

# Nassau BOCES Outdoor & Environmental Education

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

The overlying objective of the Nassau BOCES Seashore Program is to provide specific content aligned to each grades' science curriculum and 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 program takes place at Caumsett State Historic Park. The Program is also possible at a location near your school.

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516-396-2264

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[www.nassauboces.org/outdoors](http://www.nassauboces.org/outdoors)



*We are more than just a field trip... we provide a learning experience 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, and 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

## 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     | <b>Scientific Inquiry</b> 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.  |
|                                 | <b>Standard 4 Living Environment</b>                     | <p><b>Key Idea 1:</b> Living things are both similar to and different from each other and nonliving things.</p> <p><b>Key Idea 3:</b> Individual organisms and species change over time.</p> <p><b>Key Idea 4:</b> The continuity of life is sustained through reproduction and development.</p> <p><b>Key Idea 5:</b> Organisms maintain a dynamic equilibrium that sustains life.</p> <p><b>Key Idea 6:</b> Plants and animals depend on each other and their physical environment.</p> <p><b>Key Idea 7:</b> Human decisions and activities have had a profound impact on the physical and living environment.</p> | <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.</p> <p>Evidence of human impact is ever present and “captured” in the strand lines created by incoming tides</p> |
| NYS Common Core                 | Supporting Standards                                     | Description   | Instructional Activities   |
| Math                            | Operations and Algebraic Thinking                        | <p><b>Grade 3:</b> Represent and solve problems involving multiplication and division.</p> <p><b>Grade 4:</b> Use the four operations with whole numbers to solve problems.</p> <p><b>Grade 5:</b> 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><b>Grade 3:</b> Use place value understanding and properties of operations to perform multi-digit arithmetic.</p> <p><b>Grade 4:</b> Use place value understanding and properties of operations to perform multi-digit arithmetic.</p> <p><b>Grade 5:</b> Understand the place value system. Perform operations with multi-digit whole numbers and with decimals to hundredths.</p>  |  |
| Math                            | Measurement and Data                                     | <p><b>Grade 3:</b> Represent and interpret data.</p> <p><b>Grade 4:</b> Represent and interpret data.</p> <p><b>Grade 5:</b> 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)   |