observations. They are our neighbors, our in-laws, and people in the office down the hall.

- Take the amazing discovery made by Pensacola native **Tom Garner**. In 1983, Garner attended a **UWF archaeology field school** led by **Dr. Judith Bense, founder of the UWF archaeology program** and later became University president. Garner was hooked and continued feeding his interest, 30 years later he is well versed in the identification of historical artifacts and aware of areas in the local region which may have been considered likely candidates for the location of the Luna settlement.
- Tom watched those areas closely and when homes were being built or re-modeled, he would visit the sites and look for artifacts. He discovered Spanish colonial and Native American artifacts at a privately- owned residential lot within view of the two uncovered shipwrecks in Pensacola Bay, which were also linked to the Luna expedition. After multiple visits and surface collections, Garner brought the artifacts to the UWF archaeology lab on Oct. 30, 2015.
- The rest made history: **UWF archaeology program announced the identification of the Luna settlement land site in December 2015**. UWF archaeologists recovered numerous sherds of broken 16th century Spanish ceramics found undisturbed beneath the ground surface, linking the site to the Luna expedition.

These observations, along with the story of the social good that can result from Citizen Science, has been largely untold. In addition, Citizen Scientists are challenging old notions about who can conduct research, where knowledge can be required, and even how solutions to some of our biggest societal concerns and problems might emerge.

- Take the **Audubon Christmas Bird Count**, it began in 1900 thanks to **New York ornithologist Frank M. Chapman**, who was an early officer in the then-nascent Audubon Society, he proposed a new

holiday tradition—a "**Christmas Bird Census**" that would count birds during the holidays rather than hunt them.

- Thanks to the inspiration of Chapman and the enthusiasm of **27 dedicated birders, 25 Christmas Bird Counts** were held that day in locations that ranged from Toronto, Ontario to Pacific Grove, California with most counts in or near the population centers of northeastern North America. Those original 27 bird counters tallied around **90 species on all counts combined**.
- The data collected by observers over the past century allow Audubon researchers, conservation biologists, wildlife agencies and other interested individuals to study the long-term health and status of bird populations across North America.
- When combined with other surveys such as the **Breeding Bird Survey**, it provides a picture of how the continent's bird populations have changed in time and space over the past hundred plus years.
- The long-term perspective is vital for **conservationists**. It informs **strategies to protect birds and their habitat** and helps identify environmental issues which can affect many other species, as well as people.

There was a time, in the not so distant past, when our area did not support **pelicans, ospreys** or many other **piscivores (fish eating species)**. Why? Because our water quality became impaired and our habitat (seagrasses) and emergent grasses (salt marsh) died back. Once the habitat disappeared, so did the fishery and the seafood.

That's difficult to comprehend today, especially when you see iconic photos of the waterfront which may include a sandy white beach, or a shrimp boat with pelicans sitting on pilings nearby. The **Northwest Florida Water Management District (NFWFMD)** recently updated their Surface Water Improvement & Management (**SWIM**) Plan for Pensacola Bay System 2017 and noted the following historic changes in area waters over time include:

- 2,600 acres of saltmarsh habitat lost between 1950-2010;
- 4,200 acres of tidal wetland habitat lost between 1950-2014;
- 6,138 acres of seagrass bed habitat lost between 1940-2010; and
- 8,143 acres of oyster reef lost between 1972-2015.

**Thinking historically**, what might the area have been like before these resources were lost, then think about where we've been (the 1970's, 80's and 90's - when fish kills in our bays and bayous were measured in square miles), and then where we are going (the future trajectory). Back in the 1940's, 50's and 60's – the **population in the region was very low**, so pressure on the resources was much less. Today, we are in a growth mode which is driving the local and state economy while challenging land and resource overseers on how to **manage the land and water resources for growth**, while also allowing the **ecological processes to function as designed and support the important ecosystem services**.

These days, the area is growing with new year-round residents and visitors thru tourism. Regional tourism reports that the Pensacola & Beach areas received 1.8 M visitors in 2014, and 2.7 M in 2017. Many residents and visitors will spend a portion of their holiday at the beach, fishing, swimming, perhaps diving and may enjoy a nutritious seafood meal at one of the many restaurants in the area. So, is it safe to eat the seafood in in area waters, either inland or off shore?

The State of Florida periodically publishes Fish Consumption Advisories to alert consumers about the possibility of chemically contaminated fish in Florida waters. The advisories are meant to inform the

public of potential health risks of specific fish species from specific water bodies. To see which fish species are listed and in which waterbodies, please visit the link below.

<http://www.floridahealth.gov/programs-and-services/prevention/healthy-weight/nutrition/seafood-consumption/documents/fish-advisory-big-book-2018.pdf>

The 58-page document is not intended to alarm the public, rather to protect the public. In a region like Escambia County which receives **~65" of rain annually** [in 2017 the area received 97" & in 2018 the area received 90"] we have many problems with flooding that will only increase as we create more impervious surfaces. The best estimates are that **30-40% of the rain which hits the ground in our region, becomes stormwater runoff** - and runs off the land into streams, creeks and rivers.

Intercepting this stormwater and treating it proves expensive but retrofitting stormwater management approaches in older and antiquated areas becomes astronomically expensive and some say cost prohibitive. This becomes a bigger conundrum as we opt to develop the remaining lowland areas, thereby inviting more people to move to our area. **More flooding. More stormwater runoff.**

Another conundrum, equally expensive and a far bigger headache for managers is the cost of treating wastewater. No one likes to talk about it, but those 2.7 M visitors in 2017 all used the bathroom a few times a day. There's also a good chance that a portion of those visitors take a prescribed Rx daily. Mix all that together and then focus on our regional **Wastewater Treatment Plants (WWTPs)**.

The question that begs to be asked is: Do the local WWTP facilities treat effluent to the most recent technology? Do these systems address pharmaceuticals, pesticides, personal care products, etc.? Likely not. Originally designed to remove nutrients and some pathogens, most systems are outdated. Here's the website for you to learn more: <https://floridadep.gov/water/domestic-wastewater/content/general-facts-and-statistics-about-wastewater-florida>

Currently, treating waste should include the latest and greatest technology available for this industry, but sadly that is not the case. In the US, **Florida leads the nation with 12% of all septic tanks** located in the state, many in northwest Florida. And while septic systems work \*when\* they are maintained, often older and rural areas are not routinely monitored.

Technological strides are being made in the world of wastewater treatment plants (WWTP) especially in some of the more **metropolitan areas** in the US. In eastern Virginia, the **Sustainable Water Initiative for Tomorrow (SWIFT)** Project has a goal of taking **WWTP effluent and treating to the highest standards (drinking water) and then pumping 100 M gallons/day back into the groundwater**. Why pump ultra clean water back into groundwater? Because the groundwater interacts with the regional geologic matrix which then creates a similar geo-chemical signal as it seeps into creeks and rivers within the watershed, and the watersheds support seafood, an important component of the local tourism which supports a sustainable fishery. The **quality and quantity influence groundwater which supports the ecosystem**. The SWIFT Project adds another step in the treatment process to align the highly treated effluent with the water chemistry of the ecosystem, which requires a balancing act in many areas including aquatic chemistry. <http://swiftva.com/factsheets/>

Northwest Florida is far from being metropolitan, but local citizen groups continue to remind the decision makers that these solutions exist and could be applied locally. In Santa Rosa County alone, the antiquated Milton WWTP continues discharging into upper Blackwater and East Bays, despite decades of discussions to remove the discharge from surface waters. In South Santa Rosa County, development chugs along in low lying areas, all the while one WWTP couldn't meet state standards for discharge in one waterbody (Hidden Creek into East Bay River Bayou, Navarre, FL) so the state allowed the discharge to be sent to the **Rapid Infiltration Basin System (RIBS)** located in wetlands which feed **Williams Creek**, that discharges into Santa Rosa Sound (SRS) near Navarre, FL.

Across the sound from mouth of Williams Creek is the Navarre Beach WWTP which also discharges its treated effluent into SRS. The City of Gulf Breeze used to maintain a WWTP which discharged near the active and much-loved Shoreline Park. **Gulf Breeze was proactive in moving the facility away from the popular amenity beach** complete with trails, boat launch, bathrooms, parking, picnic tables, gazebos, and some of the **healthiest seagrass beds in the area**.

The antiquated ECUA Pensacola Beach WWTP is being maintained and to take some of the pressure off 100% treated discharge entering the SRS near Quiet Water Beach, the NFWFMD provided a grant to use a portion of the **treated effluent for landscape irrigation**. But that approach is not the key, rather that is just kicking the can down the road.

Other challenges include inland land parcels which may serve as **groundwater recharge areas**. Over a decade ago, many citizens in the Holly-Navarre area were alarmed at the concept that some businesses that had the \*potential\* to contaminate groundwater (gas stations, etc.) could receive a permit to develop business' in areas \*designated by the state\* as groundwater recharge zones. This and similar issues become well-known battles as **construction and demolition (C&D) landfills** consider accepting items otherwise not allowed in an **unlined landfill**. These circumstances rear their head after hurricanes and other catastrophic events which create mounds debris (vegetation, household items, etc.) which if transported to an unlined landfill could contaminate groundwater and impact air quality. **Rolling Hills** in Escambia County, FL, might come to mind.

Likely the most frustrating aspect of these antiquated approaches to addressing real issues is that the **county and state agencies who are brokering the many land developments and benefitting from additional taxes** are not taking responsibility to protect the health and welfare of the communities who already reside in the area. More disconcerting is that these agencies have lost vital institutional knowledge of what prompted the outcry a decade ago, and now it again becomes the responsibility of the stakeholders to remind the agency personnel why these concepts may be a bad idea.

Another conundrum is the amount of plastic trash being collected along waterfronts. Kudos to all the amazing volunteers with Ocean Hour, Keep Pensacola Beautiful, Carpenter Creek, and other folks who are collecting tons of trash and plastic debris from road sides, beaches and area waters. Sadly, this effort has no end in sight as many folks don't grasp how trash gets into our waterways.

Earlier in this newsletter we provided information about area rainfall, as **~65" annually**, this plus the creation of more impervious surfaces reflects **30-40% of the rain which hits the ground in our region, becomes stormwater runoff** - and runs off the land into streams, creeks and rivers. The stormwater picks up pesticides, herbicides, trash, hydrocarbons, metals, etc. and carries everything to the lowest point, water. Roads and bridges become super highways routing more trash to the waterways during

rain events. Costly bay savers are installed to capture some of this runoff, sediment and trash, but they must be maintained on a regular schedule. The tons of debris collected by dedicated volunteers prove that there remain gaps in the process. The Citizen Science component of trash pickup is the breakdown and sorting of the most common trash collected, cigarette butts, plastic bags and bottles, and a host of other items which are discarded and end up in area waters.

Area high school students have been monitoring the amount of trash emergent grasses are able to capture (alleviate) as stormwater enters these living-buffers before reaching surface waters. The thicker the emergent grass buffer between the upland and the water body, the less trash enters the system. The grasses are also known to take up nutrients and can break down or sequester contaminants of stormwater runoff.

Students from several area high schools have been participating in long term monitoring projects at Bayou Texar, Bayou Grande, Project Green Shores and Sanders Beach. Soon, the recently opened City of Pensacola waterfront parcel known as Bruce Beach may be the newest site to be added to the students monitoring areas.

Bruce Beach lends itself to the area as a natural outdoor classroom and is currently used by many groups including Audubon Members who enjoy the many different bird species using the three distinctive habitat types found in the area. **Washer Woman Creek**, the sandy shoreline of **Bruce Beach**, and the man-made-wetland mitigation site offer different habitats for marsh birds, the open and protected waters are ideal for ducks and other seabirds, and the emergent grasses offer shelter and seeds to many sparrows and insect eaters.

Washer Woman Creek becomes daylighted just south of Main Street and follows a rock lined meandered path to Pensacola Bay. Washer Woman's Creek headwaters are located near the Spring Street Library and are 100% underground. Historically, many small creeks were culverted and placed underground as the city grew.

The **Native Plant Society** conducted several plant walks in 2018 and early 2019 and identified many invasive species that should be removed to create more habitat for native species. Sadly, a giant specimen of a Prickly Pear Cactus (native) sporting a 24" trunk was \*inadvertently\* cut down from the beachfront area. The two nearby gopher tortoises who likely enjoyed their waterfront dining station will likely have to wander further for food.

In the future, **Washington High School Marine Science Academy**, the **Dixon School of the Arts and Sciences**, and many home school kids will be able to use this area to learn more about our coastal environments. Perhaps one day, the Institute of Human and Machine Cognition (IHMC) and UWF Robotic students will build Remote Operating Vessels (ROVs) to scan the sea floor near Bruce Beach for remnants of shipwrecks and historic wharfs, or to see if there are benthic communities using the area.

All the while, the **UWF Archaeology Dept** in partnership with **Florida Public Areas Network** have documented that the waterfront is rich in history and each disturbance reveals more artifacts. Perhaps one day, visitors to the area will learn about the rich history, culture, heritage and the community that thrived in this little waterfront area which is becoming a gem in the rough for its many citizens.

**Happy Earth Day everyone!**

The Bream Fishermen Association is a not-for-profit organization dedicated to promoting environmental conservation and recreational opportunities for anglers, hunters, campers and people invested in related outdoors activities. It is the objective of the BFA to support, develop, and implement programs that will:

- 1) Improve the quality of our environment;
- 2) Protect and maintain our present wilderness type lakes, rivers, swamps, marshes, bays, forests, and beaches in their natural undeveloped state;
- 3) Advance the causes of plant, marine, and wildlife preservation; and
- 4) Environmental education and outreach.

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. 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.

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*

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