



# Program Activities Guide



## Table of Contents

Item	Page
Introduction to Turtle Trash Collectors	2
Background Information About Marine Debris	3
Interactive Program Video and Resources	4
School Campus Cleanup Extension Activity	5
How to Stay Safe While Collecting Debris	7
Turtle Trash Collectors Digital Badging Resources	8
Additional Optional Extensions	9
Additional Resources	10
Grade Level Guide	10
Sea Turtle Necropsy Datasheet	16
Sea Turtle Necropsy Flipbook	18
Worksheet for School Campus Cleanup Extension Activity	20

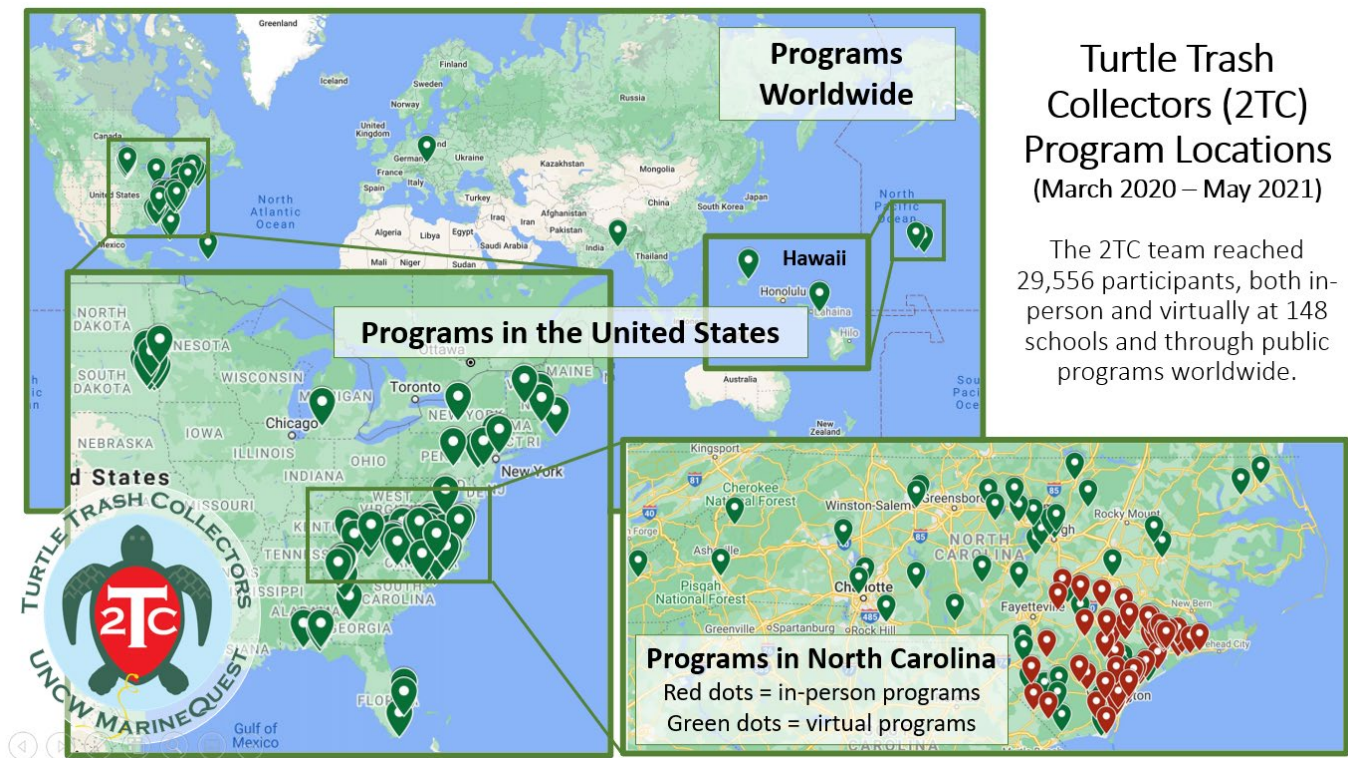
## Introduction to Turtle Trash Collectors

MarineQuest's Turtle Trash Collectors was a University of North Carolina Wilmington environmental education initiative funded by the NOAA Marine Debris Program under grant # NA18NOS9990031. Our goal was to educate youth about the impacts of marine debris and encourage behavior changes that would reduce the generation of marine debris in the future.

From 2019-2021, we reached 29,556 people with our program about the impacts of marine debris. 19,324 (15,823 youth and 3,501 adults) participated in a hands-on simulated necropsy in schools and at public events across Southeastern North Carolina from January 2019-March 2020. We transitioned to virtual programs due to the COVID-19 pandemic in March 2020 and reached an additional 9,037 youth, 914 adults, and 281 additional participants with a virtual version of this program. (Note: Virtual numbers are likely underestimates as we do not always know how many people are viewing the program.)

We created an interactive video of this virtual program to allow teachers and the public to continue learning with us after our grant funding ended. This video, optional lesson extensions, and additional resources are outlined in this program activity guide.





## Turtle Trash Collectors (2TC) Program Locations (March 2020 – May 2021)

The 2TC team reached 29,556 participants, both in-person and virtually at 148 schools and through public programs worldwide.

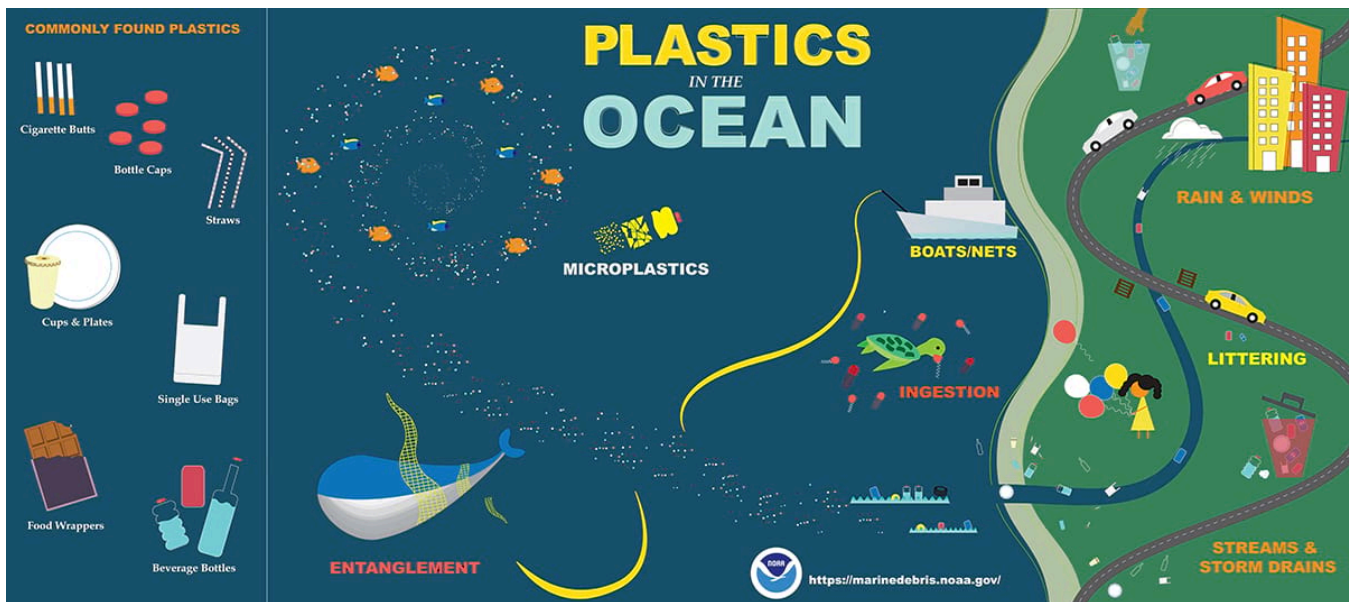
## Background Information About Marine Debris

### *What is marine debris?*

Marine debris is any kind of trash that ends up in the ocean. Trash can get to the ocean in many ways, but the main way is through human pollution on land. The litter in our parks, on our beaches, and in our communities can make its way into waterways that lead to the ocean. There are also ocean-based sources of debris, including fishing activity, offshore drilling, and cargo ships. Marine debris comes in many shapes and sizes. It can be as big as a lost or abandoned fishing vessel, as small as a microbead from a rinse-off face wash, and anything in between. When plastics get into the ocean, they start to break into smaller and smaller pieces, but they never go away completely. Marine debris can be found everywhere in the ocean, from the surface to the seafloor. It collects in areas of ocean circulation called gyres and forms patches of higher amounts of debris.

### *Why is marine debris bad?*

Once this debris gets to the ocean, it can cause many problems for the animals that live there. Animals can be entangled in our trash, which can cause them to drown or affect their health over time. Marine animals sometimes eat marine debris, making them feel full, so they stop eating other, healthy food. This debris can carry toxins, which can build up in our food chains. Marine debris can also damage underwater habitats and ecosystems. Marine debris is also a major problem for people. It can clog up our waterways, making it hard for water to drain during storms and causing flooding. It can cause issues for boat transportations. Trash on our beaches can be dangerous for beachgoers and is bad for our economy in coastal communities. Marine debris and toxins can even be in the seafood we eat!



### *What can we do to stop marine debris?*

The good news about marine debris is that we know the source of the problem... it's us! Anything people use daily can become marine debris if we don't dispose of it correctly or if the wind carries it into the water by accident. It is up to each and every one of us to keep items from becoming marine debris! You can help by reducing how much plastic you use every day! Opt for reusable water bottles, coffee cups, and food containers instead of single-use. You can also help stop litter from making its way to the ocean by picking up any trash you see outside! You can join our Turtle Trash Collectors Digital Badge Program to earn badges for your efforts. Finally, telling others about this important issue is the easiest thing you can do to help keep our seas free of debris because the more people who know about this issue, are more people who can help.

## **Interactive Program Video and Resources**

You can access the **Interactive Program Video** on our website at:

<https://uncw.edu/marinequest/grantsprojects/ttc/interactiveprogramvideo.html>. It is also hosted on the [NOAA Marine Debris Program website](#) and [UNCW MarineQuest's YouTube channel](#). During this video, we conduct a simulated sea turtle necropsy, or animal dissection. We use a model sea turtle that we modified with plush internal organs. Simulations are an incredibly powerful teaching tool and we have found students become very invested in the program and truly feel like a scientist. Please be aware that the model dissection may upset sensitive viewers, especially younger students (2<sup>nd</sup> grade and under). While we do explain that the turtle is a model and that we are doing a simulation, we recommend discussing this with younger viewers before starting the video as needed.

Throughout the video, there will be places to pause and discuss observations and predictions with your students. We also include two optional printable resources ([Datasheet](#) or [Flipbook](#), pictured on the right and included at the end of the guide on pages 15-18) that you can use to keep students engaged. We recommend using one (not both) of these with your students, and we provide places to pause and

record data and information in the recording. The Datasheet is designed for older students (4<sup>th</sup> grade and up), while the Flipbook is ideal for younger viewers (3<sup>rd</sup> grade and younger). Please note that you will need to cut and staple the Flipbook before starting the program. Instructions for assembling the Flipbook are included on page one (the last page of the Flipbook should face "out" to serve as a "cover page"). The rest of this guide provides optional extensions to the recording, including a **School Campus Cleanup Extension Activity**, **How to Stay Safe While Collecting Marine Debris**, our **Digital Badging Resources**, **Additional Extension Activities**, **Additional Resources** about marine debris, and a **Grade Level Guide** for incorporating this lesson into your curriculum for grades K-12.

### Sea Turtle Necropsy Data Sheet

Necropsy Date: \_\_\_\_\_ Data Recorder: \_\_\_\_\_

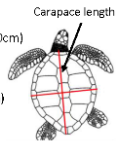
Necropsy Technician(s): \_\_\_\_\_

Sea Turtle Stranding Date: \_\_\_\_\_ Location: \_\_\_\_\_

Turtle Identification #: \_\_\_\_\_

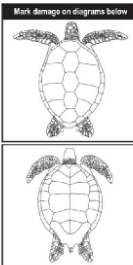


<b>Sea Turtle Species:</b> <input type="checkbox"/> Loggerhead <input type="checkbox"/> Green <input type="checkbox"/> Leatherback <input type="checkbox"/> Hawksbill <input type="checkbox"/> Kemp's Ridley <input type="checkbox"/> Flatback <input type="checkbox"/> Olive Ridley <input type="checkbox"/> Unknown <b>Scientific name:</b> _____		<b>Carapace Length:</b> _____ <b>Estimated Age based on Carapace Length:</b> <input type="checkbox"/> Hatchling (<5cm) <input type="checkbox"/> Post-hatchling (5-10cm) <input type="checkbox"/> Juvenile (10-60cm) <input type="checkbox"/> Sub-adult (60-90cm) <input type="checkbox"/> Adult (>90cm)
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

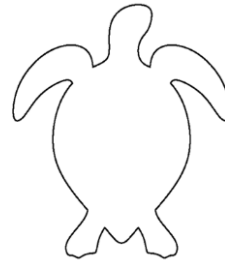


#### External Examination:

Barnacles present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Entangling materials attached? <input type="checkbox"/> Yes <input type="checkbox"/> No
Slicing wounds? <input type="checkbox"/> Yes <input type="checkbox"/> No	Entangling material: <input type="checkbox"/> Fishing line <input type="checkbox"/> Fishing net <input type="checkbox"/> Fishing hook <input type="checkbox"/> Plastic
Bite wound? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Other, describe: _____
Tumors present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Other external observations, describe: _____

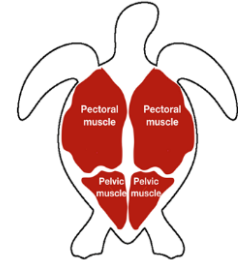


To assemble your sea turtle anatomy flip book, cut along the dotted lines and stack the pages according to page number. Flip page 8 over so the picture faces outward. Staple in the corner where marked.  
External observations:

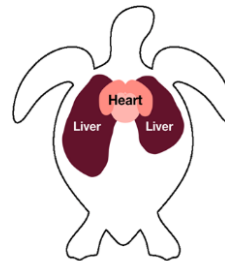


1  
Is there anything wrong with the sea turtles heart or liver?

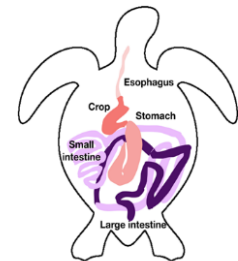
Are the turtles muscles strong or weak?



2  
Write your observations for the digestive system on the next page. Be sure to record what is inside each part or if that section is empty.



3



4

## School Campus Cleanup Extension Activity

**Purpose of activity:** In this activity, students will participate in a school campus cleanup. They will predict where the most litter is likely to be on campus, collect their trash, and analyze what they collected to determine if their predictions were correct. Students will then make predictions about where trash is likely generated in their entire community and where cleanups would be most effective.

### Materials:

- Worksheets for students (can be accessed [here](#) and included at the end of the activity guide on pages 19-20)
- Clipboards and data sheets
- Three trash bins with liners
- Gloves and/or hand sanitizer
- Luggage or food scale to weigh trash collected
- Optional: Turtle Trash Collector Badge Program Classroom Poster ([8.5" x 11" version](#) or [11" x 17" version](#))

## Instructions:

- Review with students how trash gets into the ocean. Use interactive questioning to help students understand that litter makes its way from the ground into waterways and drainage systems to travel to the sea. When trash gets into the ocean, it is called Marine Debris.
- Distribute worksheets and ask students to complete the first question: How does trash get into the ocean?
- Now ask students how can we stop it? The easiest way is to clean up trash before it gets into the ocean, and we can do that by cleaning up litter in our community starting today, right here at school! We will go out to 3 areas of the school grounds. We will use the following for this lesson plan, but you can choose any that work best for your school:

playground, sports fields, and parking lot. Where do you predict we will find the MOST debris? What kind of debris do you expect to find on the playground? Sports fields? Parking lot? Do you think litter is higher at different times of the year? Perhaps during sports season or when the weather is nice? Have students record their predictions on their worksheets.

- Go over litter cleanup safety guidelines (included on the next page).
- Now that we have our predictions and know our safety guidelines, label a trash container with each location. Head out to each place and have students collect trash and deposit it into the appropriate container. (Students can leave their worksheets in the classroom). Have a student record the items and quantities found at each location as it is deposited into the container using the [Ocean Conservancy Volunteer Ocean Trash Data Sheet](#). Alternatively, use the [Marine Debris Tracker App](#) or the [Ocean Conservancy Clean Swell App](#). (NOTE: If using paper data sheets, be sure to [submit the data](#) from your cleanup to the Ocean Conservancy).
- Visit the bathroom and wash hands upon returning to class.
- Have students weigh bags of trash upon return to the classroom and record data on datasheets and worksheets.
- Compile data (and graph if desired) on the board. Were your predictions correct? (Optional: track the trash each student collected using the [Turtle Trash Collectors Badge Program Classroom Poster](#) and request badges at <https://uncw.edu/marinequest/2tc.html>)
- Ask students to brainstorm where else we might find trash in our community. Pull up a google map of your area and identify specific locations where debris might be found and map its pathway to the ocean.
- Have students complete their worksheets by identifying why it is important to pick up trash in our community and identifying how we can use reusable items instead of single-use ones to generate less waste!



## TURTLE TRASH COLLECTORS

A UNCW MarineQuest Program Funded by the NOAA Marine Debris Program

Name: \_\_\_\_\_ Date: \_\_\_\_\_

How does trash get into the ocean? (Be sure to include where it starts, how it moves, and what it might travel through.)

Today we will collect trash at these 3 sites on our school campus:

- 1.
- 2.
- 3.

Where do you think you will find the most trash? Why?

Trash Collection Site	Number of Trash Items Collected	Total Weight of Trash Collected
1.		
2.		
3.		

# How to Stay Safe When Collecting Debris

## Safety first!

Follow these easy safety guidelines to keep yourself safe during your clean up:



Work with an adult: always make sure you have an adult nearby who can help you with your clean up!



Be mindful of where you are at all times and stay with your adult.



Check the weather and tides: do not go out for a cleanup in severe weather. If doing a beach cleanup, try to go at low tide.



Do not touch any item that looks like it may be dangerous, sharp, or rusty! Check with your adult if you are unsure.



Wear reusable gloves and closed-toed shoes: protect your hands and your feet from debris during clean ups by wearing protective, reusable gloves and appropriate footwear. If you do not have gloves, avoid touching sharp objects and be sure to wash your hands after collecting debris.

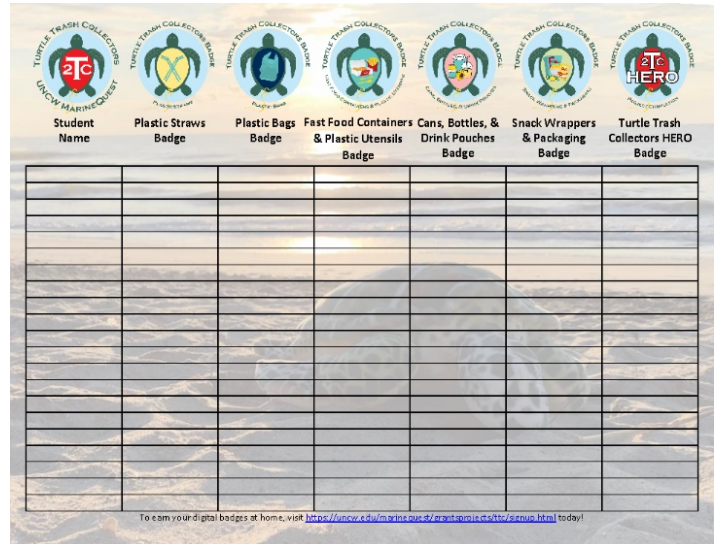


Bring water, snacks, and sunscreen.

**Stay aware of your surroundings and any potential hazards!**

## Turtle Trash Collectors Digital Badging Resources

You can use this digital badge incentive program to get students engaged in collecting trash in your community. We created a **classroom poster** (pictured on the right) to print to keep track of student progress with the digital badging program in the classroom. There is one that will print on 8.5x11 paper and has room for 21 student names that you can access [here](#), and one that will print on 11x17 paper and has room for 30 student names that you can access [here](#). If you hang this in your, students can tally the trash they find in the space provided or check it off when they earn a badge. We recommend collecting 10-20 pieces of debris in a category to earn the badge, but you can modify this number as needed.



You can access and print the badges for your students [here](#), or click each image below to access them online where you can save them on your computer:

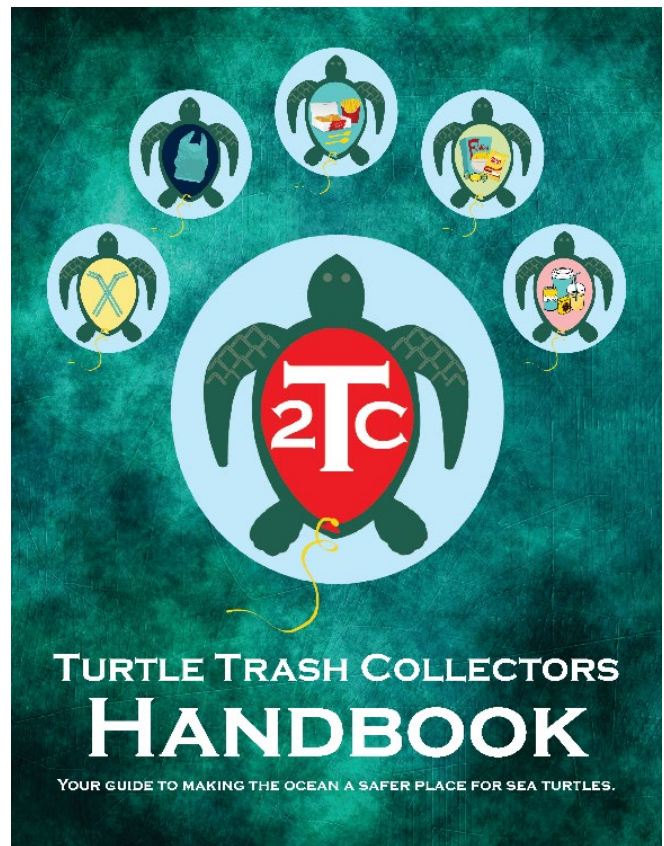




Students can also sign up for the digital badge program with their families at home and receive their badges using an email address. For more information, see the informational flyer on the next page, check out [our digital badging handbook here](#), or visit our website at: <https://uncw.edu/marinequest/2tc.html>

## Additional Optional Extensions

- ❖ Collect litter in your community over time and track what you find during different times of the year. Be sure to record and report your data using the [Marine Debris Tracker App](#) or the [Ocean Conservancy Clean Swell App](#), or use the [Ocean Conservancy Printable Volunteer Ocean Trash Data Sheet](#) and [submit your data here](#).
- ❖ **Upcycling** is taking something that you no longer have use for and turning it into something useful rather than throwing it away. We created [an upcycling activity guide](#) with instructions on making a reusable bag from a t-shirt, a caterpillar out of an egg carton, a milk jug planter, and more!
- ❖ Challenge students to upcycle trash collected during a cleanup into art and host an art walk or art contest.
- ❖ Learn how to pack a lunch that will produce little to no trash with our [Zero-Waste Lunch Challenge: a guide to waste-free eating](#)
- ❖ [My Plastic Footprint: a guide to a plastic-free home](#) shows you how to do a plastic audit in your kitchen and bathroom and suggests some smart swaps you can make to reduce the plastic we use every day.
- ❖ The NOAA Marine Debris Program has many great activities and resources [here](#), especially these [TRASH TALK videos](#).
- ❖ If you and your students want to take another step towards reducing marine debris by reducing trash in your cafeteria, check out [Every Tray Counts](#). This initiative has reduced thousands of pounds of waste in school cafeterias, and they want to help you do the same. Every Tray Counts provides a [detailed guide](#) with various options for reducing the amount of waste created by disposable lunch trays and provides opportunities for composting, recycling, and liquid waste.
- ❖ If you are interested in additional marine and environmental education for your students, our MarineQuest team can work with you to create the perfect program. These highly interactive fee-based virtual programs are aligned with state and national curriculum standards and designed to provide your students with authentic marine science experiences. Please visit [our website](#) to learn more.



## Additional Resources

- ❖ [Karen Beasley Sea Turtle Rescue & Rehabilitation Center website](#)
- ❖ [Plastic Ocean Project website](#)
- ❖ [Traveling Through Trash Program Activities Guide](#)
- ❖ [Ghost \(net\) Busters Program Activities Guide](#)

## Grade Level Guide

In the following table, we have outlined how the Turtle Trash Collectors recording can be incorporated into your curriculum to meet educational standards. We outlined North Carolina Common Core Essential Standards (NCCCES) and the Next Generation Science Standards (NGSS) here, but teachers worldwide have incorporated the program into their curriculums.

Grade Level	North Carolina Common Core Essential Standards	Next Generation Science Standards
<b>Kindergarten</b>	<p><b>K.L.1</b> – Structures and Functions of Living Organisms: Compare characteristics of animals that make them alike and different from other animals and nonliving things.</p> <p><i>We explore different species of sea turtles during the program and compare turtle anatomy to human anatomy. You can extend this by discussing other types of turtles (land and pond turtles) and how turtles move and live.</i></p>	<p><b>K-ESS-3-3</b> – Earth and Human Activity: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p> <p><i>We discuss how everyone can make a difference in preventing marine debris and ask participants to help spread the word and educate others. You can extend this through a writing or drawing activity.</i></p>
<b>First Grade</b>	<p><b>1.L.1</b> – Ecosystems: Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive</p> <p><b>1.L.1.3</b> – Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there (e.g., reuse or recycle products to avoid littering)</p> <p><b>1.L.2.2</b> – Summarize the needs of living organisms for energy and growth – Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.</p>	<p><b>1-LS1-1</b> – From Molecules to Organisms: Structures and Processes: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.</p> <p><i>You can extend the program by having students design devices to remove debris from the ocean or prevent it from getting there by mimicking nature.</i></p>

	<p><i>We discuss ways to prevent marine debris, protect sea turtle nests, and cover sea turtle rehabilitation. We also cover how ingesting marine debris can impact a sea turtle's energy and growth.</i></p>	
<b>Second Grade</b>	<p><b>2.L.1</b> – Structure and Functions of Living Organisms: Understand animal life cycles.</p> <p><i>We briefly discuss the life cycle of sea turtles during the program, but you can expand on it for a more detailed study. You can also show <a href="#">"The Magestic Plastic Bag – a Mockumentary"</a> about how a plastic bag makes its way into the ocean.</i></p>	<p><b>K-2-ETS1-1</b> – Engineering Design: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p><i>You can extend the program by asking students to engineer a solution to marine debris, whether at sea or on land.</i></p>
<b>Third Grade</b>	<p><b>3.L.1</b> – Structure and Functions of Living Organisms: Understand human body systems and how they are essential for life: protection, movement, and support.</p> <p><i>We compare the sea turtle's body parts to a human at many points during the program.</i></p>	<p><b>3-LS4-4</b> Biological Evolution: Unity and Diversity - Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.</p> <p><i>You can extend the program by discussing how marine debris and the production of plastics contributes to climate change and discuss possible solutions to this issue.</i></p>
<b>Fourth Grade</b>	<p><b>4.L.1.1</b> – Ecosystems: Understand the effects of environmental changes, adaptations, and behaviors that enable animals (including humans) to survive in changing habitats – Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.</p> <p><b>4.L.2.1</b> – Molecular Biology: Understand food and the benefits of vitamins, minerals, and exercise – Classify substances as food or non-food items based on their ability to provide energy and materials for survival, growth, and repair of the body.</p> <p><i>We discuss the impacts of marine debris on sea turtles and the ocean environment, including the effects of ingestion.</i></p>	<p><b>3-5-ETS1-2</b> Engineering Design: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p><i>You can extend the program by designing solutions to the marine debris issue and then comparing different designs for merit.</i></p>

<p><b>Fifth Grade</b></p>	<p><b>5.L.1</b> – Structures and Functions of Living Organisms: Understand how structures and systems of organisms (to include the human body) perform functions necessary for life</p> <p><b>5.L.2</b> – Understand the interdependence of plants and animals with their ecosystem</p> <p><i>We discuss the structure and function of a sea turtle's body systems and compare these to humans. We also discuss how all animals and humans are connected within the ecosystem.</i></p>	<p><b>5-ESS3-1</b> Earth and Human Activity: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p> <p><b>5-LS2-1</b> Ecosystems: Interactions, Energy, and Dynamics - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p><i>We discuss ways to prevent marine debris based on an understanding of watersheds. We also cover how plastic can be consumed at many points of the food chain and can accumulate at higher levels. You can extend this with a discussion of bioaccumulation.</i></p>
<p><b>Sixth Grade</b></p>	<p><b>6.L.2.3</b> – Ecosystems: Understanding the flow of energy through ecosystems and the responses of the population to the biotic and abiotic factors in their environment – Summarize how the abiotic factors of biomes affect the ability of organisms to grow and survive</p> <p><i>We discuss how the ingestion of plastic impacts sea turtles and all levels of the food web and how it can bioaccumulate at higher levels.</i></p>	<p><b>MS-PS1-3</b> – Matter and its Interactions: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.</p> <p><i>We discuss the impacts of plastics and other synthetic materials during the program. You can expand on this by looking at how plastic is made.</i></p> <p><b>MS-LS2-1</b> – Ecosystems: Interactions, Energy, and Dynamics: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</p>
<p><b>Seventh Grade</b></p>	<p><b>7.L.1</b> – Structures and Functions of Living Organisms: Understand the processes, structures and functions of living organisms that enable them to survive, reproduce and carry out the basic functions of life</p> <p><i>We discuss the various body systems in a sea turtle and compare them to the human body. You can extend this discussion in the classroom to meet this standard.</i></p>	<p><i>We discuss how plastics in the environment can be mistaken for food by many animals and the impacts of ingestion on animal survival. You can expand on this by discussing how this may impact resource availability and resource dynamics.</i></p>

<p><b>Eighth Grade</b></p>	<p><b>8.L.3</b> – Ecosystems: Understand how organisms interact with and respond to the biotic and abiotic components of their environment</p> <p><i>We discuss how sea turtles interact with marine debris and how they can become entangled in it or ingest it, which is hazardous to their survival.</i></p> <p><b>8.E.1</b> – Earth Systems, Structures, and Processes: Understand the hydrosphere and the impact of humans on local systems and the effects of the hydrosphere on humans</p> <p><b>8.E.1.4</b> – Conclude that the good health of humans requires:</p> <ul style="list-style-type: none"> <li>• Monitoring of the hydrosphere</li> <li>• Water quality standards</li> <li>• Methods of water treatment</li> <li>• Maintaining safe water quality</li> <li>• Stewardship</li> </ul> <p><i>We discuss how human debris can impact our watersheds, oceans, sea turtles, and the world and discuss the need to reduce marine debris. We offer various ways students can help, including reducing the use of single-use items, collecting litter in their community, and educating others about the issue. There are optional extensions provided later in this guide where students can monitor debris in their neighborhood. You can also expand the stewardship piece through public speaking or writing assignments.</i></p> <p><b>8.L.5</b> – Molecular Biology: Understand the composition of various substances as it relates to their ability to serve as a source of energy and building materials for growth and repair of organisms.</p> <p><b>8.L.5.1</b> – Summarize how food provides the energy and the molecules required for building materials, growth and survival of all organisms (to include plants)</p>	<p><b>MS-ESS3-3</b> – Earth and Human Activity: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</p> <p><i>We discuss ways to minimize the impacts of man-made debris on our environment and provide an optional extension activity to collect litter in your community. You can do this over time and monitor changes.</i></p> <p><b>MS-ESS3-4</b> – Earth and Human Activity: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.</p> <p><i>We touch on this topic during the program and you can expand on it through classroom discussions or writing assignments.</i></p> <p><b>MS-LS2-4</b> – Ecosystems: Interactions, Energy, and Dynamics: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</p> <p><i>We discuss how marine debris can impact ecosystems and habitats, and you can expand on this through classroom discussions/writing assignments, or by exploring our <a href="#">Ghost (net) Busters program activities guide</a> biomimicry lesson.</i></p> <p><b>MS-LS2-5</b> – Ecosystems: Interactions, Energy, and Dynamics: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.</p> <p><i>We discuss some of the ways to prevent the generation of marine debris, but there are many new inventions that hope to remove</i></p>
----------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p><i>We discuss how animals need food for energy and need excess food to store energy. We also discuss how ingesting plastic prevents sea turtles and other animals from obtaining the nutrients they need for survival.</i></p>	<p><i>debris from the ocean. You can expand on our program by evaluating some of these designs and discussing how their use may maintain biodiversity.</i></p>
<p><b>High School</b></p>	<p><b>Biology</b></p> <p><b>Bio.2.1</b> - Analyze the interdependence of living organisms within their environments.</p> <p><b>Bio.2.1.2</b> - Analyze the survival and reproductive success of organisms in terms of behavioral, structural, and reproductive adaptations.</p> <p><b>Bio 2.1.3</b> - Explain various ways organisms interact with each other (including predation, competition, parasitism, mutualism) and with their environments resulting in stability within ecosystems.</p> <p><i>We discuss the predators and prey of sea turtles and how ingesting marine debris impacts a sea turtle's reproductive success and overall survival.</i></p> <p><b>Bio.2.2</b> - Understand the impact of human activities on the environment (one generation affects the next).</p> <p><b>Bio.2.2.1</b> - Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction, and introduction of nonnative species) may impact the environment.</p> <p><b>Bio2.2.2</b> - Explain how the use, protection, and conservation of natural resources by humans impact the environment from one generation to the next.</p> <p><i>We discuss this concept in detail during the program, focusing on the impacts of marine debris and prevention strategies. There are many ways you can expand on this topic, including public speaking or writing activities or local debris cleanups.</i></p>	<p><b>HS-LS2-7</b> – Ecosystems: Interactions, Energy, and Dynamics: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.</p> <p><i>You can extend the lesson by having students design, evaluate, and refine solutions to marine debris.</i></p> <p><b>HS-LS2-6</b> – Ecosystems: Interactions, Energy, and Dynamics: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.</p> <p><i>We discuss how marine debris impacts our ocean ecosystems, and you can extend this with a discussion of how this will improve or decline based on human behavior.</i></p> <p><b>HS-LS4-6</b> – Biological Evolution: Unity and Diversity: Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.</p> <p><i>As an extension to our lesson, you can have students design and test a solution to reduce litter in their community.</i></p> <p><b>HS-ESS3-1</b> - Earth and Human Activity: Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.</p>

	<p><b>Earth and Environmental</b></p> <p><b>EEn.2.7.3:</b> Explain how the lithosphere, hydrosphere, and atmosphere individually and collectively affect the biosphere. - Explain how human activities impact the biosphere.</p> <p><i>We discuss how the Earth's waterways are all connected to the ocean and broken into watersheds and how litter anywhere in the world will eventually end up in the ocean.</i></p> <p><b>EEn.2.8.4:</b> Evaluate human behavior in terms of how likely they are to ensure the ability to live sustainably on Earth. - Evaluate the concept of "reduce, reuse, recycle" in terms of impact on natural resources.</p> <p><i>During our program wrap up we focus on the importance of reducing and reusing to prevent marine debris. We also provide some guides for reducing your personal use of plastics in our Plastic Footprint activity and How to Pack a Waste-Free Lunch guide.</i></p>	<p><i>We discuss the invention of plastic from fossil fuels and how it has drastically changed how humans live. You can expand on this point through public speaking or writing activities, focusing on how long plastic stays in our environment and the hazards it creates for our planet.</i></p> <p><b>HS-ESS3-4</b> – Earth and Human Activity: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.</p> <p><i>We discuss ways to prevent the generation of marine debris, but many new inventions hope to remove debris from the ocean. You can expand on our program by evaluating some of these designs and discussing how their use may restore our planet's natural systems.</i></p> <p><b>HS-ETS1-3</b> – Engineering Design: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.</p> <p><i>As an extension, have students evaluate some of the new inventions that hope to remove debris from the ocean or stop it from getting there.</i></p>
--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

# Sea Turtle Necropsy Data Sheet



Necropsy Date: \_\_\_\_\_ Data Recorder: \_\_\_\_\_

Necropsy Technician(s): \_\_\_\_\_

Sea Turtle Stranding Date: \_\_\_\_\_ Location: \_\_\_\_\_

Turtle Identification #: \_\_\_\_\_

**Sea Turtle Species:**

Loggerhead       Green

Leatherback       Hawksbill

Kemp's Ridley       Flatback

Olive Ridley       Unknown

**Scientific name:** \_\_\_\_\_

**Carapace Length:** \_\_\_\_\_

**Estimated Age based on Carapace Length:**

Hatchling (<5cm)

Post-hatchling (5-10cm)

Juvenile (10-60cm)

Sub-adult (60-90cm)

Adult (>90cm)

## External Examination:

Barnacles present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Entangling materials attached? <input type="checkbox"/> Yes <input type="checkbox"/> No
Slicing wounds? <input type="checkbox"/> Yes <input type="checkbox"/> No	Entangling material: <input type="checkbox"/> Fishing line <input type="checkbox"/> Fishing net <input type="checkbox"/> Fishing hook <input type="checkbox"/> Plastic
Bite wound? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Other, describe:
Tumors present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Other external observations, describe:

**Mark damage on diagrams below**



## Internal Examination:

Muscles: <input type="checkbox"/> strong/big muscles <input type="checkbox"/> some/small muscle <input type="checkbox"/> no muscle
Heart: <input type="checkbox"/> no findings <input type="checkbox"/> trauma, describe: _____
Liver: <input type="checkbox"/> no findings <input type="checkbox"/> trauma, describe: _____
Digestive System: Esophagus: <input type="checkbox"/> empty <input type="checkbox"/> contents, describe: _____ Crop: <input type="checkbox"/> empty <input type="checkbox"/> contents, describe: _____ Stomach: <input type="checkbox"/> empty <input type="checkbox"/> contents, describe: _____ Small intestine: <input type="checkbox"/> empty <input type="checkbox"/> contents, describe: _____ Large intestine: <input type="checkbox"/> empty <input type="checkbox"/> contents, describe: _____
Lungs: <input type="checkbox"/> no findings <input type="checkbox"/> trauma, describe: _____
Fat: <input type="checkbox"/> lots of fat <input type="checkbox"/> some fat <input type="checkbox"/> no fat
Cause of death:

**How does trash get into the ocean? Can trash in your neighborhood make its way to the sea?**

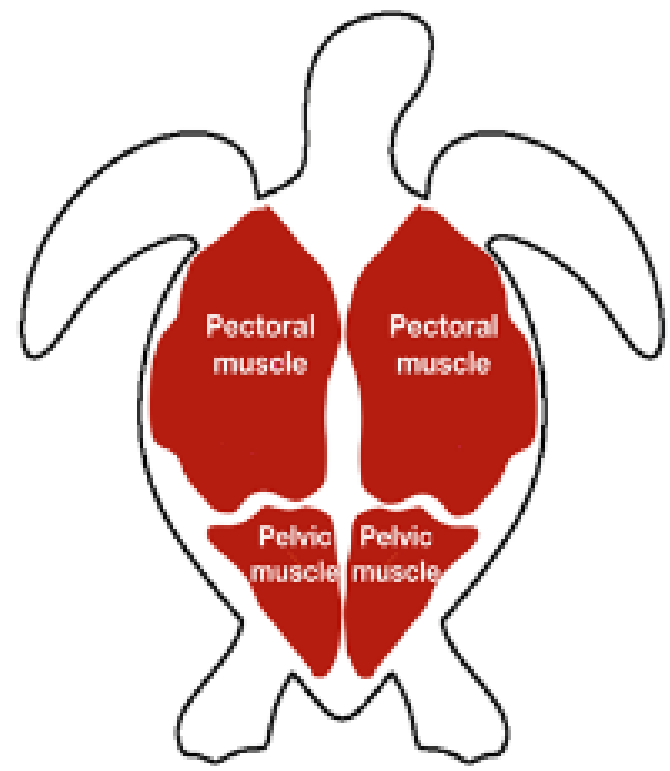
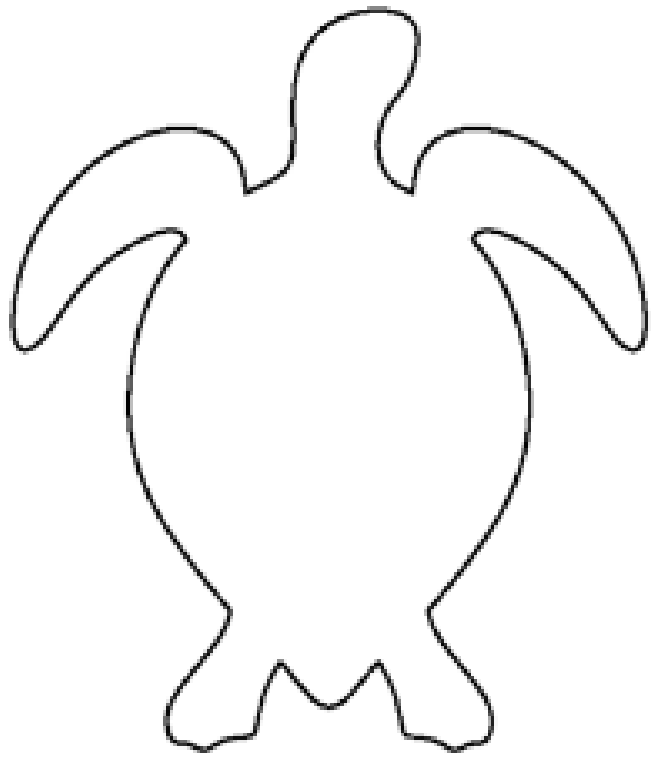
**How can we can stop marine debris from killing other sea turtles and animals in the ocean?**

- 1.
- 2.
- 3.

To become a Turtle Trash Collector, visit our website: <https://uncw.edu/marinequest/grantsprojects/ttc/signup.html>

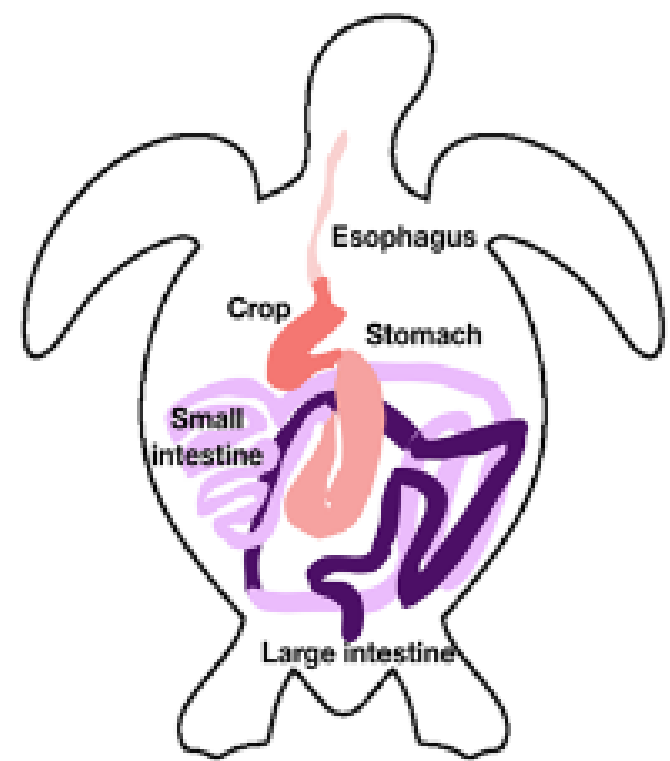
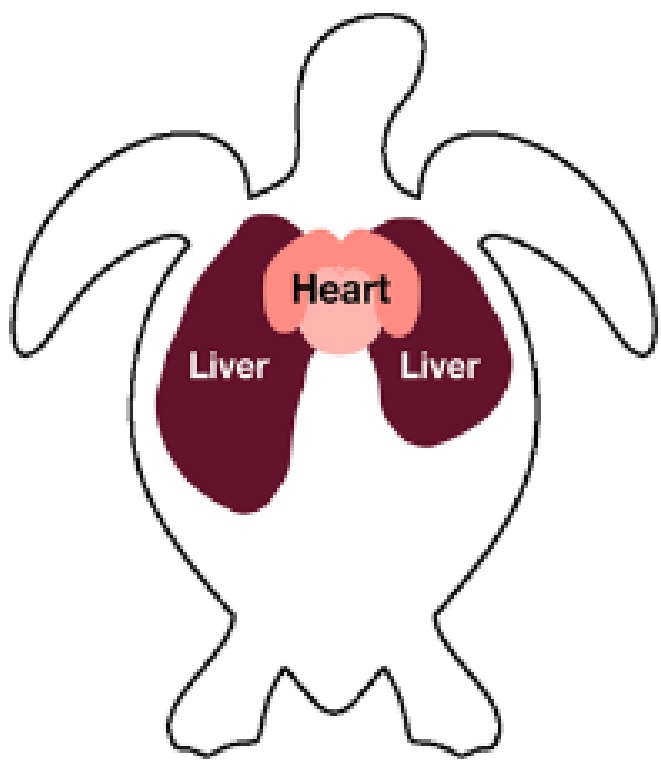
To assemble your sea turtle anatomy flip book, cut along the dotted lines and stack the pages according to page number. Flip page 8 over so the picture faces outward. Staple in the corner where marked.

External observations:



Is there anything wrong with the sea turtles heart or liver?

Write your observations for the digestive system on the next page. Be sure to record what is inside each part or if that section is empty.



**Digestive System Observations:**

Esophagus:

Crop:

Stomach:

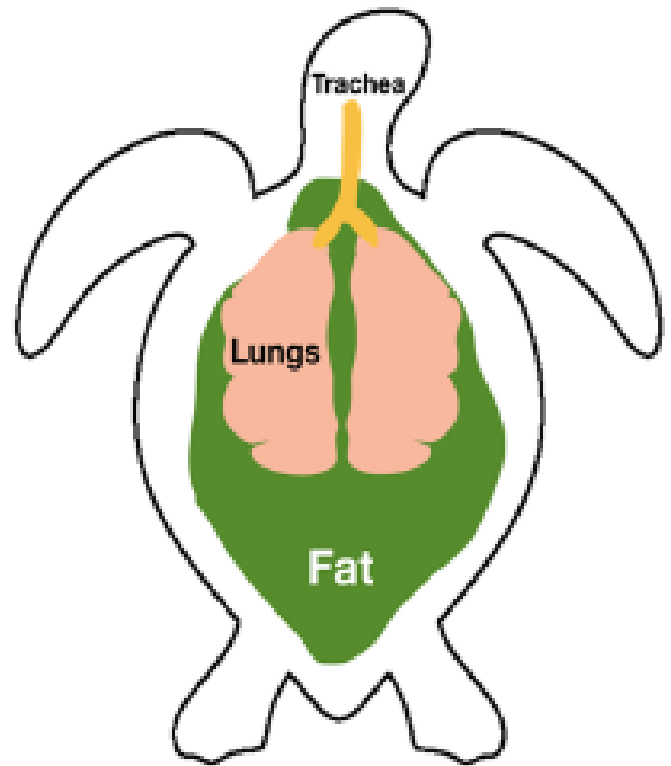
Intestines:

\_\_\_\_\_

Why did the sea turtle eat marine debris?

5

Is there anything wrong with the sea turtles lungs or fat?



6

How can litter in your neighborhood make its way to the sea?

Name: \_\_\_\_\_

Species: \_\_\_\_\_

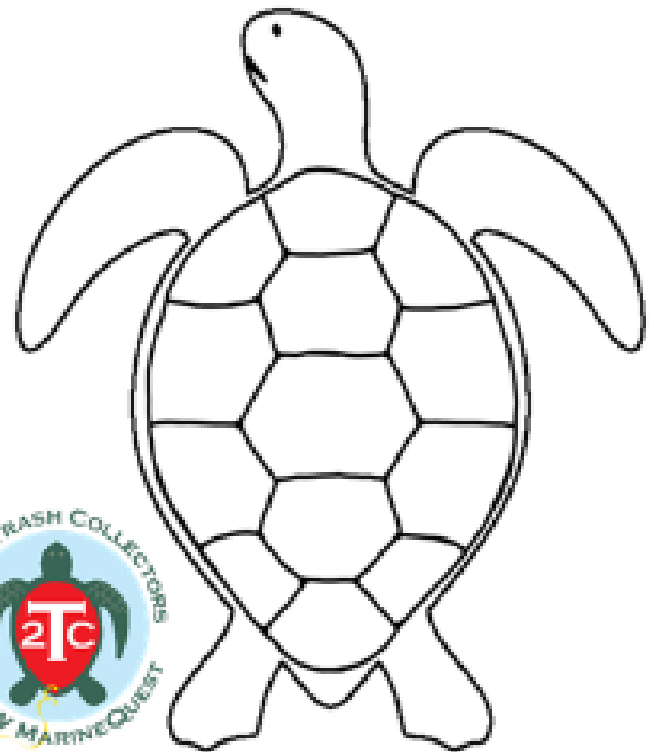
Age: \_\_\_\_\_

How can we can stop marine debris from killing other sea turtles and animals in the ocean?

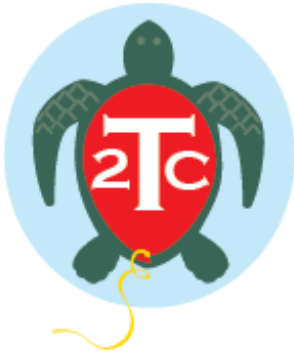
- 1.
- 2.
- 3.

Become a Turtle Trash Collector today!  
Visit our website to learn more and sign up:  
[uncw.edu/marinequest/grantsprojects/2TC](http://uncw.edu/marinequest/grantsprojects/2TC)

7



8



# TURTLE TRASH COLLECTORS

A UNCW MARINEQUEST PROGRAM FUNDED BY THE NOAA MARINE DEBRIS PROGRAM

Name: \_\_\_\_\_ Date: \_\_\_\_\_

How does trash get into the ocean? (Be sure to include where it starts, how it moves, and what it might travel through.)

Today we will collect trash at these 3 sites on our school campus:

- 1.
- 2.
- 3.

Where do you think you will find the most trash? Why?

Trash Collection Site	Number of Trash Items Collected	Total Weight of Trash Collected
1.		
2.		
3.		

Were your predictions correct?

Where else might we find litter in our community?

Why is it important to pick up litter in our community?

What else can you do to help prevent marine debris?

Match the reusable alternative to the following single use items:

**Single use items:**

Plastic water bottle

Ziploc baggie

Plastic straw

Plastic grocery bag

Paper lunch bag

Disposable diaper

**Reusable alternatives:**

Metal straw or No straw

Reusable bag

Glass water bottle

Lunch box

Cloth diaper

Tupperware container