

Nurdle Patrol Progress Report

Year 2 Quarter 3 (December 1, 2021 – February 28, 2022)

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March 22, 2022

Administration:

Contract Activity

- The Nurdle Patrol Expansion, Education, and Outreach was approved for funding for Year 2 on June 1, 2021.
- The Subaward Agreement No. UTA20-000902 between The University of Texas at Austin and Texas A&M University Corpus Christi was fully funded for year two for the amount of \$37,880.00 to further enhance the website for usability and the ongoing maintenance of the phone app to help promote the awareness and education of Nurdle Patrol.
- Purchase Order issued to Enlighted Images in June 2021 for \$12,000 to produce a four-part video series featuring Diane Wilson.
- Purchase Order issued to Augs Services in July 2021 for \$13,760.00 to create and post two billboards across Texas about Nurdle Patrol from August 2021 to April 2022.

Risks and Impacts: None

Project Tasks:

Hire full-time staff to organize annual meeting, training, travel, manage website and develop promotional materials about Nurdle patrol.

Tracy Weatherall was hired during the first quarter of year one on July 1, 2020, and June 1, 2021, for year two.

Host the Texas Plastic Pollution Symposium (TPPS)

The planning committee met on October 22nd and December 1st to discuss the 2022 symposium logistics. It was decided that the 4th annual meeting will be a hybrid event (virtual and in-person) and will take place on Thursday, March 31, 2022, in Port Aransas. The one-day symposium will be held at the Port Aransas Community Theater for oral presentations and the poster session will take place at UTMSI. Student oral presentation and poster awards will be given this year by the Coastal Bend Bays & Estuaries Program. They plan to offer \$300 for oral presentations (\$150 1st place, \$100 2nd place, \$50 3rd place) and \$200 for poster presentations (\$100 1st place, \$75 2nd place, \$25 3rd place). One hundred thirty-five people have registered as of March 22, 2022, 94 are attending in-person, 12 to be determined and 23 are attending virtually. Thirty people have submitted abstracts and 13 of those are students.

Student Scholarships

As described in the consent decree, students that attend in person and present their research at the Texas Plastic Pollution Symposium will receive a \$500 stipend to cover costs for travel and expenses. Thirteen students are planning to give presentations at this year's symposium in which 8 are presenting posters and 5 are giving oral presentations. Eight students are traveling from out of the Corpus Christi area and will receive the \$500.00 scholarship for travel accommodations etc.

Create Starter and Teacher Kits

The Nurdle Patrol Starter Kit was created during the first year of Nurdle Patrol (2020) for organizations to start-up their own Nurdle Patrol citizen science project or to incorporate nurdle surveys into their existing monitoring program. The kits were designed to supply organizations with resources needed to conduct surveys, talk to their volunteers about nurdles, and provide a foundation for a successful project. As of the end of the third quarter, 154 partners have received the starter kits (Figure 1).



Figure 1. Nurdle Patrol Starter Kit items.

The Nurdle Patrol Teacher Kits were also developed during the first year of Nurdle Patrol due to many requests from teachers across the United States that wanted to teach their students about how plastics reach the ocean and what negative impacts plastics have on the environment. These kits include a curriculum about nurdles entering the ocean, what negative impacts there are, and what solutions are out there to prevent nurdles from

getting into the waterways. The interactive teacher kits include six jars of nurdles, information card about how to conduct a nurdle survey, a presentation all about nurdles, and articles describing the problem. An updated version of the teacher kit curriculum was completed during the third quarter which includes an All Level Nurdle Survey, a Nurdle Hurdle Race, K-5 curriculum that includes lesson plans for age specific children in K-1, 2-3, and 4-5, and Middle School and High School Chemistry curriculums. These lesson plans will be linked to our webpage very soon. As of the end of the third quarter, 776 teacher kits have been shipped to educators in the USA, Canada, Mexico, Puerto Rico, Costa Rica, Columbia, UK, Spain, Africa, Australia, and Thailand (Figure 2).

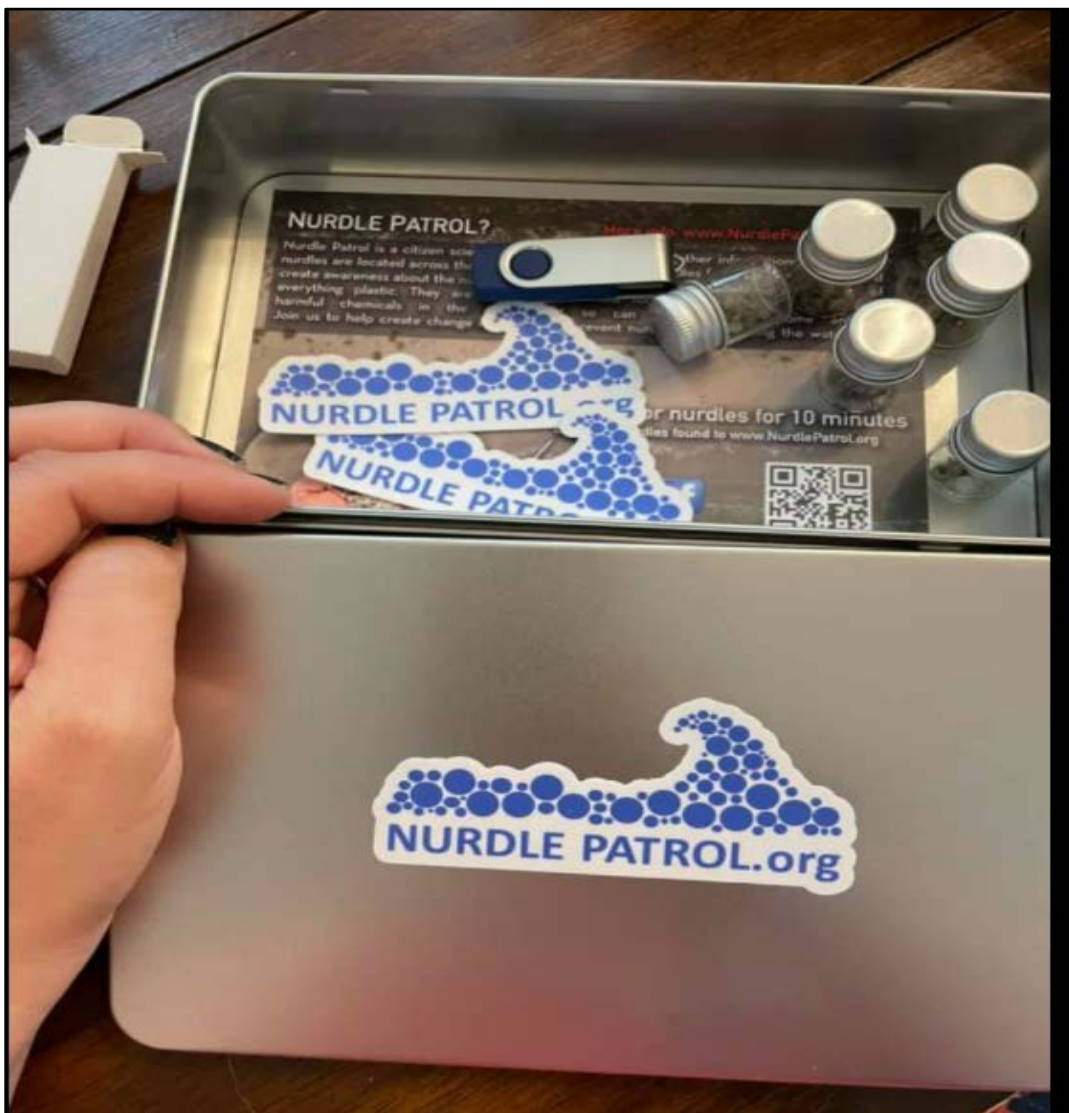


Figure 2. Teacher kit items

Plastic Free Life Kit

In January 2021, we initiated the Plastic Free Life Challenge. This friendly competition was designed as an incentive to encourage our partners and individuals to conduct as many

- August 4, 2021 - Fidora Nurdle Patrol partnership meeting via Zoom in Scotland.
- August 11, 2021 - Texas Parks & Wildlife Depart. Angler Class via Zoom to area chiefs all over Texas.
- September 9, 2021 – Virtual presentation to the San Diego Girl Scout Club about nurdles and the new nurdle patch.
- September 10, 2021 – Nurdle Patrol presentation to Saint Stanislaus School in Mississippi.
- September 12, 2021 – Virtual presentation to the Texas Parks and Wildlife Leadership Angler Class
- September 21, 2021 – Illinois River Watch virtual presentation.
- September 22, 2021 – Galveston Audubon virtual presentation.
- October 1, 2021 – In-person presentation invited speaker at the Valley Environmental Summit in South Padre Island, Texas.
- October 4, 2021 – Tracy Weatherall attended the STEAM (Science Technology Engineering Arts Mathematics) night at Kaffie Middle School in Corpus Christi, Texas to inform students and their families about nurdles and the issues with marine debris and microplastics and their impact on the environment, animals and people.
- October 10, 2021 – Tropical Trail Association virtual presentation.
- October 22, 2021 – virtual presentation to Loyola University in New Orleans to a natural science class.
- October 28, 2021 – Invited speaker to the General Land Offices’ Adopt-a-Beach Workshop in Galveston, Texas.
- November 1, 2021 – presented to the Galveston Master Naturalists through a virtual presentation.
- November 10, 2021 – Texas A&M University-Kingsville presentation to the SAFER student group.
- January 5, 2022 – Mississippi High School via Zoom presentation
- January 26, 2022 – Gulf of Mexico Alliance presentation to all 5 Gulf states researching plastics in the environment.
- February 18, 2022 – Presentation to multiple universities in Mexico about partnership with Nurdle Patrol.
- January 27, 2022 and February 17, 2022 – The education specialists at the Mission-Aransas NERR met with the general public at the Bay Education Center in Rockport, Texas to discuss the negative impacts of nurdles, microplastics and marine debris to the environment, marine life and people.

The Nurdle Patrol Facebook group is being utilized as a way to communicate with individual citizen scientists as well as new organizations about new efforts related to Nurdle Patrol. News stories, survey results, and other related material are also shared with the more than 2,736 followers on the closed group Nurdle Patrol Facebook page. Also, the Nurdle Patrol Twitter account (public) was created in August 2020 to educate and inform the general public about plastic pollution and other science related topics. To date there are 331 followers.

Lisa Scobel, a graduate student studying Environmental Conservation from the University of Wisconsin-Madison, joined the Nurdle Patrol team this summer as an intern and recruited 14 new partners along the Mississippi River's 2,350 mile stretch as well as New York and Canada (Figure 4). In addition, she published 5 Nurdle Patrol related articles that are posted on the [nurdlepatrol.org](https://nurdlepatrol.org/Forms/News/index.php) website at <https://nurdlepatrol.org/Forms/News/index.php>.

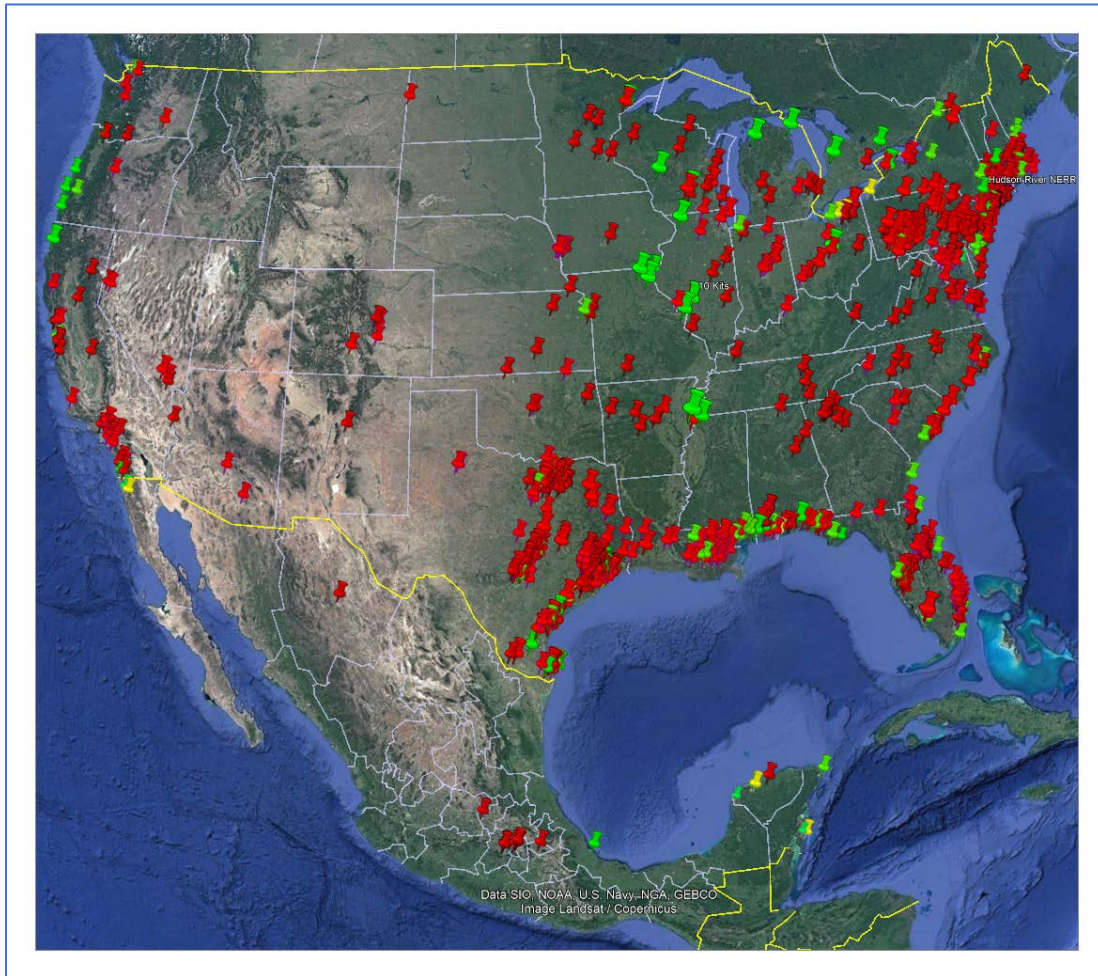


Figure 4. Nurdle Patrol Partners in the continental United States, Canada, and Mexico. Green markers represent partners who joined previously, and yellow markers represent new partners acquired during Y2Q3. Red markers represent Nurdle Patrol Teacher Kits that were sent to educators.



Figure 5. Nurdle Patrol Partners in Alaska.

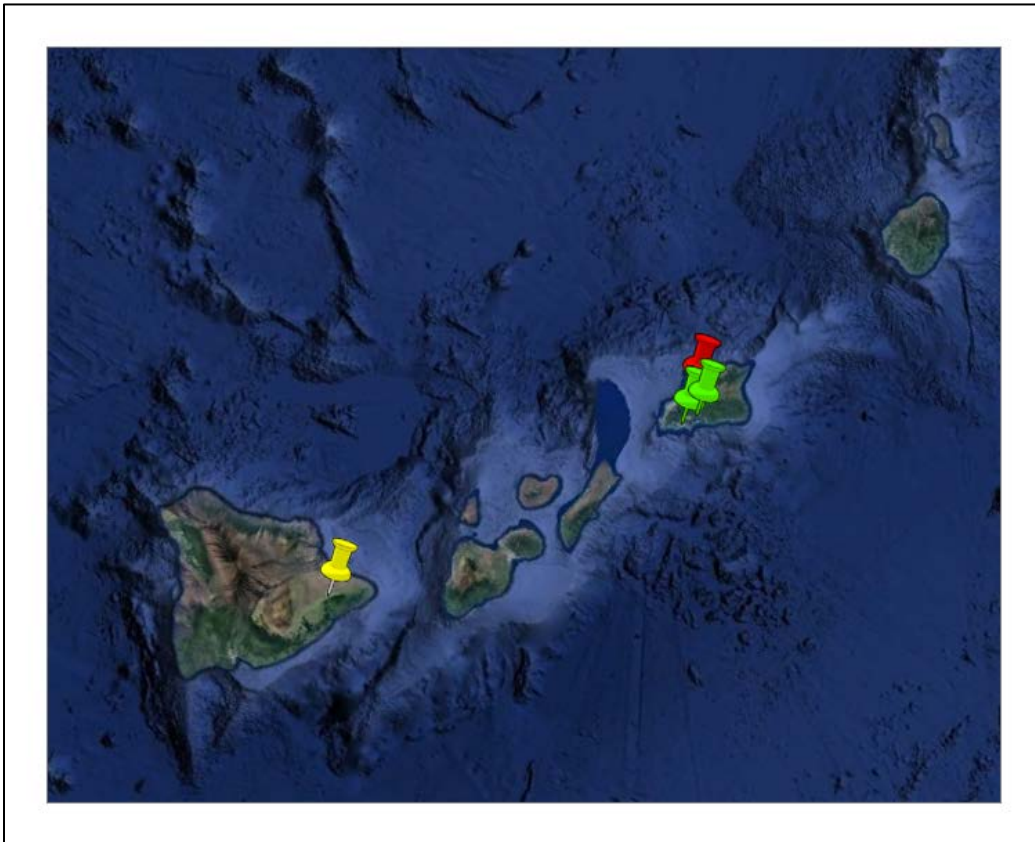


Figure 6. Nurdle Patrol Partners and Teacher Kit in Hawaii.



Figure 7. Teacher Kits in Puerto Rico.

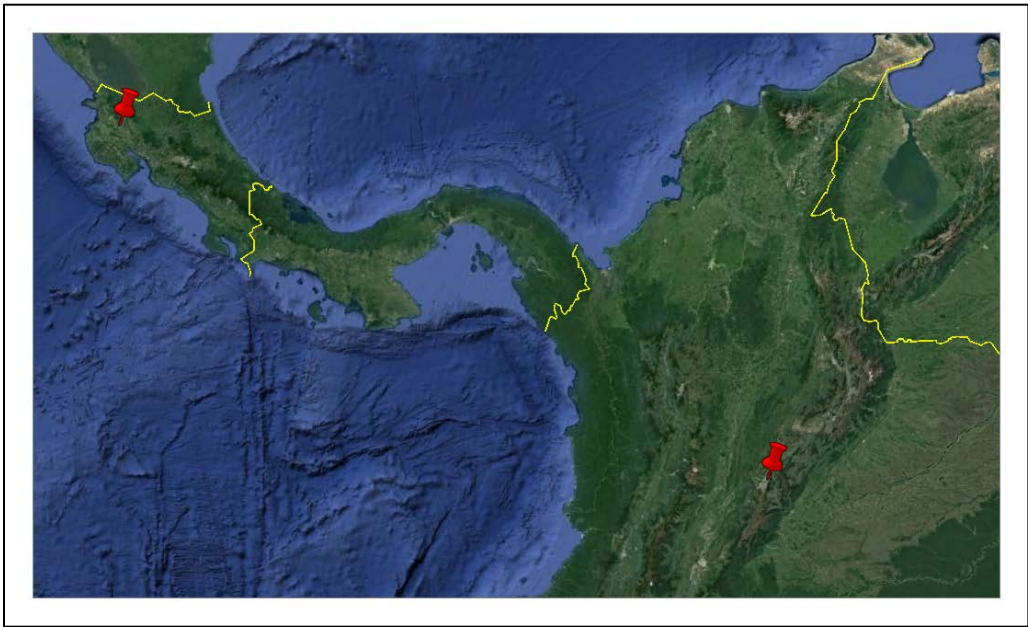


Figure 8. Teacher Kits in Costa Rica and Columbia.



Figure 9. Teacher Kit in Spain.



Figure 10. Teacher kits in the UK.



Figure 11. Teacher Kits in Kenya, Africa.

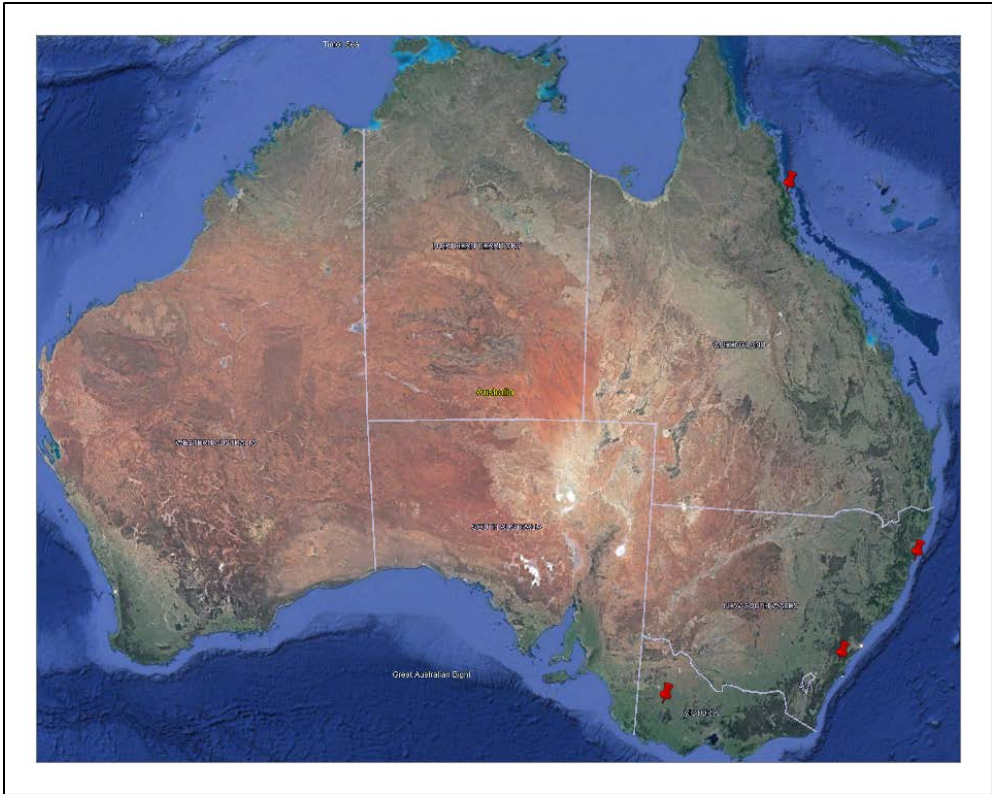


Figure 12. Teacher Kits in Australia.

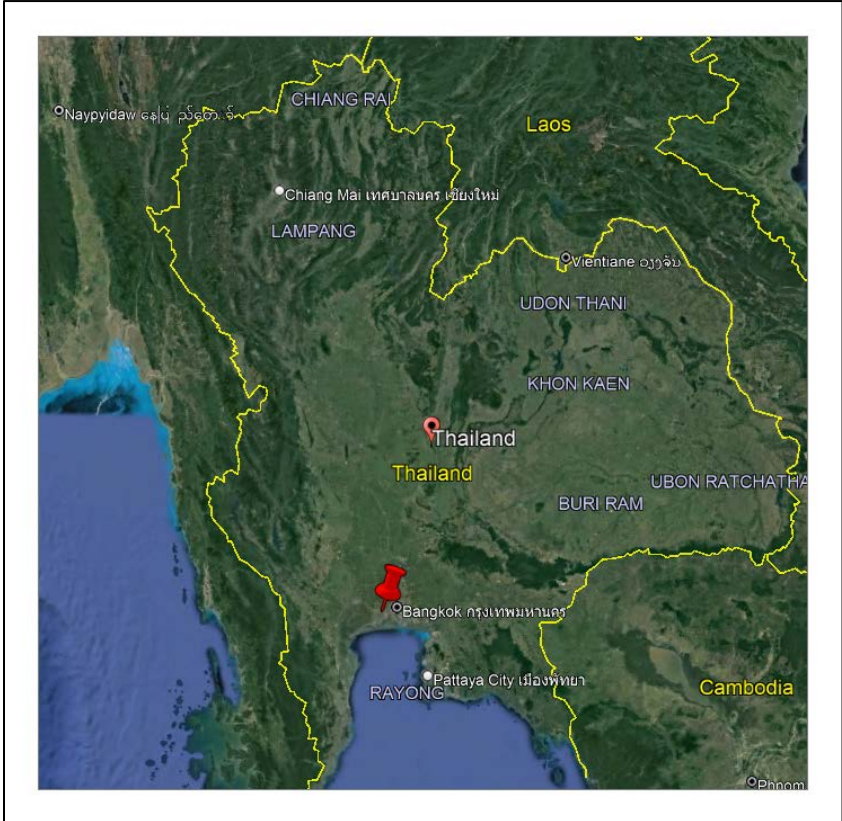


Figure 13. Teacher Kit in Thailand.

Number	Partner	Group Type	State	Number	Partner	Group Type	State
1	Terra Science & Education	School	NY	40	Defenders of Wildlife	Nonprofit	NC
2	STEM Engagement	School	NY	41	Old Women Creek NERR	NERR	OH
3	Tampa Bay Estuary Program	NEP	FL	42	Deleware NERR	NERR	DE
4	Coastal Bend Bays & Estuaries Program	NEP	TX	43	ACE Basin NERR	NERR	SC
5	Weeks Bay NERR	NERR	AL	44	Angler Action Foundation	Nonprofit	FL
6	Rockport Fulton Middle school Ecology/Environmental Club	School	TX	45	Hudson River NERR	NERR	NY
7	Island R/V Resort	Business	TX	46	Friends of the Kaw	Nonprofit	KS
8	Southernmost Homeschoolers	Homeschool	FL	47	Buffalo Niagara Waterkeeper	Waterkeeper	NY
9	Inland Ocean Coalition North Texas Chapter	Nonprofit	TX	48	Crystal Coast Waterkeeper	Waterkeeper	NC
10	Choctawhatchee Basin Alliance	Waterkeeper	FL	49	White Oak New Riverkeeper Alliance	Waterkeeper	NC
11	National Park Service - Padre Island National Seashore	Federal	TX	50	Sapelo Island NERR	NERR	GA
12	Friends of Padre	Nonprofit	TX	51	NY-NJ Baykeeper	Waterkeeper	NY
13	Universidad de Veracruzana - Sea & Reef Program	University	MX	52	South Slough NERR	NERR	OR
14	Rookery Bay NERR	NERR	FL	53	A Rocha USA	Business	FL
15	Surfrider Foundation - Texas Coastal Bend Chapter	Nonprofit	TX	54	Sustain 2 Remain	Nonprofit	TX
16	Galveston Bay Foundation	Nonprofit	TX	55	Missouri Confluence Waterkeeper	Waterkeeper	MO
17	Texas A&M University - Corpus Christi, Conrad Blucher Instit.	University	TX	56	Great Bay NERR	NERR	NH
18	Texas Master Naturalist	Nonprofit	TX	57	Sea Grant - Mississippi-Alabama	Sea Grant	MS
19	The University of Texas, Rio Grande Valley	University	TX	58	Mississippi State University Extension	University	MS
20	Parley for the Oceans	Nonprofit	MX	59	Flour Bluff ISD	School	TX
21	11th Hour Racing	Nonprofit	TX	60	Corpus Christi Hooks	Business	TX
22	Monsignor McClancy Memorial HS	School	NY	61	Padilla Bay NERR	NERR	WA
23	Nicholls State University	University	LA	62	Kachemak Bay NERR	NERR	AK
24	Texans For Clean Water	Nonprofit	TX	63	Bayou City Waterkeeper	Waterkeeper	TX
25	Flyaway Paper Straws	Business	FL	64	Save Our Shores	Nonprofit	CA
26	Our Lady Academy	School	MS	65	Delaware Sea Grant	Sea Grant	DE
27	Saint Stanislaus	School	MS	66	Louisiana State University	University	LA
28	Shedd Aquarium	Aquarium	IL	67	Mountain Watershed Association - Youghiogheny Riverkeeper	Nonprofit	PA
29	Charleston Waterkeeper	Waterkeeper	SC	68	Florida Sea Grant - UF/IFAS Extension Pinellas County	Sea Grant	FL
30	South Padre Island Sessions	Business	TX	69	Narragansett Bay NERR	NERR	RI
31	Gulf Guardians	Nonprofit	TX	70	Barataria-Terrebonne National Estuary Program	NEP	LA
32	Sun of a Beach Cleanup	Nonprofit	FL	71	Sarasota Bay Estuary Program	Nonprofit	FL
33	Keep Bolivar Beautiful	Nonprofit	TX	72	He'eia National Estuarine Research Reserve	NERR	HI
34	University of Texas Marine Science Institute	University	TX	73	North Carolina Coastal Reserve and NERR	NERR	NC
35	Mission-Aransas NERR	Governmental	TX	74	North Inlet-Winyah Bay NERR	NERR	SC
36	Jacques Cousteau NERR	NERR	NJ	75	Wildlife Club	Nonprofit	FL
37	Wells Reserve at Lautholm	NERR	ME	76	Tilamook Estuaries Partnership	NEP	OR
38	Tijuana River NERR	NERR	CA	77	Chesapeake & Coastal Service, CBNERR	NERR	MD
39	Guana Tolomato Matanzas NERR	NERR	FL	78	Morro Bay National Estuary Program	NEP	CA

Table 1: Nurdle Patrol Partners who have received startup kits as of February 28, 2022.

Number	Partner	Group Type	State	Number	Partner	Group Type	State
79	Waterkeeper Alliance	Nonprofit	TX	117	Castal Brigade	Nonprofit	TX
80	Healthy Gulf	Nonprofit	LA	118	Pascagoula River Audubon Center	Nonprofit	MS
81	Texas Marine Mammal Stranding Network	Nonprofit	TX	119	Lower Mississippi River Foundation	Nonprofit	MS
82	Seaside Sustainability	Nonprofit	MA	120	Kipp Delta Public Schools	Public Schools	MS
83	Siera Club, Baton Rouge Group	Nonprofit	LA	121	Texas Parks and Wildlife Dept.	governmental	TX
84	The Gale Academy of Environmental Science and Technology	School	FL	122	Illinois River Watch Network	Nonprofit	IL
85	Lake Worth Waterkeepers	Waterkeeper	FL	123	Ohio Sea Grant	governmental	OH
86	Columbia Waterkeeper	Waterkeeper	OR	124	Harris County Precinct 2	governmental	TX
87	Cahaba Riverkeeper	Waterkeeper	AL	125	Great Lakes Aquarium	Business	MN
88	MTHS Eco Club	Nonprofit	WA	126	Thunder Bay NMS	governmental	MI
89	USM School of Humanities	University	MS	127	Upper Mississippi River NWFR	governmental	IL
90	TAMUCC Green Team	University	TX	128	New York Sea Grant	governmental	NY
91	Jean Lafitte National Historical Park and Barataria Preserve	Nonprofit	LA	129	Great Lakes Environmental Center, Inc.	Business	MI
92	O'ahu Waterkeeper	Waterkeeper	HI	130	Lake Huron Centre for Coastal Conservation	Nonprofit	Ontario
93	Plastic Free Grants	Nonprofit	MS	131	Stream Teams United	Nonprofit	MO
94	Chesapeake Bay NERR	NERR	VA	132	A Rocha USA	Nonprofit	WI
95	Friends of Lake Superior Reserve	NERR	WI	133	KEEP PEARLAND BEAUTIFUL	Nonprofit	TX
96	University of Michigan	University	MI	134	Wisconsin Sea Grant	Governmental	WI
97	Save Our Seas Mountain Ocean Project	Nonprofit	TX	135	Sierra Club of Missouri	Nonprofit	MO
98	Maryland Coastal Bays Program	Nonprofit	MD	136	Environmental Club and Aquatic Science	High School	TX
99	University of Alaska Fairbanks	University	AK	137	A Greener Future	Nonprofit	Ontario
100	University of Oregon's Charleston Marine Life Center	University	OR	138	TPWD	governmental	TX
101	Shoreline Education for Awareness (SEA)	Nonprofit	OR	139	University of Houston-Clear Lake	University	TX
102	MARYSMA Mar Y Sustentabilidad Para El Medio Ambiente	Eco-Tourism	MX	140	Narragansett Bay NERR	NERR	RI
103	Apalachicola Nat'l Estuarine Research Reserve	NERR	FL	141	Barataria-Terrebonne National Estuary Program	NEP	LA
104	FWS Bandon Marsh National Wildlife Refuge	Governmental	OR	142	Calhoun County Extension Service	Governmental	TX
105	Mobile Baykeeper	Nonprofit	AL	143	Boyscouts of America Troop 168	Boyscouts	TX
106	Connecticut River Conservancy	Nonprofit	CT	144	Chesapeake Bay Reserve	Governmental	MD
107	Dimock and Dimock Photography	Business	OR	145	Fundación Pedro y Elena Hernández, AC	Nonprofit	MX
108	Costa Cleanups	Nonprofit	TX	146	Menos Plastico En Mahahual	Nonprofit	MX
109	Elizabeth Kratzig	Eco-tourism	FL	147	CICESE (Center for Scientific Research and Higher Education)	University	MX
110	Elizabeth Kratzig	Travel	FL	148	Northern Ohio Surfrider Foundation	Nonprofit	OH
111	Rio Grande Chapter of the Texas Master Naturalist	Nonprofit	TX	149	Black River Audubon Society	Nonprofit	OH
112	Mustang Island State Park	Governmental	TX	150	Eastern Shore Fly Fishers	Nonprofit	AL
113	Texas Retired Teachers Association	Nonprofit	TX	151	Presque Isle State Park	governmental	PA
114	Sea Turtle Inc.	Nonprofit	TX	152	Charleston County Public Library	Public Library	SC
115	Choctawhatchee Basin Alliance	Nonprofit	FL	153	The Sustainability Institute, Environmental Conservation Corps	Nonprofit	SC
116	Turtle Island Restoration Network	Nonprofit	TX	154	Hawaii Preparatory Academy	Private School	HI

Table 2: Nurdle Patrol Partners who have received startup kits as of February 28, 2022 (continued).

Phone App Maintenance and update website

A contract was signed with Texas A&M University-Corpus Christi Conrad Blucher Institute (CBI) in August 2021. The work by CBI includes improvement to the phone app for Nurdle Patrol by adding all data onto a map, as well as updates to the Nurdle Patrol website (www.NurdlePatrol.org). Both versions of the phone app, Android, and iOS, were released in May 2021. The app is being downloaded and utilized by citizen scientists. The development team have been working on the following administrative tasks during the third quarter of year two:

- Manage Logo
- Manage Reports
- Manage News
- Manage Patrol Photos
- Manage Partner Logos
- Manage Users (Figure 14)

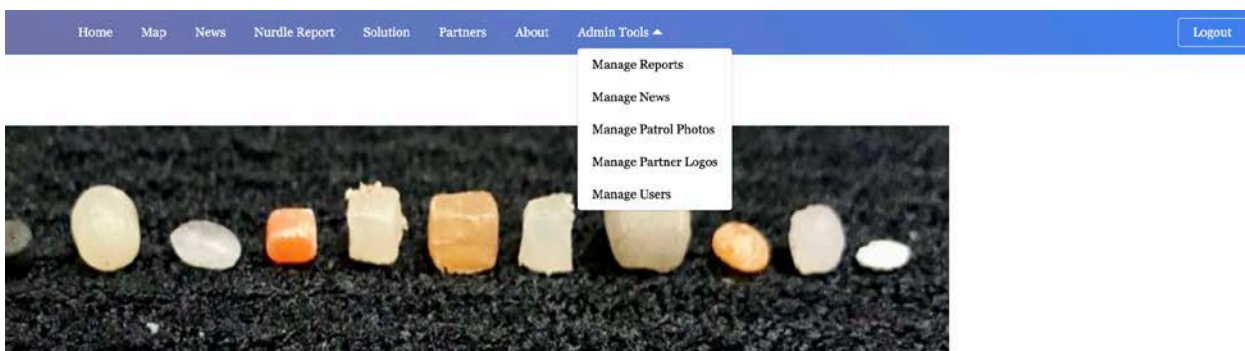


Figure 14. Menu showing admin tools in development environment (Preview)

Most of the administrative features have been implemented as of March 16, 2022 and will be released and available on nurdlepatrol.org by the end of March 2022. Once they are available, the old Nurdle website will be taken down and no longer accessible on the Internet. In addition, the development team received more than a hundred partner logos and made them available on the Partners page on NurdlePatrol.org. The new Resource page is expected to be available by the first week of April.

Beginning the first week of April, the development team will switch focus to the mobile application bug fixing and development. The list of tasks includes fixing the location issue when the user is on the Data Entry page (Figure 15), adding historical nurdle report on the map, and adding the solution page.

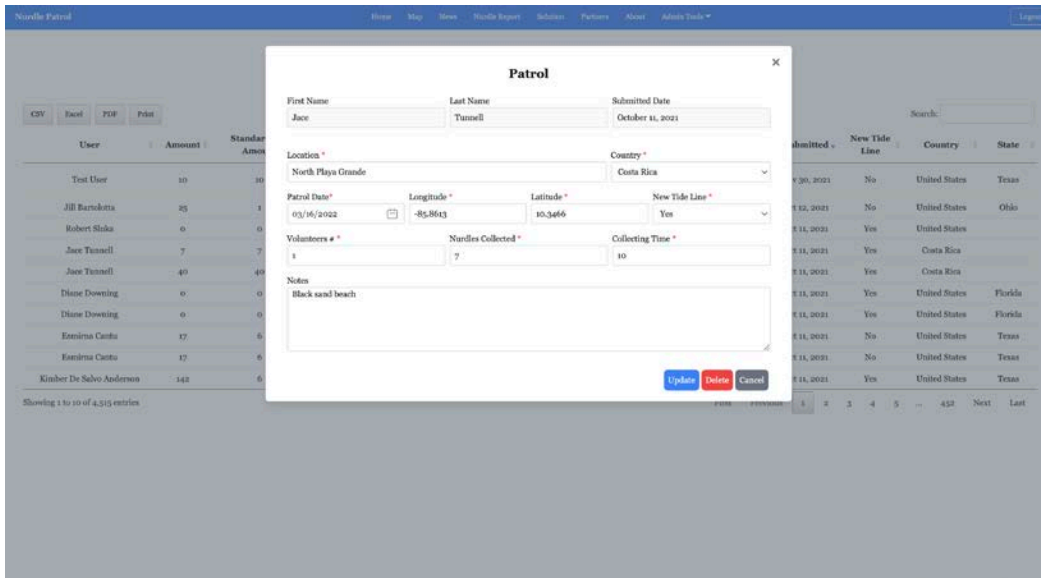


Figure 15. New Manage Patrol Data Entry page in development environment.

Develop Educational and promotional videos

Videos produced from year 1 funding (2020) have been placed on the YouTube Channel that the Mission-Aransas Reserve maintains, as well as posting to various social media platforms, and adding to the NurdlePatrol.org website. For year 2 (2021) funding, a four-part video series featuring Diane Wilson is being produced. The first video was filmed on July 21, 2021 and is complete. The second video was filmed on September 27, 2021 and is complete. The third and fourth videos have been shot and are being edited for completion. Once all four videos are complete, a strategic release will be announced.

1. Diane Bio: Diane's life growing up as a multigenerational shrimper, raising kids, living and working on the bay in Texas, and her passion with ensuring that environmental justice was being served. End this video with the beginning efforts of knowing that Formosa is discharging plastic pellets into the waterways where Diane has raised her kids and fished for a living, and that she knew something had to be done.

2. Formosa Lawsuit: Diane describes the long battle with Formosa, taking samples daily for three years straight, making allies with whistle blowers that worked for Formosa, the dangers of working against Formosa in the community, and the lawsuit's ultimate decision. End video with Diane talking about the key pieces of evidence that brought down Formosa, including utilizing Nurdle Patrol data as part of that effort. Jace could come in at the end and talk with Diane about the big picture of Formosa's nurdle concentrations vs other parts of the Gulf that were being collected to show the impact of how many pellets Diane was collected compared to other areas.

3. Working with Nurdle Patrol: Diane and Jace talk about collecting nurdles at Formosa, at other plastic manufacturing sites, sending in TCEQ complaints across the state to put nurdle releases from many plastic manufacturing sites on the official record of the state,

using the Formosa lawsuit funding to expand Nurdle Patrol efforts across the U.S., and the continued fight with Formosa. End with talking about "where do we go from here".

4. Future - Where do we go from here: Diane and Jace talk about the Matagorda Bay Mitigation Trust, the \$50M in funding that was set up from the Formosa lawsuit consent decree that Diane established, what projects are being funded, where Nurdle Patrol is going in the future, and what Diane's future plans are. Have this impactful about the future, with plastic policy changes that have occurred in Texas and other states, federal efforts going on, and end the video as if there is another series waiting to come out about the good things happening.

Public Awareness

In year 1 (2020) we created a Nurdle Patrol rack card that describes how to conduct a Nurdle Survey on the front side and on the back side it has more detailed information including where to look for nurdles, what nurdles are, and a QR Code link to NurdlePatrol.org where a training video can be found (Figure 16). We created this card in English and Spanish (Figure 17).



Figure 16. Nurdle Patrol outreach flyer front and back.



Figure 17. Spanish version of the Nurdle Patrol outreach flyer front and back.

The billboard campaign was created during the first year (2020) of Nurdle Patrol and was a huge success and has been extended for the second year. One billboard was installed in August 2021 in Portland, Texas near the Gulf Coast Growth Ventures plastics plant that is being constructed, and the second billboard was installed in Point Comfort (site 355751) in February 2022 (Figure 18).



Figure 18. Nurdle Patrol billboard campaign.

Nurdle Patrol is proud to have an outreach installation at the Texas State Aquarium (Figure 19). The Texas State Aquarium reached out to us in the summer of 2021 to request video footage, images of nurdles, and text on the impact of plastics in the environment. From the information we sent, the aquarium was able to create an exhibit with a video that plays continuously, and a poster display educating folks on what nurdles are, how they get into the environment, and solutions for reducing plastics getting into the ocean.

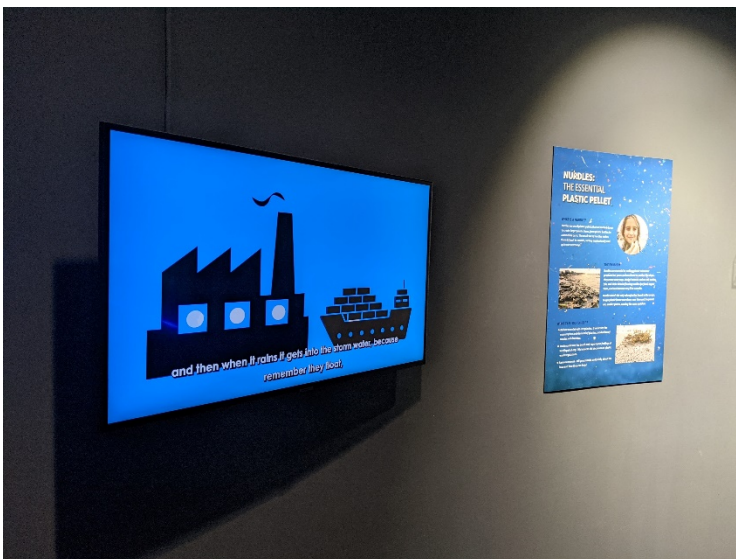


Figure 19. Nurdle Patrol outreach installation at the Texas State Aquarium.

Summary

A total of 623 surveys were conducted during Year 2, Quarter 3 (Y2Q3) and 19,235 nurdles were removed from the beaches, riverbanks, and lake shorelines of the United States and Mexico. Nurdlepatrol.org acquired 6 new partners and shipped 271 teacher kits to educators in the USA, Canada, Mexico, Puerto Rico, Costa Rica, Columbia, UK, Spain, Africa, Australia, and Thailand (Table 3).

Y2Q3	Number of Surveys	Nurdles Removed	New Partners	Teacher Kits
December	187	6,541	2	48
January	132	4,681	2	193
February	304	8,013	2	30
Total	623	19,235	6	271

Table 3: Y2Q3 Progress Report Summary

Obstacles

Currently there are no obstacles to report.