

Nurdle Patrol Progress Report Year 2 Quarter 1 (June 1-Aug 31, 2021)

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September 17, 2021**

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 will meet during the fall of 2021 to discuss the 2022 symposium logistics.

Student Scholarships

As an incentive to attract students to attend in person and present their research at the Texas Plastic Pollution Symposium, we plan to offer a \$500 stipend to cover costs for travel and expenses.

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. To date, 140 partners have received the starter kits with more requests coming in from organizations on a regular basis (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. To date, 475 teacher kits have been shipped to educators in the USA, Canada, UK, Spain, and Africa (Figure 2).

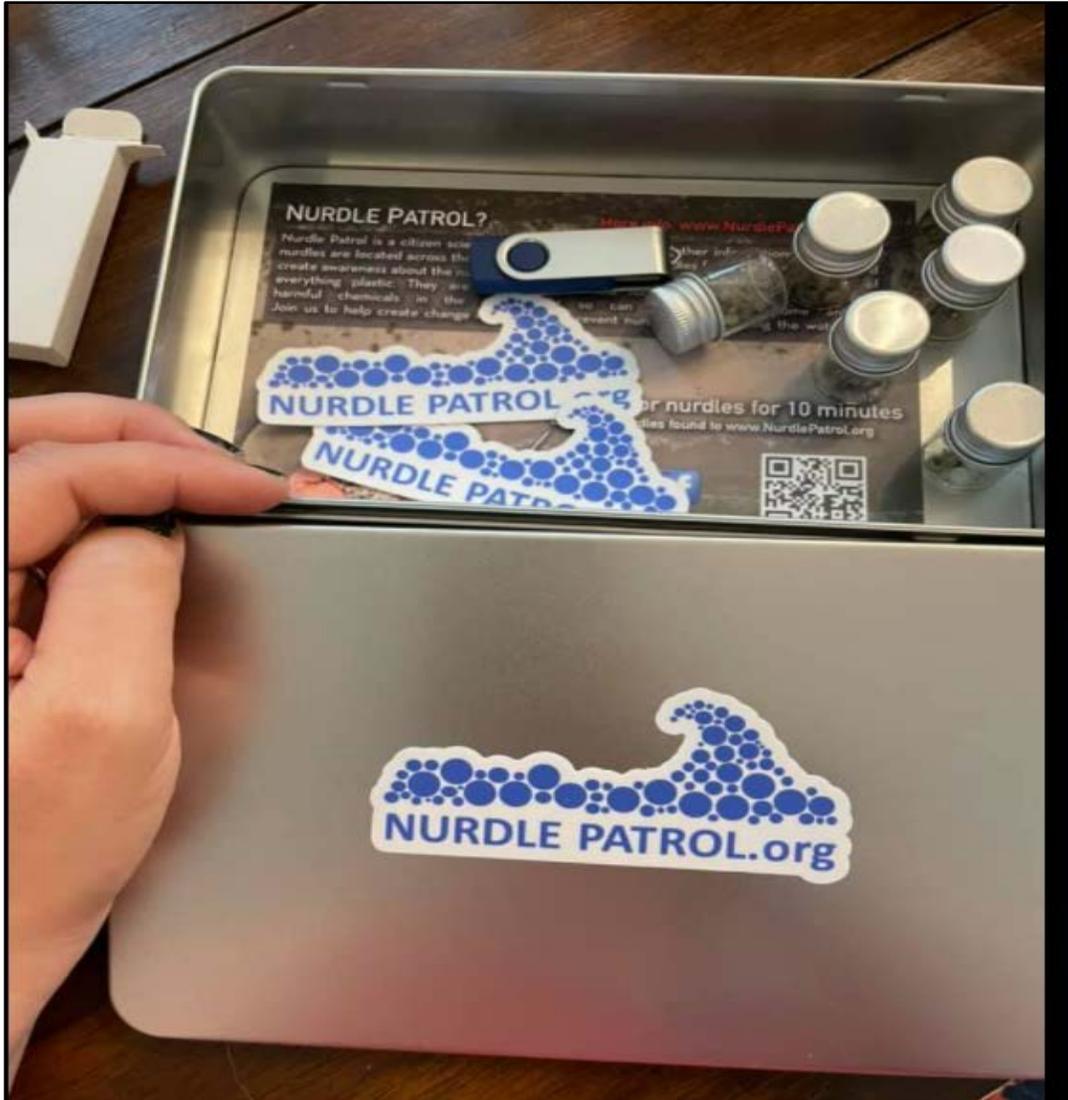


Figure 2. Teacher kit items

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 nurdle surveys as possible each month. The group that conducts the most surveys will win a Plastic Free Life starter kit that includes 42 single-use plastic alternatives (Figure 3).

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 2,700 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 269 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>.

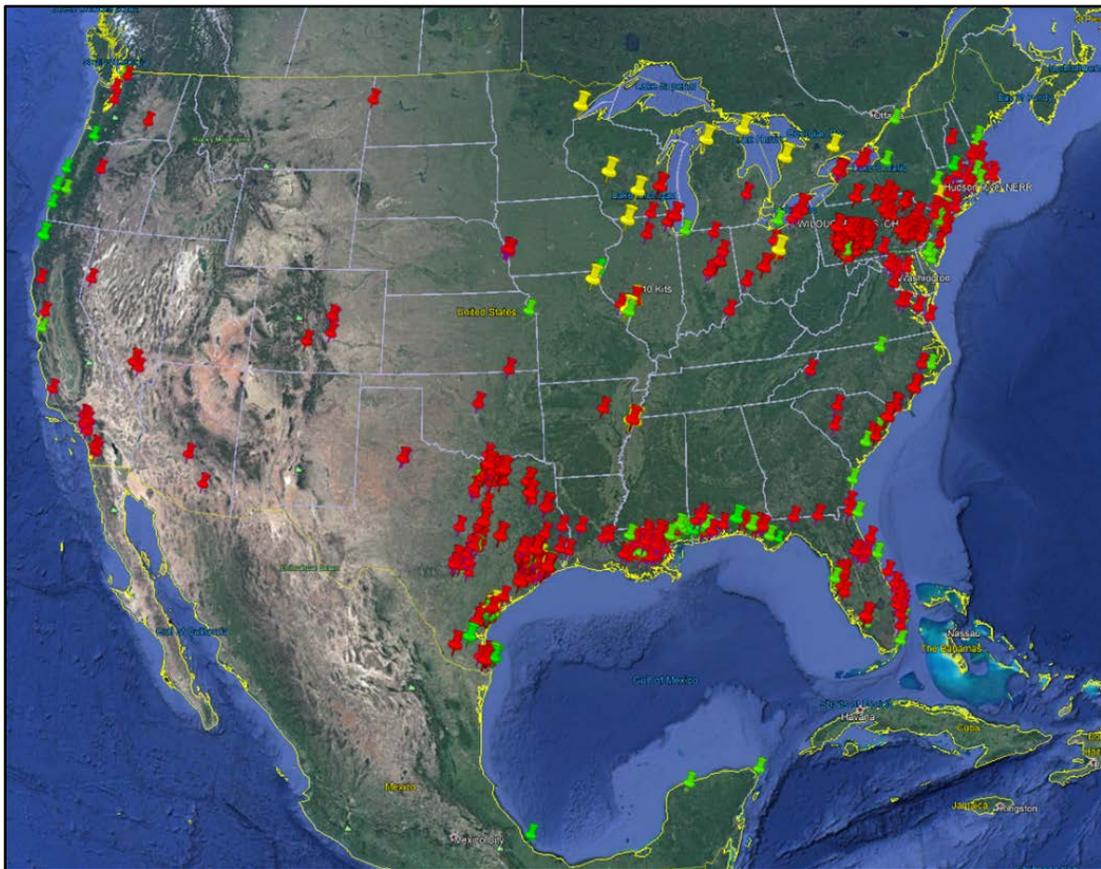


Figure 4. Nurdle Patrol Partners in the continental United States, Canada, and Mexico. Green markers represent partners who joined previously, and yellow markers represent new partners acquired during Y2Q1. Red markers represent Nurdle Patrol Teacher Kits that were sent to educators.

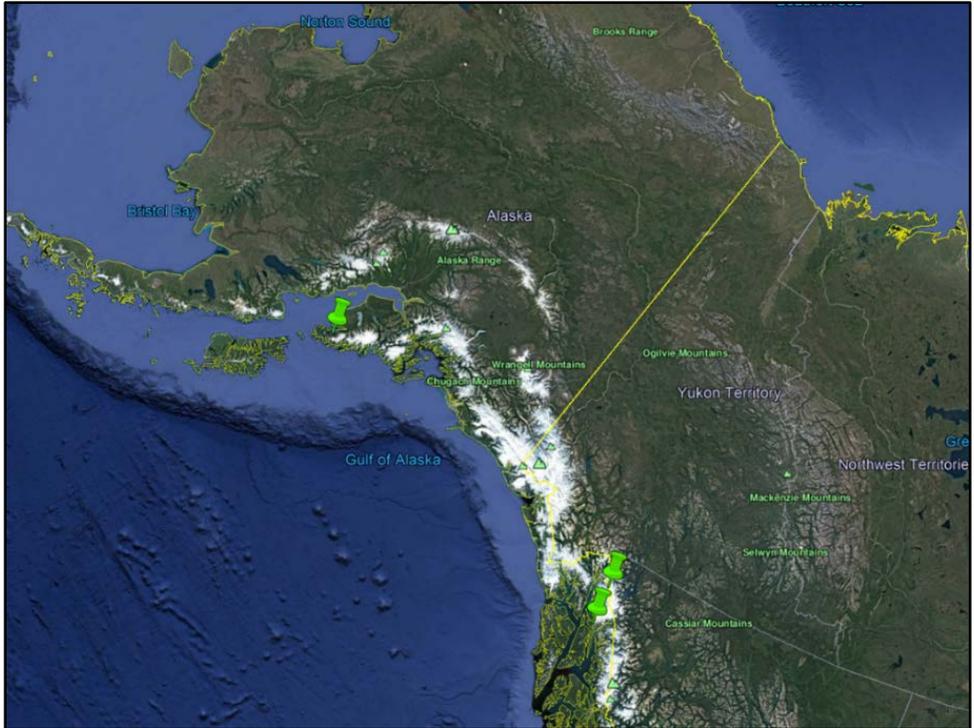


Figure 5. Nurdle Patrol Partners in Alaska.

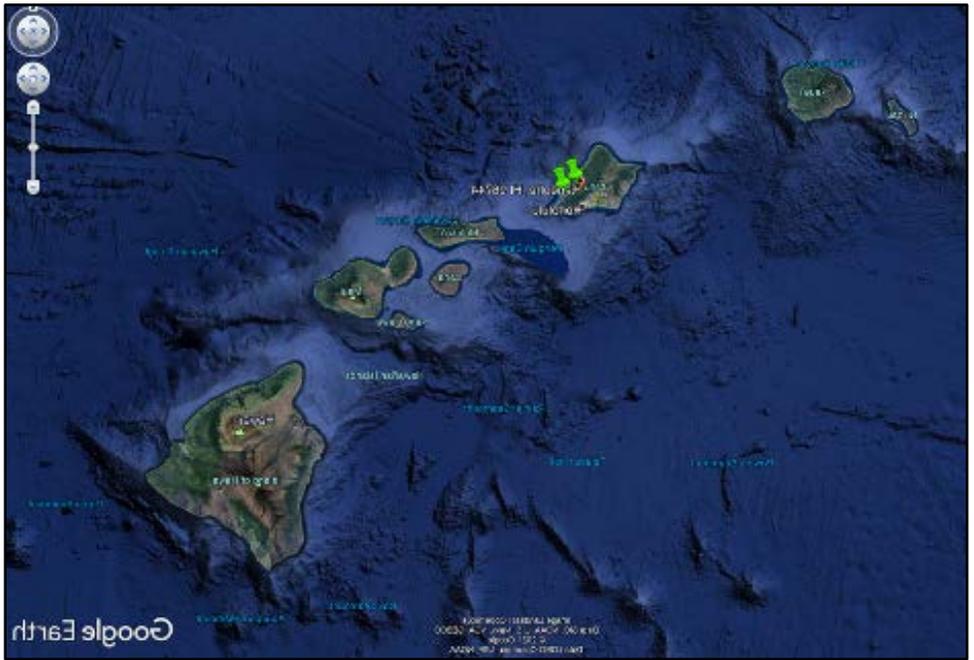


Figure 6. Nurdle Patrol Partners in Hawaii.

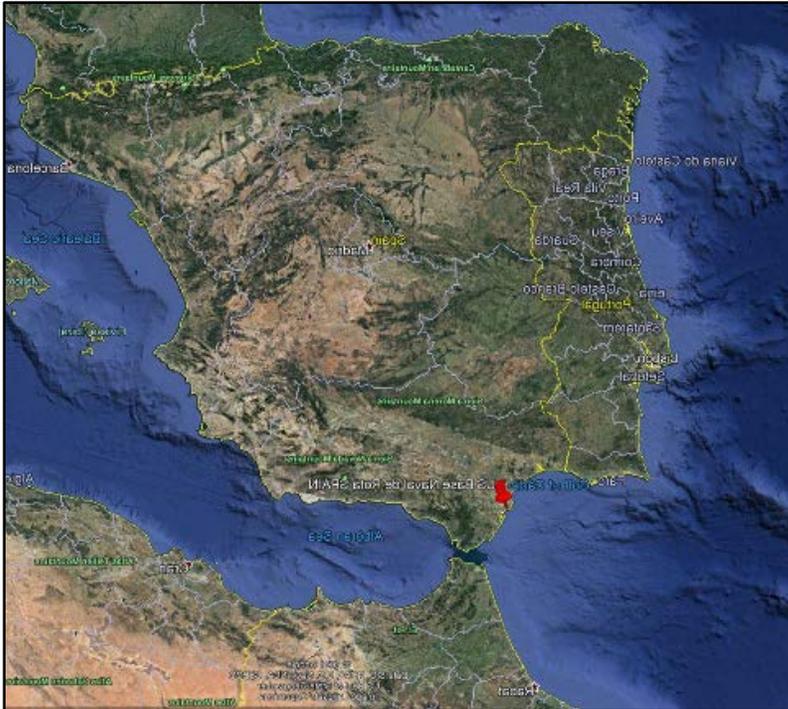


Figure 7. Teacher Kit in Spain.

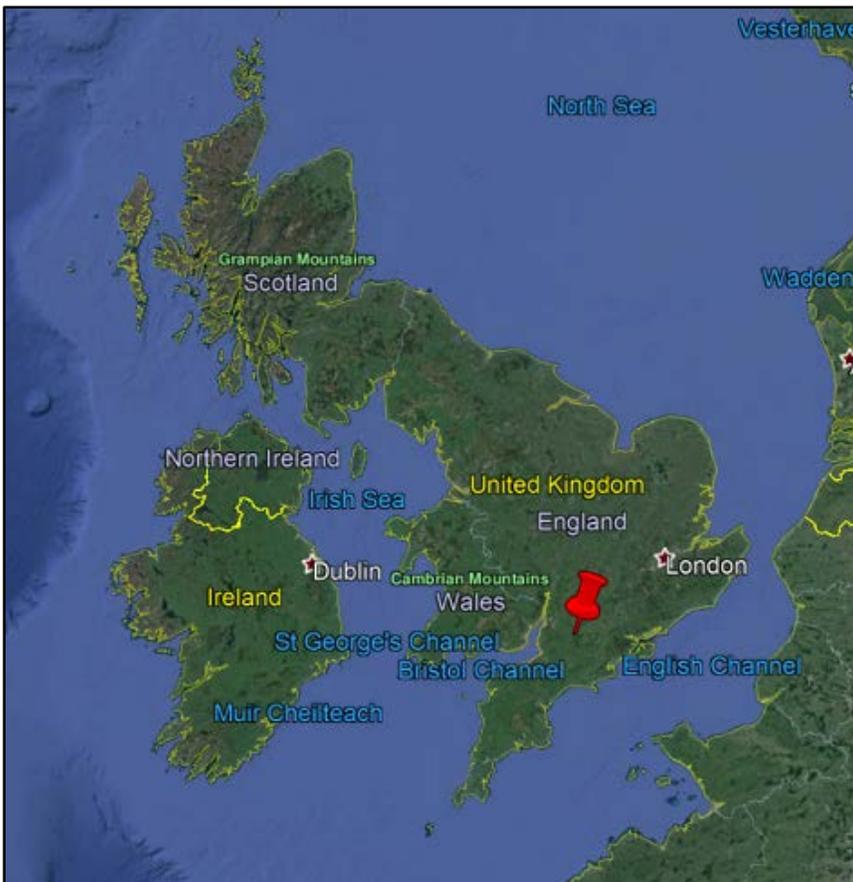


Figure 8. Teacher kit in the UK.



Figure 9. Teacher Kits in Kenya, Africa.

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

Table 1: Nurdle Patrol Partners who have received startup kits as of August 31, 2021.

Number	Partner	Group Type	State	Number	Partner	Group Type	State
71	Sarasota Bay Estuary Program	Nonprofit	FL	106	Connecticut River Conservancy	Nonprofit	CT
72	He'eia National Estuarine Research Reserve	NERR	HI	107	Dimock and Dimock Photography	Business	OR
73	North Carolina Coastal Reserve and NERR	NERR	NC	108	Costa Cleanups	Nonprofit	TX
74	North Inlet-Winyah Bay NERR	NERR	SC	109	Elizabeth Kratzig	Eco-tourism	FL
75	Wildlife Club	Nonprofit	FL	110	Elizabeth Kratzig	Travel	FL
76	Tillamook Estuaries Partnership	NEP	OR	111	Rio Grande Chapter of the Texas Master Naturalist	Nonprofit	TX
77	Chesapeake & Coastal Service, CBNERR	NERR	MD	112	Mustang Island State Park	Governmental	TX
78	Morro Bay National Estuary Program	NEP	CA	113	Texas Retired Teachers Association	Nonprofit	TX
79	Waterkeeper Alliance	Nonprofit	TX	114	Sea Turtle Inc.	Nonprofit	TX
80	Healthy Gulf	Nonprofit	LA	115	Choctawhatchee Basin Alliance	Nonprofit	FL
81	Texas Marine Mammal Stranding Network	Nonprofit	TX	116	Turtle Island Restoration Network	Nonprofit	TX
82	Seaside Sustainability	Nonprofit	MA	117	Castal Brigade	Nonprofit	TX
83	Siera Club, Baton Rouge Group	Nonprofit	LA	118	Northcoast Environmental Center	Nonprofit	CA
84	The Gale Academy of Environmental Science and Technology	School	FL	119	Pascagoula River Audubon Center	Nonprofit	MS
85	Lake Worth Waterkeepers	Waterkeeper	FL	120	Lower Mississippi River Foundation	Nonprofit	MS
86	Columbia Waterkeeper	Waterkeeper	OR	121	Kipp Delta Public Schools	Public Schools	MS
87	Cahaba Riverkeeper	Waterkeeper	AL	122	Texas Parks and Wildlife Dept.	governmental	TX
88	MTHS Eco Club	Nonprofit	WA	123	Illinois River Watch Network	Nonprofit	IL
89	USM School of Humanities	University	MS	124	Ohio Sea Grant	governmental	OH
90	TAMUCC Green Team	University	TX	125	Harris County Precinct 2	governmental	TX
91	Jean Lafitte National Historical Park ad Barataria Preserve	Nonprofit	LA	126	Great Lakes Aquarium	Business	MN
92	O'ahu Waterkeeper	Waterkeeper	HI	127	Thunder Bay NIMS	governmental	MI
93	Plastic Free Grants	Nonprofit	MS	128	Upper Mississippi River NWFR	governmental	IL
94	Chesapeake Bay NERR	NERR	VA	129	New York Sea Grant	governmental	NY
95	Friends of Lake Superior Reserve	NERR	WI	130	Great Lakes Environmental Center, Inc.	Business	MI
96	University of Michigan	University	MI	131	Lake Huron Centre for Coastal Conservation	Nonprofit	Ontario
97	Save Our Seas Mountain Ocean Project	Nonprofit	TX	132	Stream Teams United	Nonprofit	MO
98	Maryland Coastal Bays Program	Nonprofit	MD	133	A Rocha USA	Nonprofit	WI
99	University of Alaska Fairbanks	University	AK	134	KEEP PEARLAND BEAUTIFUL	Nonprofit	TX
100	University of Oregon's Charleston Marine Life Center	University	OR	135	Wisconsin Sea Grant	Governmental	WI
101	Shoreline Education for Awareness (SEA)	Nonprofit	OR	136	Sierra Club of Missouri	Nonprofit	MO
102	MARYSMA Mar Y Sustentabilidad Para El Medio Ambiente	Eco-Tourism	MX	137	Environmental Club and Aquatic Science	High School	TX
103	Apalachicola Nat'l Estuarine Research Reserve	NERR	FL	138	A Greener Future	Nonprofit	Ontario
104	FWS Bandon Marsh National Wildlife Refuge	Governmental	OR	139	TPWD	governmental	TX
105	Mobile Baykeeper	Nonprofit	AL	140	University of Houston-Clear Lake	University	TX

Table 2: Nurdle Patrol Partners who have received startup kits as of August 31, 2021 (continued). Yellow highlighted Partners are those that intern Lisa Scobel recruited.

Phone App Maintenance and update website

A contract was signed with Texas A&M University-Corpus Christi Conrad Blucher Institute (CBI) on August 31, 2020. The work by CBI included the development of a phone app for Nurdle Patrol, 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. No technical glitches have been found to date. The following website improvements occurred during the first quarter of year two:

- The updated Nurdle Patrol website is now equipped with a responsive design that facilitates better user experience for both desktop and mobile devices. This new version is in the final stages of development and should be posted for public use within the next quarter.
- It is equipped with a modern web framework that provides better security than the previous website.
- The Solution page (Figures 10 & 11) and About page (Figure 12) have been completed, but these pages will be launched to the public once the new website is launched during the next quarter.
- The development team is currently working on the Home Page (Figure 13), Map, Nurdle Report and News pages.

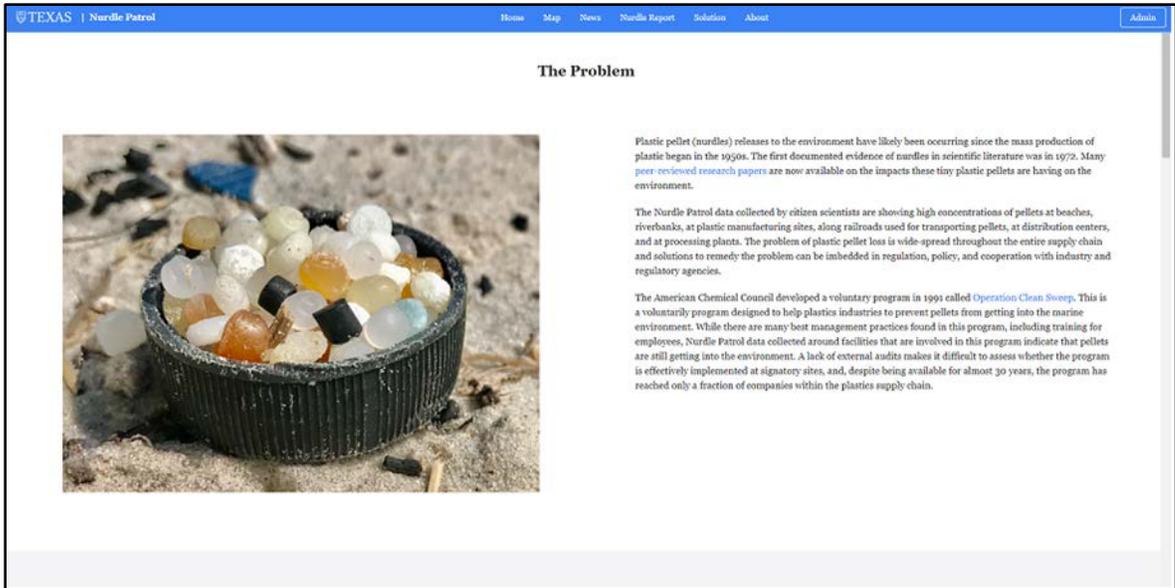


Figure 10. Solution Page (Desktop view).

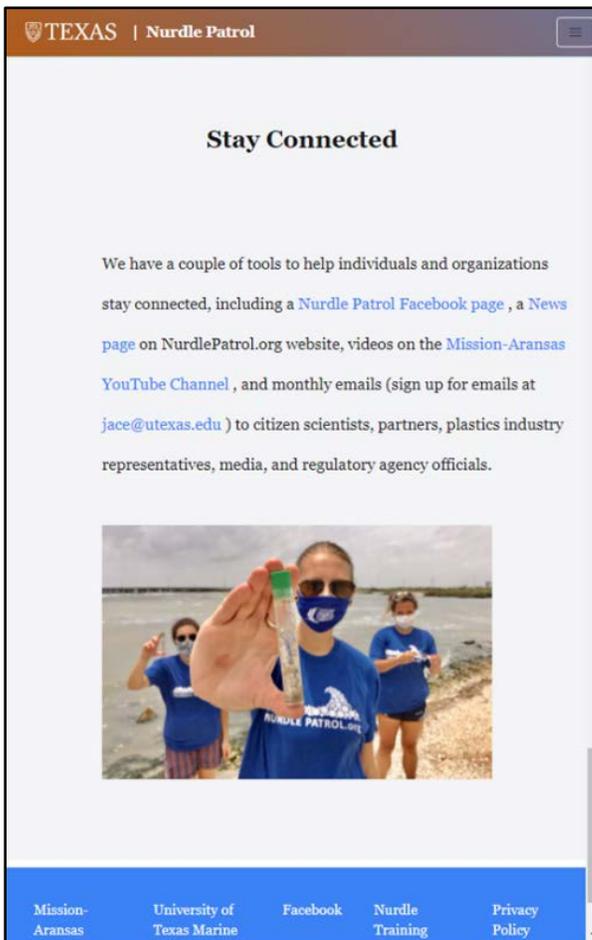


Figure 11. Solution page (Mobile View).

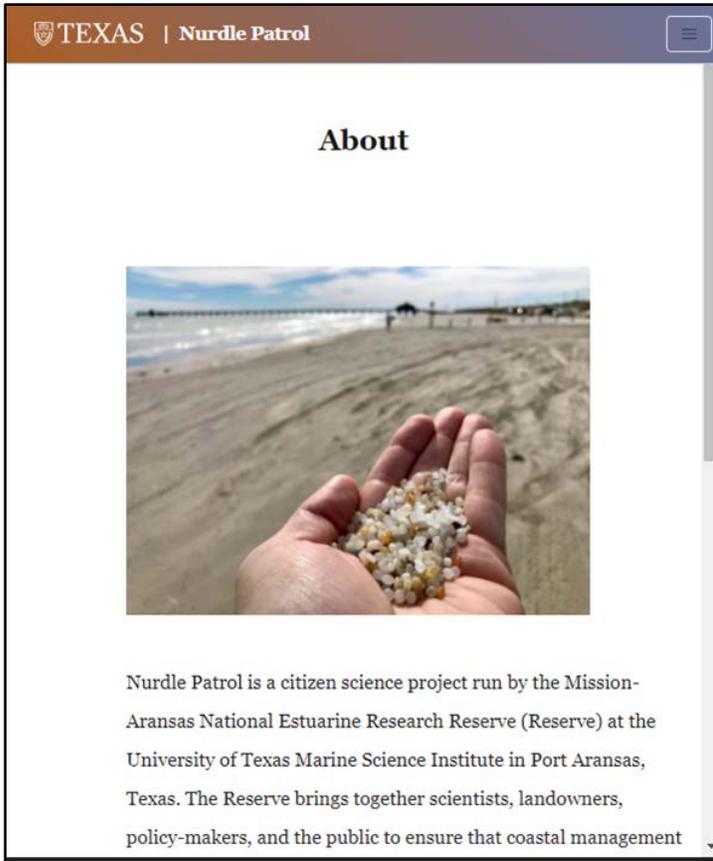


Figure 12. About page (Mobile View).

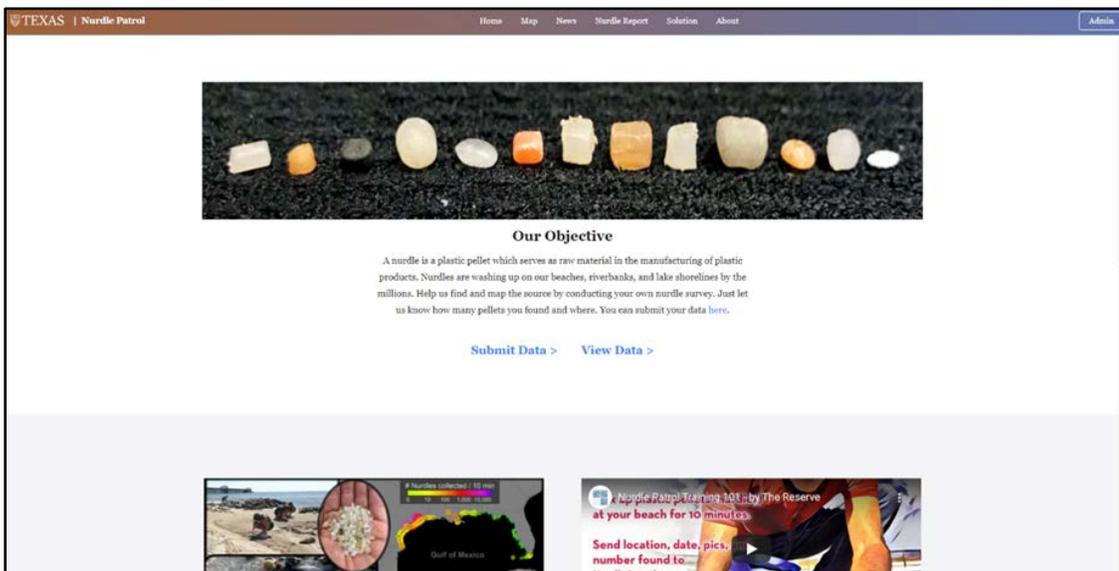


Figure 13. New Home page (Preview).

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 planned. The first video was filmed on July 21, 2021 and is currently being produced. The second video is scheduled for filming on September 27, 2021. The outline for the four-part series is listed below:

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 14). We created this card in English and Spanish (Figure 15).



Figure 14. Nurdle Patrol outreach flyer front and back.



Figure 15. 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 (August 2021) in Port Comfort, Texas near the Formosa Plastics Corporation and the second billboard was installed (September 2021) in close proximity to the new Exxon Mobil plastics plant in Gregory, Texas (Figures 16).



Figure16. Nurdle Patrol billboard campaign.

Summary

A total of 716 surveys were conducted during Year 2, Quarter 1 (Y2Q1) of the Matagorda Bay Mitigation Trust and 19,747 nurdles were removed from the beaches, riverbanks, and lake shorelines of the United States and Mexico. Nurdlepatrol.org acquired 21 new partners and shipped 176 teacher kits to educators in the USA, Canada, UK, Spain, and Africa (Table 3).

Y2Q1	Number of Surveys	Nurdles Removed	New Partners	Teacher Kits
June	237	7,434	14	48
July	278	3,531	4	9
August	201	8,782	3	119
Total	716	19,747	21	176

Table 3: Y2Q1 Progress Report Summary

Obstacles

The main programmer at the Conrad Blucher Institute left the team in late May 2021 and the process of recruiting a new full-time programmer to work on the Nurdle Patrol website and mobile app has been delayed due to the impact of the on-going coronavirus pandemic. However, they recently picked a suitable candidate for the position who is expected to start working in October 2021.