

## **Spring 2019 Meeting of the Natural Area Advisory Committee – Agenda**

April 18, 2019, NATL Academic Pavilion, 1:02pm

In Attendance: (Appendix 13)

Erika Brownson (outgoing Undergraduate TA)

Jennifer Eells (Graduate TA)

Jennifer Gillett-Kaufman (Entomology and Nematology)

Iona Hennessey (Undergraduate TA)

Jessica Hong (Graduate TA)

Gage LaPierre (Vice-Chair)

Erik Lewis (Facilities Planning and Construction)

Ashley Morris (Incoming Invasive Species Intern)

Lexie Nielsen (outgoing Invasive Species Intern)

Jaret Daniels (Florida Museum)

Emily Sessa (Biology)

Matthew Smith (Plant Pathology)

Introductions (Emma)

Emma began the meeting by thanking the NAAC members for attending and how future meetings will be planned with a doodle poll to optimize attendance at these meetings. Everyone introduced themselves and helped themselves to snacks throughout the meeting.

### **1) Fiscal report for FY 2018-2019 (Appendix 1)**

Jesh provided the fiscal report for the fiscal year 2018-2019. There was \$400 dollars carried over from last year and most of the spending of the budget was on track except for the recent increase in the cost of the burn of the upland pine, which has left NATL at a slight deficit.

### **2) Fiscal plan FY 2019-2020 (Appendix 2)**

Jesh provided the fiscal plan for 2019-2020. Income is similar from 2018-2019 except the money from the UF Office of Sustainability that usually funds the invasive species intern will not continue in 2019-2020. Other changes include the minigrant funds, which in previous years funded two \$500 minigrant projects. Due to lack of minigrant applicants last year, it was recently agreed upon (through email communication with the NAAC) that a NATL Enhancement Internship will take the place of the minigrants with an allowance of up to \$1,200 for the intern's salary and materials for their project. Jennifer Gillett-Kaufman suggests if there continues to be a lack of interest in the minigrants, the money could be used to fund a future invasive species intern. Gage LaPierre suggests stopping the \$400 used for fliers, which are typically dispersed at the Florida Museum and replace it with a plaque/sign instead. Gage states that printing fliers are wasteful and end up in landfills anyway. This would produce less waste and free up \$400 to be allocated to another cause. Emma Weeks provides that the map cards are not useful once visitors arrive at NATL as it does not provide any more information beyond that. Jaret Daniels stated that visitors do like having something tangible as they come by and that having a plaque/sign displayed at the Museum is not feasible. Emma Weeks offered to talk to the Provost to have their contribution increased in NATL as NATL does accomplish a lot with little money but could do more with a little more in order to fully cover the cost of the annual burn. Gage mentioned that Zach Prusak with Raelene Crandall's fire ecology class could potentially plan to burn NATL plots and this could save NATL money. Jennifer Gillett-Kaufman stated that before going to the Provost and risking having money taken away from NATL to wait and see if this plan with Zach Prusak will work. Erik Lewis also proposed having the Chair of NATL go to LVL and request funds. Emily Sessa moved to approve the 2019-2020 fiscal plan and Matt Smith seconded the motion. All members agreed.

### **3) Updates on possible capital improvements and funding sources (Appendix 3)**

Emma provided the updates on the wishlist, which will expire in 2021. Emma proposed that a separate meeting to focus on a future wishlist and plan. One thing to consider being added to the plan is a new boardwalk in SEEP as it now closed because of a broken board and it has been closed more frequently in recent months because of large areas with damaged boards. Emma reported that Facilities services has assessed 40% of the boards need to be replaced and 18% of the foundation underboards need to be replaced. It was suggested to ask for funding using the donation button on the website by posting pictures of the broken boardwalk. It may urge those that really enjoy using the boardwalk to donate. The Capital Improvement Trust Fund that previously paid for the boardwalk stated they did not pay for the boardwalk. NATL operations committee will follow up with CITF with the paperwork to possibly acquire funding. Erik stated that we would need to get clubs from colleges to go to student government and petition for help. Another item to be added to the wishlist would be a Trailmaster as the current one that NATL has is frequently shorting and the model is not manufactured anymore. Jaret suggested talking to the Thomson Earth Center Institute who may be interested in working with NATL to enhance research and teaching by having classroom training events. A new classroom is going to be built in the front of the museum with fairly direct access into NATL. Bruce McFadden would be the contact point.

### **4) NATL Use Report**

#### **People counter summary (Appendix 4)**

Jen has been having issues with the Trailmaster working on and off. NATL has about the same visitors but reduced visitors at some entrances.

#### **Volunteer summary (Appendix 5)**

NATL does not currently have any regular volunteers but the operations committee did participate in many volunteer events with UF such as Fall Day of Service and The Big Event. They also took part in a BioBlitz organized by the Florida Museum. Matt Smith asked for notification of future BioBlitz-type events as his students may be interested in participating and providing fungal knowledge to these groups. Jen notes that FALAFEL group will be meeting periodically at NATL for fungal forays.

#### **Mini-grant update and 2019 planning (Jen, Pages 9-10)**

Minigrants are ongoing from last year. GREBE has updated the biota list on the website and the SEEP wetland birds sign. Currently, they are working on creating a bird checklist to be provided in the NATL kiosks. DPMSO is preparing a report. A new system (NATL Enhancement Intern) will be in place for next year.

#### **Social media update (Appendix 6)**

Iona has taken over running the Instagram, all sites doing well with followers

#### **5) Invasive plant update (Appendix 7)**

Lexie provided the invasive species update. Guineagrass is a major issue at NATL as other invasive species such as mimosa and camphor have reduced in abundance. Air potato has regrown by the Florida Museum and an application has been submitted to acquire air potato beetles to be released this spring/early summer.

#### **6) Nature trail update, boardwalk concerns (Appendix 8)**

Iona maintains the nature trails by trimming and mowing frequently. The old field trail, which was once lost after its restart, has now been re-added. Iona also inventoried the shed of all the items and placement. Jennifer suggested putting this information in the TA manual.

#### **7) Old field update (Appendix 9)**

Jen said the SW plot will be restarted this year and will plan to plant some native maize to attract feed and local wildlife. Gage proposes getting rid of some trails that do not serve a purpose. Jennifer counters that as the old field sections grow out, the trails will hit more interesting species.

### **8) Restoration of Upland Pine (Appendix 10)**

Jesh provided the upland pine update. The annual burn has not occurred yet but hopefully soon. Gage and Jesh have been looking into seed mixes and acquiring greenhouse space to introduce native species back into upland pine to replace the ruderal species. Jennifer offered some of her greenhouse space to use for NATL if they wanted to start growing soon. An upland pine management meeting will be planned in the near future, to discuss how to improve chances of having a successful burn and what to do afterwards.

### **9) Plant inventories (Gage, Page 14)**

Gage also started a plant inventory/monitoring project to keep a more in-depth species list of what comes and goes in the succession and upland pine plots. This will be monitored every fall. Gage also suggested rotating the till plots in Old Field if the plots turn into monocultures because that is not indicative of an abandoned old field over time. It has been over-tilled to the point where no other species will grow except wild radish. Jennifer suggests talking to the agronomy department for advice.

### **10) New chair needed by August 2019**

Emma announces that she will be leaving UF and as NATL chair in August. NATL will need a new chair and Emma is looking for one in Entomology but states that the chair does not necessarily need to be in Entomology. If there is no replacement, Jennifer who served as the NATL Chair before Emma could potentially serve as Chair in the meantime.

### **11) Vote, Next NAAC meeting date and time. Proposed Noon, September 12, 2019 or doodle poll**

The committee agreed that a doodle poll worked well this meeting and this methods will be used to decide the time and day for the September meeting as it gets closer.

### **Fiscal plans 2018-2019, 2019-2020**

## Appendix 1: Fiscal Report for 2018-2019

### NATL Fiscal Plan for FY 2018-19

Approved April 12th, 2018

<b>Funds available for 2018-19, excluding stipends for Graduate TAs*.</b>		
Brought forward from 2017-18	400.00	400
Projected income for 2017-18		
Provost	6,000	
NATL endowment	4,625	
Sum		10,625
<b>Grand Total</b>		

### Spending plan for 2017-18

Personnel (OPS)		
Undergraduate TAs	4,322	
Control of invasives	1,320	
Sum		5,642
Other Expenses		
Miscellaneous expenses	2,500	
Upland pine restoration	3,200	
2000 NT fliers	400	
2 minigrants @\$500 each	1,000	
Sum		7,100
<b>Grand Total</b>		

To be carried forward

### NATL improvement fund (from online donations)

Online donations to NATL (implemented March 2012) \$ 921

\* The Provost and the CALS Dean will each pay the stipend for a NATL Graduate Teaching Assistant

### 18 April 2019 Report for FY 2018-19

#### Receipts

Already received	Projected
0	0
6,000	6,000
4,625	4625
<b>\$11,025</b>	<b>10,625</b>

#### Expenditures

Already spent or encumbered	Projected
4,322	4,322
1320	1320
5,642	5,642
1,226	1,226
3,200	3,200
400	400
1,000	1,000 Change to one intern
5,826	5,826
<b>\$12,742</b>	<b>11,468</b>
<b>-\$1,717</b>	<b>-843</b>

## Appendix 2: Fiscal Report for 2019-2020

### Initial NATL Fiscal Plan for FY 2019-2020

Final version to be approved at Fall meeting

#### Funds available for 2019-20, excluding stipends for Graduate TAs\*

Brought forward from 2018-19	0	
Projected income for 2019-20		
Provost	6,000	
NATL endowment	4,625	
Sum	10,625	
Grand Total		\$10,625

#### Spending plan for 2019-20

OPS		
Undergraduate TAs	4,322	
Control of invasives	1,320	
Sum	5,642	
OE		
Miscellaneous expenses	1,500	
Upland pine restoration	3,200	
2000 NT fliers	400	
NATL Enhancement Internship	1,200	
Sum	6,300	
Grand Total		\$11,942
To be carried forward		-\$1,317

#### NATL improvement fund (from online donations)

Online donations to NATL (implemented March 2012)	\$ 921
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### 18 April 2018 Report for 2019

#### Receipts

Already received	Projected
0	0
6,000	6,000
4,625	4,625
11,125	10,625

#### Expenditures

Spent	Projected
0	4,322
0	1,320
	5,642
0	1,500
0	3,200
0	400
0	1,200
0	6,300
	11,942
	-1,317

## **Appendix 3: Capital Improvements Updated Spring 2018 Report**

### **Long Range NATL Wish List: 2011-2021 Vision Plan**

We recognize that NATL already has tremendous value to the local UF community. This Vision Plan seeks to strengthen and enhance these indigenous values of NATL and, in addition, provide mechanisms for bringing the educational values of NATL to an unlimited online environmental community of users. We present the plan in the form of a two-part outline of infrastructure and other developments, focusing on both in-person and online users of NATL.

This list is not static; additional items may be added to the list. Items will be removed from the list if more than half of the NAAC members feel that the item would not enhance the use of NATL. Funding for items could come from donations to the UFF on behalf of NATL or by writing specific items into future grant proposals.

#### **A. Enhancing in-person access**

1. SEEP boardwalk. Now in a state of disrepair with large holes forming monthly. We are working with Facilities to get a quote for its repair/replacement.
2. Trailmaster replacement
3. Natural Area Park water fountain. (Design and placement not yet considered.)
4. Add a classroom and/or lab building to facilitate NATL use. To avoid using land in the NATL-west Conservation Area, the building might best be situated on an out-parcel south of the pavilion. (A representative of the UF Foundation believes NATL might attract a donation of \$1 million or more. Having a plan for using such a donation might help the donor decide to make it. An alternative plan for using such a donation would be to set up an endowment for the benefit of NATL.)

#### **B. Instituting remote access (and security) and real-time online interaction with NATL**

1. In partnership with FLMNH, develop a program using an interactive whiteboard (e.g., SMART board) to use digital material from NATL to involve K-12 students in learning about ecological concepts and problems. Including grade-level specific, standards-based curriculum materials (field investigation activities) that can be implemented as part of school field trips or summer enrichment programs. Make available as downloadable files for use by home schooled children, scout groups and others. NATL TA Jennifer Eells is currently working on this. **In progress- Upland pine ecosystems, Invasive Species and Fire Ecology lesson plans including information, glossaries, pictures, activities and questions are ready to be uploaded to the website.**
2. Prepare pre-recorded guided tours that will be filmed and then available online for those that cannot visit NATL in person. Offer live guided tours for schools and other groups of

people that would not be able to visit NATL in person due to distance from the site or disability. **In progress –Jen will incorporate this into the environmental education project with paired videos and study guides.**

### **C. Enhancing the research and teaching usage of NATL**

In collaboration with the School of Forest Resource and Conservation (SFRC), the NATL Operations Committee is discussing the implementation of several demonstration plots in the Restricted Area Upland Pine. Depending on the needs of SFRC and other users plots could include those that have been managed with burning, herbicides, mowing and combinations thereof, as well as different planting techniques. **Completed 2016, ongoing.**

Establish a grant program costing approximately \$10,000 a year providing small grants (\$500-\$5,000 grants) to foster data collection, proposal submissions and distance curriculum development utilizing NATL. Distance curriculum developed using seed grant funding would be made freely available on the NATL website. \$1,000 per year earmarked for a grant that would support one or more citizen science projects in NATL. Citizen Science projects could fund some NATL specific ideas as well as support the partnership of NATL with national initiatives.

Sarah Anderson, a student in Entomology, is studying the southeastern blueberry bee (*Habropoda laboriosa*) in NATL's old field plots (Figure 1). The tents you see are ones she erected to capture the bees as they emerge from underground (Figure 2). She will mark and release them to learn more about their biology.



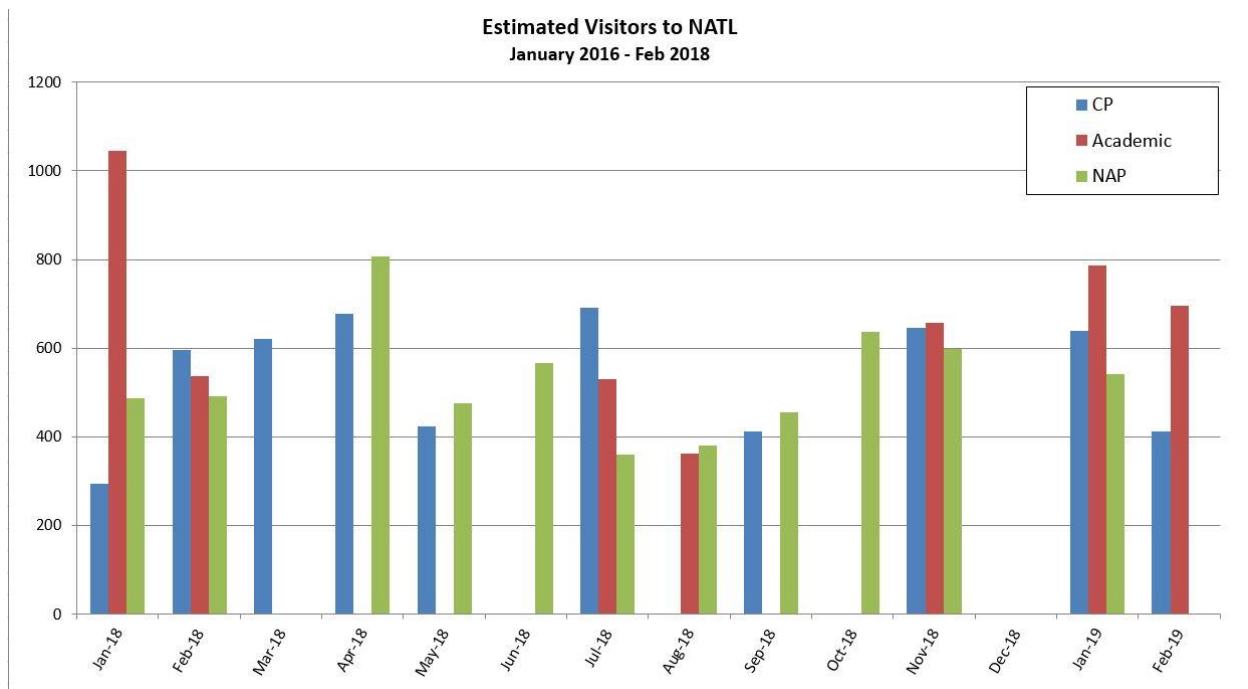
**Figure 1 and 2. Sarah Anderson in the Old-field plot catching southeastern blueberry bees. The tents she erected over the bee' holes to capture and mark emerging bees.**

On March 21<sup>st</sup>, Jessica Hong and Gage Lapierre gave Dr. Mallinger's pollution ecology class a tour of NATL. Emma Weeks also led a group of small school children on a tour of NATL and helped them to pick up trash.



## Appendix 4: TrailMaster/People Counter Summary

Three TrailMaster units are installed in NATL, one at the Academic, Cultural Plaza and Natural Area Park Entrances, respectively. These units measure NATL usage by counting the number of people passing through each entrance. The Cultural Plaza Entrance has had a TrailMaster installed since July 2010, however initial technical difficulties yielded unreliable data in the first few months. Subsequently, two additional units were installed at the Academic Entrance (June 2011) and Natural Area Park Entrance (April 2012). Figure 1 and Table 1 summarize information collected by the TrailMaster units. NATL visitors are counted twice (as they enter and exit), so all counts are divided by two to estimate the number of visitors NATL receives. Some technical difficulties related to battery failures provided unreliable data at the Academic Entrance throughout 2017 and 2018. New batteries and a new TrailMaster were installed and all issues seemed to have resolved.



**Figure 3. Summary of TrailMaster counts from January 2018 to February 2019 at the Cultural Plaza, Academic and NAP entrances.** All numbers are TrailMaster counts/2 because users are counted twice, as they enter and exit.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
<b>CP</b>	<b>2010</b>											323.5	323.5	
	<b>2011</b>	465	456.5	527.5	636	427.5	421.5	686	526.5	282.5	365.5	329.5	299.5	5423.5
	<b>2012</b>	355.5	411.5	529	1531.5*	312	477.5	521	582	373	696.5	705.5	543	7038
	<b>2013</b>	673	795.5	428	443	315*	498*	486*	449*	346	379.5	279	253	3597
	<b>2014</b>	338.5	305.5	487*	694	318	518.5	451	316	427.5	511.5	432	454.5	4767
	<b>2015</b>	500.5	518.5	546	630	671	713.5	636	417.5	528.5	595.5	767	723	7247
	<b>2016</b>	635.5	N/A*	N/A*	757	691.5	508.5	1837	755	710	N/A*	772	0	6666.5
	<b>2017</b>	1109.5	553	610.5	927	623.5	557.5	841	647	225	N/A*	N/A*	N/A*	6094
	<b>2018</b>	294.5	595	621.5	678	423.7	N/A*	690.5	N/A*	413	N/A*	646.9	N/A*	4363.1
	<b>2019</b>	639.9	413											1052.9
<b>AE</b>	<b>2011</b>					676	532.5	548.5	834.5	915.5	557	345.5	4409.5	
	<b>2012</b>	689	804	724.5	1174.5*	573	719.5	501.5	608.5	1090	954.5	621.5*	248.5	8709
	<b>2013</b>	572	656	882.5	595	352	344	587.5	291.5	864	1010.5	686	229	7070
	<b>2014</b>	434.5	569.5	653	732	387.5	547.5	681.5	319.5	459	873	627	346	6630
	<b>2015</b>	712.5	570	869	884.5	546.5	687.5	554.5	479.5	1195.5	970	775	400	8644.5
	<b>2016</b>	855.5	916	837	1077	N/A*	554	1613	1023	748	N/A*	1018	463	9104.5
	<b>2017</b>	1198.5	810.5	N/A*	1221	N/A*	N/A*	623	N/A*	N/A*	N/A*	N/A*	N/A*	3853
	<b>2018</b>	1045.5	538	N/A*	N/A*	N/A*	N/A*	531	362	N/A*	N/A*	656.7	N/A*	3133.2
	<b>2019</b>	786	695											1481
<b>NAP</b>	<b>2012</b>			639	471	471.5	338	356*	676.5	549	375	330.5	4206.5	
	<b>2013</b>	533.5	605	838	717.5	455.5	488	553	568.5	776	521.5	495.5	6899	
	<b>2014</b>	353	577.5	846*	820.5	467	362.5	448.5	365	517.5	636.5	527	501	6422
	<b>2015</b>	540	535.5	854	736	916	470.5	327.5	252.5	340.5	473.5	499	415	4379.5
	<b>2016</b>	508	741	736.5	942	471.5	497.5	2451.5	919	784.5	755.5	982.5	635	10424.5
	<b>2017</b>	825	817	861.5	936.5	801	495	556	432	301.5	N/A*	691	365	7081.5
	<b>2018</b>	487.5	491.5	N/A*	808	476.5	567.5	360.5	381.5	455.5	638	599.5	N/A*	5266
	<b>2019</b>	541	N/A*											541
													Grand Total	144827

**Table 1. Summary of NATL usage estimates via TrailMaster counts.** All numbers are TrailMaster counts/2 because users are counted twice, as they enter and exit.

\*Technical difficulties

### **Appendix 5: Volunteer summary**

NATL took part in the Fall Day of Service on October 20<sup>th</sup>. This involved a large group of students helping to trim trails and pick up trash. We also participated and represented NATL in the following events: The Butterfly Festival on October 13<sup>th</sup>, The Fall Organization Fair on September 19<sup>th</sup>, and the Educator Open House Event on October 4<sup>th</sup>. The Big Event was held on March 16<sup>th</sup> and included students from the Freshmen Leadership Council (Figure 3). They helped to clean NATL East and South Trail of trash.



**Figure 4.** The volunteers from the Freshmen Leadership Council and staff members Jessica Hong, Jennifer Eells and Erika Brownson cleaned up trash at the Big Event on March 16<sup>th</sup>.

On March 21<sup>st</sup>, the Florida Museum of Natural History held a BioBlitz for Adania Flemming's LDC2019 class and visiting educators at NATL. Graduate and Undergraduate TAs Jennifer Eells and Erika Brownson participated in the event which included surveys of insects, plants, amphibians, and aquatic flora and fauna. The students were divided into groups based on taxa (plants, birds, mammals, aquatic vertebrates and invertebrates) and either collected (Figure 5), took photos or spotted the different organisms. All species captured were photographed and listed on the board at the pavilion (Figure 4) as well as on the nature app iNaturalist.



**Non-Crop hosts of agriculturally important organisms in the Natural Area Teaching Lab (2018)** – The PI is Cory Penca, a dual enrolled DPM/PhD student in the Entomology and Nematology Department, representing the Doctor of Plant Medicine Student Organization. Their academic advisor is Dr. Amanda Hodges also in the Department of Entomology and Nematology. . The project surveyed NATL for insects, nematodes, fungi and plant pathogens known to impact agricultural systems. They have prepared a draft fact sheet, available for digital and print use that highlights the interaction between natural areas and these organisms, with specific interest paid to the ecological role of non-crop plant species in supporting populations of agriculturally significant organisms. The group is now preparing its report.

Due to a lack of candidates applying for the mini-grants we decided to evolve the program into a NATL improvement project internship. This would be available for one participant that wanted to conduct a NATL improvement project. We have two applicants and will make a decision shortly.

### **Personnel Changes**

Ashley Morris was hired as the new Invasive Species Intern on February 25<sup>th</sup>, 2018. Ashley is an undergraduate student in Entomology and Nematology with a specialization in biosecurity. Before coming to NATL, she worked for the UF Urban Entomology Lab and volunteered for the Forest Service. She will be replacing the outgoing intern, Alexandra (Lexie) Nielsen.

### **Appendix 7: Social Media Updates**

NATL's Facebook page has **1,317** Likes and our Twitter page has 1,622 Followers. Since the last NAAC meeting in September, we have increased our Facebook Likes and gained **77** followers on Twitter! The NATL Instagram account, created in June 2015, has **683** Followers, **131** more than the number of followers at the Fall 2018 NAAC meeting.

If you use social media, please follow NATL on [Facebook](#), [Twitter](#), and [Instagram](#). The NATL Operations Committee makes an effort to post several times a week about what is going on in NATL. We also love posting about visitors using NATL, so please share any pictures or observations with us on any of these social media accounts.

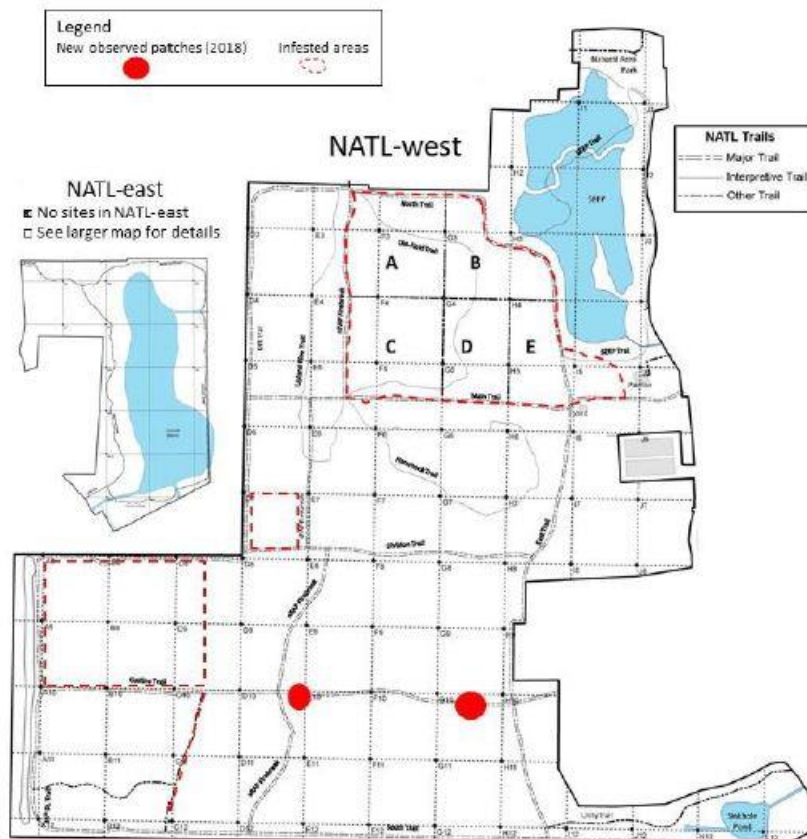
## Appendix 8: Status of Control of Invasive Plants in NATL

Guinea grass is still a major invasive, with patches growing through the upland pine and old field areas. In April, a grass walk with Mike Drummond from the Alachua County Environmental Protection Department was conducted to determine the various species of grasses in NATL, with guinea grass being the most widespread. Guinea grass regrowth (after being treated with glyphosate) during the summer was rapid but has begun to slow down recently. This will make it easier to manage patches of the grass and prevent new patches from growing (Figure 6). Mimosa has been much less common than it has in previous years, with only 13 plants treated so far this year compared to 534 treated in 2017.

Top FLEPPC category 1 plants in NATL include cogon grass (*Imperata cylindrica*), coral ardisia (*Ardisia crenata*), cat's claw vine (*Macfadyena unguis-cati*), air potato (*Dioscorea bulbifera*), skunk vine (*Paederia foetida*), and Japanese climbing fern (*Lygodium japonicum*). Category 2 plants include but are not limited to paper mulberry (*Broussonetia papyrifera*), silverthorn (*Elaeagnus pungens*), and Chinaberry tree (*Melia azedarach*). More information about invasive plant management in NATL can be found on the NATL website ([http://natl.ifas.ufl.edu/biota/invasive\\_control.php](http://natl.ifas.ufl.edu/biota/invasive_control.php)).

### Guineagrass (*Megathyrsus maximum*)

Potential threat for NATL:  Major  Moderate  Minor  Uncertain  
 Current status in NATL:  Eradicated  Controlled  Diminished  Threatening  
 Current management:  Routine monitoring  Controlled when found by:  
 Manual removal  Herbicide applied to:  foliage  stem or stump  soil



**Figure 6.** A 2018 map of guinea grass infestation in NATL. Since 2011 it has spread to other upland pine areas as well as two patches along Gasline Trail, which is a hammock ecosystem.

**Table 2. The top invasive species removed in NATL.** The numbers indicate how many individual plants were managed. See Appendix 2 for a more in depth table with additional species.

Species name	Common name	2015	2016	2017	2018	2019*
<i>Albizia julibrissin</i>	Mimosa	168	168	496	15	0
<i>Ardisia crenata</i>	Coral ardisia	1152	550	581	1164	25
<i>Broussonetia papyrifera</i>	Paper mulberry	2	71	16	1	0
<i>Cinnamomum camphora</i>	Camphor tree	4	801	69	13	0
<i>Dioscorea bulbifera</i>	Air potato	0	4	24 vines	2	1
<i>Megathyrsus maximum/Sorghum halpense</i>	Guinea/Johnson grass (# of times patches sprayed)	ND	15	17	28	16

\*Indicates the year is not over yet and thus, additional plant removal may be added in in the future.

## **Appendix 9: Nature trail update**

We maintain our trails to a height of 80 inches to be compliant with the Americans with Disabilities Act (ADA). The NATL TAs routinely trim the nature trails and roads. Each semester, we attempt to assemble volunteer groups to help trim and pick up trash. Each nature trail is mowed by the undergraduate TA biweekly and weekly in the summer months while all over trails are mowed by Facility Services. The signs on our self-guided nature trails are updated weekly and trail sequences via Excel spreadsheets are updated monthly to reflect any changes and to help facilitate future seasonal updating of the trails. All signs are routinely cleaned while new signs are put up for new species and non-relevant signs are pulled, while yellow flagging tape are refreshed on plants weekly. Any fallen tree or trail blockage will be lopped and/or chain sawed and removed. SEEP boardwalk is swept biweekly.

A massive reorganizing of the shed including an inventory and map of item locations is currently ongoing. The boardwalk has developed a large hole and another possible weak spot near it. Installation of new boards and a look at the integrity of the posts will constitute a quick fix option while the fate of a new boardwalk is ongoing.

## **Appendix 10: Oldfield Update**

There will be an Old-field restart of subplot B SW (1-year) in April of 2019 through double disking. Additionally, we hope to fulfill one of the original tenets of NATL and plant food crops for wildlife in the 1 year plots. The crop will consist of native Florida maize and help to feed and attract local wildlife. It will also be a better visual education to the status of abandoned agriculture fields in Florida. The Old-field trail will be mowed and maintained weekly by the undergraduate TA.

## **Appendix 11: Restoration of Upland Pine**

In spring 2016, members of the NATL staff outlined a demonstration area to contrast three upland pine restoration treatments: burning, mowing and herbicide. The demonstration area is situated on the western end of the restricted area (see Fig. 7). Half of an area, 50 meters wide by 200 meters long, was designated to demonstrate an herbicide treatment, and the other half of the area was designated to demonstrate a mowing treatment. In addition, another segment will be allotted to the combined treatments of herbicide + fire and mow + fire treatments. Our previous burn was in April 2018 and finished combination treatments by August 2018. NATL plans to burn in April-May of 2019. In 2019, in efforts to shift the plant species from ruderal to those more indicative of a longleaf pine ecosystem began. Seeds and seedlings from local nurseries will be reintroduced into the upland pine area.



## **Appendix 12: Plant Surveys**

### **NATL Permanent Annual Plant Diversity Inventory & Monitoring Project**

#### ***Background and Rationale***

Outside of photographs, NATL has had no monitoring of plant diversity or composition in its natural communities. Monitoring is extremely important because it can guide our decision-making concerning the impact our management actions have on certain ecotypes. A prime area of concern is the upland pine community, where active restoration and resources are being spent but no monitoring is occurring. Monitoring in the succession plots would also be beneficial because it has been observed over the years that certain species are becoming increasingly dominant in frequently tilled plots. It is postulated that the lack of ruderal diversity in some succession plots is being caused by a lack of ruderals in the seed bank which is due to long-term and repeated tilling. Management may need to rotate the successional plots to increase seed bank diversity which will help limit the increasing dominance of certain species. Issues such as these is why data on plant composition is needed to better support and guide management decisions at NATL. Overtime, monitoring data would also help inform visitors and provide real data for any potential undergraduate projects as well.

#### ***Implementation & Status***

In 2018 members of the NATL operations committee, along with volunteers, helped establish a set of long-term monitoring plots. The plots established are 10m<sup>2</sup> and feature five nested quadrats of sizes (0.01m<sup>2</sup>, 0.1m<sup>2</sup>, 1m<sup>2</sup>, 3.16m<sup>2</sup>, 10m<sup>2</sup>). Areas at NATL are heterogeneous, it was thought this design would be best fit to properly understand and estimate the plant composition in each community. The plot design was also chosen because it would enable NATL to realistically and accurately sample communities with few personal on ground (as opposed to transect, or grid sampling). A total of 11 plots were established at NATL, 7 Upland Pine Sites and 4 in the Succession Plots. Plots were established with donated scrap metal poles, marked with GPS, and photographed from the south facing north. In each plot species presence were recorded only once as they occurred in each nested quadrat. Coverage for each species was measured at the 10m<sup>2</sup> level. The overstory was included but denoted with and the \* symbol in the data. Implementation of the plots began in November of 2018 and ended in January of 2019 – going forward we would like to standardize and limit monitoring to October – November months entirely. The 2018 data and map of plots is available and will begin to be analyzed after next years (2019) monitoring. Transferring this information to NATL's website is currently in process.

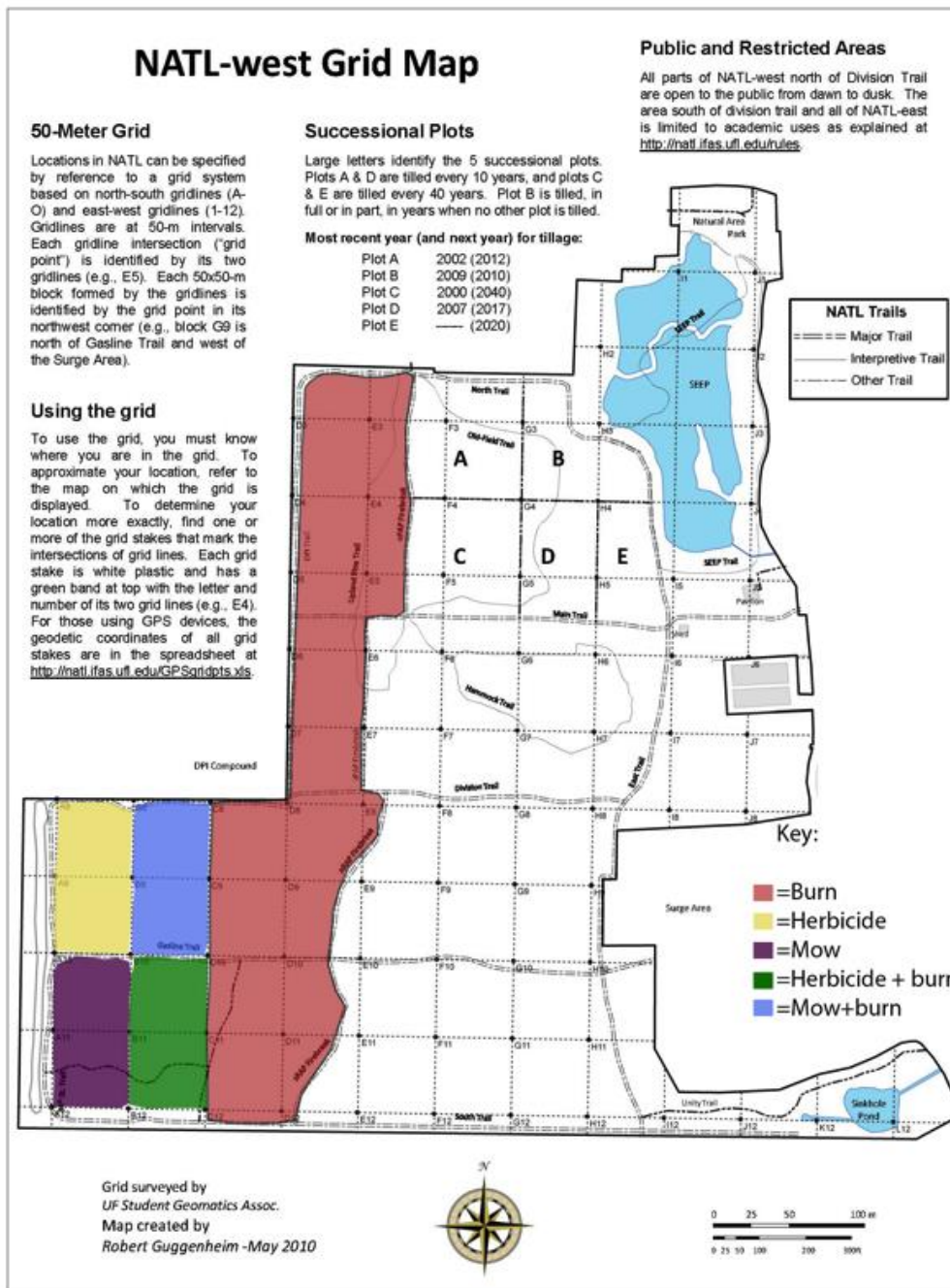


Figure 7. Map showing demo plots.

## Appendix 13. NAAC roster Spring 2019

A	B	C	D	E	F	G	H
NAAC roster							
The current version of the NAAC roster is at <a href="http://natl.ifas.ufl.edu/docs/NAACroster.xls">http://natl.ifas.ufl.edu/docs/NAACroster.xls</a>							
Last name	First name	Representing	Email	Campus address	Phone (352-)	Notes	
Brown	James	ENSO (Entomology & Nematology Student Organization)	<a href="mailto:jamestbrown5@ufl.edu">jamestbrown5@ufl.edu</a>				
Brownson	Erika	NATL Undergraduate Teaching Assistant	<a href="mailto:ebrownson@ufl.edu">ebrownson@ufl.edu</a>			non-voting	
Byron	Morgan	NATL Graduate Teaching Assistant	<a href="mailto:maconn00@ufl.edu">maconn00@ufl.edu</a>		727-808-6547	non-voting	
Clark	Mark	Soil and Water Science	<a href="mailto:clarkmw@ufl.edu">clarkmw@ufl.edu</a>	PO Box 110510	392-1804 ext. 319		
Crandall	Raelene	School of Forest Resources and Conservation; Fire Ecology	<a href="mailto:raecrandall@ufl.edu">raecrandall@ufl.edu</a>	PO Box 110410	273-3416		
Daniels	Jaret	McGuire Center, FLMNH	<a href="mailto:jdaniels@flmnh.ufl.edu">jdaniels@flmnh.ufl.edu</a>	PO Box 110620	273-2022		
Eells	Jennifer	NATL Graduate Teaching Assistant	<a href="mailto:jeells0@ufl.edu">jeells0@ufl.edu</a>				
Gillett-Kaufman	Jennifer	Entomology & Nematology Department	<a href="mailto:gillett@ufl.edu">gillett@ufl.edu</a>	PO Box 110620	273-3950		
Hansen de Chapman	Gail	Chair of Lakes, Vegetation, and Landscaping Com.	<a href="mailto:ghansen@ufl.edu">ghansen@ufl.edu</a>				
Hennessy	Iona	Incoming Undergraduate Teaching Assistant	<a href="mailto:ihennessy@ufl.edu">ihennessy@ufl.edu</a>				
Hong	Jessica	NATL Graduate Teaching Assistant	<a href="mailto:jessica.hong@ufl.edu">jessica.hong@ufl.edu</a>				
Jacobson	Susan	Wildlife Ecology and Conservation	<a href="mailto:jacobson@ufl.edu">jacobson@ufl.edu</a>	PO Box 110430	846-0562		
Kim	Jin-Won	Tourism, Recreation and Sport Management	<a href="mailto:jinwonkim@ufl.edu">jinwonkim@ufl.edu</a>	PO Box 118208	294-1625		
Lapierre	Gage	NATL Co-Chair	<a href="mailto:gagemo@ufl.edu">gagemo@ufl.edu</a>				
Lewis	Erik	Facilities Planning and Construction	<a href="mailto:etlewis@ufl.edu">etlewis@ufl.edu</a>	PO Box 115050	273-4011		
Martin	Nicholas	ENSO (Entomology & Nematology Student Organization)	<a href="mailto:n.martin@ufl.edu">n.martin@ufl.edu</a>				
Nielson	Lexie	Invasive Species Intern	<a href="mailto:anielson@ufl.edu">anielson@ufl.edu</a>				
Prestwich	Ken	NATL Super Volunteer	<a href="mailto:kprestwi@holycross.edu">kprestwi@holycross.edu</a>	none			
Putz	Jack	Biology	<a href="mailto:fep@ufl.edu">fep@ufl.edu</a>	PO Box 118526	392-3704		
Robinson	Scott	Florida Museum of Natural History	<a href="mailto:srobinson@flmnh.ufl.edu">srobinson@flmnh.ufl.edu</a>		273-1965		
Romagosa	Christina	Wildlife Ecology and Conservation	<a href="mailto:cmromagosa@ufl.edu">cmromagosa@ufl.edu</a>		273-3996		
Sessa	Emily	Department of Biology	<a href="mailto:emilysessa@ufl.edu">emilysessa@ufl.edu</a>	PO Box 118526	392-1098		
Szoka	Mary	Wetlands Club	<a href="mailto:mary.szoka@ufl.edu">mary.szoka@ufl.edu</a>				
Smith	Erick	Friend of NATL	<a href="mailto:erick@kestreleco.com">erick@kestreleco.com</a>				
Smith	Jason	School of Forest Resources and Conservation	<a href="mailto:jasons@ufl.edu">jasons@ufl.edu</a>	PO Box 110410	846-0843		
Smith	Matthew	Department of Plant Pathology	<a href="mailto:trufflesmith@ufl.edu">trufflesmith@ufl.edu</a>	PO Box 110680	273-2837		
Walker	Tom	Friend of NATL	<a href="mailto:tw@ufl.edu">tw@ufl.edu</a>	PO Box 112015	273-3920		
<b>Weeks</b>	<b>Emma</b>	Entomology & Nematology Department ( <b>NATL Chair</b> )	<a href="mailto:eniweeks@ufl.edu">eniweeks@ufl.edu</a>		273-3954		

## Appendix 8. Status of Control of Invasive Plants in NATL

The table below is a summary of some of the top invasive species removed in NATL. The numbers indicate how many individual plants were managed in each year.

Status of Invasive exotic plants in NATL: 2010 to date												
by Ethan Carter and Tam Walker (under construction)												
<p>This spreadsheet lists those species that are considered enough of a threat to NATL's ecosystems to be worthy of control or eradication. When no individual of a threatening species has been found in the last three years, the species is moved to the "Eradicated" category at bottom. If the species is once more found in NATL, it returns to one of the other two categories. The "box score" format is intended to facilitate the reporting of the status of threatening species at each spring's NAAC meeting. In <a href="#">NATL Invasives 2014.docx</a> is a paragraph for each listed species that gives</p>												
Status of Invasive exotic plants in NATL: 2010 to date												
by Ethan Carter and Tam Walker (under construction)												
Plant	Category	Worst documented	Plants or Patches Treated									
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Most threatening</b>												
<i>acral ardisia</i>	Mature Plant	2009: >1200	316	81	5	7	2	2	20	33	50	3
<i>Ardisia crenata</i>	juvenile plants	2009: >400	ND	ND	ND	1366	2968	1150	530	548	1114	22
<i>cuqugrass</i>	patch treated	2005: >20	ND	17	10	7	5	3	1	0	2	2
<i>Impatiens cylindrica</i>												
<i>skunkvine</i>	Major patch treated	2016: 15	1	0	0	1	0	0	15	0	0	0
<i>Forsydia fastida</i>	Patch remnants treated	2014: 3	1	1	0	0	3	0	0	0	0	0
<i>quince of jamaica grass</i>	Black/area treated		ND	ND	ND	ND	ND	ND	6	4	6	6
<i>Heptachys m. oviformis/Sorghum halimifolium</i>	Number of times each area was treated	2018: 28							15	17	28	16
<i>mimosa</i>	counted, treated trees	2017: 496	ND	366	78	13	10	168	168	496	15	0
<i>Bibasia tullicrisis</i>												
<i>air potato</i>	Major patch treated	2009: 4	1	1	0	0	0	0	2	0	0	0
<i>Dioscorea bulbifera</i>	Patch remnants treated	2010: 5	5	1	ND	2	0	0	0	0	2	1
<i>Japanese climbing fern</i>	patch treated	2012: 17	1	3	7	4	0	1	3	2	3	0
<i>Lygodium japonicum</i>												
<b>Lower threat</b>												
<i>camphortree</i>	mature trees	2011: 7	ND	7	3	0	2	0	3	21	12	0
<i>Cinnamomum camphora</i>	stems	2016: 798	ND	11	31	3	2	4	798	48	1	0
<i>paper mulberry</i>	mature trees	2011: 47	ND	ND	>20	ND	47	0	2	16	0	0
<i>Breynia mollis/papilion</i>	stems	2014: 480	ND	29	15	ND	480	2	69	0	1	0
<i>linguist</i>	mature trees	2012: 3	ND	ND	3	1	0	0	0	0	0	0
<i>Erithalis japonica</i>	stems	2014: 30	ND	ND	7	6	30	0	5	1	0	0
<i>errand vine</i>	Major patch treated	2016: 3	0	0	0	0	0	0	3	1	0	0
<i>Sesuvium portulacastrum</i>	Patch remnants treated	2009: 3	3	3	3	3	3	1	0	0	0	0
<i>Chinese tallnut tree</i>	mature trees	2012: 7	ND	1	7	0	1	0	0	2	0	0
<i>Lycium radiatum</i>	stems	2011: 15	ND	15	7	2	0	1	1	1	0	0
<i>glazy privet</i>	mature trees	2016: 40	ND	ND	10	2	0	0	0	40	5	0
<i>Ligustrum lucidum</i>	stems	2016: 92	ND	ND	5	1	ND	0	0	92	3	0
<i>English ivy</i>	Major patch treated	2017: 31	0	0	2	1	0	0	0	31	13	3
<i>Hedera helix</i>	Patch remnants treated	2014: 3	0	0	0	2	3	1	0	1	0	0
<i>Asparagus Fern</i>	Major Patch treated	2015: 1	ND	ND	ND	ND	ND	1	0	0	0	1
<i>Hesperis matronalis</i>	Patch remnants treated								0	0	0	0
<b>Eradicated (more than three years without sighting)</b>												
<i>cat's claw</i>	newly found	2006: 1	0	1	1	1	1	0	0	0	0	0
<i>Macfadyena unguiculata</i>	stems treated	2011: 2	1	2	2	2	1	1	0	0	0	0
<i>cherry tree</i>	mature trees	2012: 5	ND	4	5	1	0	0	0	0	0	0
<i>Helleborus</i>	stems	2011: 9	ND	9	0	0	0	0	0	0	0	0
<i>silvertans</i>	mature shrubs	2012: 7	ND	ND	ND	7	1	0	0	0	0	0
<i>Elaeagnus pungens</i>									0	0	0	0
<i>white lead tree</i>	mature trees	2000: 1	0	0	0	0	0	0	0	0	0	0
<i>Leucaena leucocephala</i>	stems	2012: 43	ND	8	43	18	15	0	0	0	0	0
<i>noquid chart tree</i>	multistem clump	2011: 23	ND	23	2	0	0	0	0	0	0	0
<i>Hesperis matronalis</i>										0	0	0

**Appendix 9: NAAC Group Photo**

