



Please mark your calendar for the next General Membership Meeting

Wednesday, 7 August 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 Chicken Tetrazzini, a garden salad and apple cinnamon bread pudding.

Cost \$10.00/person

1615 East LaRua Street, Pensacola

Please join us in welcoming **Elizabeth Hieb**, a native Pensacolian before moving to Mobile in 2006 to attend Spring Hill College. Her presentation is entitled: **A Decade of Data: Dauphin Island Sea Lab's Manatee Research in the Northern Gulf of Mexico.**

Elizabeth graduated from Spring Hill in 2010 with a Bachelors of Science in Biology and then completed a Masters of Science at the University of South Alabama, studying Alabama red-bellied turtles. After completing her Masters degree in 2012, Elizabeth began work at the Dauphin Island Sea Lab as a Research Technician and Manager of DISL's **Manatee Sighting Network**. Highlights of her work at DISL include leadership roles in the first successful West Indian manatee and bottlenose dolphin rescues in Alabama history and participation in research activities including marine mammal health assessments, satellite tagging and tracking, and stranding response. Elizabeth also acts as the education and outreach coordinator for DISL's Marine Mammal Research Program.

REGIONAL EVENTS:

Coastal and Estuarine Research Federation (CERF) will be hosting their 2019 Conference in **Mobile, AL, 3-7 November 2019**. This scientific meeting provides an important platform for many researchers, students, businesses, governmental agencies and non-profits to hear about the current research being conducted in the region, the ability to network and collaborate with researchers as they share their work and findings with interested attendees. For more information, please visit <https://www.cerf.science/cerf-2019>.

National Climate Assessment Teach-In will host an evening workshop in **Pensacola, FL**, on Tuesday, **30 July, at 6:00 PM** in Studer Community Institute Building, 220 West Garden St., Pensacola, FL. Hotter temperatures, stronger hurricanes, heavier rainstorms, shifting seasons and ranges for agriculture and wildlife—these are just a few of the impacts of climate change on the U.S. and the Gulf coast. For more info: Christian Wagley, 850.687.9968, 350pensacola@gmail.com

PENSACOLA AND PERDIDO BAY ESTUARY PROGRAM UPDATE:

In 2018, the **U.S. Environmental Protection Agency** selected a proposal by the **Bay Area Resource Council (BARC)** and **Escambia County** to establish a new **Estuary Program for Pensacola and Perdido Bays**. The \$2 million grant is funded through the **Gulf Coast Ecosystem Restoration Council** as part of the **RESTORE Act** and will be hosted by Escambia County. The Estuary Program will guide the production of a **Comprehensive Conservation and Management Plan (CCMP)** that will be a fully vetted roadmap for achieving publicly identified outcomes and goals for Pensacola and Perdido Bays. This could be very beneficial for our region and the watersheds.

Stakeholders from federal, state and local agencies and the public are invited to help develop a long-term plan that will address water quality and living resource challenges and priorities in Pensacola and Perdido Bays. The Pensacola and Perdido Bays Estuary Program is a non-regulatory program that will seek to build on existing assets, watershed management plans and scientific data to restore and conserve the environment and the economy of Pensacola and Perdido Bays for generations to come.

Jim Trifilio was selected to be the **Executive Director** for this program. Jim has worked as **Coastal Management Coordinator for Okaloosa County Tourist Development Council** for the past 14 years and spent the 5 years prior to that working for **FL Department of Environmental Protection**. This position and program provide the opportunity to engage the public, educate the community on the regional natural resources and develop the foundation for identifying and addressing the many sources of impairment to this region's aquatic systems. Stay tuned for more.

RARE SPECIES VISITING OUR REGION:

From time to time, **unusual species** have been known to surface in our area. During **Tropical Storm Cindy in June 2017**, **two American Flamingo's** were spotted at Johnson Beach and again at the 19-acre field where the ECUA wastewater treatment plant once stood on Main Street. As we will learn from Ms. Hieb, **manatees** often travel to northern **Gulf of Mexico** and if food and temperature conditions are suitable, they may take up residence in the area for the season. At other times, we are reminded that that area and the region we live in is also home to many other species, some residents and others, migrants or transients, some secretive, others nocturnal, some under our noses while others may be far offshore. This reminder was reflected in the two marine mammals that were recently found along the **Florida Panhandle** in June & July 2019. One, a rare **Pigmy Sperm Whale** washed up on shore at **Blue Mountain Beach** in Walton County, the other considered extremely rare, a **beaked whale** came nearshore at **Gulf Islands National Seashore** and eventually succumbed; a necropsy is currently being conducted by federal agencies.

Many **seasonal migrants** simply pass through the area, others such as several species of **shorebirds** and **sea turtles** come to the region specifically to nest. These sightings serve as a reminder that although we live in this region and community, we must also be mindful that we **share this regional landscape and the ecosystem with a host of other species**, who are dependent on- and making a living in and off the area.

FIRE ECOLOGY IN THE BLACKWATER RIVER STATE FOREST... Mother Nature and her landscape are astoundingly resilient. One need only look to the **Blackwater River State Forest** to see a ***young*** forest (US Government purchased the land in **1937** from the **Bagdad Land and Timber**, leased it to the state in **1938** and the state acquired it in **1955**) which had been clear cut in the late 1800's and early 1900's, replanted with a different species, **Slash Pine**, because the life cycle of the **Longleaf Pine** was not understood until the early 1970's. Today we have learned the significance of **Fire Ecology**, a critical component of a healthy forest in **Coastal Plain**.

Areas in Northwest Florida that have gone decades without fire and are dominated by water oaks and other shade tolerant hardwoods. This overgrowth shades out the living groundcover that is an important food source for many species.

The return of fire onto the landscape at Blackwater River State Forest has resulted in the reappearance of many native groundcover species in **bogs, seepage slopes, steephead ravines and wet meadows**. The diversity in the **Longleaf Ecosystem** occurs below the knee. Up to 100 different plants can live side by side in a one-meter quadrat, each making it's living in **nutrient poor, low pH (acidic) conditions**. Seeds embedded in the ***seed bank*** are reawakened when conditions return after fires move through the area. The **resilience of this system** and the **diversity it supports** provide a glimpse of the **complexity of these ecosystems**. And as we learn more about these systems, we are reminded that we are in the early stages of fully comprehending the role and importance of each piece of the puzzle (**trophic level**) and how this culminates into the bigger ecosystem. The future of these systems lies with **future generations**, who will apply new technologies to crack the code of these vibrant ecosystems, and thus protect them for future generations.

LANDSCAPING WITH NATURE IN MIND...As our landscape shifts from **rural to suburban** and **suburban to urban**, the loss of native flora is quickly being replaced by **non-native** and often **invasive species**, which have more lasting effects on our ecosystem (even outside the natural areas like Blackwater State Forest) than many of us suburban and urban home owners realize. Non-native, ornamental species offer little to no benefit to the native fauna which depend on these plants for their food source. The specialized food web becomes broken right in front of our eyes in our own backyards.

The **University of Delaware** Wildlife Ecologist, **Doug Tallamay**, presents the idea of restoring nature's landscapes – which can be viewed as a series of specialized relationships. Within these landscapes are **food-webs that always begin with plants**. The ***wrong plant*** may not support the animal species which depend on the **native landscape**, thus creating a gap in the food web; whereas the right plant can benefit an enormous number of species, even in a small space. Did you know, that a live oak can support over 650 different insect species throughout the year, that in turn support song birds and many other species? Native plants and animals, **flora and fauna**, have co-evolved in our region of Northwest Florida to flourish in nutrient poor, **highly erodible sandy soils**, occasional droughts and floods, tropical events which can deliver heavy rains (this region receives 65" of rain annually), and pop-up storms that have **lightning which can ignite forest fires**. Planting a **Florida Friendly Landscape** means choosing species that are native to our area and placing them properly, ***right tree in the right place*** for aesthetic and ecological harmony.

SUMMER STUDENT STUDY OF THE COASTAL REGIONS OF FLORIDA

Recently **students from five universities** spent one week each in very different coastal regions of Florida learning about various landscapes, emerging issues (climate change, microplastics, etc.), regional threats and stressors, and the varying focus of research that is currently being conducted throughout the state.

At the **University of North Florida**, students learned about spatial and temporal variability in estuaries and lagoons. **Florida Atlantic University** hosted a week at the **Florida Keys Marine Laboratory** where students studied coral reefs and the associated reef communities, mangroves, seagrasses and algal communities. At **Florida Gulf Coast University Vester Marine Laboratory in Ft Myers** students learned about coastal geology, oyster reefs, coastal currents and seagrass meadows. During their week at the **University of South Florida-St Pete**, students experienced hand's-on marine collection techniques, low energy shorelines and honed their newly learned skills on the **ocean-going research vessel, Weatherbird**. At the **University of West Florida**, students learned about rural, suburban and urban watersheds, fire ecology, the relationship between healthy uplands and how they support healthy waters, nutrients and water chemistry, and the focus of research being conducted at the **US Environmental Protection Agency - Environmental Research Laboratory on Pensacola Beach**.

Students collected water samples throughout the state during this course and spent time in the lab analyzing nutrients, chlorophyll a, and microbial samples from inland and offshore sites.

The **crowning jewel** of this course was a series of presentations by the students sharing the data they collected, analyzed and how they interpreted this information from the many samples they collected.

No matter which field these students end up in as they finish their education and go through life, they will have learned the basics about **ecology**, the incredible ecosystems found in Florida and the delicate balance nature is trying to accommodate with the continued stressors of continued growth of the population, increased tourism, fragmentation of the landscape and watersheds, climate change, microplastics and the continued loss of diversity and habitat along the way. <https://infocus.uwf.edu/florida-college-students-get-tour-state-study-water-quality/>



2019 FIO Class standing in a pitcher plant bog at Blackwater River State Forest in June.

These are our future leaders.

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.

The BFA applied for and received a permit from the **Florida Fish and Wildlife Conservation Commission** to place oysters in cages and hang these cages off private and commercial docks. BFA Members and Student volunteers visited the **25 sites in both the Pensacola and Perdido Watersheds** every 3 months and collected **water chemistry**, viewed the oysters for survival/death, took a subsample of 10 oysters from the batch and measured their growth, and finally weighed them. The differences between survival rates, **growth rates and recruitment of organisms** from the different waterbodies initiated an additional endpoint to this study. To date, oyster cages have been inspected for the presence of wild oysters, mussels, amphipods, crabs, shrimp, snails, worms, and other taxa.

To our amazement and delight, we have documented the presence of **coral polyps** growing on our oyster shells hanging in **higher salinity water**. Participants in the POP Project will be receiving a report card with the details of water chemistry, growth, survival and recruitment. In addition, this work will be presented at the **Coastal and Estuarine Research Federation** in Nov 2019.

CARPENTER CREEK UPDATE

On **April 20, 2010** the Deepwater Horizon Oil Rig exploded in the Gulf of Mexico. In **July 2012**, the **RESTORE ACT** was signed into law by President Obama to take 80% of the monetary penalties and return them to **Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States** affected by the spill. In **2013**, Escambia County convened a **Restore Committee** to decide how monies incurred from this environmental disaster should be spent to better the community impacted by the spill. The **EsCo Restore Committee** met monthly for three years and heard from many citizens from which they solicited ideas, input and participation. In **2015**, 124 proposals were submitted for consideration, funding and application to improve the area. By **2017**, ten projects that bubbled to the top were selected for funding. EsCo received \$1.3M funding from the US Treasury in **Feb 2018** for planning assistance on this project. After the lengthy process of advertising the project (RFP) **Aug 2018**, vetting the vendors which applied, numerous hoops and hurdles later, three applications bubbled to the top, presentations were made to a selection committee (a closed process) and one company, Wood, was selected **Oct 2018**.

(<https://www.woodplc.com/>)

It has taken six months for the **Carpenter Creek & Bayou Texar Watershed Management Plan** Selection Committee to finalize negotiations last week with Wood, Public Limited Company (PLC). SCAPE is a subconsultant to Wood on this project. This contract will go to the Escambia County (EsCo) Board of County Commissioners for approval on **August 1st, 2019** and the project will commence shortly thereafter.

BFA have sampled multiple stations in this and other local watersheds since the 1970s. As our landscape transforms into more an urbanized one, vegetated buffers will help protect small creeks, streams and bayous from nutrient and stormwater runoff. Carpenter Creek has received much attention since 2015 when a proposal was submitted to Escambia County as a Restore Proposal Project (see the concept paper on the BFA website) that would serve to improve the quality of an entire watershed located in one county: 1) overseen by two jurisdictional agencies (Escambia County & City of Pensacola), 2) encompassing several very different demographic areas, and 3) all within one watershed.

Hopefully the spirit of the proposal, community and student inclusion can start sooner rather than later.

KUDOS TO GRACE SOMMERVILLE

UWF Master's student and BFA Water Quality Sampling Team Member, **Grace Sommerville**, recently completed her thesis, "**Spatial and temporal variability in water quality in three urbanized bayous of the Pensacola Bay system, Escambia county, Florida, USA**". Grace collected samples bimonthly from **Bayous Texar, Chico and Grande** along the estuarine gradient for nutrients, chlorophyll a (a measure of phytoplankton biomass), light attenuation and the water quality parameters of salinity, temperature, dissolved oxygen and pH.

High nutrients, particularly nitrate, and chlorophyll a were observed in **Bayous Chico and Texar** compared to Bayou Grande. Summer 'chlorophyll a' concentrations in Bayous Chico and Texar were consistently above 10 ug/L, a level often used to indicate a bloom of phytoplankton. Bottom water oxygen concentrations detrimental to animal life (<2 mg/L) were present in all three Bayous, particularly in Bayou Chico. **Four of Grace's 15 sampling locations coincided with historic BFA sampling stations.**

Salinity and total Kjeldahl nitrogen at these locations in the freshwater reaches of the estuary were similar between Grace's study and the historic BFA data between 1999 and 2017. The one exception was much lower salinity during Grace's study at the Bayou Chico station downstream of Maggie's ditch. These **results suggest that eutrophication is occurring in Bayous Chico and Texar.**

Bayou Grande has fewer eutrophication indicators likely because nutrient inputs to this system are lower as it is the **least developed between the three bayous studied.** Harmful algal blooms are a reminder of how important it is to control nutrient runoff.

WHERE DID THE OIL FROM THE DEEPWATER HORIZON OIL SPILL GO? As we near the **10-year anniversary of the Deepwater Horizon oil spill**, many folks have asked where did the ~200 million gallons of oil and dispersant go? Scientists from **Gulf of Mexico Research Initiative, National Oceanic and Atmospheric Administration, Sea Grant, University of FL IFAS Extension** recently held a workshop **Grand Bay National Estuarine Research Reserve** to discuss these issues.

Due to the size and scope of the spill, the following information is a best estimate of where the oil went. It is estimated that **~17% was recovered at the wellhead**. At the same time, dispersants were being pumped into the plume and the researchers estimate that **~20% of the oil was dispersed into the water column**. Some of the oil made (non-dispersed and heavier) its way to the seafloor by binding or combining with sand, burned byproducts or other particles. Scientists estimate **1,235 square miles of seafloor around the well contain oiled sediments**, making up ~5% of the total.

Of the oil that made it to the surface water, **~4% was skimmed and ~6% was burned off the water**. It is estimated that **25% evaporated** as many of the naturally occurring oil components are volatile and roughly **23% remains unaccounted for**.

Much like the **microbial world** plays a big role in breaking down compounds into smaller more useful parts (in our bodies, on land and in water) which then become available to other organisms, so too, the microbial world is full of naturally occurring **oil eating bacteria** and microbes that can convert compounds for other organisms.

Not clear on the process? Let's consider the role of microbes in a fish tank. [Fish excrete ammonia which is toxic to many organisms at certain concentrations; enter microbes, one type can breakdown ammonia to nitrite, and another microbe can break down nitrite to nitrate. Nitrate can be taken up by plants which produce oxygen, which all fish need to survive.] Clearly this is an oversimplified example.

Microbes played a very big role in breaking down the oil in all the media, surface waters, water column, sediments, exposed to light, in the wetlands, etc. These organisms have evolved in part because the **Gulf of Mexico has natural oil seeps**. Of course, natural oil seeps do not release the volume of oil that was released during the oil spill. But the microbial world has developed many different strategies to break down oil, including producing **surfactants** (which is what humans applied to the oil as dispersants) to disperse the oil into smaller compounds. The microbial community can also be stimulated by various nutrients, or limited energy sources, which can fuel microbes to break down oil more quickly. The oil is the food source for these microbes. More food, more population growth.

The scientific world has coined the breakdown of oil by the microbial community as a form of **bioremediation**. As the **Deepwater Horizon Oil Spill** began but before the oil came ashore, **students and researchers from UWF** sampled multiple stations along **Escambia and Santa Rosa Beaches** twice a week for six months and once a week for the next six months. During that time frame, researchers could identify how closely the oil and dispersed oil were from fouling Florida's beaches based on the **microbial community structure** and were able to **capture the shift to an increased oil-eating community as oil came ashore**.

NO TWO OIL SPILLS ARE ALIKE...Unlike the **1989 Exxon Valdez oil spill** in Prince William Sound, an inlet in the Gulf of Alaska, Alaska, U.S. That incident happened after an Exxon Corp. tanker, the Exxon Valdez, ran aground on Bligh Reef during a voyage from Valdez, Alaska, to California. The Valdez spill happened in **very cold waters, with extreme tides and cobble stone to bolder type beaches**. The Valdez spill just over **11 million gallons**. In contrast, **Deepwater Horizon oil spill occurred in the warm waters** of the Gulf of Mexico and **oiled 1,313 miles of shoreline**. **Louisiana took the brunt of that impact with 64%** of the oil on its shoreline (mainly marshes), **Florida had 14%, Mississippi 12%, Alabama 7% and Texas had ~3%**.

REMINDER THAT OIL AND WATER DON'T MIX WELL...As Tropical Depression (**Hurricane**) **Barry** organized itself in the Gulf, many oil companies began **evacuating personnel from over 225 active oil and gas platforms**. Our culture's

dependency on oil begun with the modern automobile ~133 years ago and the by-product of this marvelous invention which altered our lifestyle and trajectory is increased **carbon dioxide**. The world population in 1886 was estimated to be 1.5 B (billion), today (2019) the world population is estimated to be surpassing 7.7 B. (worldpopulationreview.com)

There is no disputing that **weather patterns are changing**. Areas in Europe that used to experience heavy snowfall in winter haven't in the last decade. Storms developing in the Caribbean have become more intense (Hurricane Michael, 2018) and organized themselves quicker in part due to warmer than usual Gulf of Mexico conditions, and the Midwest and West Coast have experienced more **droughts and heat waves** in recent years. Climate Change was coined taboo during Florida Governor Scott's tenure (now Senator Scott), but the data tells the real story. Carbon dioxide (CO₂) is an important heat-trapping (**greenhouse**) gas, which is released through human activities such as **deforestation** and **burning fossil fuels**, as well as natural processes such as respiration and **volcanic eruptions**. For more information on this important topic please visit <https://climate.nasa.gov>.

What can you do, as an individual, to combat climate change? **Plant more trees**. How many trees must I plant to offset my carbon footprint? It varies from tree to tree, but a single tree can absorb as much as 48 lbs (21.77 kgs) of CO₂ per year. The average American produces about 19.78 metric tonnes (21.8 tons) of CO₂ emissions each year. This means it would take ~909 trees to absorb the CO₂ an average American produces each year. (<https://carbonpositivelife.com/>)

Taking the initiative to plant a tree, especially a **native tree** for your area, is a great first step. Most of us could not afford to plant 909 trees because we don't have the space to support them, but there is another important step that individuals can do, and that is to **support the purchase of sensitive lands** through the **Florida Forever Program**.

HISTORY OF LAND CONSERVATION IN FLORIDA...In 1964, the **State of Florida first began setting aside money to purchase public land** with the **Land Acquisition Trust Fund (LATF)**. This fund focused on buying properties for **outdoor recreation and conservation**. The State of Florida's environmental efforts to buy tracts of land to protect them increased with the passage of the **Environmental Land & Water Management Act of 1972**. This action also led to the **Land Conservation Act**, which allotted 200 million dollars to buy **environmentally endangered lands (EEL)** and another 40 million dollars to enhance outdoor recreation lands.

This progressive approach was established when the State of Florida had a population of 5.8M and was governed by C. Farris Bryant. The **Conservation and Recreational Lands (CARL)** program was established by the Florida legislature in **1979 to acquire lands of environmental and cultural significance**. In **1989**, the CARL program was replaced by **Preservation 2000** and the funding increased to three billion dollars for conservation land purchases. In **1998**, a replacement program called **Florida Forever** broadened the land purchasing criteria to include **historical preservation**. (<https://dos.myflorida.com>)

Today, **Florida Forever is Florida's premier conservation and recreation lands acquisition program**, a blueprint for conserving natural resources and renewing Florida's commitment to conserve the state's natural and cultural heritage. **Florida Forever replaces Preservation 2000 (P2000)**, the largest public land acquisition program of its kind in the United States. With approximately 10 million acres managed for conservation in Florida, more than 2.5 million acres were purchased under the Florida Forever and P2000 programs. Since the inception of the Florida Forever program in July 2001, the state has purchased more than 770,279 acres of land with a little over \$3 billion (as of 12/31/2017). (<https://floridadep.gov>)

The State of Florida has a total of 37.5 M acres of land (some of which are submerged as seagrass meadows) and of that total, 11.8 M acres have been placed in conservation. In addition, the population of Florida in 2019 is estimated to be ~21.5 M residents and receives ~115 M visitors annually. (<http://www.statemaster.com>) and (<https://www.fnai.org>)

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 outdoor 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) Provide 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
