Assateague Island Native Plant Corps

FINAL REPORT (P19AC00603 - 00025056)



:

2022
Location/Agency: Assateague Island National Seashore/ National Parks Service
Program Dates: 5/22/22 and 9/16/22
Leader:

	Dakota Exum (They/He), 24: Dakota has a bachelor's degree from the University of Mary Washington (VA) in Marketing with minors in sustainability and non-profit administration. This is their fourth position with SCA and their third leadership role. Dakota's previous seasons include a crew working along the Florida National Scenic Trail, the NH conservation corps, and a roving trail team in southern Appalachia. Dakota plans to continue leading SCA crews to provide members with fun and fulfilling seasons.

Executive Summary

The mission of SCA is to build the next generation of conservation leaders and inspire lifelong stewardship of our environment and communities by engaging young people in hands-on service to the land. SCA was founded in 1957 by Liz Putnam, a college student who believed that the passion, talent, and hard work of young people could be a force for tackling the challenges facing America's public lands. Today SCA provides opportunities for thousands of young people to develop conservation values and explore pathways to green careers, strengthen their leadership skills, and deepen their sense of responsibility to others and to the world. Young people emerge from SCA with fuel for their continuous growth and with a sense of empowerment to take action for the issues that they care about, in conservation and beyond. SCA nurtures thriving youth and thriving landscapes.

The Native Plant Corps was established to help the natural resources department of the Assateague Island National Seashore tackle the ever growing invasive plant problem and complete any other projects with which they require assistance. The team served roughly 4 months on the Delmarva peninsula and on Assateague, the barrier island, on the Maryland side. We reported to Jonathan Chase, the resident certified pesticide applicator of ASIS NPS, who has led multiple short term SCA teams through this process in previous years. His main focus for the island currently is the process of removing invasive plants through the small-scale application of herbicide in order to provide habitat for native species. The island has seen both phase one (helicopter herbicide application) and phase two (invasive removal via burn unit) in

previous years. Now, Jonathan and the crew are conducting phase three (invasive removal via backpack and UTV sprayer).

Jonathan reviewed the MSDS sheets for all of the herbicides we used, which I will list in the chart below. We were confident in our ability to use said chemicals without compromising our personal health and safety or the health and safety of the environment as a whole.

Chemicals Used & Hazard Rating						
Name	**Category**	**Health Hazard**	**Flammability Hazard**	**Instability Hazard**	**Active Ingredient**	**Hazard Level**
Polaris	*Herbicide*	1	1	0	Imazapyr	CAUTION
Rodeo	*Herbicide*	1	1	0	Glyphosate	CAUTION
Garlon 4 Ultra	*Herbicide*	2	1	0	Triclopyr	CAUTION
Aquachem	*Surfactant*	3	2	0	Alcohol	WARNING
Hi-Light	*Dye*	1	0	0	No Information	CAUTION

The crew's main focus revolved around detecting and treating the invasive plants listed in the table below. We surveyed the island and the park headquarters for these plants, then we took detailed ArcGIS points cataloging whether the weed had been detected previously, the scientific name (abbreviated), the size, the treatment number or the plan to "return for treatment". *(See pg. 20-21 for pictures)*

One of the most important invasive removal projects of the season involved Connor Ranft, a Reporting and Analysis Coordinator with the Student Conservation Association. She visited Assateague in August to set up a monitoring experiment which involved creating control and treatment areas of Arthraxon hispidus. The project was called the "Public Lands Service Coalition Project Evaluation" which used a Before-After Impact-Control (BAIC) design to test corps teams' efficiency in invasive species and forest fuel management. The purpose of the project overall was to collect data that "will document and quantify the environmental impact of conservation corps work on public lands over time". The portion of the evaluation conducted here will provide data on how fast invasive species can grow when left unchecked and will support the necessity of our action. *(Pg. 19)*

Another important task we tackled on the island involved an intensive census of the following rare plants. For these specimen we collected data points using a Garmin GPS, which included a discrete name for the plant, the size, location, whether there is any proof of herbivory present, and either the cage # if already caged or "caged today, cage #". *(Pg.17-18)*

Example ArcGIS point data

- "2022 New Weed: Car Kob, 1m x 1m x 1m, RX073022_1

Invasive Plants & Nuisance Weeds



Phragmites (Common Reed)
Phragmites australis



Mugwort
Artemisia vulgaris



Asiatic Sand Sedge
Carex kobomugi



Tree of Heaven
Ailanthus altissima



Creeping Charlie
Glechoma hederacea



Honeysuckle
Lonicera japonica



Autumn Olive
Elaeagnus umbellata



Chinese Lezpedeza
Lezpedeza cuneata



Bull Thistle
Cirsium vulgaris



Canada Thistle
Cirsium arvense



Wiregrass
Eleusine indica



Fountain Grass
Pennisetum alopecuroides



Princess Tree
Paulownia tomentosa



Tumbleweed
Salsola kali



Poison Ivy
Toxicodendron radicans



Small Carpetgrass
Arthraxon hispidus

 **Japanese Stiltgrass** *Microstegium vimineum*	 **Virginsbower** *Clematis terniflora*	 **Crepe Myrtle** *Lagerstroemia indica*	

Rare & Threatened Plants			
 **Seabeach Amaranth** *Amaranthus pumilus*	404 | Not Found **Seabeach Knottweed** *Polygonum glaucum*		

In an effort to diversify our work experiences, Jonathan scheduled an array of projects in areas other than herbicide. One of these projects involved the removal of multiple decaying boardwalks that had been washed away during one of many intense storms in the past decade and had recently washed ashore in the salt marshes on the island's bayside. For a change of pace, the team tackled the destruction and removal of 4 15ft by 3ft sections. We used hand saws and crowbars to separate the boardwalk into manageable pieces and hauled them out of the marsh using a beach adapted buggie. This was probably the most physically intense work the crew did and even though we struggled, at the end of the day we had our success. *(Pg. 14-15)*

Although the team was mostly invasive species focused, we had multiple opportunities to hone "trail skills". The team tackled two trail clearing projects on the island that were pre-existing, but had become overgrown. These trails provided Jonathan access to detect and target specific invasive species in areas of vegetation that are not accessible to the public. Nearing the end of the season, the team was involved in a landscaping project where we cleared multiple patches of vegetation and installed 210 holes behind the park's visitor center. The purpose of the project was to increase the diversity of native plants near the boardwalk, since so much vegetation has been removed during its construction. The plot locations and future plantings were predetermined before we arrived and the trees/ plugs were not scheduled to arrive at the park

until after we had finished our season. So unfortunately, the team will not get to see this project to completion. *(Pg. 22)*

Conservation Impact

Through SCA, young people have the opportunity to complete meaningful work that makes a positive impact on the world around them. SCA projects make tangible and positive impacts to the land, protecting and restoring parks and public lands, educating visitors about conservation, and increasing access to urban green spaces.

The main purpose of this season's work was to minimize or eradicate the presence of specified invasive species on the island. Invasive species removal is important in the effort to maintain a healthy native biodiversity which in turn supports the entire ecosystem of the island. Our work to find federally listed threatened species is important for the preservation of those species. Protecting these species from herbivory increases their chance of survival as they continue to suffer stress from climate change and habitat destruction. We also cataloged these species to map the location and population of said species and predict their future rate of survival. Removing old structures from the marshland is important to prevent water and soil contamination as well as to allow for revegetation of the area. The arthraxon monitoring project allows the NPS the data to prove the effectiveness of using herbicide for invasive plant removal. It also allows SCA the data to prove the effectiveness of one of their crews in this effort. In turn, this allows both organizations the data to support funding requests for further efforts.

Summary of Accomplishments

- Improving land or wetland (Unit: # acres): 12.483 Acres
  - Removing invasive species: 12.383 Acres
  - Trash clearing and removal of structures: 0.10 Acres
- Gardening and landscaping (Unit: # of trees/ plugs): 210 Trees/ Plugs
  - Planting trees and vegetation: preparing planting sites
- Certifications (Unit: # certifications): 25 Certifications
  - ATV/ Off-road driving: 4 Certifications (Dakota, Jacob, Heather, Michael)
  - BLM "Wildland Fire Introductory Guides": 1 Certification (Dakota)
  - FAA "Piloting Unmanned Aerial Vehicles - Part 107": 1 Certification (Michael)
  - NPS "Cataloging DOI Museum Collections": 2 Certifications (Dakota & Heather)
  - NPS "Conducting the DOI Museum Inventory": 2 Certifications (Dakota & Heather)
  - NPS "Museum Checklist Pt. 1 and 2": 4 Certifications (Dakota & Heather)
  - NPS "Safeguarding DOI Museum Collections": 2 Certifications (Dakota & Heather)
  - NPS "Natural Resource Decision Making in a Changing Environment": 2 Certifications (Jacob & Heather)
  - USFWS "Developing a Conservation Agreement": 1 Certification (Heather)
  - USFWS "ESA Overview": 2 Certifications (Dakota & Heather)

    - USGS “Bear Spray-Training for Defense Against Dangerous Animals”: 1 Certification (Dakota)
    - WFLP “S-110 Basic Wildland Fire”: 1 Certification (Dakota)
    - WFLP “S-130 Firefighter Training (Online Component)”: 1 Certification (Dakota)
    - WFLP “S-190 Introduction to Wildland Fire Behavior”: 1 Certification (Dakota)
- Education and outreach to people (Unit: # people or posts): 4 Posts
    - Media or communications (video, photography, website, social media)
- Improving Trail (Unit: # feet): 21,120 Feet
    - Improving existing trail (including all trail structures)
- Collecting Data (Unit: # points or samples): 176 Points
    - GIS points:
        - Invasive species
            - Points: 129
            - Lines: 31
            - Polygons: 14
        - Rare/ Threatened species
            - Points: 2

Participant Impact

In every SCA experience, participants complete projects that solve real conservation challenges and see the tangible results of their labor. Through this work they learn how to conserve resources and protect the planet, learn why their conservation work projects are critical to that effort, and discuss with teammates and leaders what they could do to address environmental issues after SCA; including exploring possible careers in conservation or green jobs and discussing their academic and career goals. SCA experiences provide participants with opportunities to lead their peers, engage in problem-solving, conflict resolution, and group decision-making, and ultimately reflect on the ways the experience is impacting them.

Alongside the team’s everyday work, Jonathan and the NPS staff worked hard to provide fun and fulfilling opportunities for personal and professional growth (we called these our “Other Educational Experience Fridays”). For many of these trips, the goal was simply to explore the geographical and cultural history of the area. This was especially rewarding for our members from different areas of the country. Of the wonders of the Delmarva peninsula, we were able to visit the following: the Chincoteague visitors center, The Museum of Chincoteague Island, the Wallops Island NASA Flight Facility, the Blackwater Wildlife Refuge, the Harriet Tubman Underground Railroad State Park/ visitor center, the Furnace Town historical site, and the Pocomoke River State Park. *(Pg.24-26)*

Our more active learning experiences included ATV training & certification with Tammi Pearl, a wildlife technician here at Assateague who is conveniently also an ATV Safety Institute instructor. *(Pg. 16)* Many of these opportunities actually involved the wildlife crew, including both a sand tiger beetle beach survey and a Monitoring Avian Productivity and Survivorship (MAPS)

bird banding day. *(Pg. 11-12)* We also had the chance to rent and learn how to kayak along the Pocomoke river. *(Pg. 23)*

	Heather Hinchliffe (She/Her), 22: Heather has a Bachelor of Science in Aquatic Biology with a minor in Diversity Studies from Texas State University. This is her first season with the SCA, but certainly not her last. She will continue to work in conservation roles in Texas wherever she can and hopes to continue partaking in meaningful environmental projects for the duration of her career.
	Jacob Greene (He/Him), 20: Jacob is a rising senior studying Environmental Analysis at Pomona College. This is his first position with SCA and first position doing extended conservation-related work in the field. Jacob is from DC and loved visiting Assateague and the Delmarva peninsula when growing up, making this an ideal location for trying this type of work. After college, he hopes to pursue environmental work of any kind, ideally working closely with ecosystems like Assateague's and communities most impacted by environmental issues.



Michael Burke (He/Him), 25:

Michael has a bachelor of science degree from the University of Massachusetts Lowell in Environmental Science. This is his first season with the Student Conservation Association and joined to acquire a brief scope of the professional end of the environmental science field. Michael hopes to expand his horizons in future with opportunities in environmental science laboratory and field work around the New England area.

Great Stories

"I'm genuinely so glad that I found the SCA because otherwise I would probably be very lost looking for job opportunities post-graduation. I feel like just this one experience presented me with a ton of options that I didn't realize were available. I also feel way more confident in my ability to market myself and my skills to potential employers in this field."

- Heather Hinchliffe

"After this experience I feel like I have a good idea on what kind of work in this field suits me and what doesn't as I look onward. Re-reading my initial letter to myself I was first slightly surprised at how brief and to-the-point I made it out. Despite the short length it gave me a message that I can reinforce and reframe as the season comes to a close which was to not only finish the season to completion but to have a good framing of what works and doesn't work for me in terms of professional work in the environmental science field. The letter also asked me to keep in mind why I even took on SCA responsibilities in the first place, who I was doing this for aside from myself, and what were the most important takeaways that I wanted to have at the end of the season."

- Michael Burke

"I have had the privilege of learning so much from my amazing leader. I feel comfortable enough to ask them for guidance and advice in personal and professional capacities, and confident that they, along with my supervisors, care about my wellbeing and success as an individual. I can't stress enough how grateful I am for how welcoming, patient, and considerate they have been to me and the other crew members as employees and as individuals. It was in this kind of environment that I felt safe enough to have moments of self-growth."

- Heather Hinchliffe

"One of my highlights was just the walks I got to do in the afternoon, crossing the Sinepuxent bay and Assateague's cordgrass ecosystems lit by the orange sunset. Even though I was far away from my family,

I was able to make wonderful friends with my team members. For those reasons, I now know that conservation fieldwork is something I may like to pursue in the future!"

- Jacob Greene

"I know now for a fact that the conservation world is where I want to stay. I want to keep doing work that is meaningful and fulfilling. And if this work allows me to travel a little, that would be even better because I tend to feel stagnant if I haven't moved in a while. I feel like the conservation field has an endless supply of knowledge and skills to learn, which makes me excited at the prospect of being a part of that over the course of my life and career."

- Heather Hinchliffe

"Whatever professional pursuit I take part in after this I will always look back on my time with the SCA and AmeriCorps and how it served as the first stepping stone towards my goals as an environmental scientist."

- Michael Burke

"A primary reason I took this position was to learn more about Assateague Island. From visiting the island when I was growing up, I already knew I loved the island's beaches, marshes, and forests. Yet I did not know much about them! Under the supervision of a botanist who'd been working on the island for 20 years, I had access to someone who could answer any of my questions. He would frequently show us often overlooked components of Assateague, like how some of the most florally biodiverse areas on the island are in wet pond areas, some of them can be right next to campsites! Throughout the season we learned a ton of plants, far more than I initially wrote in my smart goals."

- Jacob Greene

"Before SCA, I thought that as an employee you had to go exceedingly far beyond the work assigned and you had to disregard personal physical/mental health- just get the job done at any cost. From the start, SCA wanted to know what I was comfortable with, my boundaries, that it's okay to voice concerns, and that it's okay and in fact very important to take breaks. I have thrived in this work environment more than I have in any other before, and I hope to carry over these practices to my future workplaces."

- Heather Hinchliffe

"Our National Park Service supervisor and instructor Jonathan Chase was very thorough in showing what we were to wear for herbicide treatments, which chemicals we would be using, as well as how to safely measure out, handle, and mix up said herbicide without risk of contamination or spilling. He expressed that at the end of the day, the main priority is that no one gets injured or sick and he made sure that safety was placed above getting tasks done in a timely manner."

- Michael Burke

"In our last week, which involved heavy lifting in the hot, humid sun, I felt as though I was an incredibly productive team member, partly because I handled the heat better. I also learned that extended fieldwork has its pros and cons. I realized that it can be a bit isolating being far from old friends and family (even with the fact that I returned many weekends). Being around your team 24/7 also meant that work and life sort of blended at times."

- Jacob Greene

Acknowledgements

We want to give a big thank you to the staff of the Assateague Island National Seashore and all the National Park personnel that we worked with closely. Thank you to Jonathan Chase for his crucial guidance and his patience in teaching yet another group of young adults the arduous process of herbicide application. Thank you to Tammi Pearl, NPS Wildlife Technician and ATV Safety Institute Instructor, for providing the team with ATV training and certifications as well as inviting us to experience many of the ongoing wildlife projects. Thank you to Jonathan Chase and Lindsay Ries for providing the team with an organized schedule packed to the brim with a variety of career advancing opportunities and learning experiences. Thank you to Blayze Richardson and Lauryn Stalter for their constant support and advocacy, both personally and professionally.

Appendix



Lindsay Ries, ASIS National Park Service Employee, holding a yellow-billed cuckoo and identifying its age during a MAPS bird banding excursion.



Michael Burke providing a launch pad for the release of a yellow-billed cuckoo.



Heather Hinchliffe providing a launch pad for the release of a banded bird.



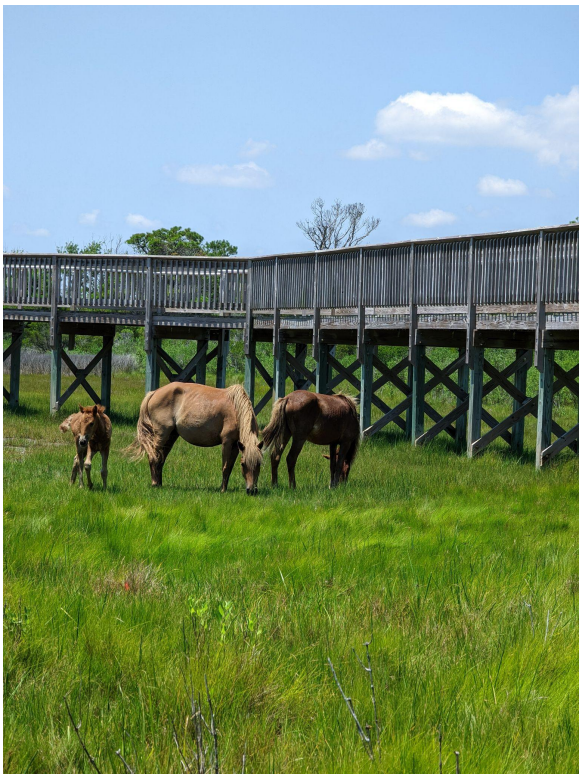
Lindsay Ries holding a yellow-billed cuckoo in a photographer's hold for documentation.



A member of the wildlife crew showing the team how to hold a juvenile cat cow-bird to inspect inside of its beak.



Lindsay Ries showing the team how to determine the age of a bird by its tail feathers.



A brood of wild horses (a stallion, a mare, and a foal) photographed by the Life of the Marsh Trail boardwalk.



A brood of wild horses photographed in the Assateague Island salt marsh with Egrets as company.



Yankee, the oldest stallion on Assateague Island, photographed without a brood nearing the end of his lifespan.



Jacob Greene posing in the space where the team removed multiple washed up boardwalk sections.



Jonathan Chase discussing a boardwalk removal project with the team on the bayside where the old boardwalk pieces have washed ashore.



Heather Hinchliffe taking a picture of the crew mid boardwalk demolition project. (Left to Right: Heather, Jacob, Dakota, and Michael)



Dakota Exum taking a picture of the team with the dumpster of treated timber after completing the boardwalk demolition project. (Left to Right: Michael, Jacob, Heather, and Dakota)



Dakota Exum using a crowbar to dismantle one of the washed up boardwalks.



Dakota Exum sitting on an ATV during an ATV Safety and Use course with Tammi Pearl.



Michael Burke focused on learning ATV training.



Jacob Greene learning how to ride an ATV with Michael Burke pictured in the background.



Heather Hinchliffe practicing her ATV riding.



Heather Hinchliffe with the Seabeach Amaranth she discovered.



Seabeach Amaranth covered by a protective cage for protection and data collection.



Jacob Greene installing a cage around a Seabeach Amaranth to protect it from grazing herbivores.



A specimen of Seabeach Amaranth (*Amaranthus pumilus*).



Dakota Exum holding a water bottle above their head to avoid being dive bombed by protective Tern parents.



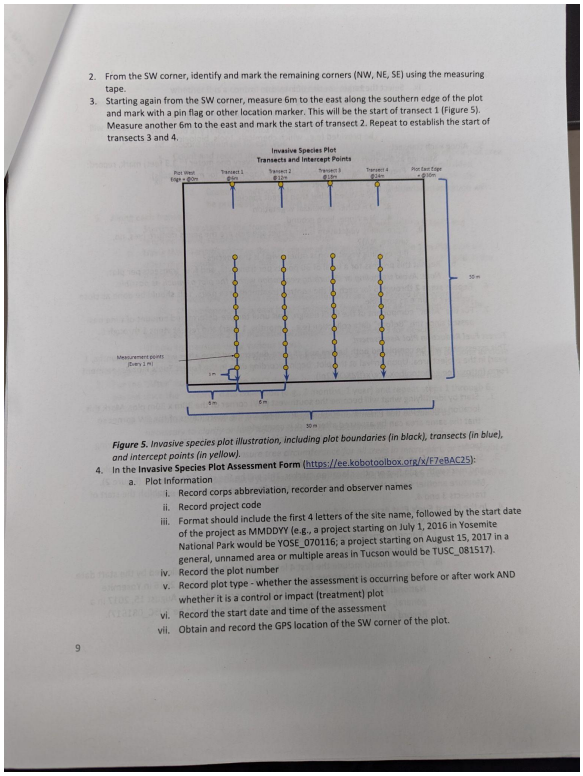
Dakota Exum hiding from the sun and flies on their break during Amaranth surveying.



The veg crew and some extra hands from the wildlife crew, spread out across the sand to grid search for Amaranth during the census.



Connor Ranft measuring out her project plots.



2. From the SW corner, identify and mark the remaining corners (NW, NE, SE) using the measuring tape.
3. Starting again from the SW corner, measure 6m to the east along the southern edge of the plot and mark with a pin flag or other location marker. This will be the start of transect 1 (Figure 5). Measure another 6m to the east and mark the start of transect 2. Repeat to establish the start of transects 3 and 4.

Figure 5. *Invasive species plot illustration, including plot boundaries (in black), transects (in blue), and intercept points (in yellow).*

4. In the **Invasive Species Plot Assessment Form** (https://ee.kobotoolbox.org/x/F7eBAC25):
   a. Plot Information
      i. Record corps abbreviation, recorder and observer names
      ii. Record project code
      iii. Format should include the first 4 letters of the site name, followed by the start date of the project as MMDDYY (e.g., a project starting on July 1, 2016 in Yosemite National Park would be YOSE_070116; a project starting on August 15, 2017 in a general, unnamed area or multiple areas in Tucson would be TUSC_081517).
      iv. Record the plot number
      v. Record plot type - whether the assessment is occurring before or after work AND whether it is a control or impact (treatment) plot
      vi. Record the start date and time of the assessment
      vii. Obtain and record the GPS location of the SW corner of the plot.

9

A picture of Connor Ranft's plans for the *Arthraxon hispidis* monitoring project (invasive species plots).



(Left to Right) Jacob and Heather using backpack sprayers to remove the invasive species *Artemisia vulgaris.*



(Left to Right) Heather and Jacob posing in their herbicide coveralls, road-side vests, and other PPE.



Jacob Greene using the UTV sprayer, while on top of a ladder, to apply herbicide to *Phragmites Australis*.



Heather Hinchliffe spraying *Phragmites Australis* from the top of a ladder being held down by Dakota Exum.



Heather Hinchliffe holding an uprooted *Salsola kali* by its taproot like it is a fish.



The veg crew posing with a small patch of *Carex kobomugi* that they found during an Amaranth survey.



Heather Hinchliffe spraying *Phragmites Australis* from the top of a ladder.



Heather Hinchliffe spraying Polaris on a patch of *Carex kobomugi* in the national park Over Sand Vehicle area.



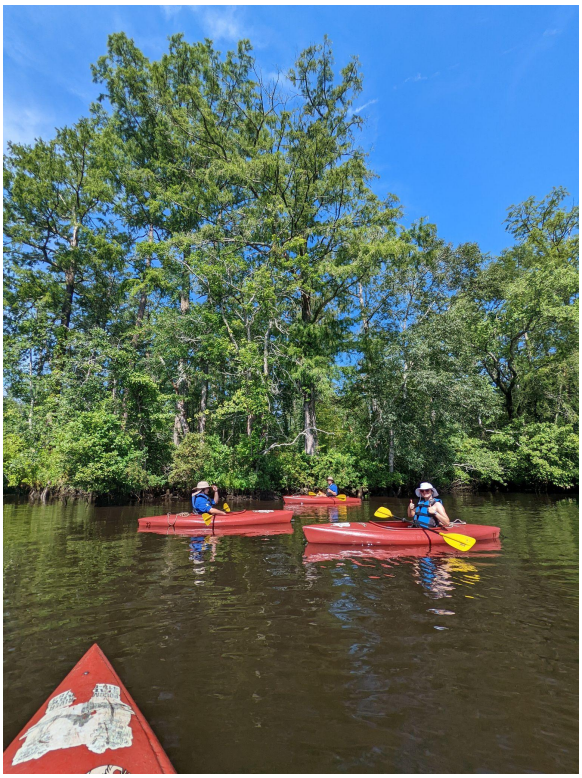
Jonathan Chase teaching Jacob Greene how to use the auger for a landscaping project at the visitor center.



Heather Hinchliffe squatting in one of the holes that the team dug for the visitor center landscaping project.



(Left to Right) Heather Hinchliffe, Connor from the wildlife crew, and Michael Burke using hand tools to dig holes for the boardwalk landscaping project.



The veg crew learning how to kayak at the Pocomoke River State Park.



Jacob Greene kayaking on the Pocomoke river.



(Left to Right) Jacob, Heather, and Michael kayaking on the Pocomoke river.



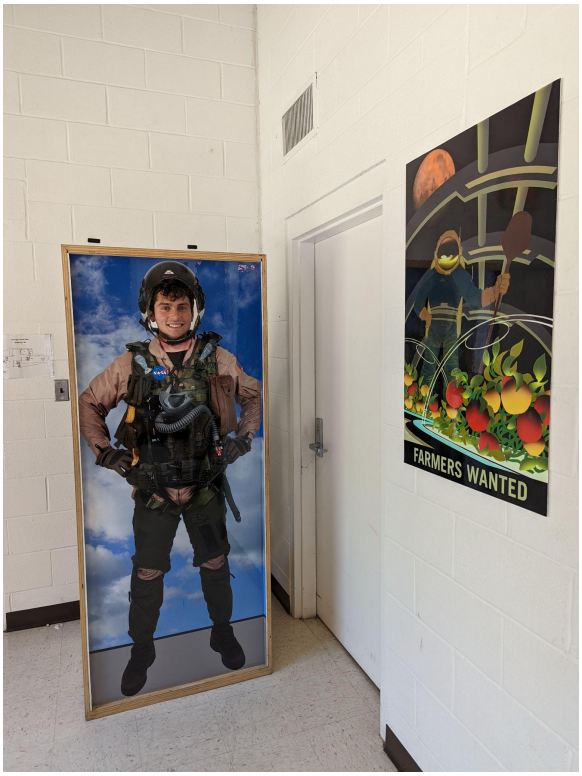
Heather Hinchliffe taking a selfie with the tired crew on their way back from our Pocomoke river field trip.



(Left to Right) Michael Burke, Dakota Exum, and Heather Hinchliffe posing at the top of the furnace ramp at the Furnace Town museum.



Michael Burke and Heather Hinchliffe posing at the bottom of the historic iron furnace in Snow Hill, MD.



Jacob Greene posing for a photograph at the Wallops Island NASA Center.



Heather Hinchliffe posing for a photograph at the Wallops Island NASA Center.



The crew posing with the Chincoteague Island Visitor Center sign on an educational experience day.



Michael Burke and Jacob Greene reading about the planet Jupiter at the Wallops Island NASA Center.



Jacob Greene posing with an “Invasive Species Management” exhibit sign at the BNWR visitor center.