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**Board Meeting Minutes**

**Friday, September 24, 2021**

**9:00 to 11:30 am, via Zoom**

**Opening**

* Welcome - Bob Deyle,
* Introductions See participants in Appendix A
* Agenda review - Bob Deyle

**August 2021 minutes** - Tom Taylor

* Debbie Lightsey made the motion to approve the minutes, seconded by Jim Stevenson and passed unanimously.

**August 2021 financial report** - Jim Davis

* The report was not available; tabled to next meeting

**Wakulla Springs wildlife abundance trends 1992 - May 2021 Part 2** – Bob Deyle, Monitoring Program Coordinator.

* Part 1 looked at aggregate trends by periods. This is the [URL for the Part 1](http://wakullaspringsalliance.org/wp-content/uploads/2021/09/Wakulla-Springs-Wildlife-Abundance-Trends-Part-1-Presen-to-WSA.Aug-2021.Deyle_.pdf) PowerPoint.
* Part 2 today looks at total animal abundance and hypotheses. This is the [URL for the Part 2](http://wakullaspringsalliance.org/wp-content/uploads/2016/11/Wakulla-Springs-Wildlife-Abundance-Trends-Part-2-Presen-to-WSA.Deyle_.Sep-2021.pdf) PowerPoint.
* Total animal counts are declining from 1992 to 2021
* A revised abundance report for year-round species, occasional breeders, migratory, etc. was done to examine each separately.
* The abundance of species across time/periods was presented.
* The American Wigeon, as an example, has declined to 0 and has been removed from the survey. This may be from hydrilla removal. Breeding populations have been declining and they may be not migrating as far south due to climate change.
* The American Coot has had a similar decline.
* Common Gallinule have declined too but are still observed regularly. They eat hydrilla so the abundance may be linked. Proliferation of algae may have had an impact. They do eat it, if there is nothing else.
* Hooded Merganser are increasing since 2011. They were lowest during the mechanical hydrilla harvesting and chemical removal linked to crayfish access, which has increased. Increases may be related to increases in breeding populations up north.
* Pied-Billed Grebe have declined and increased with some correlation to hydrilla.
* White Ibis are a dominant species. They eat small aquatic crustations including crayfish. They breed elsewhere so counts are lower in those months. There were large variations doing the hydrilla invasion period. They are doing pretty well now.
* There is a graph and a table of trends by species. Herbaceous species are decreasing and carnivorous species are increasing.
* Alligators have decreased over time with a slight increase since 2013 after hydrilla treatment ended and the upgrade of the Tallahassee waste treatment. This may be from where nesting and juveniles are seen so counts are higher. River stage, air temperature and sunshine show significant correlations to the number of alligators, but when controlling for those variables the positive trend since 2012 remains statistically significant.
* The Anhinga have had a long-term decline. The biggest occurred with the beginning of hydrilla management. In the post hydrilla management period numbers have been increasing slightly. There has been a decrease in nesting observed which may account for the increase since males are territorial during nesting season.
* Wood ducks need old trees for nesting. There has been a long-term decline. There was an increase during the hydrilla period, which they eat. They do migrate away in the winter.
* The Yellow-Crowned Night Heron feed largely on crustations. There is no significant long-term trend overall, decline during hydrilla management and increasing during the post hydrilla management period.
* The previously used all-species abundance measure is influenced by out-of-ecosystem factors such as climate change and changes in breeding success. The year-round resident breeder measure of aggregate abundance exhibits a similar long-term declining trend, but shows a positive trend for the post-hydrilla management period in contrast to a declining trend for the all-species abundance measure. This may be a positive sign.
* The ecosystem may be equilibrating to a more detrital-based food web after cessation of herbicide treatments, grazing by manatee, loss of submerged aquatic vegetation, proliferation of agal mats, etc.
* Herbivores are in decline or extirpated. There is reduced nesting by predators. Fish eating birds are eating crayfish.
* Carnivores are increasing, alligators, egrets, green herons, etc.
* C – Hooded mergansers are nesting in wood duck boxes in Jim Stevenson’s swamp.
* C – Dropping head may influence conditions because of brackish water. We are getting more inflow from Spring Creek. Salinity spikes may affect bull rush populations but they are not an important feed source. This may influence some birds and marsh integrity.
* Q – What are the links to nitrogen levels? A – This affects algae and food sources for some species including fish and fish eaters. Change in stage may be a factor.

**Springshed and river update -** Cal Jamison

* We did a [PSA video yesterday](https://www.youtube.com/watch?v=_4KfazostIA) on the tour.
* Wakulla Spring has been very tannic with low visibility, 8’ yesterday.
* Flows are high contributing to the darkness. This may change with less rain predicted.
* We have been collecting water samples in our region to test for pesticides, personal products, trace heavy metals, etc. We can add sites if anyone has suggestions. The results will be on a public website.
* Q – What is the intent? A – This is a baseline study to determine the presence of these chemicals. UF is doing this. This hasn’t been done before. We have some information on wells.
* 2 graduate students in hydrogeology are looking at Sulphur springs in this area and the link to saltwater intrusion. We are helping them.
* Paul Muller is doing cave crayfish and other studies.
* Dr Ming got a hit from the dye tracing in Lake Jackson.
* The Moore property is adjoined the park property. The neighborhood association, Tyler McMillan at Tall Timers and others met to discuss Tall Timber’s role in management.

**Cave exploration updates** –

* Andreas Hagberg, Global Underwater Explorers
	+ Have been diving outside of the Wakulla basin. We will be back in this area soon.
* Chris Werner, WKPP
	+ We cannot dive because of dark conditions.
	+ We did a fundraiser for stairs at Emerald Sink. We will be volunteering to replace them.

**Gator cam statistics - Rob Gelhart**

* Everyone is going to the gator cam. It is most viewed part of the WSA website.
* People are downloading a lot from our site.
* Cal Jamison and Sean McGlynn helped set this up

**Park tour boat concession update** – Deyle

* Nothing new.

**Planned poultry farm within Priority Focus Area 2 –** Deyle

* Deyle was contacted by a Wakulla County resident, Charlie Ouimet, several months ago concerning a free-range chicken poultry farm being developed by a neighbor on property with two large sinkholes within PFA2. They are starting with 300 birds, to be expanded later.
* Deyle encouraged him to contact FDACS and DEAR but he did not get useful information. So, Deyle emailed a set of questions to Maddy Hart in the Office of Agricultural Water Policy at FDACS and DEAR Director Julie Espy. Maddy provided a comprehensive response:
	+ How does FDACS/FDEP identify new agricultural sources required to comply with these provisions?
		- FDACS completes a GIS analysis of all unenrolled lands within BMAPs statewide each year for our annual report to the Legislature. Our office uses the results of this analysis to guide field services staff efforts for both BMP enrollment and Implementation Verification (IV) visits, which now must be completed on enrolled properties at least every 2 years per Senate Bill 712 (2020).
		- Otherwise, we find out about new operations through word of mouth, local news, social media, community members, etc., similar to how you’ve alerted us to this. This is helpful to us when people bring things like this to our attention.
	+ What steps are taken to notify agricultural producers of their responsibilities?
		- Producers and landowners are expected to be familiar with the laws and regulations that apply to them in whatever area they choose to site their operations.
		- FDACS performs outreach year-round in BMAPs statewide and producers will be contacted to enroll in any applicable BMP manual(s) when they are identified as being unenrolled.
	+ How does FDACS/FDEP assure compliance?
		- Compliance with a producer’s Notice of Intent (NOI) [to implement BMPs] is assured through an implementation verification (IV) visit at least every 2 years. [This visit involves reviewing and collecting records, including applications of N and P, visually inspecting the operation, and reviewing the checklist signed by the producer during their original enrollment.] Any inconsistencies or issues noted during the IV visit will be recorded and the producer will be given methods to improve or fix these items. Field services staff will then follow up with the producer to ensure the changes have been made. Outright or eventual refusal to comply with the manual guidelines will result in a producer being turned over to FDEP for enforcement action, but our staff work very hard to get producers into compliance before that becomes necessary.
		- If a producer refuses to enroll in BMPs or implement water quality monitoring at their own expense, they are turned over to FDEP for enforcement per the statute.
		- More information on compliance is located here on our Frequently Asked Questions section of our website: https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Water-Policy-FAQ and we also have a separate document for FAQs related to SB 712: https://www.fdacs.gov/content/download/93834/file/senate-bill-712-faq.pdf
	+ This is a unique situation as the property owner has not yet established their operation and has not contacted our office for information on our Poultry BMP manual. We cannot enroll someone until the operation is on the ground and in production.
	+ We are working on informing the property owner of their responsibilities under the current law. Justin Bryan has been following up on this and will be reaching out to him today. We have also reached out to NWFWMD’s agricultural liaison, Dave Cambron, to inform him of this new operation within the PFA and so that we can follow up if the property owner requires any sort of permitting from the District to prep the site.
* C - Eyes and ears on the ground are essential.
* C - It is on a 5 A home site and they can do anything they want; i.e. no local land use controls apply because it is zoned agricultural.
* C - Maddy’s office talked to the owner and he has received the BMP manual.

**City of Tallahassee solar farm herbicide use** – Jim Stevenson, Bob Deyle

[see Appendix C for a list of questions]

* Deyle reported that he had previously communicated with Origis Services about arranging a tour of the solar facility in mid-September. David Perrizo had indicated he would get back to me when he knew when he would be in Tallahassee. In the meantime, he had evinced concern about our efforts to secure information about the specifics of Origis’s herbicide use on the site. Deyle called him earlier this week. He never got back Here’s what Deyle learned:
* Origis has stopped using Round-up (glyphosate) at all of its operations because of legal liability concerns after the Bayer settlement. As a result, they also will no longer use Oust (sulfometuron-methyl) because it is used in combination with the Roundup.
* They are currently researching alternatives and open to suggestions for alternative herbicides.
* They have used sheep on some sites but are not inclined to do so at this facility, which he characterizes as “large,” primarily because they have sunk capital into the mowing and herbicide treatment equipment and have five employees on the payroll for managing the site.
* He averred that the city has no leverage as to how Origis manages the facility but suggested that if they were willing to pay for the cost of sheep grazing Origis might be amenable to doing so.
* Deyle provided him with information about dye studies and travel times that have demonstrated hydrogeologic connections to Wakulla Spring from the area. He also informed him about the plant tissue herbicide analyses underway and the fact that DEP conducts quarterly water quality sampling on the upper river that includes glyphosate but not sulfometuron-methyl. Deyle did not tell him about DEP’s willingness to conduct ground water sampling because they ran out of time, but he did suggest that he and Perrizo talk again when he is back in the office.
* Perrizo expressed concern about the motives underlying our questioning. Deyle tried to reassure him that we’re “not out to get” Origis. Nevertheless, he said at this point he is not inclined to offer a site tour except perhaps for one or two of us.
* He subsequently informed Deyle that to arrange a tour we will need to secure written permission from KRR, the facility owner, and the City of Tallahassee.
* Jim has put together a list of questions which Deyle distributed with the final agenda (Appendix C). Before we discuss those, Deyle said he wanted to offer some perspective:
* At this point we have no evidence of harm caused by the herbicides previously applied at the solar farm: Roundup and Oust; we are still waiting for results of the plant tissue analyses of the samples that park staff sent to the lab in South Dakota.
* Only 38 of 1242 quarterly samples of herbicides collected by FDEP at the Ways between Oct 2017 and Jan 2021 have been present at levels above the method detection limit. None of those have exceeded DEP’s acute toxicity levels for plants or animals.
* We have no information about herbicide use elsewhere in the springshed, including public properties such as the Tallahassee airport, state and county highway rights-of-way, electric utility rights-of-way, or Wakulla State Forest.
* Without information on what Origis intends to use in lieu of Roundup with Oust we have no basis for even beginning to identify a possible future risk. Even if we do learn what they choose to use, it seems unlikely at this point that they will divulge specifics about timing or quantities.
* We don’t have evidence of herbicides in sampling by DEP or sampling at Wakulla Springs.
* This is just one place in the springshed. We should look at the airport and other places where herbicides are used.
* We have adjacent owners willing to have their wells sampled.
* Jim Stevenson provided a list of questions in appendix C. He has researched sheep use on solar farms, including the solar array at I-10 and I-75. DACS has been helpful.
* The flows to Wakulla Springs are similar to that from the spray field. We need divers to sample karst windows nearby.
* The movies, Kiss the Ground and Fantastic Fungi, explain how avoiding herbicides and rebuilding the microbiome can cleanup pollution, retain water and capture carbon. It was suggested that the WSA should advocate these practices where possible.
* Add these sites to the UF study to provide data to document the need to stop herbicide use. Cal can add these sites to provide a onetime baseline.
* The solar farm only applies herbicide once a year so there may not be any showing up.
* We need a herder on our tour. There are 4,000 sheep on the I-10/I-75 site. This could be profit making.
* Keep in mind that there is nitrogen in sheep shit.

**Nitrate level excursion update** – Deyle

* We should have looked at the longer data record. It shows that the stretch of readings between 0.33 and 0.36 mg/L from 10/2/19 – 3/8/20 was the anomaly. On the other hand, it appears to show a reversal of the previous downward trend beginning 3/10/20.
* Here’s Cal’s chart:



* Here are the data for the full data record for that USGS gauge:



* USGS nitrogen readings at the boat dock have been increasing since February 2020.
* There has been greater variation over time. DEP will contact USGS to be sure the probe is working properly.
* DEP does not use USGS data. They use grab samples quarterly.
* Kathleen Coates noted, however, that there are a lot of problems with these sensors fouling from algae and other growths on their surfaces. Grab samples are analyzed in a lab and are more accurate.

**Upcoming meetings and events** – Deyle

* Wakulla County will have a workshop on the acquisition of the golf course on Oct. 4 in person or live streamed. They will still do the Moore rapid infiltration facility.
* **October 22** – Presentation by Terry Ryan regarding sanitary sewer overflow spills and contaminated sites in Tallahassee. Staff is developing a transparency plan.
* **November 19 (third Friday**!) **–** Selection of Nominating Committee

**Adjourn**

* A motion by Cal Jamison, seconded by Debbie Lightsey was passed unanimously.

**Appendix A**

**Agenda**

**Friday, September 24, 2021**

**9:00 to 11:30 am, via Zoom**

 **9:00 Opening**

* **Welcome and introductions** - Bob Deyle, See participants in Appendix A
* **Agenda review** - Bob Deyle

 **9:10 August 2021 minutes** - Tom Taylor [attached]

 **9:15 August 2021 financial report** [attached]- Jim Davis

 **9:20 Wakulla Springs Wildlife Abundance Trends 1992 - May 2021 Part 2** – Bob Deyle, Monitoring Program Coordinator

**10:05 What’s new?**

* **Springshed and river update -** Cal Jamison
* **Cave exploration updates** –
	+ Andreas Hagberg, Global Underwater Explorers
	+ Chris Werner, WKPP
* **Emergent marsh distress update** – Deyle
* **Park tour boat concession update** - Deyle
* **What else?**

**10:30 Planned poultry farm within Priority Focus Area 2 -** Deyle

**10:45 City of Tallahassee solar farm herbicide use** – Jim Stevenson, Bob Deyle [see attached list of questions]

**11:05 Nitrate level excursion update** – Deyle

**11:15 Upcoming meetings and events** – Deyle

* **October 22** – Presentation by Terry Ryan regarding sanitary sewer overflow spills and contaminated sites in Tallahassee
* **November 19 (third Friday**!) **–** Selection of Nominating Committee

**11:20 Other business**

**11:30 Adjourn**

**Appendix B**

**9-24-21 WAKULLA SPRINGS Board Meeting Participants**

**\* Indicates those present**

Officers

Robert E. Deyle, Chair \*
Howard Kessler, Vice-Chair
Tom Taylor, Secretary \*
Jim Davis, Treasurer

Directors

Gail Fishman

Albert Gregory \*
Rob Gelhardt \*

Andreas Hagberg \*

Cal Jamison \*
Brian K. Katz
Debbie Lightsey \*

Terry Ryan

Lindsay Stevens
Jim A. Stevenson \*

Members and Guests

Jodie Cahoon

Jim Call

George Cavros

Kathline Coates\*

Brett Cyphers

Anthony Gaudio

Maddy Hart \*

Carlos Herd \*

Mark Heidecker \*

Chuck Hess

Linda Lee\*

Brian Luipani \*

Dallas Marshall \*

Charles Ouimet \*

Johnny Richardson \*

Bob Thompson

Paul Thurman

Sophie Wacongne \*

Chris Werner \*

Roger

**Appendix C**

**Tallahassee Solar Farm Herbicide Use**

**Questions: Tallahassee Solar Farm**

How many acres are under vegetation management?

Will the facility be expanded in the future?

How will herbicide application avoid listed species: gopher tortoise and golden aster?

Has the food habitat for each tortoise been mapped?

What training and supervision do the herbicide applicators receive to assure compliance with the applicable herbicide label requirements?

Will herbicides affect the rare cave crayfish?

Did Origis or the City investigate the feasibility of sheep grazing?

WSA requested a tour of the site in mid-April. No tour scheduled by mid-Sept.

When were herbicides first applied on the facility?

What quantity of each herbicide is applied annually?

How many acres are treated with herbicide?

How many sheep would be required for how many days per year on site?

What is the estimated loading of N to the ground surface/ground water from sheep manure?

What are the environmental benefits of sheep vs. herbicides?

What is the amount of reduction of herbicide and mowing compared to sheep?

Were “weed barriers” considered?

Amount of time herder will be on site?

**Other Details:**

Groundwater flows from the facility to Wakulla Spring.

Domestic wells are down gradient and in close proximity to the facility.

Water from wells and karst windows will be tested for herbicides if Origis provides information on what herbicides are being used and when they are applied.

An acre of grass and brush can support about six sheep (?).

Sheep can clear an acre up to 5 feet high.

Nitrate content is double that of cow manure but effect should be negligible. (DACS)

A single adult sheep produces one ton of manure/year.

It should be the City’s responsibility to select an experienced herder.

We need a tour of the facility with an experienced herder.

 Origis has decided to discontinue use of Roundup.

**Some of What We Know**

It is the city’s responsibility to do no harm which includes protecting water quality, cave crayfish, and the food plants of gopher tortoises from herbicide contamination.

A herder must assess the habitat to determine the number of sheep per acre and habitat quality.

Regional groundwater flow direction is from the facility toward Wakulla Spring.

The City contracted with Origis of Austin, Texas to construct the solar farm. Origis Services manages the farm, but equity in the farm is now held the investment firm KKR.

**Sheep Grazing Operators and Experts:**

**A+ Environmental Restoration**. Arcadia, FL (clients: Tampa Electric, Duke Energy, FP&L, I-75 & I-10)

 **White Oak Pastures and Bancroft Station**; Blufton, GA. (Also, TN, CO and AZ)

 Goal to eliminate herbicides. Now mow 4 times /year; striving for 2 times /year.

 **Sillicon Ranch**, TN. Six sheep per acre per year.

 Also, CA, other southern states.

 DACS, Office of Agricultural Water Policy, Central Office

 DACS, Office of Agricultural Water Policy, Jackson County

 Leon County Extension Office: IFAS Agent

Tampa Electric: Hillsborough County

 Former herder: Bobbie Golden, Jefferson County.

 Florida Geological Survey

**Other Sources**

American Solar Grazing Association

Meat Sheep Alliance of Florida

9/20/21 draft