

Fall 2020 Meeting: Natural Area Advisory Committee (NAAC)

September 24th, 2020

10:00am – 11:00am (Eastern Time)

Join via Zoom: <https://ufl.zoom.us/j/96166334933> (password = longleaf)

Attendees: Anthony Auletta, Gage LaPierre, Brittany Evans, James Brown, Taylor Auer, Scott Robinson, Rae Crandall, Nick Keiser, Eben Broadbent, Christina Romagosa,

Start time: 10:01am

Agenda

(click links to jump to that section of the report)

1. [Opening Remarks and Introductions](#) (Anthony)
 - a. Departure of Iona Hennessey and Eleanor Phillips
 - b. Iona Hennessey's position has yet to be filled
 - c. Taylor Auer is a new NATL volunteer this fall
2. [Status of NATL during COVID-19](#) (Anthony)
 - a. NATL was closed shortly after Spring NAAC meeting
 - b. NATL reopened to the public in July and safety guidelines have been posted on kiosks, social media, and website
 - c. Folding Chairs are now available at the pavilion to support social distancing
3. [Revisiting the 2011-2021 NATL Long Range Vision Plan](#) (Anthony)
 - a. SEEP boardwalk: UF's LVL committee is asking for a proposal from NATL for support for the boardwalk repairs
 - b. Paused for Questions. No questions asked
4. [NATL Finances](#) (Anthony)
 - a. [Fiscal Report for FY 2019-2020](#)
 - i. No changes to NATL's current budget
 - b. [Fiscal Plan for FY 2020-2021](#)
 - i. [Questions taken about 2020-2021 budget](#)
 1. [Question: What does the \\$3,200 burn budget cover?](#)
 2. [Answer: They cover services related to burns and equipment. Not having to spend that money means we can reallocate those funds to other efforts](#)
 - ii. [Motion to pass 2020-2021 budget moved and passed](#)
5. [NATL Use Report](#)

- a. Visitors and People Counter Data (James)
 - i. Discussion about the data and chart provided in the report.
 - ii.No questions
- b. Events in NATL & Volunteer Summary (Anthony)
 - i. Many events have been canceled and NATL is looking forward to restarting those events
- c. Class Projects & Research in NATL (Anthony)
 - i. Amendment: Mammal tracking project will be amended to the NAAC report
- 6. Controlled Burns (Gage)**
 - a. Summary of Upland Pine (Rx) Management
 - b. June 2020 Burn in Upland Pine Restricted Area
 - i. Successful burn with help from Gary Johns from Austin Carey Forest
 - ii.Regrowth is going well but there is new guinea grass growth
 - c. Plans for Future Burns
 - i. “New” upland area is being prepared with the intention to burn that area this fall 2020, winter 2020, or early spring 2021
 - ii.We are also expecting to reseed those areas with native grasses
 - d. Groundcover Restoration in Upland Pine
 - i. Bunch grasses, forbs, removing non-target grass and tree species
- 7. Old Field Update & Proposed Seedbank Enhancement (Gage)**
 - a. Structure of the Old Field plots has changed.
 - b. As rotations events occur we would like to add ruderal species of plants to the seed bank in these areas
 - i. Questions: What will the blank space north of the 10 year plot?
 - ii.Answer: If NATL can obtain native wildflower seeds we would like to restore that seed bank with native flower species
- 8. Invasive Species Management (Brittany)**
 - a. Invasive plants continue to be an issue, however our invasive plant manager is working to reduce the monoculture of guinea grass in the Old Field plots
 - b. In the recently burned Upland Pine area, guinea grass is being effectively managed
 - c. Other invasive plants are also being monitored and targeted (skunkvine, ceasar weeds, etc.)
- 9. Nature Trail/Boardwalk Updates (Brittany)**
 - a. Trails continued to be maintained at ADA standards
 - b. Wayfinding signs in the Old Field have been updated
 - c. New signs for the Upland Pine area will be made
 - d. NATL was donated a tractor from Austin Carey Forest to help with mowing and to help NATL become more independent from Facilities Services
- 10. NATL Web Presence (James)**

- a. Social Media Updates
 - i. Social media is continuing to increase in use and reach. More people are finding NATL and engaging with our accounts
- b. Website Updates
 - i. Academic archive page added to website, broken links have been repaired, and personnel information continues to be updated as required. Please reach out to James Brown if you see issues with the website

11. Other Recent Improvements to NATL

- a. Pavilion Slope & Depression Enhancement (Gage)
 - i. Seeding the area near the pavilion will be done in the spring of 2021
- b. Tractor Acquisition (Gage)
 - i. Austin Carey donated a tractor to NATL. Soon we will build a storage space to keep it out of the elements
- c. Repairing Grid Points (James)
 - i. Bon Dewitt and James are trying to make GIS grid point repairs happen via the geomatics department
- d. Updating Brochures & Kiosks (James)
 - i. New brochures will be printed and place in and around NATL and at the Florida Museum

12. Plans for NATL in 2020-2021 (Anthony)

13. Open Floor (All)

- a. Native plants restoration
 - i. Wildflower seed supply is the limiting factor to restoring the seed bank at NATL
 - ii. Gage and Rae will discuss how to get funds through a grant system to help finance the cost of restoring NATL wildflower seed bank.
 - iii. Cone-tainers available thru IFAS-Citra
 - iv. Cost for plants needs to be discussed at a more focused meeting

14. Concluding Remarks (Anthony)

List of Tables, Figures, & Appendices

[**Table 1.**](#) Visitor data from people counters (2010-present).

[**Table 2.**](#) The top invasive species removed in NATL from 2016-2020.

[**Figure 1.**](#) Number of visitors to NATL in 2020.

[**Figure 2.**](#) Images from the prescribed burn on June 22, 2020

[**Figure 3.**](#) Map showing areas of NATL to be targeted with future prescribed fire.

[**Figure 4.**](#) Map showing contingent areas left to be burned at NATL in 2020.

[**Figure 5.**](#) Images of ongoing greenhouse-derived groundcover restoration projects in the Upland Pine Area.

[**Figure 6.**](#) Map showing Old Field plots

[**Figure 7.**](#) A comprehensive Summer 2020-Fall 2020 map of current and controlled invasives in NATL.

[**Figure 8.**](#) Images of Pavilion slope and depression burned in January and regrowth in July.

[**Figure 9.**](#) Images of pavilion slope and depression with seeded *Coryopsis lavenworthii* flowering.

[**Figure 10.**](#) NATL's recently acquired tractor, generously donated by Austin Cary Forest.

[**Figure 11.**](#) New Welcome to NATL (A and B) and Invasive Plants (C and D) brochures produced in Adobe Illustrator and Canva.com by the NATL Operations Committee in collaboration with Suzy Rodriguez (September 7, 2020).

[**Appendix 1.**](#) Current NAAC Roster

[**Appendix 2.**](#) Status of Control of Invasive Plants in NATL

1. Opening Remarks and Introductions

2020 continues to be an exciting and productive year for the **UF Natural Area Teaching Lab (NATL)**! Although COVID-19 initially caused some of our work to be slowed down during the late spring and early summer, we have nevertheless made substantial progress towards the restoration and educational goals we had set earlier in the year. Details of that progress are outlined in the subsequent sections of this report.

Since the Spring 2020 NAAC meeting, we have also seen several changes to the NATL Operations Team. In May, undergraduate TA **Iona Hennessy** graduated and left NATL to pursue the next stage of her career. And in August, graduate TA **Eleanor Phillips** left NATL to accept a permanent position at the University of Tennessee in Knoxville. We are immensely grateful to both Iona and Eleanor for their many outstanding contributions to NATL, as well all the positive energy they brought to the team. We will miss having them in NATL but wish them both the very best in their future endeavors.

Due to the ongoing hiring pause caused by COVID-19, we have not yet been able to hire a new undergraduate TA to fill Iona's position. However, we are hopeful that we will be able to fill it by the end of the year, and would invite all members of the NAAC to share the job posting with motivated undergraduate students they know when the time comes. Eleanor's TAship has since been passed on to **Gage LaPierre**, who continues in his role as NATL Vice Chair. Gage's devotion to enhancing NATL cannot be overstated, and he has been instrumental in helping NATL achieve its goals over the past few years. And so, we are very happy that we can support him with this TAship as he begins in his PhD program.

Brittany Evans remains in her role as undergraduate TA and continues to do an outstanding job of overseeing the control of invasive plants in NATL (among her other duties). **James Brown** remains in his role as graduate TA as well and continues to do excellent work, especially in regard to enhancing NATL's online presence and furthering our educational mission. We feel very fortunate to have both on the team.

Finally, this August **Taylor Auer** (undergraduate student in FRC) joined the team as a new NATL intern. Taylor brings a wealth of previous field experience to the team, and we are very excited to work with her this semester.

In this report, we provide detailed updates on key projects that have happened in NATL since our last meeting in April 2020. We also outline our short term and long-term plans for continuing to improve NATL in the future. We are energized by the great progress we have made already and look forward to even more advancements for the remainder of 2020-2021!

2. Status of NATL During COVID-19

The COVID-19 pandemic required us to make several temporary changes to NATL operations during the spring and summer. Following the stay-at-home guidelines issued by Alachua County and UF policies restricting campus access to essential personnel, NATL was closed to both visitors and operations staff on March 24th, 2020. At this time, the NATL operations staff shifted to working remotely. In late May, we received permission from the University administration for the operations staff to resume their work in NATL. And on **July 1st**, we were able to reopen NATL to the campus community and the general public.

At present, NATL remains open for academic and recreational use. The safety of our staff and visitors remains our top priority during the pandemic, and so we now require everyone to adhere to the following safety guidelines while in NATL:

- NATL users must maintain a safe social distance of at least 6 feet whenever possible.
- Users must wear a face mask in NATL unless a distance of 6 feet or more between individuals is maintained at all times.
- Users are encouraged to sanitize their hands often, especially after touching shared surfaces.

These precautions follow the current safety policies enacted by the University. They are posted clearly at multiple locations in NATL, including at all entrances, kiosks, and the Pavilion. Safety information is also posted prominently on the NATL website and our social media accounts. These guidelines will remain in effect until the University advises that they can be eased.

It is anticipated that there will be an increase in use of the NATL Pavilion during the fall semester, as many classes, student organizations, and other groups seek out safe outdoor meeting spaces. The Pavilion currently contains 9 picnic tables, and this setup allows for adequate social distancing of small groups. To help accommodate larger groups, we have procured 15 metal folding chairs from UF Facilities to supplement the picnic table seating. These chairs can be positioned around the perimeter of the Pavilion to create further distance between individuals. The chairs are currently secured with a lock to one of the Pavilion columns, and the combination to the lock is available to UF staff or faculty who request it.

Finally, although NATL remains open for academic and recreational use, we are not scheduling any public events in NATL at this time. Such events are currently discouraged by the University, and we do not want to promote gatherings in which people can potentially spread the virus. NATL events will resume once it is deemed safe to hold them again.

All of our responses to COVID-19 are informed by, and in accordance with, the policies set forth by the University. The NATL Operations Committee continues to monitor the situation very closely, and will adjust our operations accordingly if the University policies change.

3. Revisiting the 2011-2021 NATL Strategic Plan

Below is a copy of **2011-2021 Long Range NATL wish list** that was included in previous NAAC reports. Items that were completed prior to 2020 have been removed from the list. Substantial progress has been made on many of the remaining items on this list; we have summarized key updates in red:

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 intrinsic values of NATL and provide mechanisms for bringing the educational value 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 UF Foundation on behalf of NATL or by writing specific items into future grant proposals.

A. Enhancing in-person access

- The SEEP boardwalk is continuing to suffer from periodic breakages in boards and will need an extreme overhaul soon as the pilings will need to be replaced. *A project request will be submitted through UF Construction and Planning portal via Chair Anthony Auletta. Potential funding for the project may exist through Jeanna Mastrodicasa (Associate Vice President for Operations IFAS), though that offer may no longer be viable considering previous confusion with follow-ups for quotes to make repairs and due to recent budget changes.*
- A new entrance for the Cultural Plaza entrance when the alcohol storage shed is built. (Design not yet considered). *At the April 16th Cultural Plaza Advisory Committee meeting, we learned that construction of the storage shed will progress during COVID-19. Once it is finished, it is not clear how the entrance to NATL will be affected or whether funding will be available to fix or upgrade the entrance.*

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

- 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. *Former NATL TA Jennifer Eells began working on this in 2019, and the current NATL TAs will continue this work. Lesson plans on Invasive Species, Birds, Wetlands, and Fire Ecology have been completed and uploaded to the website. Other topics are still in progress.*

- 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. *This has become all the more essential in light of the COVID-19 pandemic. NATL TAs are currently working on assembling educational videos and other interactive resources.*

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.

With 2021 on the horizon, a full assessment of our progress towards each of goals will be a priority in the coming year, as will be developing a long-term strategic plan for 2021-2031. Preliminary ideas are listed at the end of this report (see Section 12). These items will be discussed in detail at the Fall 2020 NAAC meeting.

4. NATL Finances

A. Fiscal Report (FY 2019-2020)

NATL Fiscal Plan for FY 2019-2020				Final Report for 2019-2020	
Final version approved at Fall 2019 meeting					
				Receipts	
Funds available for 2019-20, excluding stipends for Graduate TAs*				Already received	Projected
Brought forward from 2018-19		500		500	500
Projected income for 2019-20					
Provost		6,000		6,000	6,000
NATL Endowment		4,625		4,625	4,625
Sum		11,125		11,125	11,125
Grand Total			11,125		
Spending Plan for 2019-20				Expenditures	
OPS				Spent	Projected
Undergraduate TAs		4,322		4,322	4,322
Control of Invasives		1,320		1320	1,320
Sum		5,642		5,642	5,642
OE					
Miscellaneous Expenses		1,500		1,574	1,574
Upland Pine Resotation		3,200		0	0
Updated Wayfinding Signs				420	420
New Trailmasters				2,755	2,755
2000 NT fliers		400		0	400
NATL Enhancement Internship		1,200		1,200	1,200
Sum		6,300		5,949	6349
Grand Total			11,942	11,591	11,991
To be carried forward			-817		-866
NATL improvement fund (from online donations)					
Online donations to NATL (implemented March 2012)			921		921

B. Fiscal Plan (FY 2020-2021)

NATL Fiscal Plan for FY 2020-2021			17 Sept 2020 Report for 2020-2021	
Final version to be approved at Fall 2020 meeting				
			Receipts	
Funds available for 2020-21, excluding stipends for Graduate TAs*			Already received	Projected
Brought forward from 2019-20	0		0	0
Projected income for 2018-19				
Provost	6,000		6,000	6,000
NATL Endowment	4,625		4,625	4,625
	Sum	10,625	10,625	10,625
	Grand Total	10,625		
Spending Plan for 2020-21			Expenditures	
OPS			Spent	Projected
Undergraduate TAs	4,322		1,000	4,322
Control of Invasives	1,320		0	1,320
	Sum	5,642	1,000	5,642
OE				
Miscellaneous Expenses	1,500		257	1,500
Resotation Projects	3,200		0	3,200
New NATL fliers	400		0	400
NATL Enhancement Internship	1,200		0	1,200
	Sum	6,300	257	6300
	Grand Total	11,942	1,257	11,942
To be carried forward		-1,317		-1,317
NATL improvement fund (from online donations)				
Online donations to NATL (implemented March 2012)		921		921

5. NATL Use Report

A. Visitor Counts/Trafx Data

We are excited to announce that NATL's people counting equipment and software is updated! The TrailMaster visitor counting equipment was replaced with the recently purchased TrafX system. Since their installation in July 2020, the TrafX equipment has provided accurate counts of visitors to NATL. The data reported below for January 2020 through April of 2020 were recorded using the TrailMaster equipment. We do not have any data for May 2020 and June 2020. And data from July 2020 through August 2020 were recorded using TrafX equipment. The new and old counters use infrared technology to count visitors. Our equipment does not record the direction of the count data. To correct for visitors entering and leaving NATL, we

divide the total number of visitors at each entrance by two. Between January 1st and September 1st, 2020, NATL had approximately **5,464 visitors!** Since 2010, NATL has seen a total of **160,118 visitors!** (Note: The actual number of NATL visitors may be higher than reported however, some data points were missing due to failing TrailMaster equipment).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total		
CP													323.5	323.5	
2010													323.5	323.5	
2011		465	456.5	527.5	636	427.5	421.5	686	526.5	282.5	365.5	329.5	299.5	5423.5	
2012	355.5	411.5	529	1531.5	312	477.5	521	582	373	696.5	705.5	543	543	7038	
2013	673	795.5	428	443	315	498	486	449	346	379.5	279	253	253	5345	
2014	338.5	305.5	487	694	318	518.5	451	316	427.5	511.5	432	454.5	454.5	5254	
2015	500.5	518.5	546	630	671	713.5	636	417.5	528.5	595.5	767	723	723	7247	
2016	635.5				757	691.5	508.5	1837	755	710		772		6666.5	
2017	1109.5	553	610.5	927	623.5	557.5	841	647	225					6094	
2018	294.5	595	621.5	678	423.7		690.5							3303.2	
2019	866	1151	991.5	632	613					833	737		211	7341.5	
2020	955	75.1						410.5	539.5					1980.1	
AE													345.5	4409.5	
2011							676	532.5	548.5	834.5	915.5	557	345.5	4409.5	
2012	689	804	724.5	1174.5	573	719.5	501.5	608.5	1090	954.5	621.5	248.5	248.5	8709	
2013	572	656	882.5	595	352	344	587.5	291.5	864	1010.5	686	229	229	7070	
2014	434.5	569.5	653	732	387.5	547.5	681.5	319.5	459	873	627	346	346	6630	
2015	712.5	570	869	884.5	546.5	687.5	554.5	479.5	1195.5	970	775	400	400	8644.5	
2016	855.5	916	837	1077		554	1613	1023	748		1018	463	463	9104.5	
2017	1198.5	810.5		1221			623							3853	
2018	1045.5	538					531	362						2476.5	
2019	1325	304	122	390	633		626	383						3783	
2020	977	61	477	229			380.5	471						2595.5	
NAP													330.5	4206.5	
2012					639	471	471.5	338	356	676.5	549	375	330.5	4206.5	
2013	533.5	605	838	717.5	455.5	488	553	347	568.5	776	521.5	495.5	495.5	6899	
2014	353	577.5	846	820.5	467	362.5	448.5	365	517.5	636.5	527	501	501	6422	
2015	540	535.5	854	736	916	470.5	327.5	252.5	340.5	473.5	499	415	415	6360	
2016	508	741	736.5	942	471.5	497.5	2451.5	919	784.5	755.5	982.5	635	635	10424.5	
2017	825	817	861.5	936.5	801	495	556	432						5724	
2018	487.5	491.5		808	476.5	567.5	360.5							3191.5	
2019			289*	119*	591*	354	473	257	677	737			212	2710	
2020	27	22	10.5				535.5	294						889	
														Grand Total	160118.3

Table 1. Visitor data from people counters (2010-present). White blocks indicate technical difficulties with TrailMaster equipment. Technical difficulties and missing have been reported in every month at every entrance to NATL in 2019. Technical issues have been present in TrailMaster data since 2012.

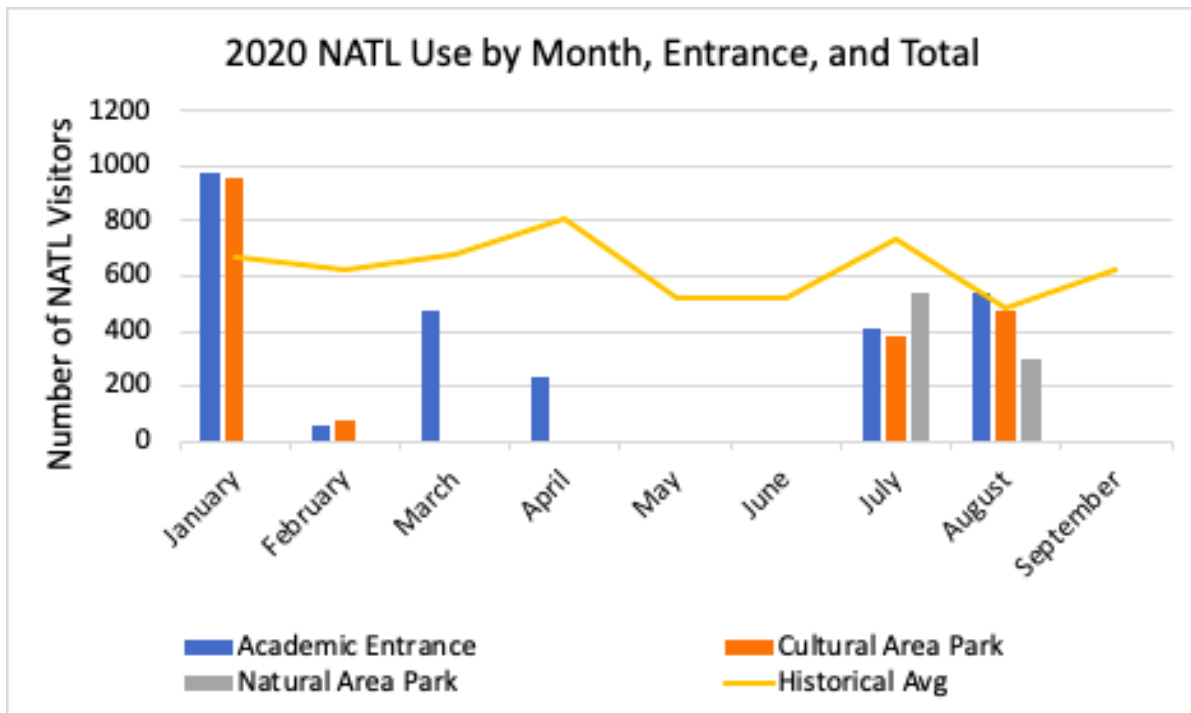


Figure 1. Monthly visitors to NATL in 2020. Yellow line represents the average of each month from all available historical data collected for that month.

B. Events in NATL and Volunteer Summary

Events: Due to COVID-19, NATL was forced to cancel all events that were planned for late Spring and Summer 2020, including: several prospective student tours, the 2020 Mini BioBlitz, UF’s “The Big Event,” UF Office of Sustainability’s Clean-Up-Alooza, and a tour for UF’s Academic and Professional Assembly. We hope that these events can be rescheduled in the future, but it is not presently clear when that may be. As noted earlier, we are not currently organizing any new events in NATL during the pandemic due to safety concerns. This pause will continue until the University indicates that it is safe to organize campus events again.

Volunteers: Restoring and maintaining NATL’s many ecosystems is accomplished in large part by our dedicated volunteers. In January 2020, NATL welcomed two new volunteers: **Julie Cromie** and **Elysia Lewis**. In August 2020, we also welcomed **Taylor Auer**. Each volunteer works hard to support conservation efforts in NATL and their contributions are greatly appreciated. Since starting their volunteer positions, Elysia, Julie, and Taylor have logged hours of working in the greenhouse, transplanting seedlings into the Upland Pine ecosystem, participating in prescribed burns, and managing invasive plants. All other volunteer events have been postponed due to COVID-19.

C. Class Projects and Research in NATL

NATL continues to serve as a valuable resource for students and faculty conducting research at UF. Two new research projects have been started in NATL since the Fall 2019 NAAC meeting; proposals for both projects were unanimously approved by the NAAC via email:

- Beginning in January 2020, Samantha Shablin (PhD student in Biology; faculty mentor: Dr. Ana Longo) collected Cuban tree frogs from NATL and is currently conducting laboratory experiments to determine if Bd (*Batrachochytrium dendrobatidis*) infection alters boldness and aggressive behaviors in this species. Samantha will provide NATL with a written summary of the findings once these experiments conclude, which will then be posted on the NATL website.
- In February 2020, Galen Cobb (PhD Candidate in Biology; faculty mentor: Dr. Marta Wayne) began a survey of native bee biodiversity in NATL as a follow-up to bee surveys conducted by Drs. Glenn Hall and John Ascher in 2006-2009. This work is ongoing, with an estimated completion date of November 2021. In addition to a written summary of their findings for the NATL website, Galen also plans to provide us with an infographic and an educational poster highlighting the bee fauna of NATL.

NATL is also an important educational resource that is widely utilized by faculty and students at UF. Our most recent data (from a survey conducted in 2015) indicate that 47 courses at UF use NATL for projects or field trips; these courses span 11 departments in four colleges and have a combined enrollment of over 3,500 students per year.

Teaching efforts at the University of Florida have expanded considerably over the last several years. In the last two years alone, over 500 new teaching faculty have joined UF, leading to the development of many new courses (including those that will be part of the new UF Quest program). Thus, there may be many faculty members using NATL in ways that were not captured by the 2015 survey. To address this, we developed an updated NATL use survey that was disseminated to faculty and staff in April. Unfortunately, the response rate for this survey was very low. James and Anthony are currently working to revise the survey and will send it out to faculty and staff again during the Fall 2020 semester; we hope to report the results at the Spring 2021 NAAC meeting.

6. Controlled Burns

A. Summary of Upland Pine (Rx) Management 2020

Repetitive annual fire is needed to encourage the growth of obligate savanna grass and forb species, and to reduce growth of weedy ruderal, vine, and shrub species. Prior to 2019, Upland Pine management and restoration of the groundcover has been hindered by unsuccessful burn years due to complications with contractors and burn conditions. Every burn year missed significantly slows the seed production of desirable plant species, increases litter accumulation, reduces bare ground for germination, and leads to weedy species coverage. Each

of these factors limit the effectiveness of future burns to clear leaf litter around older obligate overstory species, increases fire intensity, and generates more smoke. Annual prescribed burn events are a major priority for the upland pine area at NATL to restore groundcover and significantly reduce weedy species.

B. June 2020 Burn in Upland Pine Restricted Area

NATL crew and volunteers performed a successful in-house burn in the Upland Pine Restricted Area on **June 22, 2020**. The burn was led by Gage LaPierre with the assistance of Austin Cary personnel (Gary Johns). Parts of the site had been burned in 2017 whereas much of remaining parts of the site has not been burned in over a decade. Burn conditions included relative humidity at 42%, 7mph SW surface winds, and drought index (KBDI) around 200 (low), which allowed more than 80% burn coverage among the total 10acre designated burn area. Southern blocks featuring higher shading and or wetter soils burned less than northern blocks. Overstory scorching was less than 20% across the site. No snags were cut or lost during or after the burn. Post-burn observations include strong regrowth among native grass and forbs such as *Aristida*, *Andropogon*, *Setaria*, and *Dyschoriste* spp. High density seedling emergence of invasive *Megathyrus maximus* was present in historically troublesome areas post-burn.



Figure 2. Images from the prescribed burn on June 22, 2020.

C. Plans for Future Burns

A prescribed fire is planned for the new upland pine area (4 acres total) sometime in the fall or winter of 2020, as conditions become drier and relative humidity falls within acceptable parameters for high fuel combustion. Prior to 2019, the new upland pine area was utilized as part of the old-field successional framework. The presence of a high density of invasive species such as *Cinnamomum camphora* (camphor tree), *Albizia julibrissin* (mimosa tree), *Ulmus parvifolia* (Chinese elm), *Lygodium microphyllum* (old world climbing fern), *Ardisia crenata* (coral ardisia), *Dioscorea bulbifera* (air potato), along with other management concerns, led to the decision to transition this unit into upland pine management. Invasive and weedy

hardwood removals have occurred since Spring 2020 with significant reductions accomplished. A properly planned burn should allow for limited scorching and harm to existing *Pinus palustris* overstory as well as significant combustion of duff and leaf litter. Directly following post-burn, management will proceed to attempt to reseed this area with obligate bunchgrass and forb species.

Late winter or spring 2021 will be the target time frame for reburning both the restricted and public upland pine areas. During these seasonal periods, lower relative humidity along with predictable wind patterns allow for better potential of high liter combustion. A late spring burn is generally preferred for upland pine habitat as this seasonal period is known to promote and enhance the flowering and seeding of many native bunchgrass and forb species. Despite the ecological benefits of a late spring burn season, oftentimes (such as in 2020) restrictions on burning due to dry and windy conditions limit our ability to conduct burns during this time frame.

Other areas for potential upcoming prescribe fires at NATL may include those such as SEEP and certain edges along woodland and hammock edges. The benefits of prescribe fire within target areas in SEEP was discussed in the Fall 2019 NAAC meeting. In the case of edges along our hammocks and woodlands, prescribed fire will benefit these areas by helping to reduce undesirable hard-edge effects caused by trails and roads. In the past, lightning-ignited fires would have burned into woodland and hammock areas during drier years freeing up space for certain species and maintaining an open midstory. Today at NATL woodlands and hammocks often feature a high abundance of vines and shrubs along road and trail edges. Edge effects like this ultimately alter understory and midstory composition of communities by eliminating edge prone species, thus lowering plant diversity. Prominent edge species at NATL include *Crataegus spp.* (hawthorns), *Helianthus spp.*, *Zanthoxylum clava-herculis* (hercules club), *Sassafras albidum*, along with several sedges and grasses.



Figure 3. Areas successfully burned in 2020.

Figure 4.



Contingent areas that remain to be burned in 2020.

D. Groundcover Restoration in Upland Pine

To accelerate recovery of the Upland Pine groundcover, NATL staff and volunteers are continuing the seeding and planting of obligate savanna forb and grass species that was initiated in the Fall 2019. Since Spring 2019, NATL staff and volunteers have planted over 450+ plugs of *Eragrostis elliottii* (Elliot's Lovegrass), *Sorghastrum secundum* (Indian Lopsided Grass), *Aristida berychina* (Wiregrass), and *Ctenium spp* (Toothachegrass). All recent plantings have taken place within recently burned sections of the upland pine area. Plugs are planted surrounding existing patches of native bunchgrasses to reduce the risk of intermixing within Guinea grass infestations. Plugs continue to be successfully grown in an Entomology & Nematology Department greenhouse with volunteer assistance. Planting and seeding efforts will continue to progress through 2020 as more greenhouse plants become available. Additional funding for future plantings and seeding efforts is currently being sought, and we welcome suggestions for potential funding sources.

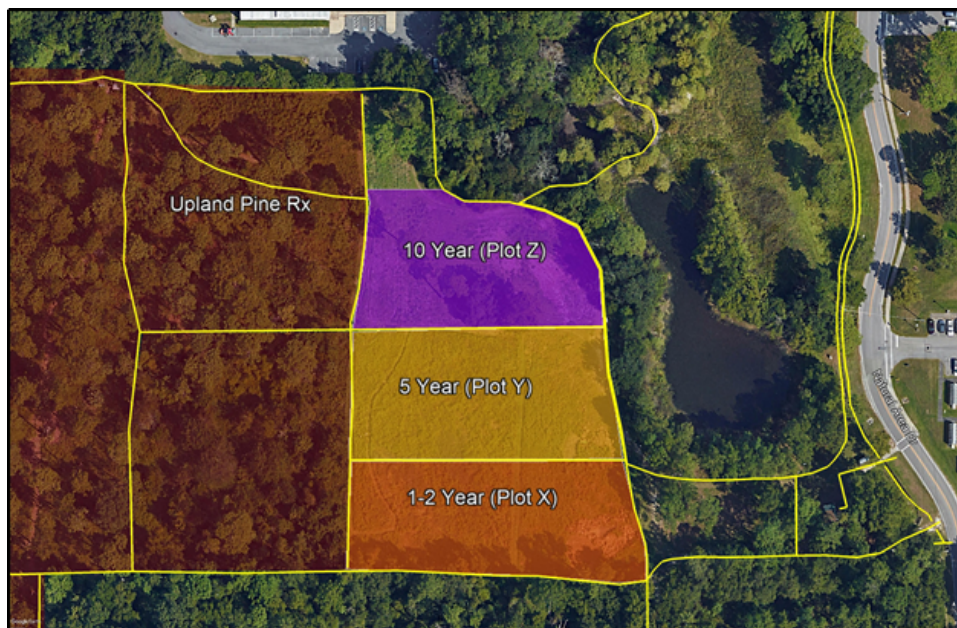


Figure 5. Images of ongoing greenhouse-derived groundcover restoration projects in the Upland Pine Area.

7. Old Field Update & Proposed Seedbank Enhancement

The Old Field plots were successfully modified in January 2020 based on the approved changes outlined in the Fall 2019 NAAC meeting (see document for changes). The Plot X will be restarted as planned at the end of the year (November-January months) via tilling with NATL equipment. Currently, Plot X contains a high density of *Ambrosia* spp. and *Bidens alba*. It is being proposed here that this plot post-tilling be reseeded with native ruderal species in effort to help enhance and restore the old-field seedbank. Proposed seeded species include *Andropogon virginicus* (Broomsedge), *Coryopsis* spp. (Tickseed), *Daela Pinnata* (Summer's Farewell), *Erigeron quercifolius* (Fleabane), *Gaillardia* spp. (Firewheel), and *Pseudognaphalium obtusifolium* (Rabbit Tobacco). Depending on results, managing old-field plots could incorporate techniques and tilling rotations that enhance and maintain high diversity ruderal composition.

Figure 6. showing plots.



Map
Old Field

8. Invasive Species Management

Guinea grass (*Megathyrsus maximus*) continues to be the number one invasive threat in NATL. The recent prescribed burn in the restricted Upland Pine has allowed for more routine spraying of the area due to the decreased brush. Guinea grass is still at large in the restricted Upland Pine but it is continually being sprayed and monitored weekly. Spraying is accompanied by replanting native bunch grasses in hopes the native grasses and plants will crowd out the invasive guinea grass. The Public Upland plots have 2 patches of guinea grass re-sprouts and the occasional plant, but all plants have been sprayed at least once. The Old Field plots are working well in the 1-, 2-, and 5- year rotation with 3 patches of guinea grass re-sprouts that are sprayed weekly. There have only been 3 mature plants documented and sprayed in the restricted hammock.

Top Florida Exotic Pest Plant Council (FLEPPC) Category 1 plants in NATL include cogon grass (*Imperata cylindrica*), coral ardisia (*Ardisia crenata*), skunk vine (*Paederia foetida*), air potato (*Dioscorea bulbifera*), Japanese climbing fern (*Lygodium japonicum*), camphor tree (*Cinnamomum camphora*), wild taro (*Colocasia esculenta*), mimosa (*Albizia julibrissin*), and shrub verbena (*Lantana strigocamara*). Category 2 plants include but are not limited to guinea grass (*Megathyrsus maximus*) and Caesar's weed (*Urena lobate*). More information about invasive plant management in NATL can be found on the NATL website (http://natl.ifas.ufl.edu/biota/invasive_control.php).

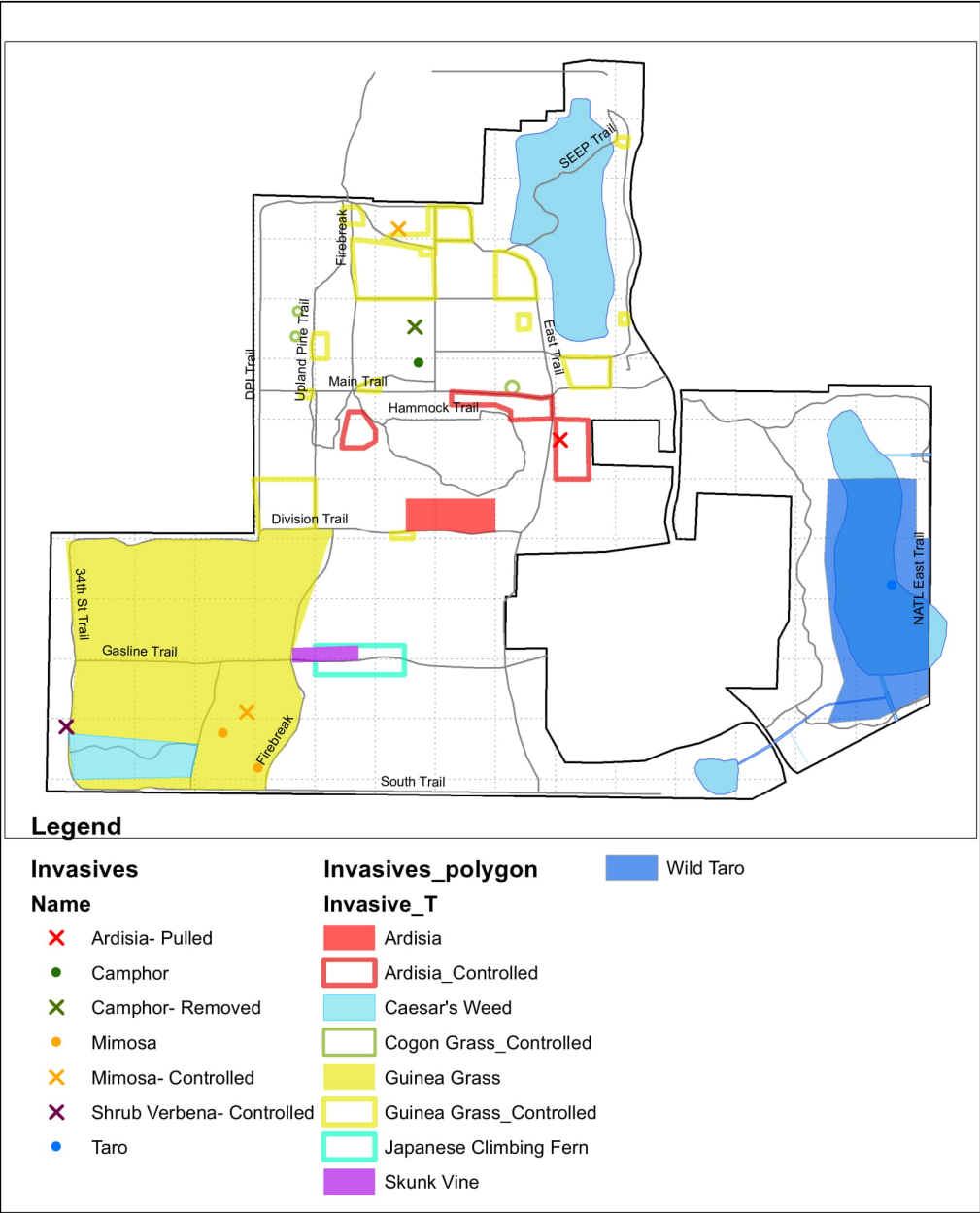


Figure 7. A comprehensive Summer 2020-Fall 2020 map of current and controlled invasives in NATL. Guinea grass and a returning invasive, Caesar’s weed, have posed the most threat to NATL’s ecosystems

Species Name	Common Name	2016	2017	2018	2019	2020*
<i>Ardisia crenata</i>	Coral ardisia	168	496	15	22	64 & 6 patches
<i>Albizia julibrissin</i>	Mimosa	168	496	15	4	9
<i>Cinnamomum camphora</i>	Camphor tree	3	21	12	7	11
<i>Imperata cylindrica</i>	Cogongrass	1	0	2	2	3
<i>Lygodium japonicum</i>	Japanese climbing fern	3	2	3	1	13
<i>Megathyrsus maximus/Sorghum halepense</i>	Guinea grass (# of times patches sprayed)	15	17	28	58	159

Table 2. The top invasive species removed in NATL from 2016-2020. The numbers indicate how many individual plants or patches were managed. See Appendix 2 for a more in-depth table with additional species.

9. Nature Trail/Boardwalk Updates

We maintain our trails’ clearance at 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. 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.

We have done a complete overhaul of all the trail signs and tree quiz on the Hammock trail. Each sign was reviewed and edited to be more concise and up-to-date because a lot of the signs had not been updated since the 2000s. All the signs are now laminated and on metal sign holders, 9”x11” for the information signs and 5”x7” for the wayfinding signs. All signs are routinely cleaned while new signs are put up for new species and non-relevant signs are pulled. Yellow flagging tape is refreshed on plants weekly. We are currently working on updating the signs for the two Old Field Plots that will become a part of the Public Upland area once the spring/winter burn is conducted.

We continue to mow the trails with 2 passes instead of the old 4-5 passes to change the trails to footpaths and hopefully lessen edge and island effects between sections of NATL. Trails are

mowed at least once a week in the growing season and as needed in the dormant season. A new addition of a tractor, donated from Austin Cary, is now being used to mow the wider trails with a 59" cutting deck. The smaller, winding trails will still be mowed with 2 passes with a push mower. Trail edges are trimmed to maintain a narrower trail. With the new tractor we are now responsible for mowing all the trails, before this UF facilities would mow most trails.

10. NATL Web Presence

A. Social Media Updates

Below is a summary of our social media accounts from 4/1/2020 to 9/1/2020:

- Facebook:
 - 93 Posts
 - 11 NEW followers (1,531 total)
 - 117 People reached on average (up 57%)
- Twitter:
 - 115 Tweets
 - 16 NEW followers (1,738 total)
 - 346 Profile visits
- Instagram:
 - 107 posts
 - 136 NEW followers (1,110 total)
 - 400-500 people reached on average

If you use social media, please follow NATL on [Facebook](#), [Twitter \(@UFNATL\)](#), and Instagram ([@NATL.UF](#)). The NATL Operations Committee posts 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.

B. Website Updates

Maintenance: The NATL website is extensive and hosts historical, archival, and empirical data, some of which is not available anywhere else but the website. Maintaining the NATL website ensures that it continues to serve as a resource that functions appropriately for a diverse group of users. Maintenance priorities for the NATL website include correcting personnel information, fixing broken links, adding missing metadata, and updating content. As of this meeting, personnel information is up to date and over 170 broken links been fixed. Correcting metadata and updating webpage content is an ongoing mission. We encourage anyone with suggestions about updating content to contact James Brown at: jamestbrown5@ufl.edu.

Changes: The next step for the NATL website is to refresh the new webpage devoted to past and current experiments performed at NATL. This section of the NATL website serves to advertise NATL's continued relevance as a research space and the page will function as a

repository for experiments conducted at NATL. Visit the experiments archive page at: <https://natl.ifas.ufl.edu/academic.php#projects>.

11. Other Recent Improvements to NATL

A. Pavilion Slope Depression Enhancement

Ecological enhancements to the slope and depressional site west of the pavilion have progressed with the blooming of previously planted *Coreopsis leavenworthii* (Leavenworth's Tickseed). Despite high germination, the growth and density of tickseed was below the desired level. This was primarily caused by the late timing of planting - January instead of November, which enabled other plants to out compete the tickseed for space. Going forward the site will be reseeded this fall with tickseed and will continue to be maintained as an open grass and forb dominated mesic area. The site will continue to receive fall or winter fire treatments (after tickseed has reseeded). The site will also be potentially further enhanced with additional species pending additional funding and seed sources.



Figure 8. Images of Pavilion slope and

depression burned in January and regrowth in July 2020.

Figure 9. Images of depression with *leavenworthii* flowering.



Pavilion slope and seeded *Coryopsis*

B. Tractor Acquisition

NATL recently an equipment transfer Forest. We are very Austin Cary for this The tractor is a 1972 Farmall with a 59" house maintenance performed to ensure long-term operation.

acquired a tractor via from Austin Cary thankful to the staff at generous donation! International 140 belly-mower deck. In-and repairs were

This tractor will allow NATL to become more independent and efficient at managing its own trails, instead of relying heavily on UF Facilities for mowing as we have done in the past. The tractor will also reduce the amount of time that TAs and interns spend mowing certain trails

with a push-mower, which is an especially burdensome and time-consuming task during the growing season months.

Interns and TAs will also gain practical experience by using this equipment, thus enhancing their professional development. Required training will be provided for designated operators, along with clear demonstration of safety. The equipment will also be utilized in preparation of prescribed fires and movement of trailered water during burns.

Going forward, there is a need for **long-term storage space** for this new tractor to ensure its continued longevity and operation.

Figure 10. recently tractor, donated by Forest.



NATL's acquired generously Austin Cary

C. Repairing

In 2005, Dr. worked with chapter of the Geomatics survey grid iron pins, and of NATL's grid The grid

Grid Points

Tom Walker the UF Student Association to points, install create a map point system. system is still

largely intact; however, it does require maintenance and would benefit from an overall inspection. Dr. Bon DeWitt in the Geomatics program is helping to organize a senior project which would provide students with applied geomatic research experience while repairing NATL's grid system.

D. Updating Brochures & Kiosks

Currently, the inventory of brochures at NATL is low and new brochures need to be printed. Printing new brochures is an opportunity to update content and refresh the look of each brochure. The NATL Operations Committee has updated two of NATL's brochures– "Welcome to NATL" and "Invasive Plants of NATL." Once they are printed, they will be made available at each of NATL's three entrances. Changes are also being planned for the "Agriculturally Important Organisms" brochure.



Figure 11. New Welcome to NATL (A and B) and Invasive Plants (C and D) brochures produced in Adobe Illustrator and Canva.com by the NATL Operations Committee in collaboration with Suzy Rodriguez (September 7, 2020).

Updates to the kiosk signs were begun by Eleanor Phillips before she left NATL, and the current TAs are continuing this work. The updated kiosk signs will include information on current land management changes and goals, such as changes to the Old-Field plots and the Upland Pine restoration and expansion.

12. Plans for NATL in 2020-21

Goals for 2020: In light of the ongoing COVID-19 pandemic, one of our top priorities in the short term is to continue developing resources to support and engage with NATL visitors from afar. The NATL TAs have already done an excellent job in this domain, by producing a variety of materials (digital brochures, videos, maps, and more) and by engaging with NATL visitors via social media and our updated website. Going forward, we will continue all of these efforts, with the goal of producing a diverse library of educational materials that can be accessed even after the pandemic ends.

The Operations Committee is also working to compile an updated NATL wish list that includes both short-term goals (for 2020-2021) and long-term improvements to NATL. We plan to work on this list throughout the remainder of the year, using data from the NATL use survey and feedback from the NAAC (to be collected at the NAAC meeting and via email). At the moment, some preliminary wish list items include: a covered storage space for the new NATL tractor, further enhancements to NATL East, continuing to pursue repairs to the boardwalk, and purchasing new equipment for management of NATL (air compressor, pole saw, brush cutter, etc.). This is in addition to the restoration goals outlined earlier in this report (e.g., continuing with regular prescribed burns, continued planting of native plant species, etc.). A more formalized wish list will be presented to the NAAC during the Spring 2021 meeting and brought to a vote then, and serve as the basis for the 2021-2031 strategic plan. As the plan is developed, we will seek out novel funding sources and other collaborators in the community and on campus to help turn these ideas into realities. If you have an idea for a project in NATL or a funding source you think would be fitting for NATL's mission and goals, please reach out!

Future Staffing Updates: Iona Hennessy, a past undergraduate NATL TA, graduated at the end of the Spring 2020 semester. Congratulations, Iona! At the moment, there is a university-wide hiring freeze that prevents us from immediately filling this position. Once the hiring freeze is lifted, we will begin our search for a new undergraduate TA, and any recommendations from members of the NAAC will be welcome. Until then, Iona's former responsibilities will be divided among the remaining NATL TAs and interns (Brittany, James, Gage, and Taylor).

Appendix 1: Current NAAC Roster

Last name	First name	Representing	Email	Campus address	Phone
Auletta	Anthony	Entomology & Nematology (NATL Chair)	anthonyauletta@ufl.edu	PO Box 110620	273-3954
Broadbent	Eben	Spatial Ecology and Conservation Lab	eben@ufl.edu		650-204-1051
Brown	James	NATL Graduate Teaching Assistant	jamestbrown5@ufl.edu	PO Box 110620	
Clark	Mark	Soil and Water Science	clarkmw@ufl.edu	PO Box 110510	392-1804 ext. 319
Crandall	Raelene	School of Forest Resources and Conservation; Fire Ecology	raecrandall@ufl.edu	PO Box 110410	273-3416
Daniels	Jaret	McGuire Center, FLMNH	jdaniels@flmnh.ufl.edu	PO Box 110620	273-2022
Evans	Brittany	NATL Undergraduate Teaching Assistant	brittany.evans@ufl.edu		
Hansen de Chapman	Gail	Chair of Lakes, Vegetation, and Landscaping Com.	ghansen@ufl.edu		
Hennessy	Iona	NATL Undergraduate Teaching Assistant	ihennessy@ufl.edu		
Keiser	Nick	Department of Biology	ckeiser@ufl.edu	622A Carr Hall	273-4981
Kim	Jin-Won	Tourism, Recreation and Sport Management	jinwonkim@ufl.edu	PO Box 118208	294-1625
Lapierre	Gage	NATL Graduate Teaching Assistant (NATL vice-chair)	gagemo@ufl.edu		
Lewis	Erik	Facilities Planning and Construction	etlewis@ufl.edu	PO Box 115050	273-4011
Prince	Candice	Agronomy Department, Center for Aquatic and Invasive Plants	cprince14@ufl.edu		392-9614
Putz	Jack	Biology	fep@ufl.edu	PO Box 118526	392-3704
Robinson	Scott	Florida Museum of Natural History	srobinson@flmnh.ufl.edu		273-1965
Romagosa	Christina	Wildlife Ecology and Conservation	cmromagosa@ufl.edu		273-3996
Smith	Erick	Friend of NATL	erick@kestreleco.com		
Smith	Matthew	Department of Plant Pathology	trufflesmith@ufl.edu	PO Box 110680	273-2837
Walker	Tom	Friend of NATL	tjw@ufl.edu	PO Box 112015	273-3920

Appendix 2: 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 Tom Walker (under construction)													
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 NATL Invasive Updated.docx is a paragraph for each listed species that													
Status of Invasive exotic plants in NATL: 2010 to date													
by Ethan Carter and Tom Walker (under construction)													
	Category	Worst documented	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Most threatening													
coral ardisia	Mature Plants	2009: >1200	316	81	5	7	2	2	20	33	50	3	16 & 3 patches
<i>Ardisia crenata</i>	juvenile plants	2009: >8400	ND	ND	ND	1366	2968	1950	530	548	1114	19	48 & 3 patches
cogongrass	patches treated	2005: >20	ND	17	10	7	5	3	1	0	2	2	3
<i>Imperata cylindrica</i>													
skunkvine	Major patches treated	2016: 3	1	0	0	1	0	0	15	0	0	2	1
<i>Paedonia foenicula</i>	Patch remnants treated	2014: 3	1	1	0	0	3	0	0	0	0	0	0
guinea/Johnson grass	Block/Areas treated		ND	ND	ND	ND	ND	ND	6	4	6	30	35
<i>Misaglynes maximum/Sorghum haipense</i>	Number of times areas have been treated	2020: 159							15	17	28	58	159
mimosa	counted, treated trees	2017: 496	ND	366	78	13	10	168	168	496	15	4	9
<i>Albizia julibrissin</i>													
air potato	Major patches treated	2009: 4	1	1	0	0	0	0	2	0	0	1	0
<i>Dioscorea bulbifera</i>	Patch remnants treated	2010: 5	5	1	ND	2	0	0	0	0	2	1	0
Japanese climbing fern	patches treated	2012: 17	1	3	7	4	0	1	3	2	3	1	13
<i>Lycopodium japonicum</i>													
Lesser threats													
camphortree	mature trees	2017: 21	ND	7	3	0	2	0	3	21	12	7	11
<i>Cinnamomum camphora</i>	stems	2016: 798	ND	11	31	3	2	4	798	48	1	0	4
paper mulberry	mature trees	2011: 47	ND	ND	>30	ND	47	0	2	16	0	0	0
<i>Broussonetia papyrifera</i>	stems	2014: 480	ND	29	15	ND	480	2	69	0	1	0	0
loquat	mature trees	2012: 3	ND	ND	3	1	0	0	0	0	0	0	0
<i>Eriobotrya japonica</i>	stems	2014: 30	ND	ND	7	6	30	0	5	1	0	0	0
arrowhead vine	Major patches treated	2016: 3	0	0	0	0	0	0	3	1	0	0	0
<i>Synedrella nodiflora</i>	Patch remnants treated	2009: 3	3	3	3	3	3	1	0	0	0	0	0
Chinese tallotree	mature trees	2012: 7	ND	1	7	0	1	0	0	2	0	0	0
<i>Sapota sabiliformis</i>	stems	2011: 15	ND	15	7	2	0	1	1	1	0	0	0
glossy privet	mature trees	2016: 40	ND	ND	10	2	0	0	0	40	5	0	0
<i>Ligustrum lucidum</i>	stems	2016: 92	ND	ND	5	1	ND	0	0	92	3	0	0
English ivy	Major patches treated	2017: 31	0	0	2	1	0	0	0	31	13	3	3
<i>Hedera helix</i>	Patch remnants treated	2014: 3	0	0	0	2	3	1	0	1	0	3	0
Asparagus Fern	Major Patches treated	2015: 1	ND	ND	ND	ND	ND	1	0	0	0	1	0
<i>Asparagus setosus</i>	Patch remnants treated								0	0	0	0	0
Eradicated (more than three years without a sighting)													
cat's claw	new sites found	2006: 1	0	1	1	1	1	0	0	0	0	0	0
<i>Macfadyenia unguis-cati</i>	sites treated	2011: 2	1	2	2	2	1	1	0	0	0	0	0
chinaberry tree	mature trees	2012: 5	ND	4	5	1	0	0	0	0	0	0	0
<i>Melia azadirachta</i>	stems	2011: 9	ND	9	0	0	0	0	0	0	0	0	0
silverthorn	mature shrubs	2012: 7	ND	ND	ND	7	1	0	0	0	0	0	0
<i>Elaeagnus pungens</i>								0	0	0	0	0	0
white leadtree	mature trees	2000: 1	0	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	0
negundo chastetree	multistem clump	2011: 23	ND	23	2	0	0	0	0	0	0	0	0
<i>Viburnum negundo</i>									0	0	0	0	0