

Instructional Plan: Seashore for Grades 3, 4, and 5

The overlying objective of the Nassau BOCES Pond Program is to provide specific content aligned to each grades' science curriculum while also providing real world applications for NYS ELA and Math Common Core Standards. Alignments are on reverse side of this document.

Vocabulary (teacher may add to list or request emphasis)

adaptation	abiotic/biotic	algae
bivalve	crustacean	cycle
erosion	filter feeder	glacier
habitat	holdfast	intertidal
macro	micro	mollusk
moraine	neap tide	niche
plankton	producer/consumer	
predator	prey	salinity
scavenger	sediment	tide pool
spring tide	strand line	univalve

Program Logistics:

- Group Size: 15 students/naturalist
- 1 adult chaperone/student group
- 1.5-2 hr session that is typically combined with another program for a 4 hr. day.
- The Pond is located at Caumsett State Historic Park. The Program is also possible at a location near your school.

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516-396-2264

See us online:

www.nassauboces.org/enviroed



We are more than just a field trip... we provide a learning environment for your students!

Students observe and collect organisms found along the shoreline.

Lesson Objectives: Students will be able to...

- **Describe how Long Island was formed**
- **Describe what causes tides and their effect on land in terms of:**
 - Tidal pools
 - Spring and Neap tides
 - Development of strand lines and evidence of human impact.
- **Describe abiotic and structural factors that affect life found on a north shore beach including:**
 - Changes in salinity
 - Temperature changes
 - Slope of the beach
 - Erosion and sedimentation
- **List plants and animals that live in a seashore ecosystem with emphasis on:**
 - The adaptations of organisms living in the intertidal zones.
 - Food webs and nutrient cycles.
 - Predator/prey relationships and the effect of invasive species.

Instructional Activities (can include but not limited to):

- Observing properties of natural materials (color, shape, size, texture) found in the seashore ecosystem.
- Observing, collecting, counting, and sorting living and non-living specimens
- Comparing north and south shore beaches.
- Using field guides, keys and charts to identify organisms
- Use of field instruments to gather abiotic data and collect and observe specimens.
- Observing the evidence of tidal changes and quantifying animal populations by zonation.
- Observing evidence of human impact.

Assessment

- The program will end with a summative "Q & A." focusing on the lesson's objectives.
- The teacher may elect to have students complete data sheets and/or writing activities back in the classroom.

Standard Alignments for Seashore Program for grades 3, 4 and 5

Standards Type	Key Standards or Code	Standard Description	Instructional Activities
NYS Science Core Curriculum	Scientific Inquiry S 1.1 thru 1.3; S3.1 thru S3.3	Ask "why" questions in attempts to seek greater understanding concerning observed objects and events; seek clarification, organize objects/data through classification and use of simple charts and tables; interpret and recognize simple patterns/relationships.	The whole session is inquiry and discovery based. Students will use charts and keys as tools for species identification. Web of Life games will be used for students to recognize species interrelationships.
	Standard 4 Living Environment	<p>Key Idea 1: Living things are both similar to and different from each other and nonliving things.</p> <p>Key Idea 3: Individual organisms and species change over time.</p> <p>Key Idea 4: The continuity of life is sustained through reproduction and development.</p> <p>Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.</p> <p>Key Idea 6: Plants and animals depend on each other and their physical environment.</p> <p>Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.</p>	The Key ideas for Standard 4 are addressed throughout the program. Observations and discussions include organisms' life cycles; adaptations of plants and animals living in a constantly changing environment; nutrient cycles; a web of life game to demonstrate inter-relationships, plant and animal adaptations. Evidence of human impact is ever present and "captured" in the strand lines created by incoming tides
NYS Common Core	Supporting Standards	Description	Instructional Activities
Math	Operations and Algebraic Thinking	<p>Grade 3: Represent and solve problems involving multiplication and division.</p> <p>Grade 4: Use the four operations with whole numbers to solve problems.</p> <p>Grade 5: Write and interpret numerical expressions. Analyze patterns and relationships.</p>	Using a square foot quadrat, students will count the numbers of snails, barnacles, mussels and crabs found in the intertidal zone to determine the highest population concentrations based on species' tolerance to exposure.
Math	Number and Operations in Base Ten	<p>Grade 3: Use place value understanding and properties of operations to perform multi-digit arithmetic.</p> <p>Grade 4: Use place value understanding and properties of operations to perform multi-digit arithmetic.</p> <p>Grade 5: Understand the place value system. Perform operations with multi-digit whole numbers and with decimals to hundredths.</p>	
Math	Measurement and Data	<p>Grade 3: Represent and interpret data.</p> <p>Grade 4: Represent and interpret data.</p> <p>Grade 5: Represent and interpret data.</p>	
ELA Anchor Standards Grades K-5	Comprehension & Collaboration	1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.	Students will participate in conversations related to their observations and data collection.
	Presentation of Knowledge and Ideas	4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.	Students in pairs or in groups of 3-4 will be responsible for presenting their observations/collections of organisms to the larger group
	Vocabulary Acquisition and Use	4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.	Students will use content-driven vocabulary throughout the program and practice the use of root words, prefixes and suffixes to determine meaning (example: macro, micro; bivalve, univalve)