

CT National Estuarine Research Reserve (NERR) Project:

Site Selection Team Initial Meeting

*CT Department of Energy & Environmental Protection
Office of Long Island Sound Programs,
NOAA Office for Coastal Management,
CT Sea Grant, &
University of Connecticut Marine Sciences Program*

May 18, 2016

Kevin O'Brien

CT Department of Energy & Environmental Protection



Project Timeline Review:

- Can be fluid; dates are not hard and fast – no formal window
- Best guess at a reasonable range, but would like to finish sooner if possible.
- Major milestones

What	Who	By When
<i>NERR Project Kickoff Meeting</i>	<i>SC, Federal NERR Leadership Team, invitees, public</i>	<i>April 2016 ... ✓</i>
Preliminary Site Screening	SST, Regional NERR Team	June 2016
Preliminary Site Screening Public Meeting	All Teams, public	July 2016
Detailed Site Selection	SST, Regional NERR Team, outside experts	August 2016
Detailed Site Selection Public Meeting	All Teams, public	July 2017
Public Comment Period	public	August 2017
Formal Nomination Announcement	SC, Governor's office	October 2017

Site Selection Team (SST)

- *Primary Functions: Evaluation/Recommendation of CT NERR site*
- Goals:
 - To understand & apply screening criteria;
 - Identify and engage outside experts where needed;
 - Review and address public comments & present findings (e.g., meetings, & reports.)
- Core composition:
 - Balanced among organizations / expertise at a manageable size (mid-teens to mid-twenties)
 - Involvement Level: HIGH (e.g., “start to finish”; hands on participation)
- External Experts:
 - Provide feedback, insight, opinions, information;
 - Involvement Level: VARIABLE - LOW to MODERATE (e.g., as needed/available, topical/general)

Core SST Members will formally apply criteria and score final sites.

External Experts are involved in site discussion, but not scoring.

Screening Overview:

2 tiers (prelim & detailed)

- Prelim is more general – idea to get 3-5 candidates
- Detailed is a more thorough vetting

Sites / Site configuration

- Within a “project area” defined by the CT Coastal Area and the CT River to Cromwell/Portland
- An area with a representative mix of land and water (coastal or riverine)
- Exists in some form of protection/preservation (i.e., not as private property to purchase)
 - Cannot be more than 50% Federal property.
- Can be a more or less single unit OR several disparate units treated as a whole (multi-site)
- Multi-site characteristics/terminology:
 - some part is the “primary” that has the main facilities (if any) and/or main reserve complex;
 - the rest are “secondary” that represent additional areas for resources, research, monitoring, etc.
- Additionally, any NERR has a “core” area(s) that encompasses the habitats/resources along with a “buffer” zone that works to protect it.
- From a management planning perspective, single units are typically easy to manage. However, multi-sites can be viable (Hudson River)

Given what CT needs to do (unique typology) we can and should consider multi-site configurations.

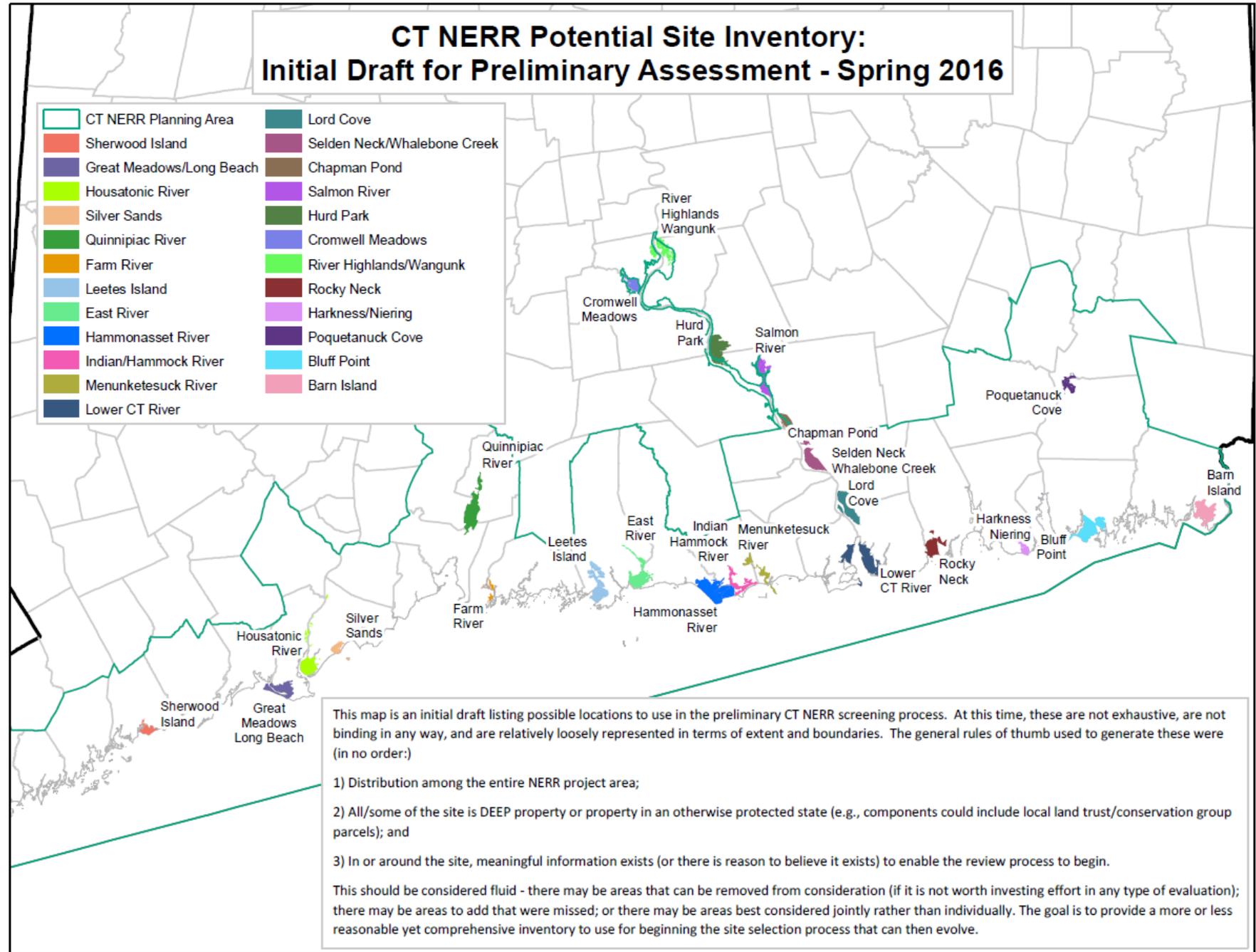
Preliminary Screening:

- SST will have a basic inventory to work from.
 - Initial protected lands with a suggested subset to focus on ~ 2 dozen or so.
 - Sites can be added to this if any have been missed, but this should happen soon
- Prior to prelim scoring, SST needs to consider how to configure these (i.e., what if any are singles, what components would make multi-sites?)
 - There can be overlap between and among (i.e., Site X could be considered as a single but also as part of another larger assembly, or one site could be part of several possible multi-site assemblages.)
 - No formal guidance for this, but should relay on BPJ and an understanding of what a NERR strives to achieve.

Once config settled, prelim scoring applied.

KEY APPROACH – FLEXIBLE

Preliminary Screening:



1. *The site is a representative estuary in the biogeographic region or sub-region (i.e., Southern New England sub-region).*
2. *The proposed boundaries of the site include sufficient land and water area to maintain the integrity of the ecosystem.*
3. *The candidate site consists of publicly owned lands and/or demonstrates sufficient potential for land acquisition and adequate land use control to meet NERRS objectives.*
4. *The candidate site is accessible by normal modes of transportation.*
5. *The candidate site is suitable for research, monitoring, and resource protection activities.*
6. *The candidate site is suitable for education, training, and interpretation activities.*
7. *The candidate site is suitable to address key local, state, and regional coastal management issues.*

Preliminary Site Scoring Matrix	
3 Points	The site is well suited for preliminary criteria.
2 Points	The site is moderately suited for preliminary criteria.
1 Point	The site is marginally suited for preliminary criteria.
0 Points	The site is not suited for preliminary criteria

Observations: 1 & 3 should be consistent across all sites based on how we are approaching, possibly 2 as well. Main differentials should come from 4-7. Criteria have some latitude for subjectivity.

Scoring is by aggregate for each candidate. To mitigate bias and ensure everyone is free to make their own decisions, scoring will be individually done rather than as a group.

SST will have latitude to make breakpoints (just 3? 4? 5?) and can adjust list if there seems to be an obvious candidate that didn't score well (conditionally on a discussion of why & majority vote)

Once finalists are selected, SST will notify SC to make sure there are no conflicts/issues.

**Outreach - There will be a public engagement process to share results and take comments – plan says public meeting, but if all agree a webinar is more efficient and equally effective then I think its well within the spirit.

Outcomes: 3-5 finalist sites, draft report, initial inventory of data, expected external contacts

Detailed Screening:

- SST core team to engage external experts.
 - SC to approve, but expect this to be pro forma. Check-in more applicable to ensure that there may be other groups/people to reach out to that may have been missed. There should be a reasonable inventory established early on, but it can expand as needed.
- Process will involve meetings, calls (formally and informally) but must schedule site visits at each of the sites to establish a more complete understanding of them.

Scoring (More formal than prelim)

- Once all the info for each site has been reviewed, each core team member will score each site using the criteria and score ranges.
- Meeting to review scores; after members may alter scores based on discussion (not required.)
- Once satisfied, no further changes allowed. Scores submitted to Chair
- For each site, average for each criteria will be calculated, the average criteria scores totaled and divided by the total possible points (percentage score, 0 to 100); Best score wins
- Ties: scores to two decimal points so unlikely but:
 - If 2 sites receive the same score – simple majority vote will decide
 - If >2 sites receive same score, SST will determine (unanimously) a fair way to decide

Outcomes: Draft report, finalist site

Criteria List

Section	Criteria
1	Environmental Representativeness & Characteristics
1.1	Ecosystem Composition
1.2	Balanced Ecosystem Composition
1.3	Habitat Composition / Complexity
1.4	Uniqueness of Habitat
1.5	Importance of Habitat for Significant Flora / Fauna
1.6	New or Exemplary Typology
1.7	Site's Relationship to Tidally Influenced Drainage Basin
1.8	Geologic Uniqueness / Diversity of the Site
1.9	Salinity Gradient
1.10	Degree Developed and Potential Impacts to Water Quality
2	Value for Research Monitoring & Stewardship
2.1	Suitability of the Site for Long Term Research
2.2	Previous and Current Research Efforts
2.3	Suitability of the Site for Environmental Monitoring
2.4	Suitability of the Site for Stewardship Program Development
2.5	Ability to Address Local, State, and Regional Coastal Management Issues
3	Value for Training, Education, and Interpretation
3.1	Value of the Site for Environmental Education, Interpretation, and Training Programs
3.2	Diversity and Quality of Education and Interpretation Opportunities
3.3	Previous and Current Education / Outreach Efforts
3.4	Diversity and Availability of Target Audiences
4	Acquisition & Management
4.1	Land Ownership
4.2	Publically Owned Lands and Feasibility of Land Acquisition
4.3	Availability of Facilities
4.4	Proximity and Accessibility of Site to Researchers, Educators, and Environmental Managers
4.5	Controlled Land and Water Access
4.6	Site Security
4.7	Compatibility with Existing Management Practices and Consumptive / Non-consumptive Uses
4.8	Compatibility with Adjacent Land and Water Uses
4.9	Future Development Plans
5	Climate Resiliency
5.1	Facility Resiliency - Accessibility
5.2	Facility Resiliency - Vulnerability
5.3	Resource Resiliency

Most criteria are pretty structured...

1.5 Importance of Habitat for Significant Flora and Fauna: A measure of the degree to which a site supports significant floral and faunal components. This criterion focuses on a site's contribution (i.e. function) toward supporting critical activities (e.g. feeding, nesting) of the following suite of significant floral and faunal components. The list includes groups of organisms that are known to be dependent upon estuarine habitats for part or all of their life cycle.

- Fish and shellfish spawning and nursery grounds (includes use by freshwater, resident estuarine, or estuarine-dependent marine species)
- Migratory bird and/or waterfowl habitats
- Bird nesting and/or roosting area
- Critical mammal habitat
- Non-game animals (amphibians, reptiles, etc.)
- State or federally listed species (animal or plant; including candidate species)

3 Points	The site supports at least four to six of the above faunal and floral components, and/or is a very important site for any threatened or Endangered species.
2 Points	The site supports at least three of the above faunal and floral components.
1 Point	The site supports one or two of the above faunal and floral components.
0 Points	The site does not support significant faunal and floral components.

...but some have a degree of subjectivity.

2.4 Suitability of the Site for Stewardship Program Development: Research Reserve stewardship programs integrate science, monitoring and communities to protect, manage, and restore coastal habitats. The Long Island Sound Study, EPA's National Estuary Program, currently advances similar stewardship initiatives to conserve natural areas, increase access to the Sound, protect important habitats, and plan for multiple uses. Using this context, sites that can augment stewardship efforts by adding to existing inventories or extending the capacity for stewardship activities at current stewardship locations would be highly valued.

3 Points	The site creates a new stewardship opportunity in CT.
2 Points	The site significantly extends stewardship goals at an existing site.
1 Point	The site moderately extends stewardship goals at an existing site.
0 Points	The site does not extend any opportunities to advance stewardship goals at an existing site.

Sample scoring example:

Section	Criteria	Rev 1	Rev 2	Rev 3	Rev 4	Rev 5	Rev 6	Rev 7	Rev 8	Rev 9	Rev 10	Rev 11	Rev 12	Rev 13	Ave Score
1	Environmental Representativeness & Characteristics														
1.1	Ecosystem Composition	2	2	2	0	3	1	1	0	2	2	0	3	3	1.62
1.2	Balanced Ecosystem Composition	1	0	2	3	1	3	3	1	1	3	2	3	1	1.85
1.3	Habitat Composition / Complexity	2	2	3	3	3	1	2	1	2	1	3	1	1	1.92
1.4	Uniqueness of Habitat	0	3	1	3	1	3	3	1	1	1	3	0	0	1.54
1.5	Importance of Habitat for Significant Flora / Fauna	0	1	2	1	1	0	1	3	2	0	1	2	2	1.23
1.6	New or Exemplary Typology	1	1	3	3	1	3	0	3	0	3	3	3	0	1.85
1.7	Site's Relationship to Tidally Influenced Drainage Basin	2	0	3	0	3	2	2	1	2	0	0	0	3	1.38
1.8	Geologic Uniqueness / Diversity of the Site	2	3	3	3	2	1	1	3	2	3	3	0	3	2.23
1.9	Salinity Gradient	3	3	1	2	2	0	3	1	1	0	3	0	1	1.54
1.10	Degree Developed and Potential Impacts to Water Quality	2	0	1	3	1	0	0	1	3	1	1	1	1	1.15
2	Value for Research Monitoring & Stewardship														
2.1	Suitability of the Site for Long Term Research	2	0	3	3	3	2	3	2	2	1	0	3	2	2.00
2.2	Previous and Current Research Efforts	3	2	3	3	0	2	3	1	1	0	2	0	3	1.77
2.3	Suitability of the Site for Environmental Monitoring	1	3	1	2	0	0	1	1	3	3	1	1	0	1.31
2.4	Suitability of the Site for Stewardship Program Development	2	2	0	3	2	1	1	1	1	3	3	0	2	1.62
2.5	Ability to Address Local, State, and Regional Coastal Management Issues	3	3	3	3	2	2	3	3	0	0	3	3	1	2.23
3	Value for Training, Education, and Interpretation														
3.1	Value of the Site for Environmental Education, Interpretation, and Training Programs	0	0	1	2	3	1	1	2	3	1	1	2	2	1.46
3.2	Diversity and Quality of Education and Interpretation Opportunities	3	2	0	0	1	2	3	3	1	3	2	2	2	1.85
3.3	Previous and Current Education / Outreach Efforts	3	1	0	0	0	0	2	3	1	2	2	0	0	1.08
3.4	Diversity and Availability of Target Audiences	0	2	3	0	1	1	0	0	3	3	3	0	0	1.23
4	Acquisition & Management														
4.1	Land Ownership	1	2	3	2	2	1	3	1	3	2	1	3	3	2.08
4.2	Publicly Owned Lands and Feasibility of Land Acquisition	1	0	0	1	1	3	2	0	1	2	1	2	2	1.23
4.3	Availability of Facilities	0	1	3	0	3	1	2	0	3	1	0	0	3	1.31
4.4	Proximity and Accessibility of Site to Researchers, Educators, and Environmental Managers	2	1	1	1	2	0	0	2	0	1	2	3	3	1.38
4.5	Controlled Land and Water Access	0	1	0	0	1	0	2	3	2	3	1	1	3	1.31
4.6	Site Security	1	0	1	3	0	1	3	1	2	0	1	0	3	1.23
4.7	Compatibility with Existing Management Practices and Consumptive / Non-consumptive Uses	0	2	2	3	0	2	0	0	0	3	3	0	0	1.15
4.8	Compatibility with Adjacent Land and Water Uses	0	1	0	1	0	0	3	0	1	2	3	2	1	1.08
4.9	Future Development Plans	2	3	0	2	1	1	0	3	2	0	3	3	2	1.69
5	Climate Resiliency														
5.1	Facility Resiliency - Accessibility	1	0	1	3	3	2	3	1	3	1	3	0	3	1.85
5.2	Facility Resiliency - Vulnerability	1	2	2	2	0	3	3	2	2	0	3	1	0	1.62
5.3	Resource Resiliency	0	3	2	0	1	2	0	2	2	3	2	2	2	1.62
Totals		41	46	50	55	44	41	54	46	52	48	59	41	5	48.38
Site Score		44.09%	49.46%	53.76%	59.14%	47.31%	44.09%	58.06%	49.46%	55.91%	51.61%	63.44%	44.09%	55.91%	52.03%

Detailed Screening Outreach:

During Selection:

- Need to engage local entities in/near location of sites (e.g., municipal officials, P&Z, cons. commissions, land trusts, etc.)
- Initial meeting(s) may need to be held (could be NERR specific or could piggy back on existing town meetings) along with follow-ups as process unfolds

Post Selection:

- Once final site selected a formal public meeting will be held in vicinity.
- Notice in local newspaper(s)/Federal Register at least 15 days in advance.
- Goal to present results of Selection process and solicit formal feedback (1 month comment period)

Following close of comment period, comments addressed (as needed) final report completed and reviewed by SC. Recommendations from CT (DEEP Commissioner to Governor) for nomination of site to NOAA OCM.

Typology:

Essentially, characteristics that describe and differentiate Reserves, especially within similar areas (bioregions)

2 Classes of 3 groups:

- Class 1 – Ecosystem types: Predominantly habitat based (Shorelands, Transition Areas, Submerged Bottoms)
- Class 2 – Physical Characteristics: Describe habitat (Geologic, Hydrographic, Chemical)

Need to provide some level of distinction between CT sites and Waquoit Bay, Narragansett Bay, Hudson River.

How?

- Best possible option is a new Class 1 typology
- If a new Class 1 typology is not viable, multiple instances of variations pulling from the Class 2 list can be sufficient for “unique enough”
 - While there is not a magic number to hit, (within reason) the more cases we can make the better
- Considerations wrt to things like T/E species presence and/or the size and extent of habitats in common to other SNE Reserves can help make for supplementary validations, but don’t in and of themselves fully cover the uniqueness need.
 - Several of the criteria do go into detail on these and related topics.

Data Sources:

Google Drive site set up that will be shared out by invite (invitations forthcoming.) Can be used as a warehouse for information.

- *Process Document, NERR Regulations, and Typology Lists (w/ Full Descriptions)*
- *LISS Ecological Sites Inventory (MS Access dB/PDF report & GIS data)*

Site Name: **RecordID:** 76

Town: Lyme **Primary Designation** Outstanding habitat **Record Complete?**

State: CT **Secondary Designation** Rare species habitat **Data collected by**

Size (acres): **Ownership:** State of Connecticut (Selden Island - 600 acres); The Nature Conservancy (207 acres) plus others **Barrett**

Component	Habitats	Significant Communities	Rarity (global)	Rarity (State)
primary	Freshwater Wetlands (tidal)	Freshwater tidal marsh		
contributing	Intertidal Flats	Intertidal freshwater beaches and shores		
contributing	Islands (Seldon Island)	Freshwater tidal flat		
contributing	Submerged Aquatic Vegetation Beds			

Species Type	Common Name	Scientific name	GCN	IUCN	CT Listed	NY Listed
plant	Arrowleaf	Sagittaria subulata	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
plant	Arrowleaf	Sagittaria montevidensis ssp spongios	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
bird	Virginia rail	Rallus limicola	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
bird	King rail	Rallus elegans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
plant	Phragmites	Phragmites australis ssp. Americanus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
plant	Golden club	Orontium aquaticum	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
plant	Winged monkey flower	Mimulus alatus	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
reptile/amphibian	Smooth green snake	Liochlorophis vernalis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
invertebrate	Eastern pondmussel	Ligumia nasuta	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
invertebrate	Tidewater mucket	Leptodea ochracea	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
bird	Least bittern	Ixobrychus exilis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
bird	Bald eagle CT River winter roo	Haliaeetus leucocephalus	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
reptile/amphibian	Wood turtle	Glyptemys insculpta	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
plant	Sedge	Carex typhina	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion of Habitat Mosaic / Complex : Area consists of Selden Neck (bedrock island), Selden Cove, and Selden Creek, extensive freshwater tidal marshes and alluvial wetlands, and a narrow upland slope. Numerous creeks flow into the cove from the surrounding uplands. Joshua Creek contains high quality freshwater tidal marsh.

Seldon Cove has freshwater tidal marsh with wild rice flats, highmarsh and shrub swamp. One of the most biologically significant sites on the lower Connecticut River, TNC's Selden Creek Preserve takes the name of the creek that divides it from the 600-acre Selden Island State Park. Selden Creek Preserve fronts one of the most important tidal wetlands of the lower Connecticut River and provides a buffer area for roosting bald eagles

Geologic Significance: Though called Selden Neck, this park is actually an island. Cut off from the mainland in the 1850s, Selden Neck has spent the better part of 160 years on its own as the largest island in the Connecticut River. The island is named after John Selden who was the second owner of the property having purchased it in 1695. It remained in the Selden family for approximately 170 years until the 1860s. In 1889 a partnership bought the

Site Name: **RecordID:** 76

Town: Lyme **Primary Designation** Outstanding habitat **Record Complete?**

State: CT **Secondary Designation** Rare species habitat **Data collected by**

Size (acres): **Ownership:** State of Connecticut (Selden Island - 600 acres); The Nature Conservancy (207 acres) plus others **Barrett**

property to quarry the islands' red granite schist for paving stones. These paving blocks were four inches wide, seven inches deep and twelve inches long. These blocks were used for paving the streets of New York city nearly 130 years ago. (http://www.ct.gov/deep/cwp/view.asp?a=2716&q=435364&deepNav_GID=1650#overview)

Threats:

Notes/Justification

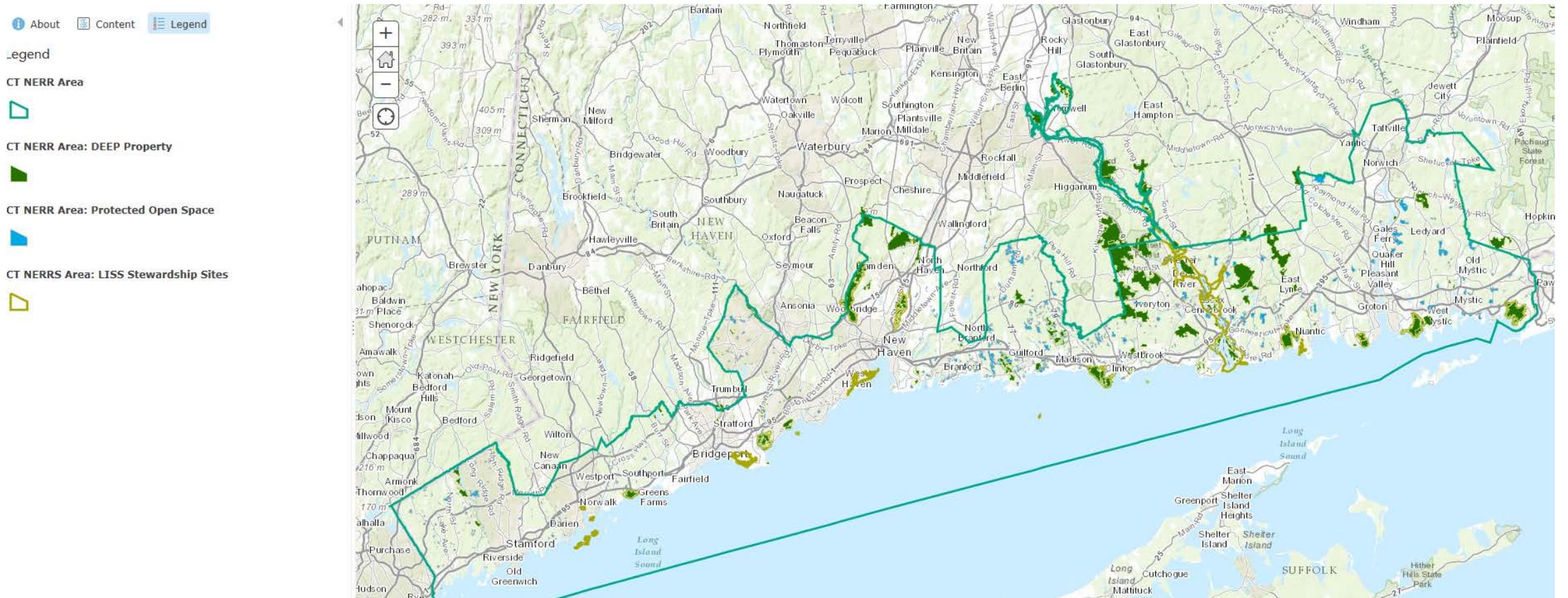
Data Sources:

- NOAA Environmental Sensitivity Index (ESI) data summaries
- One draft for Bluff Point, can be expanded to include other sites if needed)

OBJECTID	ELEMENT	SUBELEMENT	NAME	GEN_SPEC	S	F	T	E	NHP	GATE_PUB	CONC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	BREED1	BREED2	BREED3	BREED4	BREED5	RARNUM	G_SOURCE	S_SOURCE	BREED	Seasum	OBJECTID *	SOURCE_ID *	ORIGINATOR	DATE_PUB	TITLE	DATA_FORMA	PUBLICATIO	SCALE	TIME_PERIO
1269	BIRD	diving	Pied-billed grebe	Podilymbus podiceps	S	T					0	X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	-	-	-	N/A	71000308	91	39	50	Jan-Dec	33	39	Dixon, J. (CTDEP, Burlington)	2000	Shorebird, wading bird, and terrapin concentration areas in CT	EXPERT	Unpublished	N/A	2000
2220	BIRD	gull_tern	Least tern	Sterna antillarum	S	T					0				X	X	X	X						MAY-AUG	-	-	-	N/A	71000468	50	50	12	May-Aug	44	50	Victoria, J. (CTDEP, N. Franklin)	2000	Bird and wildlife distribution and seasonality for CT	EXPERT	Unpublished	N/A	2000
1273	BIRD	passerine	Brown thrasher	Toxostoma rufum	S	C					0	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUL	-	-	-	N/A	71000312	91	92	55	Jan-Dec	83	92	Bevier, L.	1994	The Atlas of Breeding Birds of CT	TEXT DOCUMENT	State Geological and Natural History Survey of CT, Hartford, 461 p.	N/A	Unknown
1270	BIRD	passerine	Yellow-breasted chat	Icteria virens	S	E					0		X	X	X	X	X	X	X	X	X	X	X	MAY-JUL	-	-	-	N/A	71000309	91	92	49	Mar-Nov	83	92	Bevier, L.	1994	The Atlas of Breeding Birds of CT	TEXT DOCUMENT	State Geological and Natural History Survey of CT, Hartford, 461 p.	N/A	Unknown
528	BIRD	raptor	Osprey	Pandion haliaetus	S	C					0		X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-	-	N/A	71000104	50	50	129	Mar-Sep	44	50	Victoria, J. (CTDEP, N. Franklin)	2000	Bird and wildlife distribution and seasonality for CT	EXPERT	Unpublished	N/A	2000
2193	BIRD	shorebird	Piping plover	Charadrius melodus	S/F	E/T					0		X	X	X	X	X	X						MAR-AUG	-	-	-	N/A	71000464	50	50	74	Mar-Aug	44	50	Victoria, J. (CTDEP, N. Franklin)	2000	Bird and wildlife distribution and seasonality for CT	EXPERT	Unpublished	N/A	2000
424	BIRD	waterfowl	American black duck	Anas rubripes	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	N/A	71000078	41	42	1	Oct-Mar	36	42	Merola, P. (CTDEP)	2000	Waterfowl seasonality information for CT	EXPERT	Unpublished	N/A	2000
887	BIRD	waterfowl	American wigeon	Anas americana	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	N/A	71000197	41	42	1	Oct-Mar	36	42	Merola, P. (CTDEP)	2000	Waterfowl seasonality information for CT	EXPERT	Unpublished	N/A	2000
423	BIRD	waterfowl	Bufflehead	Bucephala albeola	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	N/A	71000078	41	42	1	Oct-Mar	36	42	Merola, P. (CTDEP)	2000	Waterfowl seasonality information for CT	EXPERT	Unpublished	N/A	2000
422	BIRD	waterfowl	Mallard	Anas platyrhynchos	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	N/A	71000078	41	42	1	Oct-Mar	36	42	Merola, P. (CTDEP)	2000	Waterfowl seasonality information for CT	EXPERT	Unpublished	N/A	2000
			10																																							
4658	FISH	diadromous	Alewife	Alosa pseudoharengus	0						0	X	X	X	X	X	X	X	X	X	X	X	X	JAN-MAY	JAN-JUL	JAN-JUL	MAY-NOV	JAN-MAY	71000676	48	49	94	Jan-Nov	43	49	Gephard, S. (CTDEP, Old Lyme)	2000	Anadromous fish seasonality for CT	EXPERT	Unpublished	N/A	2000
4506	FISH	diadromous	American eel	Anguilla rostrata	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	MAR-SEP	JAN-DEC	71000641	49	17	160	Jan-Dec	17	17	Stone et. al	1994	Distribution and Abundance of Fishes and Invertebrates in Mid-Atlantic Estuaries	TEXT DOCUMENT	ELMR Rep. No. 12. NOAA/NO5, SEAD, Silver Spring, MD, 280 p.	N/A	1994
5743	FISH	diadromous	Atlantic sturgeon	Acipenser oxyrinchus	S	T					0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC	71000762	45	45	101	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4657	FISH	diadromous	Brown trout (sea run)	Salmo trutta (sea run)	0						0			X	X	X	X	X	X	X	X	X	X	OCT-JUN*	-	-	OCT-JUN*	OCT-JUN*	71000676	48	49	76	Oct-Jun*	43	49	Gephard, S. (CTDEP, Old Lyme)	2000	Anadromous fish seasonality for CT	EXPERT	Unpublished	N/A	2000
5749	FISH	diadromous	Shortnose sturgeon	Acipenser brevirostrum	S/E	E/E					0	X	X	X	X	X	X	X	X	X	X	X	X	APR-MAY	APR-MAY	APR-AUG	JAN-DEC	JAN-DEC	71000762	45	45	100	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4510	FISH	diadromous	Striped bass	Morone saxatilis	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	MAY-OCT	71000641	45	45	32	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4508	FISH	e_nursery	Atlantic herring	Clupea harengus	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	MAY-OCT	NOV-APR	71000641	45	45	111	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4507	FISH	e_nursery	Atlantic menhaden	Brevoortia tyrannus	0						0		X	X	X	X	X	X	X	X	X	X	X	MAY-NOV	MAY-NOV	MAY-DEC	APR-NOV	APR-NOV	71000641	45	45	106	Apr-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4509	FISH	e_nursery	Bluefish	Pomatomus saltatrix	0						0			X	X	X	X	X	X	X	X	X	X	-	-	-	JUL-OCT	JUN-OCT	71000641	45	45	89	Jun-Oct	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
5747	FISH	e_nursery	Scup (poorly)	Stenotomus chrysops	0						0		X	X	X	X	X	X	X	X	X	X	X	JUN-JUL	JUN-AUG	JUN-AUG	MAY-OCT	MAY-OCT	71000762	45	45	112	May-Oct	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4512	FISH	e_nursery	Summer flounder	Paralichthys dentatus	0						0		X	X	X	X	X	X	X	X	X	X	X	-	-	-	APR-NOV	APR-NOV	71000641	45	45	103	Apr-Nov	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4513	FISH	e_nursery	Weakfish	Cynoscion regalis	0						0		X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	MAY-SEP	JUN-OCT	JUL-NOV	MAY-NOV	71000641	45	45	108	May-Nov	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
5748	FISH	e_nursery	White perch	Morone americana	0						0	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	APR-AUG	APR-SEP	JAN-DEC	JAN-DEC	71000762	45	45	110	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4631	FISH	e_nursery	Winter flounder	Pleuronectes americanus	0						0	X	X	X	X	X	X	X	X	X	X	X	X	JAN-MAR	FEB-MAY	MAR-JUN	JAN-DEC	JAN-DEC	71000670	45	45	97	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4659	FISH	freshwater	Rainbow smelt	Osmerus mordax	0						0	X	X	X	X	X	X	X	X	X	X	X	X	FEB-MAR	MAR-MAY	APR-JUN	MAR-AUG	OCT-MAR	71000676	48	49	93	Jan-Dec	43	49	Gephard, S. (CTDEP, Old Lyme)	2000	Anadromous fish seasonality for CT	EXPERT	Unpublished	N/A	2000
5750	FISH	m_benthic	Skates		0						0	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	-	JAN-DEC	JAN-DEC	71000762	45	45	80	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000
4511	FISH	m_benthic	Tautog	Tautoga onitis	0						0	X	X	X	X	X	X	X	X	X	X	X	X	-	MAY-JUL	JUN-AUG	JAN-DEC	JAN-DEC	71000641	45	45	135	Jan-Dec	39	45	CTDEP (Marine Fisheries, Old Lyme)	2000	Fish and invertebrate concentration areas in CT	EXPERT	Unpublished	N/A	2000

Data Sources:

- Online Viewer: <http://arcg.is/1J0EtBd>
 - Project area, DEEP property, Protected Open Space, LISS Stewardship sites
 - Can be expanded as needed



Data Sources: *DRAFT* Crosswalks of SNE Reserve site profile data to NOAA Typologies

Summary Typologies of Narragansett Bay National Estuarine Research Reserve (NBNERR)

NOTE: The following is a non-comprehensive summary prepared in 2016 by CT DEEP OLISP staff for the purposes of summarizing existing Reserves proximal to CT to support site selection of a potential CT Reserve. For complete information, consult the formal NBNERR site profile documentation:

- Narragansett Bay National Estuarine Research Reserve. 2009. *An Ecological Profile of the Narragansett Bay National Estuarine Research Reserve*. K.B. Raposa and M.L. Schwartz (eds.), Rhode Island Sea Grant, Narragansett, R.I. 176pp

Site Setting/Description: The Narragansett Bay National Estuarine Research Reserve (NBNERR or Reserve) is composed of 10 property units on four islands that are located roughly in the center of Narragansett Bay, R.I. Seven units are located on Prudence Island, including the South Prudence and North Prudence units, which are the two largest units in the Reserve. The full extent of the three other smaller islands, Patience Island, Hope Island, and Dyer Island, comprise the remaining three units (with the exception of one private inholding remaining on Patience Island). The NBNERR also bounds all estuarine waters surrounding coastal units out to a depth of 5.4 meters (18 feet), except for waters adjacent to the Blount Unit on central Prudence Island. As of 2008, the NBNERR contained 2,586 acres of land and 1,809 acres of surrounding estuarine water, for a total of 4,395 jurisdictional acres. All areas in the NBNERR are designated as either ‘core’ or ‘buffer’ area, and permitted uses in a given area are dependent on this designation. The NBNERR defines core areas as those “that are essential and representative of natural habitats in the biogeographic region in which the reserve is located. Recreation, habitat manipulation, and other disruptive uses are restricted in core areas”; likewise buffer areas are defined as “those areas that are set aside to further protect core areas. Low impact recreation, habitat manipulation, and research are permitted in buffer areas. The Reserve’s setting is predominantly natural or rural, in contrast to much of coastal mainland Rhode Island, which is generally heavily developed. Patience, Hope, and Dyer islands are completely uninhabited. Prudence remains mostly undeveloped, but supports small clusters of residential housing and other limited development. The year-round human population on Prudence Island is approximately 150 people, although this peaks to nearly 2,000 people at times during the summer

Crosswalk of Site Profile Information to NOAA NERR Typologies:

Class I: Ecosystem Types	
Group I: Shorelands	
A. Maritime Forest-Woodland. That have developed under the influence of salt spray. It can be found on coastal uplands or recent features such as barrier islands and beaches, and may be divided into the following biomes:	
NOAA Description	NBNERR
Northern coniferous forest biome: This is an area of predominantly evergreens such as the sitka spruce (<i>Picea</i>), grand fir (<i>Abies</i>), and white cedar (<i>Thuja</i>), with poor development of the shrub and herb leylera, but high annual productivity and pronounced seasonal periodicity.	Forested upland plant communities represent the ultimate successional stage in most NBNERR upland settings. The majority (75 percent) of upland habitats on the Prudence and Patience Island units are forested. (The less sheltered uplands of the smaller Dyer and Hope islands are dominated by coastal shrublands.) Overall, 72 percent (509.2 ha.) of Reserve upland communities are forested. Of these, 45 percent (227.5 ha) is BLD, 2.0 percent (10.1 ha) is needle-leaved deciduous, 4.1 percent (21.1 ha) is needle-leaved evergreen, and 49 percent (250.6 ha) is mixed. Pine barrens are regionally and globally rare ecosystems comprising a mosaic of community types, many of which have been previously described. The NBNERR contains 91 ha of Atlantic coastal pine barrens, which are unique to north and mid-Atlantic coastal uplands. The pine barrens of the Reserve are composed of oak and pitch pine dominated forests and adjacent shrublands, grasslands, and sand barrens
Moist temperate (Mesothermal) coniferous forest biome: Found along the west coast of North America from California to Alaska, this area is dominated by conifers, has relatively small seasonal range, high humidity with rainfall ranging from 30 to 150 inches, and a well-developed understory of vegetation with an abundance of mosses and other moisture-tolerant plants.	N/A