

Outer Island



Location: *Outer-most of the Thimble Islands
offshore Stony Creek, Branford, CT.*

A brief Osprey's Eye View of Outer Island





Stony Creek Landing/Dock

Outer Island, CT



Google[™] earth



GLOBE Data Entry Site Names (for 21st Annual Meeting activities):

Outer Island / *GLOBE Data Entry Site Definitions* / *Login to use these for Site Data Entry*

Outer Island WeatherBug Station - Thimble Islands, CT

Latitude 41.241911, Longitude -72.760043, Elevation 5m

OI Hydro 01 Dock

Latitude 41.242289, Longitude -72.75993, Elevation 2m

OI Tidepool 01

Latitude 41.241632, Longitude -72.759679, Elevation 1.8m

OI Tidepool 02

Latitude 41.241007, Longitude -72.760313, Elevation 1.5m

OI Salt Marsh 01

Latitude 41.242072, Longitude -72.760164, Elevation 1m

OI Salt Marsh 02

Latitude 41.241531, Longitude -72.760383, Elevation 1m

OI Beach

Latitude 41.242022, Longitude -72.759941, Elevation 0.5m

OI Rocky Intertidal 01

Latitude 41.24175, Longitude -72.759779, Elevation 0.5m

OI Rocky Intertidal 02

Latitude 41.241386, Longitude -72.759742, Elevation 0.5m



The recent addition of the pavilion and the renovation of the associated laboratory building provide excellent facilities in support of visiting group activities and explorations.



Outer Island Education & Research opportunities are coordinated through the Connecticut State University System, where both researchers and students engage in study of the island's unique habitats and species, as well as other physical and biological aspects of Long Island Sound and the Thimble Islands chain.



Outer Island Conservation is focused on the priorities of the US Fish & Wildlife Service's Stewart B. McKinney Wildlife Preserve—maintain important resting, feeding, and nesting habitat for many species of wading birds, shorebirds, songbirds and terns, including the Endangered Roseate Tern.



Outer Island Habitats are perfect little examples—exemplars of those original and unspoiled Coastal Connecticut environments, including: Bedrock Shorelines, Rocky Intertidal, Beach, and Salt Marsh.



21st Annual GLOBE Meeting

Field Sites: *locations, descriptions, activities/protocols, procedures, timeline, rotation.*

Outer Island | Overview & Safety

Location: *Outer-most of the Thimble Islands offshore Stony Creek, Branford, CT.*



Descriptions: *Atmosphere Site at the Research Laboratory & Pavilion.*

Procedures: *Friends of Outer Island along with Island Interns will introduce Outer Island; a bit of history, geology and how the site became a part of the Stewart B. McKinney Wildlife Preserve. Island facilities including restroom/outhouse along with Island rules and safety issues will be addressed.*

Timeline: *10:15 am to 10:30am*

Rotation: *At @ 10:30am Atmosphere Teams and Island Tours Teams will divide up and proceed to their stations.*





21st Annual GLOBE Meeting

Field Sites: *locations, descriptions, activities/protocols, procedures, timeline, rotation.*

Outer Island | Atmosphere

Location: *Outer-most of the Thimble Islands offshore Stony Creek, Branford, CT.*

Descriptions: Atmosphere Site

at the Research Laboratory & Pavilion; Earth Networks | WeatherBug Automated Weather Station, and Using Handheld Weather Meters.... also view the live webcams.

Activities/Protocols: Atmosphere

Clouds App, Charts, Weather Meter (temp, humidity, pressure, dew point, winds).

Procedures: *Use GLOBE Observer Clouds App and Data Entry App, Charts, etc. Cloud Cover, Cloud Types, Contrails, WeatherBug Automated Weather Station, and Using Handheld Weather Meters. Review 6 month Air/Soil temperate record, noting overall trend and variability.*

Timeline: *10:30am to 11:30am*

Rotation: *At 11:00am Atmosphere Team will rotate to Tour the Island.*

Lunch: *11:30am - 12:00noon*





21st Annual GLOBE Meeting

Field Sites: *locations, descriptions, activities/protocols, procedures, timeline, rotation.*

Outer Island | Island Tour

Location: *Outer-most of the Thimble Islands offshore Stony Creek, Branford, CT.*

Descriptions: *Island Overview - Habitats, etc. General Tour of the Island, observing geology, ecology, habitats, etc.*

Activities: *Geography*

Basic observations of land and sea scapes, habitats, upland vegetation.

Procedures: *Students and Trainers along with an Island Intern will take a casual tour (walk safely among the sometimes slippery rocks) of the island landscape and habitats, discussion of the island geology and glacial history, general Long Island Sound oceanography, etc.... Take lots of Pictures!*

Timeline: *10:30am to 11:30am*

Rotation: *At 11:00am Tour Team will rotate to Atmosphere discussion.*

Lunch: *11:30am - 12:00noon*





Field Sites: *locations, descriptions, activities/protocols, procedures, timeline, rotation.*

Outer Island | Hydrosphere 01

Location: *Outer-most of the Thimble Islands offshore Stony Creek, Branford, CT.*

Descriptions: Hydrosphere Site

At small perched Tidepool on south side bedrock shore; and nearby sampling of Long Island Sound water.

Activities/Protocols: Hydrosphere

Water temperature, Dissolved Oxygen, pH, Conductivity, transparency

Procedures: Hydrosphere

1. Power Up LabQuest and insert Temp/DO/pH Probes
2. Cast bucket ~3-5m from shore, draw in and set on ground.
3. Immediately insert Temp, DO, pH Probes
4. Wait 3 minutes and if readings are stable, record readings; if not, swirl probes and wait another minute - record readings.
5. Remove Probes and insert either Conductivity or Salinity.
6. Wait 3 minutes and record readings, swirl and wait if readings not stable; record readings | If readings are still drifting, make note "drifting".

Timeline: 12noon - 1:15pm and again 1:30pm - 2:45pm

Rotation: Hydrosphere 01 Team will rotate to Hydrosphere 02 and then to Hydrosphere 03 (dock) - rotate every 25 minutes.

- At 1:30pm All Hydro Teams will move to work at Intertidal Transects





Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.

Outer Island | Hydrosphere 02

Location: Outer-most of the Thimble Islands offshore Stony Creek, Branford, CT.

Descriptions: Hydrosphere Site

At Large perched Tidepool on north side rocky shore; and nearby sampling of Long Island Sound water.

Activities/Protocols: Hydrosphere

Water temperature, Dissolved Oxygen, pH, Conductivity, Salinity, Transparency.

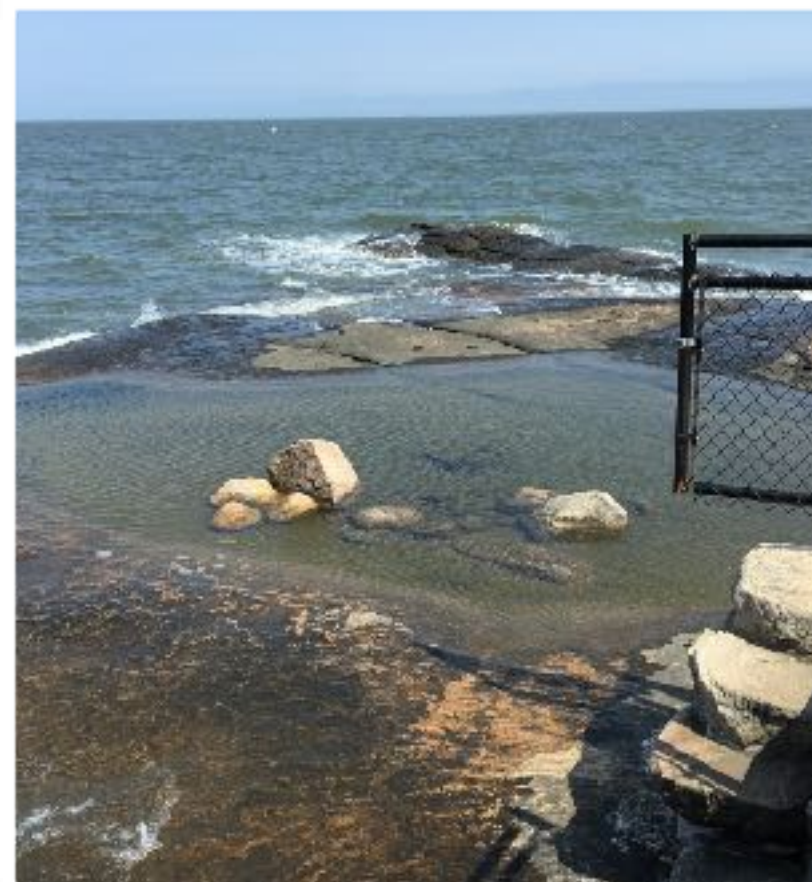
Procedures: Hydrosphere

1. Power Up LabQuest and insert Temp/DO/pH Probes
2. Cast bucket ~3-5m from shore, draw in and set on ground.
3. Immediately insert Temp, DO, pH Probes
4. Wait 3 minutes and if readings are stable, record readings; if not, swirl probes and wait another minute - record readings.
5. Remove Probes and insert either Conductivity or Salinity.
6. Wait 3 minutes and record readings, swirl and wait if readings not stable; record readings | If readings are still drifting, make note "drifting".

Timeline: 12noon - 1:15pm and again 1:30pm - 2:45pm

Rotation: Hydrosphere 02 Team will rotate to Hydrosphere 03 (dock) and then to Hydrosphere 02 - rotate every 25 minutes.

- At 1:30pm All Hydro Teams will move to work at Intertidal Transects





21st Annual GLOBE Meeting

Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.

Outer Island | Hydrosphere 03

Location: Outer-most of the Thimble Islands offshore Stony Creek, Branford, CT.

Descriptions: Hydrosphere Site

At the dock/pier on the NW side of the island near the pavilion and lab; sampling of Long Island Sound water using YSI probes and secco disc. Island Interns will lead.

Activities/Protocols: Hydrosphere

Water temperature, Dissolved Oxygen, pH, Conductivity, transparency

Procedures: Hydrosphere

1. Power Up YSI Temp/DO/pH Probes
2. Bucket up water sample.
3. Immediately insert Temp, DO, pH Probes
4. Wait 3 minutes and if readings are stable, record readings; if not, swirl probes and wait another minute - record readings.
5. Remove Probes and insert either Conductivity or Salinity.
6. Wait 3 minutes and record readings, swirl and wait if readings not stable; record readings | If readings are still drifting, make note "drifting".

Timeline: 12noon - 1:15pm and again 1:30pm - 2:45pm

Rotation: Hydrosphere 03 (dock) Team will rotate to Hydrosphere 02 and then to Hydrosphere 02 - rotate every 25 minutes.

- At 1:30pm All Hydro Teams will move to work at Intertidal Transects





Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.

Outer Island | Hydrosphere

Vernier LabQuest Base Unit & Probes:

LabQuest Base Unit:

This is a small Digital computer with ports for inserting a variety of probes.

LabQuest Main Screen

LabQuest immediately recognizes each Probe and should instantly show current readings.

Procedures: Hydrosphere

1. Power Up LabQuest and insert Temp/DO/pH Probes
2. Cast bucket ~3-5m from shore, draw in and set on ground.
3. Immediately insert Temp, DO, pH Probes
4. Wait 3 minutes and if readings are stable, record readings; if not, swirl probes and wait another minute - record readings.
5. Remove Probes and insert either Conductivity or Salinity.
6. Wait 3 minutes and record readings, swirl and wait if readings not stable; record readings | If readings are still drifting, make note "drifting".

Trouble Shooting: If the screen looks other than shown at right, press the "Home" button to return to current Probe Readings.





21st Annual GLOBE Meeting

Field Sites: *locations, descriptions, activities/protocols, procedures, timeline, rotation.*

Outer Island | Intertidal Transect 01

Location: *Outer-most of the Thimble Islands offshore Stony Creek, Branford, CT.*

Descriptions: Intertidal Transect 1

This transect runs from the High Tide Line through Mid to Low Tide Line and is located in the main Rocky Intertidal area to the NW of the Large Perched Tidepool.

Activities/Protocols: Rocky Intertidal

Set up transect lines and establish 1m quadrats at High, Mid and Low Tide areas along the transect. Count and illustrate rocks within each quadrat, measure using your hand (if wider than open hand, flip rock and collect shore crabs. Place crabs in shallow pans for identification. Identify crab gender and whether adult or juvenile. Adult females may have eggs!

Equipment:

50m tapes, meter sticks to form 3 1m squares at High, Mid, Low Tide, shallow pans, hand lenses, small rulers.

Timeline: *12noon - 1:15pm and again 1:30pm - 2:45pm*

Rotation: *12:00pm to 1:15pm - Hydrology and Intertidal Transects Part 1.*

- Group 1 (20 students) to work with Ginny and Jim on Intertidal Transect Activity, and data gathering. At 1:15pm this Group will move to Hydro Station 1 to begin data, swapping with other Hydro Group after 25min on station.





21st Annual GLOBE Meeting

Field Sites: *locations, descriptions, activities/protocols, procedures, timeline, rotation.*

Outer Island | Intertidal Transect 02

Location: *Outer-most of the Thimble Islands
offshore Stony Creek, Branford, CT.*

Descriptions: Intertidal Transect 1

This transect runs from the High Tide Line through Mid to Low Tide Line and is located in the main Rocky Intertidal area to the NW of the Large Perched Tidepool.

Activities/Protocols: Rocky Intertidal

Set up transect lines and establish 1m quadrats at High, Mid and Low Tide areas along the transect. Count and illustrate rocks within each quadrat, measure using your hand (if wider than open hand, flip rock and collect shore crabs. Place crabs in shallow pans for identification. Identify crab gender and whether adult or juvenile. Adult females may have eggs!

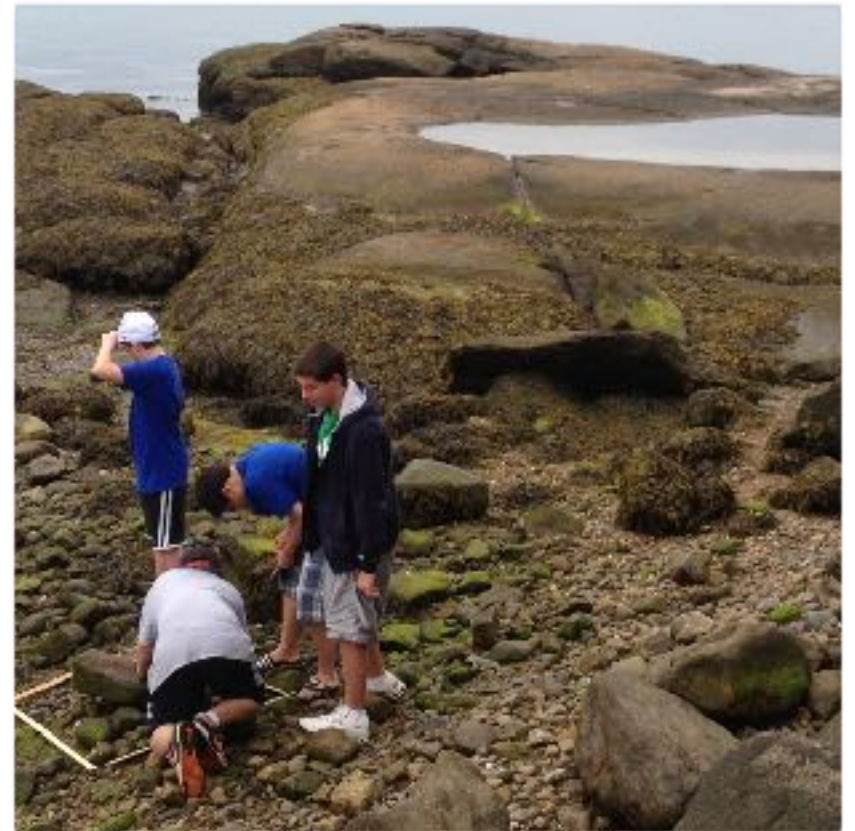
Equipment:

50m tapes, meter sticks to form 3 1m squares at High, Mid, Low Tide, shallow pans, hand lenses, small rulers.

Timeline: *12noon - 1:15pm and again 1:30pm - 2:45pm*

Rotation: *12:00pm to 1:15pm - Hydrology and Intertidal Transects Part 1.*

*- **Group 1** (20 students) to work with Ginny and Jim on Intertidal Transect Activity, and data gathering. At 1:15pm this Group will move to Hydro Station 2 to begin data, swapping with other Hydro Group after 25min on station.*





Field Sites: *locations, descriptions, activities/protocols, procedures, timeline, rotation.*

Outer Island | Birds

Location: *Outer-most of the Thimble Islands
offshore Stony Creek, Branford, CT.*

Descriptions: *Endangered and native Sea Birds
Try to identify as many bird species as possible.*

Activities: Biology - Birds

*Basic observations of birds, bird behavior and bird
habitats. Use Scopes and Binoculars.*

Procedures: *Scopes can be set up under
the Pavilion, binoculars also may be used
outside of the Pavilion.*

Timeline: *during Lunch or at conclusion while
awaiting ferry.*





21st Annual GLOBE Meeting

Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.

Outer Island

Field Activities | Protocols, Equipment, Timeline and Rotation

Atmosphere: ClipBoards/Pencils (1ea.), Cloud Charts (2), Kestrel/WeatherFlow (1), WeatherBug Automated Weather Station and Outer Island Website (1), GLOBE Observer and Data Entry Apps (✓).

***Protocol Field Guide, Protocol Instructions, Data Sheets**

Hydrosphere 1: ClipBoards/Pencils (1ea.), Buckets (1), Vernier LabQuest (1), Probe/Temp (1), Probe/DO (1), Probe/pH (1), Salinity (1), Transparency Tube (1), Squirt Bottle (1), Towel (1), Calibration Thermometer (1), GLOBE Observer and Data Entry Apps (✓).

***Protocol Field Guide, Protocol Instructions, Data Sheets**

Hydrosphere 2: ClipBoards/Pencils (1ea.), Buckets (1), Vernier LabQuest (1), Probe/Temp (1), Probe/DO (1), Probe/pH (1), Salinity (1), Squirt Bottle (1), Towel (1), GLOBE Observer and Data Entry Apps (✓).

***Protocol Field Guide, Protocol Instructions, Data Sheets**

Hydrosphere 3: ClipBoards/Pencils (1ea.), Island Interns will introduce they daily water sampling routines using high quality probeware, secco disc and deep water sampler, GLOBE Observer and Data Entry Apps (✓).

Intertidal Transect 1: ClipBoards/Pencils (1ea.), 50m Tapes (1), Meter Sticks (12 for 3 quadrats @ High, Mid, Low Tide), Plastic pans (1 ea. For High/Mid/Low Tide Stations), Mag Lens (3), Small Rulers (6), Towels (1).

***Protocol Field Guide, Protocol Instructions, Data Sheets**

Intertidal Transect 2: ClipBoards/Pencils (1ea.), 50m Tapes (1), Meter Sticks (12 for 3 quadrats @ High, Mid, Low Tide), Plastic pans (1 ea. for High/Mid/Low Tide Stations), Mag Lens (3), Small Rulers (6), Towels (1).

***Protocol Field Guide, Protocol Instructions, Data Sheets**





Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.

Outer Island

Field Activities | Protocols, Equipment, Timeline and Rotation

Timeline of Activities and Rotation Schedule:

1. 10:15am - Meet as a large group on the rock wall near the pavilion.
 - Ginny, Jim and the Island Keepers will go over Island Safety and general rules, etc.

2. 10:30am - 11:30am – Island Tour and Atmosphere/ WeatherStation and Website. - Groups rotate from Tour to Lab at 11:00am.
 - **Group 1** w/ trainers and Island Interns will take a tour of the island with Ginny and Jim; slow walking around the east/south/west of the island and introducing the habitats, ecology, geology, etc. At 11:00am group rotates to Lab.
 - **Group 2** w/ trainers will remain in the Lab/Pavilion area to discuss Atmosphere (Peter Falcon and Juliet Hulse to lead); they will use Cloud App, Charts and a Kestrel or other weather meter, also in the lab connect a tablet/ phone or laptop to the large screen TV to view the Outer Island Website (basic island overview, online resources, weather data links and webcams; Trainers will have access to the last 6 months of weather data to show on the screen. At 11:00am group rotates to Tour Island.

3. 11:30am – 12:00pm - **Lunch.**





Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.

Outer Island

Field Activities | Protocols, Equipment, Timeline and Rotation

4. 12:00pm to 1:15pm - Hydrology and Intertidal Transects Part 1.

- **Group 1** (20 students) to work with Ginny and Jim on Intertidal Transect Activity, and data gathering;

- **Group 2** (20 students will split in to smaller groups of 5 with Trainers (Peggy and Julie and Peter as leads) will rotate among the Hydro Sites (2a, 2b).

- **Group 2a** Hydro1 @ Tidepool/Ocean Site #1 with Peggy (Temp, pH, DO, Salinity, biota obs).

- **Group 2b** Hydro 2 @ Tidepool/Ocean Site #2 with Julie (Temp, pH, DO, Salinity, biota obs).

- **Group 2c** Hydro 3 @ Dock/Pier with Island Interns (Temp, pH, DO, Salinity, Transparency, deep water sampling).

* Groups Rotate after 25 minutes; Group 2a starts @ Tidepool Site #1 and rotates to Tidepool Site #2 and then on to Dock/Pier Site. Group 2b starts @ Tidepool Site #2, rotates to Dock/Pier and on to Tidepool Site #1, Group 2c starts at the Dock, rotates to Tidepool #1, and then Tidepool #2.

5. 1:30pm – 2:45pm - Hydrology and Intertidal Transects Part 2.

- **Group 2** (20 students) to work with Ginny and Jim on Intertidal Transect Activity, and data gathering;

- **Group 1** (20 students will split in to smaller groups of 10 with Trainers (Peggy and Julie and Peter as leads) will rotate among the Hydro Sites (2a, 2b).

- **Group 1a** Hydro 1@ Tidepool/Ocean Site #1 with Peggy (Temp, pH, DO, Salinity, biota obs).

- **Group 1b** Hydro 2 @ Tidepool/Ocean Site #2 with Julie (Temp, pH, DO, Salinity, biota obs).

- **Group 1c** Hydro 3 @ Dock/Pier with Island Interns (Temp, pH, DO, Salinity, Transparency, deep water sampling).

* Groups Rotate after 25 minutes; Group 1a starts @ Tidepool Site #1 and rotates to Tidepool Site #2 and then on to Dock/Pier Site. Group 1b starts @ Tidepool Site #2, rotates to Dock/Pier and on to Tidepool Site #1, Group 1c starts at the Dock, rotates to Tidepool #1, and then Tidepool #2.

6. 3:00pm – 4:00pm - All Groups reassemble in the Lab and under the Pavilion to discuss the Hydro data collection and Intertidal Observations.

- 3:00ppm – 3:30pm - **Group 1** meets with Ginny and Jim in the Lab to discuss Transect data. - **Group 2** meets under the Pavilion with Peggy and Julie and Peter to discuss hydro data. comparing findings at each site.

- 3:30ppm – 4:00pm - **Group 2** meets with Ginny and Jim in the Lab to discuss Transect data. **Group 1** meets under the Pavilion with Peggy and Julie and Peter to discuss hydro data. comparing findings at each site.

7. All Groups + Trainers prepare to depart the Island, Clean – up and trash check, all trash removed from Island as teams depart for Stony Creek Landing.

