**Appendices**

Table S1. US Next Generation Science Standards that may align with marine debris content (NGSS, 2013).

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| **NGSS Science & Engineering Practice (SEP)** | **Examples at matched grade level (3-5)** |
| **Asking Questions & Defining Problems** | • Ask questions about what would happen if a variable is changed. • Identify scientific (testable) and non-scientific (nontestable) questions. • Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. • Use prior knowledge to describe problems that can be solved. • Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. |
| **Developing and Using Models** | • Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution. • Develop and/or use models to describe and/or predict phenomena. • Develop a diagram or simple physical prototype to convey a proposed object, tool, or process. • Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system. |
| **Planning and Carrying Out Investigations**  | • Evaluate appropriate methods and/or tools for collecting data. • Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. |
| **Analyzing & Interpreting Data** | • Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings. • Analyze data to refine a problem statement or the design of a proposed object, tool, or process. • Use data to evaluate and refine design solutions. |
| **Using Mathematics and Computational Thinking** | • Organize simple data sets to reveal patterns that suggest relationships. • Describe, measure, estimate, and/or graph quantities (e.g., area, volume, weight, time) to address scientific and engineering questions and problems. |
| **Constructing Explanations and Designing Solutions** | • Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard). • Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem. • Identify the evidence that supports particular points in an explanation. • Apply scientific ideas to solve design problems. • Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. |
| **Engaging in Argument from Evidence** | • Compare and refine arguments based on an evaluation of the evidence presented. • Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation. • Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions. • Construct and/or support an argument with evidence, data, and/or a model. • Use data to evaluate claims about cause and effect. • Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. |
| **Obtaining, Evaluating, and Communicating Information** | • Read and comprehend grade-appropriate complex texts and/or other reliable media to summarize and obtain scientific and technical ideas and describe how they are supported by evidence. • Compare and/or combine across complex texts and/or other reliable media to support the engagement in other scientific and/or engineering practices. • Combine information in written text with that contained in corresponding tables, diagrams, and/or charts to support the engagement in other scientific and/or engineering practices. • Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. • Communicate scientific and/or technical information orally and/or in written formats, including various forms of media as well as tables, diagrams, and charts. |

Table S2. Text of selected North Carolina state standards (NCSCOS – North Carolina Standard Course of Study) that may be easily tied to marine debris education (Instructional Services, North Carolina Department of Public Instruction, 2010).

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| **Subject** | **NCSCOS Standard**  | **Text** |
| Science | 4.L.1.1*,* 4.L.1.3 | *Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful;* and *Explain how humans can adapt their behavior to live in changing habitats.* |
| English Language Arts | 4.R.7 | *Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* |
| Math | 4.NBT.5 | *Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers.* |
| Social Studies | 4.G.1.3 | *Exemplify the interactions of various peoples, places and cultures in terms of adaptation and modification of the environment*. |
| Technology | 4.TT.1 | *Use technology tools and skills to reinforce classroom concepts and activities.* |
| Art | 4.V.3.3 | *Create art using the processes of drawing, painting, weaving, printing, stitchery, collage, mixed media, sculpture, ceramics, and current technology.* |

**Table S3.** Image of University of Toronto Trash Team’s Curriculum Connections demonstrating how their lessons are tied to marine debris educational standards in Ontario, Canada **(**Rochman Lab, 2020)**.**

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