

# Unit 4: Marine Ecosystems of Long Island Sound

## Marine Science

15 Classes

*Created February 2026*

### Essential Questions

- How do the varying ecosystems of Long Island Sound contribute to the diverse life that inhabits this estuary?
- How do we impact the organisms and habitats of Long Island Sound?

### Enduring Understandings with Unit Goals

**EU 1:** Students will understand that organisms are adapted for particular habitats and that loss of that habitat can impact the health of Long Island Sound.

- Long Island Sound is a diverse ecosystem that has various habitats within its estuary.
- Long Island Sound is home to many people, leading to impacts and changes on the environment.

**EU 2:** Formulate a hypothesis about how changes in temperature might affect the organisms living in the intertidal zone.

- Organisms are adapted to particular environments and abiotic or biotic changes can have drastic impacts on organisms within an ecosystem.

### Standards

#### Common Core State Standards

- **CCSS.ELA-LITERACY.RST.6-8.1** Cite specific textual evidence to support analysis of science and technical texts.
- **CCSS.ELA-LITERACY.RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- **CCSS.ELA-LITERACY.RST.6-8.4** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

#### Next Generation Science Standards

- **MS-ETS1-2 Engineering Design** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- **MS-ESS3-5 Earth and Human Activity** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
- **MS-LS2-4:** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

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### ISAAC Vision of the Graduate Competencies

**Competency 1:** Write effectively for a variety of purposes.

**Competency 2:** Speak to diverse audiences in an accountable manner.

**Competency 3:** Develop the behaviors needed to interact and contribute with others on a team.

**Competency 4:** Analyze and solve problems independently and collaboratively.

**Competency 5:** Be responsible, creative, and empathetic members of the community.

### Unit Content Overview

- Long Island Sound Overview
  - What is an Estuary?
  - Long Island Sound characteristics
- Coastal Grasslands
  - Buffers to storms
  - Nurseries- organisms that live in the coastal grasslands
  - Ecosystem services and threats to coastal grasslands
- Saltmarshes
  - Zones of the saltmarsh
  - Saltmarsh organisms
  - Ecosystem services and threats to saltmarshes
- Sandy Beaches
  - Organisms that call sandy beaches their home
  - Ecosystem services and threats to sandy beaches
  - Sand Microscope Lab
- Rocky Intertidal
  - Rocky Intertidal adaptations
  - Organisms in the rocky intertidal
  - Ecosystem services and threats to the rocky intertidal
- Tidal Flats
  - Tidal mudflat organisms
  - Ecosystem services and threats to tidal mudflats
- Submerged Aquatic Vegetation Zone
  - Importance of eelgrass beds
  - Ecosystem services and threats to eelgrass beds

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- Organisms within the eelgrass
- Open Water
  - Fish of LIS
  - Marine Mammals of New England
  - Sea turtles

#### **KeyTerms and Vocabulary:**

Estuary, Ecosystem services, Habitat, Provision, Regulation, Filtration, Erosion, Nursery, Peat, Hypoxia, Economical, Ecological, Littoral, Wrack line, Longshore currents, Longshore drift, Tombolo, Sand spit, Sand bar, Barrier Islands, Jetties, Zonation, Desiccation

**Interdisciplinary Connections:** Language Arts, Mathematics, Science

### Daily Learning Objectives with *TWPS*

#### Students will be able to...

- Explore different marine ecosystems within Long Island Sound and their characteristics.
  - *How do marine ecosystems differ within Long Island Sound?*
  - *What influences these differences in habitats within Long Island Sound?*
- Explore the various ecosystem services each habitat provides for us.
  - *What are the ecosystem services habitats can provide for us?*
  - *How do these ecosystem services vary between habitats?*
- Interpret the various threats and stressors each habitat is under.
  - *What are the various threats and stressors organisms are facing in Long Island Sound?*
- Explain why certain organisms are only found in particular habitats within the sound.
  - *Why can organisms only be found in particular habitats?*
  - *How are organisms adapted to their particular habitats?*
- Investigate what is happening to sand around the world
  - *Why is there a sand crisis and what is being done to combat this?*
  - *Why does sand look different around the world?*
  - *How does sand differ between locations within Long Island Sound?*
- Analyze how the various habitats within Long Island Sound are connected and influenced by one another.
  - *How do the habitats in Long Island Sound influence one another?*
  - *How can habitats change over time?*
- Explain how Long Island Sound is influenced by the Atlantic Ocean.
  - *How is Long Island Sound influenced by the Atlantic Ocean?*
- Predict how humans can impact life within Long Island Sound.
  - *How do humans impact life within Long Island Sound?*
  - *How is CT monitoring the water quality within Long Island Sound?*

## Unit 4: Marine Ecosystems of Long Island Sound Marine Science

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### Instructional Strategies/Differentiated Instruction

- Daily Warm Up Activities
- Lecture slides with guided note-taking
- Flexible grouping
- Exit slips
- Graphic Organizers
- Creating authentic connections for students
- Rephrasing and restatement of information and concepts
- Student use of headphones
- Independent reading
- Outlining of text
- Determining central ideas, paraphrasing
- Laboratory Experiences

#### **EL Differentiated Instruction:**

- Sentence starters
- Simplified direction
- Prompting and questioning
- Alternate responses when needed
- Explicit modeling
- Key vocabulary
- Visuals
- Graphic organizers
- KWL charts
- Venn diagram
- Glossary

### Assessments

#### **FORMATIVE ASSESSMENTS:**

- Warm Up Activities
- Daily check-ins with students

#### **SUMMATIVE ASSESSMENTS:**

- Quiz on EU 1
- Quiz on EU 2
- Unit Task
- Unit Test

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#### Unit Task

**Unit Task Name:** Long Island Sound Diorama

**Description:** Students will create a shoebox diorama or infographic of a habitat within Long Island Sound highlighting the characteristics of the habitat (EU 1), the organisms that live there, its ecosystem services, threats this habitat is facing as well as steps to care for this habitat. (EU 2)

**Evaluation:** Teacher Created Problem Solving Rubric

#### Unit Resources

- Chromebook
- Internet Access
- Marine Touch Exhibit
- Pear Assessment
- Newsela
- A Virtual Tour of Long Island Sound Habitats NY/CT Sea Grant Long Island Sound Study