



Salt Marsh Vegetation Sampling at Boston Harbor Islands National Recreation Area

2012 data report for Calf, Peddocks, and Snake Islands

Natural Resource Data Series NPS/NETN/NRDS—2013/467



ON THE COVER

Salt marsh on Calf Island, Boston Harbor Islands National Recreation Area.
Photograph by: MJ James-Pirri

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April 2013

U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science
Fort Collins, Colorado

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Please cite this publication as:

James-Pirri, M. J. 2013. Salt marsh vegetation sampling at Boston Harbor Islands National Recreation Area: 2012 data report for Calf, Peddocks, and Snake Islands. Natural Resource Data Series NPS/NETN/NRDS—2013/467. National Park Service, Fort Collins, Colorado.

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Acknowledgments

Special thanks are given to R. Baranowski and S. Corona for assisting with field sampling, plant identification, and data entry. Thanks are also extended to B. Mitchell, M. Albert, R. Bowles, C. Roman, A. Kozlowski, S. Stevens, and P. Sharpe for technical and logistical support. This work was funded by the Northeast Temperate Network through a Cooperative Agreement with the University of Rhode Island.

Introduction

The Northeast Temperate Network (NETN) and park managers have identified the biological integrity of intertidal marsh habitats as a high priority vital sign for Boston Harbor Islands National Recreation Area (BOHA) (Mitchell et al. 2006). As part of the NETN Inventory and Monitoring Program, salt marsh vegetation was selected as a vital sign for monitoring. Salt marsh vegetation composition and abundance respond to stressors in estuarine systems. These stressors can be local such as restriction or reestablishment of tidal flow (e.g., Roman et al. 1984, 1995, 2002, Smith et al. 2008, James-Pirri et al. 2012), regional such as changes in nutrient inputs (e.g., Nixon and Oviatt 1973, Wigand et al. 2001), or global such as sea level rise (e.g., Donnelly and Bertness 2001, Hartig et al. 2002). Salt marsh vegetation species diversity and abundance (measured as percent cover) will be measured at BOHA on a 3 year repeating sampling cycle. This data report summarizes salt marsh vegetation monitoring data collected at Calf, Peddocks, and Snake Islands in BOHA during 2012. In 2013 salt marsh vegetation monitoring is planned for the two salt marshes on Thompson Island.

Methods

Salt marsh vegetation was sampled using the salt marsh vegetation sampling protocol developed by the Northeast Coastal and Barrier Network (NCBN) (James-Pirri et al. In Review) that will soon be adopted (with minor modifications) by NETN (National Park Service, B. Mitchell, NETN Program Manager, personal communication, 2012). The protocol modification currently adopted by NETN randomly locates vegetation plots throughout the salt marsh area, whereas the NCBN protocol locates monitoring plots randomly along transects that traverse the low marsh to high marsh gradient. The vegetation plots are re-randomized each sampling year. For the 2012 sampling at BOHA, salt marsh habitat (Table 1) was sampled based the BOHA draft vegetation map (Largay and Sneddon In Review). Sampling plots were randomly located within NETN-identified salt marsh GIS polygons using ArcMap software and plots were located in the field using Geographic Positioning System (GPS).

In each salt marsh, plant community composition and species percent cover were quantitatively sampled in approximately 30, 1-m² vegetation plots. In addition to live vegetation, dead vegetation and non-vegetative covers were also recorded (e.g., bare ground, permanent water, rock, wrack and litter) (Table 2). Estimates of percent cover for live vegetation and other cover types were determined using the visual cover scale method. For this method the observers stand over the plot and visually estimate the percent of each cover type using a modified Braun-Blanquet cover scale (Table 3). Salt marsh sampling occurred in August and September of 2012 on Calf, Peddocks, and Snake Islands (Table 4, Figure 1).

Data for each plot were recorded on NCBN Field Data Sheets along with other pertinent information such as the location (island), sampling date, unique plot number identification code, and UTM coordinates of the vegetation plot. Data were entered into the NETN salt marsh vegetation MS Access database, and quality control and quality assurance procedures were conducted on all digitally entered data. The Integrated Taxonomic Information System (ITIS 2013) database was used to verify scientific names and common names follow the USDA Plants Database (USDA NRCS 2013).

To summarize data by marsh, Braun-Blanquet values were converted to the midpoint of the percent range (Table 3) and the relative percent cover of each species was calculated. Relative percent cover is the percentage of each species or cover type relative to all other species and cover types present in the marsh plots. The sum of the relative percent cover values for all species and cover types equals 100%.



Figure 1. Islands in Boston Harbor where salt marsh sampling occurred in 2012.

Table 1. GIS vegetation map classifications used by NETN to isolate salt and brackish tidal marsh habitat polygons at BOHA and their associated United States National Vegetation Classification (USNVC) classification codes and community description (USNVC 2013).

Vegetation Map Classification	USNVC Association Code	Community description
Overwash grassland	CEGL004097	Herbaceous vegetation - <i>Spartina patens</i> , <i>Schoenoplectus pungens</i> , <i>Solidago sempervirens</i> .
Eastern reed marsh (tidal only)	CEGL004141	Eastern North America temperate semi-natural herbaceous vegetation - <i>Phragmites australis</i>
Reed-grass tidal marsh	CEGL004187	Tidal herbaceous vegetation - <i>Phragmites australis</i>
North Atlantic low salt marsh	CEGL004192	Acadian/Virginian zone herbaceous vegetation - <i>Spartina alterniflora</i> , <i>Ascophyllum nodosum</i>
Cattail brackish tidal marsh	CEGL004201	Herbaceous vegetation - <i>Typha angustifolia</i> , <i>Hibiscus moscheutos</i>
Salt panne	CEGL004308	Herbaceous vegetation - <i>Salicornia (virginica, bigelovii, maritima)</i> , <i>Spartina alterniflora</i>
North Atlantic high salt marsh	CEGL006006	Herbaceous vegetation - <i>Spartina patens</i> , <i>Distichlis spicata</i> , <i>Juncus gerardii</i>
Coastal salt pond marsh	CEGL006398	Herbaceous vegetation - <i>Schoenoplectus pungens</i> , <i>Eleocharis parvula</i>
Eastern tidal salt shrub	CEGL006848	Shrubland - <i>Iva frutescens</i> , <i>Spartina patens</i>

Table 2. Cover type categories used during NETN salt marsh vegetation sampling. Table excerpted from NCBN Salt Marsh Vegetation Monitoring Protocol.

Cover Type	Examples
Live vascular plants	Live vascular vegetation (herbaceous and shrubs) identified to species, if possible.
Standing dead vascular plants	Dead plants are Identified by species (e.g., <i>S. alterniflora</i> dead). This category only includes standing dead (attached) plants that are from a previous year's growth. If there are some dead leaves from the current year's growth but the plant is alive (e.g., the ends of leaves or leaves that are being replaced by new growth, etc.) then the plant is recorded as "live". Dead plant material that is not attached is recorded as "litter" (see below).
Macroalgae	This category includes macroalgae such as rockweeds (e.g., <i>Fucus</i> and <i>Ascophyllum</i> species) identified to species, if possible. Microalgae (e.g., diatom mats) and fine filamentous algae are not included in this category.
Bare ground	This category includes dirt, mud, sand, microalgae cover, etc. These are areas that are devoid of standing live, standing dead, or macroalgae and do not have permanent standing water. There can be a small amount (<1cm) of surface water over bare ground, but it is not recorded; only permanent standing water is considered in the "water" category. The "bare" category represents an absence of any type of canopy cover.
Water	This category is for permanent standing water. Permanent standing water is defined as water within a creek, ditch, marsh pool, or any other geomorphic feature that is holding water. This category is used when a plot is partially or entirely within such a feature.
Wrack and litter	Wrack is unattached material that has floated into the plot. This is generally dead (not attached) plant material, but could also be trash. Litter is dead plant material, which could be decomposed, and is not attached. It is not identified to species.
Trash	Items such as logs, old piers, tires, and other assorted trash, etc.
Rock	Boulders or rocks can be found on the surface of northern New England marshes.

Table 3. Modified Braun-Blanquet scale and corresponding midpoint values for determining relative percent cover of salt marsh vegetation.

Visual cover scale	Percent cover range	Midpoint of range
0	0%	0.0%
1	< 1%	0.5%
2	1 – 5%	3.0%
3	6 – 25%	15.5%
4	26 – 50%	38.0%
5	51 – 75%	63.0%
6	76 – 100%	88.0%

Table 4. Sampling dates, locations, and number of vegetation plots sampled in 2012.

Location	Date sampled	Number of vegetation plots sampled
Calf Island	30 August 2012	31
Peddocks Island	18 September 2012	29
Snake Island	11 September 2012	30

Results

Salt marsh vegetation sampling occurred in late August and early-to-mid September, 2012 on Calf, Peddocks, and Snake Island at BOHA (Figure 1). Twenty-six vegetative covers (including “dead plants” and two species of brown alga) and five non-vegetative covers were observed during sampling (Table 5). Sampling results for each island are presented separately below.

Calf Island

Thirty-one plots were sampled in the small salt marsh on Calf Island on 30 August 2012 (Figure 2). Seventeen plants and three non-vegetative classes were observed in the plots. Common plants and cover types (> 10% relative cover) included *Distichlis spicata* (saltgrass), *Spartina alterniflora* (smooth cordgrass), bare ground, and water (pond) (Table 6). Two invasive species: *Lepidium latifolium* (broadleafed pepperweed) and *Phragmites australis* (common reed) were also observed in the plots. *Distichlis spicata* and *S. alterniflora* were the most frequently observed and had the highest relative cover in the plots (found in 18 and 10 of 31 plots, respectively) (Table 6). No Massachusetts state-listed plants were observed in the Calf Island sampling plots.

Peddocks Island

Twenty-nine plots were sampled in the salt marsh on Peddocks Island on 18 September 2012 (Figure 3). Seventeen vegetative (including “dead plant”) and five non-vegetative covers were observed in the plots. Common cover types (> 10% cover) were *Spartina patens* (saltmeadow cordgrass), *S. alterniflora*, and bare ground (Table 7). Invasive *Phragmites australis* was also present. *Spartina patens* and dead plants were the most frequently observed cover type in the plots (observed in 13 and 10 of 29 plots, respectively) (Table 7). No Massachusetts state-listed plants were observed in the Peddocks Island sampling plots.

Snake Island

Thirty plots were sampled in the salt marsh on Snake Island on 11 September 2012 (Figure 4). Seventeen vegetative (including “dead plant”) and four non-vegetative covers were observed in the plots (Table 8). The most common cover (> 10% cover) was *S. alterniflora*, which composed 36% of the relative cover and was observed in more than 75% of the plots (23 of 30 plots). Other frequently observed cover types were wrack and litter and dead plant material (observed in 21 and 14 of the 30 plots, respectively) (Table 8). No Massachusetts state-listed plants were observed in the Snake Island sampling plots. There was an extensive area of low marsh (mostly *S. alterniflora*) on the west and southwest sides of Snake Island that was not identified as salt marsh in the NETN vegetation map and therefore no plots were located in this zone (Figure 4, white arrows). This area should be included in future monitoring efforts.

Table 5. Plants and non-vegetative cover types present in vegetation monitoring plots on Calf, Peddocks, and Snake Islands in 2012. Massachusetts listed invasive species are indicated in bold type.

Scientific Name	Common Name	Calf Island	Peddocks Island	Snake Island
Vegetative covers				
<i>Artemisia vulgaris</i> L.	Common wormwood			X
<i>Ascophyllum nodosum</i> Scorpoides	Knotted wrack (brown alga)			X
<i>Atriplex patula</i> L.	Spear saltbush	X	X	X
<i>Bassia</i> species ¹	Smotherweed species	X		
<i>Calystegia sepium</i> (L.) R. B.	Hedge false bindweed	X	X	
Dead plant	Dead plant		X	X
<i>Distichlis spicata</i> (L.) Greene	Saltgrass	X	X	X
<i>Eleocharis parvula</i> (Roem. & Schult.) Link ex Bluff, Nees & Schauer	Dwarf needle spikerush	X		
<i>Elymus repens</i> (L.) Gould	Quackgrass	X	X	X
<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)			X
<i>Iva frutescens</i> L.	Marsh elder		X	X
<i>Juncus gerardii</i> Loisel	Saltmeadow rush		X	
<i>Leontodon autumnalis</i> L.	Fall dandelion		X	
<i>Lepidium latifolium</i> L.	Broadleafed pepperweed	X		X
<i>Limonium carolinianum</i> (Walter) Britton	Lavender thrift		X	X
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Common reed	X	X	X
<i>Poa</i> species	Unknown grass	X	X	
<i>Rumex crispus</i> L.	Curley dock		X	
<i>Salicornia maritima</i> S.L. Wolff & Jefferies	Slender glasswort	X	X	X
<i>Schoenoplectus americanus</i> (Pers.) Volkart ex Schinz & R. Keller	Chairmaker's bulrush	X		
<i>Schoenoplectus robustus</i> (Pursh) M.T. Strong	Sturdy bulrush	X		
<i>Sesuvium portulacastrum</i> (L.) L.	Shoreline seapurslane	X		
<i>Solidago sempervirens</i> L.	Seaside goldenrod	X	X	X
<i>Spartina alterniflora</i> Loisel	Smooth cordgrass	X	X	X
<i>Spartina patens</i> (Aiton) Muhl.	Saltmeadow cordgrass	X	X	X
<i>Suaeda linearis</i> (Elliott) Moq.	Annual seepweed		X	X
<i>Suaeda maritima</i> (L.) Dumort.	Herbaceous seepweed	X		X
Non-vegetative covers				
Bare ground	Bare ground	X	X	X
Rock	Rock		X	
Trash	Trash		X	X
Water	Permanent water (e.g., pond)	X	X	X
Wrack and litter	Wrack and litter	X	X	X

¹ Likely *Bassia hyssopifolia* (Pall.) Kuntze, fivehorn smotherweed (positive identification requires flower).

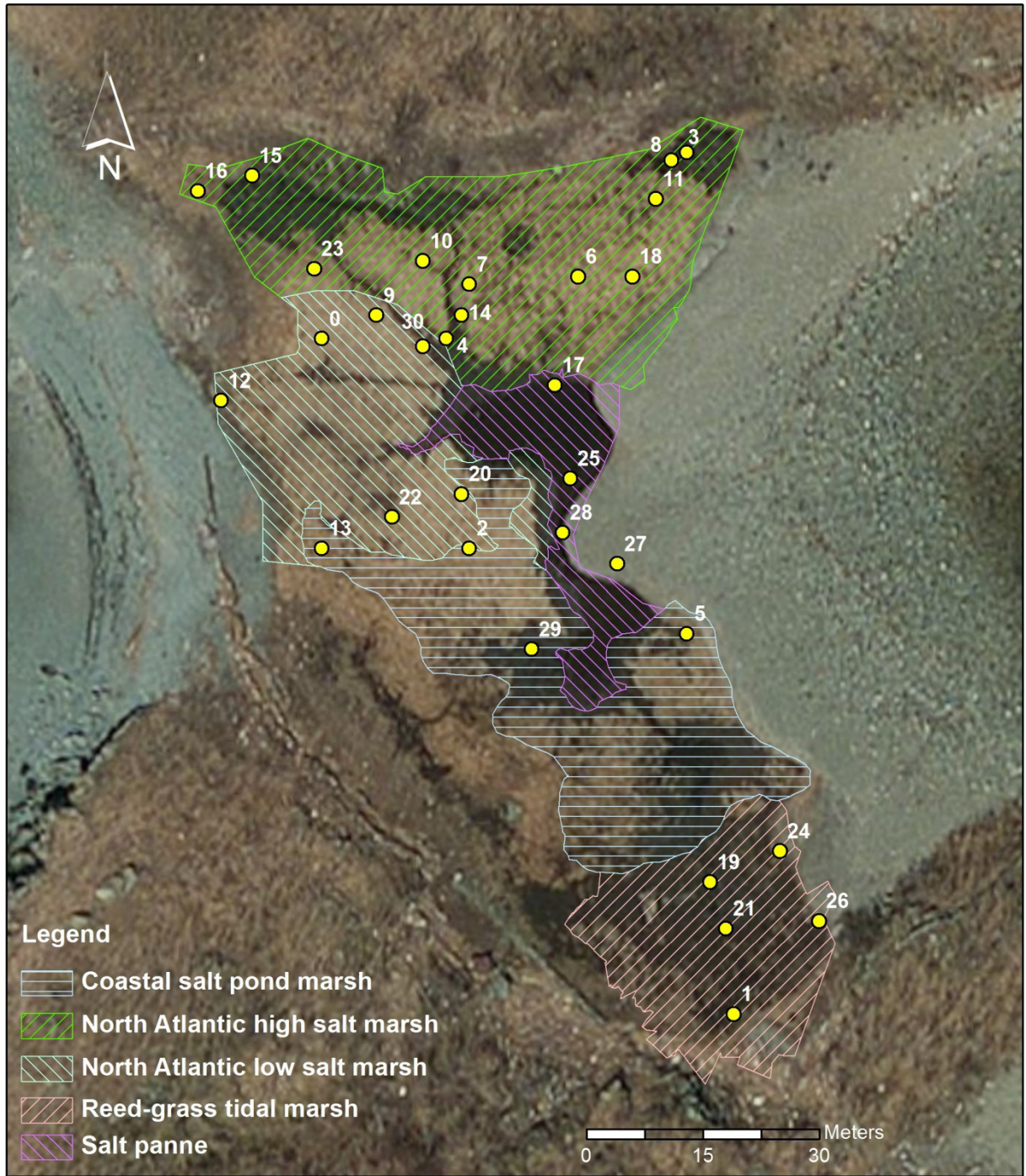


Figure 2. Location of vegetation plots on Calf Island. Hatched polygons show NETN salt marsh sampling area based on mapped salt marsh communities. Map plot labels correspond to data in Appendix B, Table 1.

Table 6. Relative percent cover of vegetative and non-vegetative cover types on Calf Island in 2012. Massachusetts listed invasive species are indicated in bold type.

Species	Common name	Relative percent cover (%)	Number of plots where observed (n=31)
Vegetative covers			
<i>Atriplex patula</i>	Spear saltbush	1.0	4
<i>Bassia species</i> ¹	Smotherweed species	<0.1	1
<i>Calystegia sepium</i>	Hedge false bindweed	0.5	2
<i>Distichlis spicata</i>	Saltgrass	36.2	18
<i>Eleocharis parvula</i>	Dwarf needle spikerush	3.5	2
<i>Elymus repens</i>	Quackgrass	1.1	1
<i>Lepidium latifolium</i>	Broadleafed pepperweed	0.1	1
<i>Phragmites australis</i>	Common reed	0.4	1
<i>Salicornia maritima</i>	Slender glasswort	0.6	4
<i>Schoenoplectus americanus</i>	Chairmaker's bulrush	4.8	5
<i>Schoenoplectus robustus</i>	Sturdy bulrush	0.1	2
<i>Sesuvium portulacastrum</i>	Shoreline seapurslane	0.1	2
<i>Solidago sempervirens</i>	Seaside goldenrod	2.8	2
<i>Spartina alterniflora</i>	Smooth cordgrass	17.6	10
<i>Spartina patens</i>	Saltmeadow cordgrass	2.8	5
<i>Suaeda maritima</i>	Herbaceous seepweed	0.5	4
<i>Poa species</i>	Unknown grass	2.4	1
Non-vegetative covers			
Bare ground	Bare ground	11.6	7
Water	Permanent water (e.g., pond)	12.7	6
Wrack and litter	Wrack and litter	1.1	1

¹ Likely *Bassia hyssopifolia*, fivehorn smotherweed (positive identification requires flower).

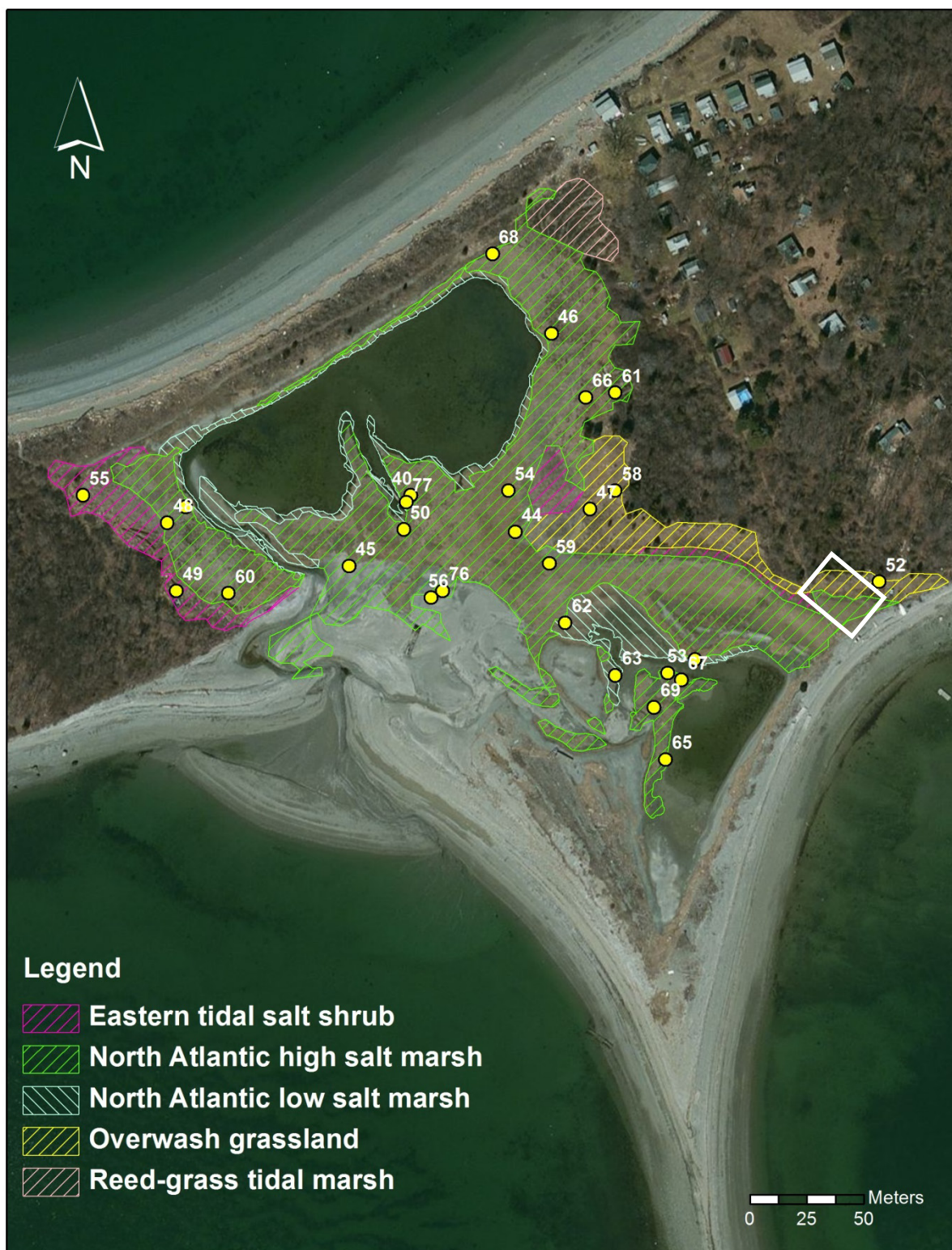


Figure 3. Location of vegetation plots on Peddocks Island. Hatched polygons show NETN salt marsh sampling area based on mapped salt marsh communities. White box indicates mowed area. Map plot labels correspond to data in Appendix B, Table 1.

Table 7. Relative percent cover of vegetative and non-vegetative cover types on Peddocks Island in 2012. Massachusetts listed invasive species are in bold type.

Species	Common name	Relative percent cover (%)	Number of plots where observed (n=29)
Vegetative covers			
<i>Atriplex patula</i>	Spear saltbush	0.2	4
<i>Calystegia sepium</i>	Hedge false bindweed	0.1	1
Dead plant	Dead plant	6.2	10
<i>Distichlis spicata</i>	Saltgrass	8.1	8
<i>Elymus repens</i>	Quackgrass	1.7	1
<i>Iva frutescens</i>	Marsh elder	5.9	9
<i>Juncus gerardii</i>	Saltmeadow rush	7.3	6
<i>Leontodon autumnalis</i>	Fall dandelion	0.1	1
<i>Limonium carolinianum</i>	Lavender thrift	0.1	2
<i>Phragmites australis</i>	Common reed	1.0	1
<i>Rumex crispus</i>	Curly dock	<0.1	1
<i>Salicornia maritima</i>	Slender glasswort	0.1	1
<i>Solidago sempervirens</i>	Seaside goldenrod	9.7	8
<i>Spartina alterniflora</i>	Smooth cordgrass	12.4	9
<i>Spartina patens</i>	Saltmeadow cordgrass	19.3	13
<i>Suaeda linearis</i>	Annual seepweed	0.6	4
<i>Poa</i> species	Unknown grass	4.1	2
Non-vegetative covers			
Bare ground	Bare ground	11.3	7
Rock	Rock	0.4	1
Trash	Trash	1.1	2
Water	Permanent water (e.g., pond)	7.1	3
Wrack and litter	Wrack and litter	3.3	6



Figure 4. Location of vegetation plots on Snake Island. Hatched polygons show NETN salt marsh sampling area based on mapped salt marsh communities. Note that there is an extensive area of low marsh, indicated by arrows, on the west and southwest sides of the island that is currently not included in the NETN sampling area. Map plot labels correspond to data in Appendix B, Table 1.

Table 8. Relative percent cover of vegetative and non-vegetative cover types on Snake Island in 2012. Massachusetts listed invasive species are indicated in bold type.

Species	Common name	Relative percent cover (%)	Number of plots where observed (n=30)
Vegetative covers			
<i>Artemisia vulgaris</i>	Common wormwood	0.1	1
<i>Ascophyllum nodosum</i>	Knotted wrack (brown alga)	1.9	3
<i>Atriplex patula</i>	Spear saltbush	3.9	3
Dead plant	Dead plant	6.2	14
<i>Distichlis spicata</i>	Saltgrass	2.9	2
<i>Elymus repens</i>	Quackgrass	0.9	2
<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)	6.1	6
<i>Iva frutescens</i>	Marsh elder	<0.1	1
<i>Lepidium latifolium</i>	Broadleaved pepperweed	1.1	1
<i>Limonium carolinianum</i>	Lavender thrift	1.3	4
<i>Phragmites australis</i>	Common reed	3.9	4
<i>Salicornia maritima</i>	Slender glasswort	3.3	4
<i>Solidago sempervirens</i>	Seaside goldenrod	3.9	3
<i>Spartina alterniflora</i>	Smooth cordgrass	35.8	23
<i>Spartina patens</i>	Saltmeadow cordgrass	4.2	2
<i>Suaeda linearis</i>	Annual seepweed	0.4	1
<i>Suaeda maritima</i>	Herbaceous seepweed	1.5	2
Non-vegetative covers			
Bare ground	Bare ground	8.1	10
Trash	Trash	0.1	1
Water	Permanent water (e.g., pond)	1.8	1
Wrack and litter	Wrack and litter	12.5	21

Discussion

The following general descriptions of the salt marshes sampled on Calf, Peddocks, and Snake Islands are based on observations noted during sampling and on data obtained from vegetation plot sampling.

Calf Island

The marsh on Calf Island lies between two beach berms and is small (~0.5 ha, McKenna and McKenna In Review) with a low area that retains water. It appears that the marsh periodically receives salt water input from storm events or high lunar tides, but is not regularly tidally inundated. On the day of sampling in 2012 (30 August 2012) the small pond had water and mosquito larvae were plentiful, indicating that at this particular period the pond lacked fish. Adult mosquitos were also abundant and aggressive. The following general description is based on walking the marsh and on data obtained from vegetation plot sampling. The marsh was characterized by a large central area of *Distichlis spicata* and *Spartina alterniflora* with *Schoenoplectus americanus* (chairmaker's bulrush) bordering the northern edge. A salt panne was present at the southern end of the marsh where *Salicornia maritima* (slender glasswort) and *Eleocharis parvula* (dwarf needle spikerush) were found. There was a small area of invasive *Phragmites australis* at the southern border and invasive *Lepidium latifolium* was abundant along the marsh upland edges and on the beach berms. Park staff have indicated that both these species were targeted for invasive plant control: part of the *Lepidium latifolium* population was manually treated in 2006, and *Phragmites australis* was treated with 2% Accord foliar spray one time in 2007 (National Park Service, M. Albert, BOHA Stewardship Program Manager, email communication, 4 January 2013). One individual of blooming invasive *Lythrum salicaria* (purple loosestrife) was observed along the western marsh border and *Datura stramonium* (jimsonweed) was abundant along the upland marsh edges.

Peddocks Island

The salt marsh that was sampled on Peddocks Island lies between two beach berms and has a large central pond. The salt marsh and pond are inundated daily by tidal water from Boston Harbor via a tidal creek. The marsh (~2.7 ha, McKenna and McKenna In Review) is characterized by an extensive area of *Spartina alterniflora* and *S. patens* surrounding the pond with *Iva frutescens* (marsh elder) along the upland edges. There is a small dense area of *Phragmites australis* in the northeast portion of the marsh (no sampling plots were located in this area). In the southeast portion of the marsh there was a groomed fenced area that was recently mowed, presumably by the adjacent cottage resident. Park staff has conducted control of several invasive plants in the Peddocks Island salt marsh. *Lepidium latifolium* control was conducted on the western and northwestern edges of the marsh from 2006 to 2012. From 2006 to 2012, *Berberis thunbergii* (Japanese barberry), *Rosa multiflora* (multiflora rose), *Acer platanoides* (Norway maple), and *Cynanchum louiseae* (black swallowwort) were manually targeted along the west and northwest sides of the marsh. In 2009, *Phragmites australis* was unsuccessfully treated on the east side of the marsh with Accord (2% concentrate), and from 2009 to 2011 *Polygonum cuspidatum* (Japanese knotweed) was treated with moderate success with Accord (2% concentrate) using a cut and drip method (National Park Service, M. Albert, BOHA Stewardship Program Manager, email communication, 27 February 2013).

Snake Island

There are two main marsh areas on Snake Island: an interior salt marsh panne and an exterior fringing marsh that encircles the entire island (total area ~3.4 ha, McKenna and McKenna In Review). A small tidal creek leads to the interior salt marsh panne that drains at low tide. Surrounding the panne are extensive areas of wrack presumably washed in by high storm tides. Seepweeds, *Suaeda linearis* and *S. maritima*, were present along the edges of the salt panne. Invasive *Phragmites australis* infiltrates the outer edges of the salt panne and along the east edge of the interior marsh where it becomes a dense monoculture. Park staff conducted manual control of invasive *Lepidium latifolium* along the east edge of the marsh in 2008, and in 2012 assorted annual and perennial herbs along the upper beach were targeted to clear habitat for nesting terns and oystercatchers (National Park Service, M. Albert, BOHA Stewardship Program Manager, email communication, 4 January 2013). Anecdotal reports (National Park Service, S. Corona, BOHA Resource Management Technician, personal communication, 11 September 2012) indicate that the interior marsh used to extend further into the upland as a meadow, but it is now dominated by a shrub/scrub community. Other notable species observed in the interior marsh were invasive *Rosa multiflora* (not located in sampling plots but present) and *Lepidium latifolium*.

The fringing marsh is dominated by *Spartina alterniflora* with the rockweeds *Ascophyllum nodosum* and *Fucus vesiculosus* present at lower elevations near the water's edge. *Phragmites australis* is present along the upland edges of the fringing marsh (none of the sampling plots fell in this zone). One concern is the encroachment of *Phragmites australis* onto the gravel beach and into the exterior fringing marsh which could negatively impact nesting oystercatchers and terns as these species prefer to nest on open gravel beach (National Park Service, S. Corona, BOHA Resource Management Technician, personal communication, 11 September 2012). There was an extensive portion of the west and southwest fringing marsh that was not included in the predefined sampling area. This is an area of *Spartina alterniflora*, similar to the fringing marsh along the north and east sides of the island. In the 2008 USNVC vegetation map obtained from NETN, this area was classified as "North Atlantic Coast Estuarine Intertidal Mudflat", whereas in 2012 it is entirely low marsh and should be included in the sample area during future monitoring efforts.

Sources of Expertise

M. Albert, National Park Service, Boston Harbor Islands National Park Area, Saugus Iron Works National Historic Site, Salem Maritime National Historic Site, Stewardship Program Director.

S. Corona, National Park Service, Boston Harbor Islands National Park Area, Resource Management Technician.

B. Mitchell, National Park Service, Northeast Temperate Network Inventory and Monitoring, Program Manager.

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Appendix A: UTM coordinates for vegetation plots

Table 1. UTM coordinates (zone 19, NAD83) for vegetation plots sampled on Calf, Peddocks, and Snake Islands in August-September 2012. Plot location ID is the unique number assigned to the plot in the NETN Access Salt Marsh Vegetation database.

Island and vegetation plot location ID	UTM X Coordinate	UTM Y Coordinate
Calf Island		
BOHA_CALF_V_R_000_2012	343778	4689480
BOHA_CALF_V_R_001_2012	343831	4689393
BOHA_CALF_V_R_002_2012	343797	4689453
BOHA_CALF_V_R_003_2012	343825	4689504
BOHA_CALF_V_R_004_2012	343794	4689480
BOHA_CALF_V_R_005_2012	343825	4689442
BOHA_CALF_V_R_006_2012	343811	4689488
BOHA_CALF_V_R_007_2012	343797	4689487
BOHA_CALF_V_R_008_2012	343823	4689503
BOHA_CALF_V_R_009_2012	343785	4689483
BOHA_CALF_V_R_010_2012	343791	4689490
BOHA_CALF_V_R_011_2012	343821	4689498
BOHA_CALF_V_R_012_2012	343765	4689472
BOHA_CALF_V_R_013_2012	343778	4689453
BOHA_CALF_V_R_014_2012	343796	4689483
BOHA_CALF_V_R_015_2012	343769	4689501
BOHA_CALF_V_R_016_2012	343762	4689499
BOHA_CALF_V_R_017_2012	343808	4689474
BOHA_CALF_V_R_018_2012	343818	4689488
BOHA_CALF_V_R_019_2012	343828	4689410
BOHA_CALF_V_R_020_2012	343796	4689460
BOHA_CALF_V_R_021_2012	343830	4689404
BOHA_CALF_V_R_022_2012	343787	4689457
BOHA_CALF_V_R_023_2012	343777	4689489
BOHA_CALF_V_R_024_2012	343837	4689414
BOHA_CALF_V_R_025_2012	343810	4689462
BOHA_CALF_V_R_026_2012	343842	4689405
BOHA_CALF_V_R_027_2012	343816	4689451
BOHA_CALF_V_R_028_2012	343809	4689455

Appendix A: UTM coordinates for vegetation plots (continued)

Table 1. UTM coordinates (zone 19, NAD83) for vegetation plots sampled on Calf, Peddocks, and Snake Islands in August-September 2012. Plot location ID is the unique number assigned to the plot in the NETN Access Salt Marsh Vegetation database (continued).

Island and vegetation plot location ID	UTM X Coordinate	UTM Y Coordinate
BOHA_CALF_V_R_029_2012	343805	4689440
BOHA_CALF_V_R_030_2012	343791	4689479
Peddocks Island		
BOHA_PEDD_V_R_040_2012	339949	4683835
BOHA_PEDD_V_R_041_2012	339850	4683830
BOHA_PEDD_V_R_044_2012	339995	4683819
BOHA_PEDD_V_R_045_2012	339922	4683804
BOHA_PEDD_V_R_046_2012	340011	4683906
BOHA_PEDD_V_R_047_2012	340028	4683829
BOHA_PEDD_V_R_048_2012	339842	4683823
BOHA_PEDD_V_R_049_2012	339846	4683793
BOHA_PEDD_V_R_050_2012	339946	4683820
BOHA_PEDD_V_R_051_2012 ¹	340059	4683713
BOHA_PEDD_V_R_052_2012	340155	4683797
BOHA_PEDD_V_R_053_2012	340062	4683757
BOHA_PEDD_V_R_054_2012	339992	4683837
BOHA_PEDD_V_R_055_2012	339805	4683835
BOHA_PEDD_V_R_056_2012	339958	4683790
BOHA_PEDD_V_R_057_2012	340074	4683763
BOHA_PEDD_V_R_058_2012	340039	4683837
BOHA_PEDD_V_R_059_2012	340010	4683805
BOHA_PEDD_V_R_060_2012	339869	4683792
BOHA_PEDD_V_R_061_2012	340039	4683880
BOHA_PEDD_V_R_062_2012	340017	4683779
BOHA_PEDD_V_R_063_2012	340039	4683756
BOHA_PEDD_V_R_065_2012	340061	4683719
BOHA_PEDD_V_R_066_2012	340026	4683878
BOHA_PEDD_V_R_067_2012	340068	4683754
BOHA_PEDD_V_R_068_2012	339985	4683941
BOHA_PEDD_V_R_069_2012	340056	4683742
BOHA_PEDD_V_R_076_2012	339963	4683793
BOHA_PEDD_V_R_077_2012	339947	4683832

Appendix A: UTM coordinates for vegetation plots (continued)

Table 1. UTM coordinates (zone 19, NAD83) for vegetation plots sampled on Calf, Peddocks, and Snake Islands in August-September 2012. Plot location ID is the unique number assigned to the plot in the NETN Access Salt Marsh Vegetation database (continued).

Island and vegetation plot location ID	UTM X Coordinate	UTM Y Coordinate
Snake Island		
BOHA_SNAK_V_R_080_2012	336891	4692380
BOHA_SNAK_V_R_081_2012	337061	4692412
BOHA_SNAK_V_R_082_2012	337017	4692263
BOHA_SNAK_V_R_083_2012	336991	4692436
BOHA_SNAK_V_R_084_2012	336981	4692218
BOHA_SNAK_V_R_085_2012	337019	4692240
BOHA_SNAK_V_R_086_2012	337037	4692331
BOHA_SNAK_V_R_087_2012	337034	4692215
BOHA_SNAK_V_R_088_2012	337135	4692329
BOHA_SNAK_V_R_089_2012	336980	4692353
BOHA_SNAK_V_R_090_2012	337028	4692361
BOHA_SNAK_V_R_091_2012	337024	4692237
BOHA_SNAK_V_R_092_2012	337134	4692240
BOHA_SNAK_V_R_093_2012	337133	4692332
BOHA_SNAK_V_R_094_2012	337092	4692195
BOHA_SNAK_V_R_095_2012	337152	4692326
BOHA_SNAK_V_R_096_2012	337122	4692380
BOHA_SNAK_V_R_097_2012	337000	4692313
BOHA_SNAK_V_R_098_2012	337026	4692219
BOHA_SNAK_V_R_099_2012	337073	4692429
BOHA_SNAK_V_R_100_2012	336958	4692385
BOHA_SNAK_V_R_101_2012	337050	4692175
BOHA_SNAK_V_R_102_2012	336982	4692353
BOHA_SNAK_V_R_103_2012	337010	4692431
BOHA_SNAK_V_R_104_2012	337135	4692242
BOHA_SNAK_V_R_106_2012	336879	4692351
BOHA_SNAK_V_R_107_2012	336914	4692231
BOHA_SNAK_V_R_108_2012	337037	4692276
BOHA_SNAK_V_R_112_2012	337062	4692429
BOHA_SNAK_V_R_113_2012	336896	4692431

¹ UTM coordinates estimated from waypoint. Plot was in a pond and the water too deep.

Appendix B: Vegetation plot data

Table 9. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012. Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager.

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_CALF_V_R_000_2012	0	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_000_2012	0	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_CALF_V_R_001_2012	1	<i>Atriplex patula</i>	Spear saltbush	3
BOHA_CALF_V_R_001_2012	1	<i>Calystegia sepium</i>	Hedge false bindweed	3
BOHA_CALF_V_R_001_2012	1	<i>Phragmites australis</i>	Common reed	3
BOHA_CALF_V_R_001_2012	1	<i>Poa species</i>	Unknown grass	6
BOHA_CALF_V_R_001_2012	1	<i>Schoenoplectus americanus</i>	Chairmaker's bulrush	2
BOHA_CALF_V_R_001_2012	1	<i>Spartina patens</i>	Saltmeadow cordgrass	3
BOHA_CALF_V_R_001_2012	1	<i>Suaeda maritima</i>	Herbaceous seepweed	2
BOHA_CALF_V_R_002_2012	2	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_003_2012	3	Bare ground	Bare ground	4
BOHA_CALF_V_R_003_2012	3	<i>Atriplex patula</i>	Spear saltbush	2
BOHA_CALF_V_R_003_2012	3	<i>Schoenoplectus americanus</i>	Chairmaker's bulrush	5
BOHA_CALF_V_R_003_2012	3	<i>Schoenoplectus robustus</i>	Sturdy bulrush	2
BOHA_CALF_V_R_004_2012	4	Bare ground	Bare ground	6
BOHA_CALF_V_R_005_2012	5	Water	Permanent water (e.g. pond)	3
BOHA_CALF_V_R_005_2012	5	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_006_2012	6	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_007_2012	7	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_007_2012	7	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_CALF_V_R_008_2012	8	Bare ground	Bare ground	4
BOHA_CALF_V_R_008_2012	8	<i>Distichlis spicata</i>	Saltgrass	4
BOHA_CALF_V_R_008_2012	8	<i>Schoenoplectus americanus</i>	Chairmaker's bulrush	3
BOHA_CALF_V_R_009_2012	9	<i>Distichlis spicata</i>	Saltgrass	5
BOHA_CALF_V_R_009_2012	9	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_CALF_V_R_010_2012	10	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_010_2012	10	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_CALF_V_R_011_2012	11	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_012_2012	12	<i>Atriplex patula</i>	Spear saltbush	2
BOHA_CALF_V_R_012_2012	12	<i>Bassia species</i>	Smotherweed species	2
BOHA_CALF_V_R_012_2012	12	<i>Elymus repens</i>	Quackgrass	4
BOHA_CALF_V_R_012_2012	12	<i>Solidago sempervirens</i>	Seaside goldenrod	4
BOHA_CALF_V_R_013_2012	13	<i>Distichlis spicata</i>	Saltgrass	6

Appendix B: Vegetation plot data (continued)

Table 1. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012. Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager (continued).

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_CALF_V_R_013_2012	13	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_CALF_V_R_013_2012	13	<i>Spartina patens</i>	Saltmeadow cordgrass	2
BOHA_CALF_V_R_014_2012	14	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_014_2012	14	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_CALF_V_R_015_2012	15	Wrack and litter	Wrack and litter	4
BOHA_CALF_V_R_015_2012	15	<i>Schoenoplectus americanus</i>	Chairmaker's bulrush	6
BOHA_CALF_V_R_016_2012	16	<i>Atriplex patula</i>	Spear saltbush	3
BOHA_CALF_V_R_016_2012	16	<i>Calystegia sepium</i>	Hedge false bindweed	2
BOHA_CALF_V_R_016_2012	16	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_016_2012	16	<i>Lepidium latifolium</i>	Broadleaved pepperweed	2
BOHA_CALF_V_R_016_2012	16	<i>Schoenoplectus americanus</i>	Chairmaker's bulrush	2
BOHA_CALF_V_R_016_2012	16	<i>Solidago sempervirens</i>	Seaside goldenrod	5
BOHA_CALF_V_R_017_2012	17	Water	Permanent water (e.g. pond)	6
BOHA_CALF_V_R_018_2012	18	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_019_2012	19	Bare ground	Bare ground	5
BOHA_CALF_V_R_019_2012	19	<i>Eleocharis parvula</i>	Dwarf needle spikerush	4
BOHA_CALF_V_R_019_2012	19	<i>Salicornia maritima</i>	Slender glasswort	1
BOHA_CALF_V_R_020_2012	20	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_021_2012	21	Bare ground	Bare ground	3
BOHA_CALF_V_R_021_2012	21	<i>Eleocharis parvula</i>	Dwarf needle spikerush	6
BOHA_CALF_V_R_021_2012	21	<i>Salicornia maritima</i>	Slender glasswort	3
BOHA_CALF_V_R_021_2012	21	<i>Schoenoplectus robustus</i>	Sturdy bulrush	2
BOHA_CALF_V_R_021_2012	21	<i>Sesuvium portulacastrum</i>	Shoreline seapurslane	2
BOHA_CALF_V_R_021_2012	21	<i>Spartina alterniflora</i>	Smooth cordgrass	3
BOHA_CALF_V_R_021_2012	21	<i>Spartina patens</i>	Saltmeadow cordgrass	3
BOHA_CALF_V_R_021_2012	21	<i>Suaeda maritima</i>	Herbaceous seepweed	1
BOHA_CALF_V_R_022_2012	22	<i>Distichlis spicata</i>	Saltgrass	4
BOHA_CALF_V_R_022_2012	22	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_CALF_V_R_023_2012	23	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_CALF_V_R_023_2012	23	<i>Spartina alterniflora</i>	Smooth cordgrass	3
BOHA_CALF_V_R_024_2012	24	Bare ground	Bare ground	6
BOHA_CALF_V_R_024_2012	24	<i>Distichlis spicata</i>	Saltgrass	3
BOHA_CALF_V_R_024_2012	24	<i>Salicornia maritima</i>	Slender glasswort	2
BOHA_CALF_V_R_024_2012	24	<i>Suaeda maritima</i>	Herbaceous seepweed	3
BOHA_CALF_V_R_025_2012	25	Water	Permanent water (e.g. pond)	6
BOHA_CALF_V_R_026_2012	26	Bare ground	Bare ground	6
BOHA_CALF_V_R_026_2012	26	<i>Salicornia maritima</i>	Slender glasswort	2
BOHA_CALF_V_R_026_2012	26	<i>Sesuvium portulacastrum</i>	Shoreline seapurslane	2

Appendix B: Vegetation plot data (continued)

Table 1. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012. Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager (continued).

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_CALF_V_R_026_2012	26	<i>Spartina patens</i>	Saltmeadow cordgrass	2
BOHA_CALF_V_R_026_2012	26	<i>Suaeda maritima</i>	Herbaceous seepweed	1
BOHA_CALF_V_R_027_2012	27	Water	Permanent water (e.g. pond)	6
BOHA_CALF_V_R_028_2012	28	Water	Permanent water (e.g. pond)	6
BOHA_CALF_V_R_029_2012	29	Water	Permanent water (e.g. pond)	6
BOHA_CALF_V_R_030_2012	30	<i>Distichlis spicata</i>	Saltgrass	2
BOHA_CALF_V_R_030_2012	30	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_CALF_V_R_030_2012	30	<i>Spartina patens</i>	Saltmeadow cordgrass	5
BOHA_PEDD_V_R_040_2012	40	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_PEDD_V_R_040_2012	40	<i>Spartina patens</i>	Saltmeadow cordgrass	4
BOHA_PEDD_V_R_041_2012	41	<i>Distichlis spicata</i>	Saltgrass	3
BOHA_PEDD_V_R_041_2012	41	<i>Spartina alterniflora</i>	Smooth cordgrass	2
BOHA_PEDD_V_R_041_2012	41	<i>Spartina patens</i>	Saltmeadow cordgrass	6
BOHA_PEDD_V_R_044_2012	44	<i>Distichlis spicata</i>	Saltgrass	5
BOHA_PEDD_V_R_044_2012	44	<i>Juncus gerardii</i>	Saltmeadow rush	5
BOHA_PEDD_V_R_044_2012	44	<i>Limonium carolinianum</i>	Lavender thrift	2
BOHA_PEDD_V_R_044_2012	44	<i>Spartina patens</i>	Saltmeadow cordgrass	2
BOHA_PEDD_V_R_045_2012	45	Bare ground	Bare ground	6
BOHA_PEDD_V_R_045_2012	45	<i>Suaeda linearis</i>	Annual seepweed	2
BOHA_PEDD_V_R_046_2012	46	Wrack and litter	Wrack and litter	2
BOHA_PEDD_V_R_046_2012	46	<i>Spartina patens</i>	Saltmeadow cordgrass	6
BOHA_PEDD_V_R_047_2012	47	Trash	Trash	4
BOHA_PEDD_V_R_047_2012	47	<i>Iva frutescens</i>	Marsh elder	5
BOHA_PEDD_V_R_047_2012	47	<i>Solidago sempervirens</i>	Seaside goldenrod	3
BOHA_PEDD_V_R_047_2012	47	<i>Spartina patens</i>	Saltmeadow cordgrass	5
BOHA_PEDD_V_R_048_2012	48	Dead shrub	Dead shrub	2
BOHA_PEDD_V_R_048_2012	48	<i>Distichlis spicata</i>	Saltgrass	4
BOHA_PEDD_V_R_048_2012	48	<i>Iva frutescens</i>	Marsh elder	3
BOHA_PEDD_V_R_048_2012	48	<i>Juncus gerardii</i>	Saltmeadow rush	5
BOHA_PEDD_V_R_048_2012	48	<i>Solidago sempervirens</i>	Seaside goldenrod	4
BOHA_PEDD_V_R_049_2012	49	Trash	Trash	2
BOHA_PEDD_V_R_049_2012	49	Wrack and litter	Wrack and litter	5
BOHA_PEDD_V_R_049_2012	49	<i>Iva frutescens</i>	Marsh elder	5
BOHA_PEDD_V_R_049_2012	49	<i>Solidago sempervirens</i>	Seaside goldenrod	4
BOHA_PEDD_V_R_049_2012	49	<i>Spartina patens</i>	Saltmeadow cordgrass	3
BOHA_PEDD_V_R_049_2012	49	<i>Suaeda linearis</i>	Annual seepweed	2
BOHA_PEDD_V_R_050_2012	50	Dead grass	Dead grass	4
BOHA_PEDD_V_R_050_2012	50	<i>Spartina alterniflora</i>	Smooth cordgrass	6

Appendix B: Vegetation plot data (continued)

Table 1. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012. Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager (continued).

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_PEDD_V_R_051_2012	51	Water	Permanent water (e.g. pond)	6
BOHA_PEDD_V_R_052_2012	52	Rock	Rock	3
BOHA_PEDD_V_R_052_2012	52	Wrack and litter	Wrack and litter	4
BOHA_PEDD_V_R_052_2012	52	Atriplex patula	Spear saltbush	1
BOHA_PEDD_V_R_052_2012	52	Iva frutescens	Marsh elder	2
BOHA_PEDD_V_R_052_2012	52	Juncus gerardii	Saltmeadow rush	2
BOHA_PEDD_V_R_052_2012	52	Solidago sempervirens	Seaside goldenrod	5
BOHA_PEDD_V_R_052_2012	52	Spartina patens	Saltmeadow cordgrass	3
BOHA_PEDD_V_R_052_2012	52	Suaeda linearis	Annual seepweed	3
BOHA_PEDD_V_R_053_2012	53	Dead grass	Dead grass	4
BOHA_PEDD_V_R_053_2012	53	Bare ground	Bare ground	4
BOHA_PEDD_V_R_053_2012	53	Spartina alterniflora	Smooth cordgrass	5
BOHA_PEDD_V_R_054_2012	54	Spartina patens	Saltmeadow cordgrass	6
BOHA_PEDD_V_R_055_2012	55	Wrack and litter	Wrack and litter	3
BOHA_PEDD_V_R_055_2012	55	Atriplex patula	Spear saltbush	2
BOHA_PEDD_V_R_055_2012	55	Elymus repens	Quackgrass	5
BOHA_PEDD_V_R_055_2012	55	Iva frutescens	Marsh elder	3
BOHA_PEDD_V_R_055_2012	55	Juncus gerardii	Saltmeadow rush	3
BOHA_PEDD_V_R_055_2012	55	Rumex crispus	Curley dock	1
BOHA_PEDD_V_R_055_2012	55	Solidago sempervirens	Seaside goldenrod	5
BOHA_PEDD_V_R_056_2012	56	Bare ground	Bare ground	6
BOHA_PEDD_V_R_057_2012	57	Water	Permanent water (e.g. pond)	6
BOHA_PEDD_V_R_058_2012	58	Dead tree	Dead tree	1
BOHA_PEDD_V_R_058_2012	58	Wrack and litter	Wrack and litter	2
BOHA_PEDD_V_R_058_2012	58	Atriplex patula	Spear saltbush	2
BOHA_PEDD_V_R_058_2012	58	Iva frutescens	Marsh elder	2
BOHA_PEDD_V_R_058_2012	58	Leontodon autumnalis	Fall dandelion	2
BOHA_PEDD_V_R_058_2012	58	Poa species	Unknown grass	5
BOHA_PEDD_V_R_058_2012	58	Solidago sempervirens	Seaside goldenrod	5
BOHA_PEDD_V_R_059_2012	59	Spartina patens	Saltmeadow cordgrass	6
BOHA_PEDD_V_R_060_2012	60	Distichlis spicata	Saltgrass	3
BOHA_PEDD_V_R_060_2012	60	Iva frutescens	Marsh elder	3
BOHA_PEDD_V_R_060_2012	60	Juncus gerardii	Saltmeadow rush	5
BOHA_PEDD_V_R_060_2012	60	Limonium carolinianum	Lavender thrift	1
BOHA_PEDD_V_R_060_2012	60	Salicornia maritima	Slender glasswort	2
BOHA_PEDD_V_R_060_2012	60	Spartina patens	Saltmeadow cordgrass	3
BOHA_PEDD_V_R_060_2012	60	Suaeda linearis	Annual seepweed	2
BOHA_PEDD_V_R_061_2012	61	Dead grass	Dead grass	3

Appendix B: Vegetation plot data (continued)

Table 1. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012. Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager (continued).

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_PEDD_V_R_061_2012	61	<i>Atriplex patula</i>	Spear saltbush	2
BOHA_PEDD_V_R_061_2012	61	<i>Calystegia sepium</i>	Hedge false bindweed	2
BOHA_PEDD_V_R_061_2012	61	<i>Iva frutescens</i>	Marsh elder	2
BOHA_PEDD_V_R_061_2012	61	<i>Phragmites australis</i>	Common reed	4
BOHA_PEDD_V_R_061_2012	61	<i>Poa</i> species	Unknown grass	6
BOHA_PEDD_V_R_061_2012	61	<i>Solidago sempervirens</i>	Seaside goldenrod	3
BOHA_PEDD_V_R_062_2012	62	Dead grass	Dead grass	4
BOHA_PEDD_V_R_062_2012	62	Bare ground	Bare ground	3
BOHA_PEDD_V_R_062_2012	62	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_PEDD_V_R_063_2012	63	Dead grass	Dead grass	3
BOHA_PEDD_V_R_063_2012	63	Bare ground	Bare ground	4
BOHA_PEDD_V_R_063_2012	63	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_PEDD_V_R_064_2012	64	<i>Spartina alterniflora</i>	Smooth cordgrass	3
BOHA_PEDD_V_R_064_2012	64	<i>Spartina patens</i>	Saltmeadow cordgrass	6
BOHA_PEDD_V_R_065_2012	65	Water	Permanent water (e.g. pond)	6
BOHA_PEDD_V_R_066_2012	66	Wrack and litter	Wrack and litter	2
BOHA_PEDD_V_R_066_2012	66	<i>Distichlis spicata</i>	Saltgrass	2
BOHA_PEDD_V_R_066_2012	66	<i>Iva frutescens</i>	Marsh elder	4
BOHA_PEDD_V_R_066_2012	66	<i>Juncus gerardii</i>	Saltmeadow rush	5
BOHA_PEDD_V_R_066_2012	66	<i>Solidago sempervirens</i>	Seaside goldenrod	5
BOHA_PEDD_V_R_067_2012	67	Dead grass	Dead grass	3
BOHA_PEDD_V_R_067_2012	67	Bare ground	Bare ground	5
BOHA_PEDD_V_R_067_2012	67	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_PEDD_V_R_068_2012	68	<i>Distichlis spicata</i>	Saltgrass	5
BOHA_PEDD_V_R_068_2012	68	<i>Spartina patens</i>	Saltmeadow cordgrass	5
BOHA_PEDD_V_R_069_2012	69	Dead grass	Dead grass	5
BOHA_PEDD_V_R_069_2012	69	<i>Spartina alterniflora</i>	Smooth cordgrass	4
BOHA_PEDD_V_R_076_2012	76	Bare ground	Bare ground	6
BOHA_PEDD_V_R_077_2012	77	Dead unidentified	Dead unidentified	2
BOHA_PEDD_V_R_077_2012	77	<i>Distichlis spicata</i>	Saltgrass	3
BOHA_PEDD_V_R_077_2012	77	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_PEDD_V_R_077_2012	77	<i>Spartina patens</i>	Saltmeadow cordgrass	5
BOHA_SNAK_V_R_080_2012	80	Dead grass	Dead grass	3
BOHA_SNAK_V_R_080_2012	80	Bare ground	Bare ground	3
BOHA_SNAK_V_R_080_2012	80	Wrack and litter	Wrack and litter	2
BOHA_SNAK_V_R_080_2012	80	<i>Salicornia maritima</i>	Slender glasswort	2
BOHA_SNAK_V_R_080_2012	80	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_081_2012	81	Bare ground	Bare ground	4
BOHA_SNAK_V_R_081_2012	81	Wrack and litter	Wrack and litter	3

Appendix B: Vegetation plot data (continued)

Table 1. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012.

Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager (continued).

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_SNAK_V_R_081_2012	81	<i>Limonium carolinianum</i>	Lavender thrift	4
BOHA_SNAK_V_R_081_2012	81	<i>Spartina alterniflora</i>	Smooth cordgrass	3
BOHA_SNAK_V_R_082_2012	82	Dead grass	Dead grass	5
BOHA_SNAK_V_R_082_2012	82	<i>Phragmites australis</i>	Common reed	5
BOHA_SNAK_V_R_083_2012	83	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_083_2012	83	<i>Ascophyllum nodosum</i>	Knotted wrack (brown alga)	4
BOHA_SNAK_V_R_083_2012	83	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_084_2012	84	Trash	Trash	2
BOHA_SNAK_V_R_084_2012	84	Wrack and litter	Wrack and litter	6
BOHA_SNAK_V_R_084_2012	84	<i>Phragmites australis</i>	Common reed	3
BOHA_SNAK_V_R_084_2012	84	<i>Spartina alterniflora</i>	Smooth cordgrass	4
BOHA_SNAK_V_R_085_2012	85	Dead unidentified	Dead unidentified	3
BOHA_SNAK_V_R_085_2012	85	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_086_2012	86	Dead unidentified	Dead unidentified	4
BOHA_SNAK_V_R_086_2012	86	<i>Atriplex patula</i>	Spear saltbush	3
BOHA_SNAK_V_R_086_2012	86	<i>Iva frutescens</i>	Marsh elder	1
BOHA_SNAK_V_R_086_2012	86	<i>Solidago sempervirens</i>	Seaside goldenrod	5
BOHA_SNAK_V_R_086_2012	86	<i>Spartina patens</i>	Saltmeadow cordgrass	5
BOHA_SNAK_V_R_086_2012	86	<i>Suaeda maritima</i>	Herbaceous seepweed	3
BOHA_SNAK_V_R_087_2012	87	Wrack and litter	Wrack and litter	6
BOHA_SNAK_V_R_088_2012	88	Wrack and litter	Wrack and litter	2
BOHA_SNAK_V_R_088_2012	88	<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)	2
BOHA_SNAK_V_R_088_2012	88	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_089_2012	89	Bare ground	Bare ground	4
BOHA_SNAK_V_R_089_2012	89	<i>Salicornia maritima</i>	Slender glasswort	5
BOHA_SNAK_V_R_089_2012	89	<i>Spartina alterniflora</i>	Smooth cordgrass	2
BOHA_SNAK_V_R_090_2012	90	<i>Artemisia vulgaris</i>	Common wormwood	2
BOHA_SNAK_V_R_090_2012	90	<i>Atriplex patula</i>	Spear saltbush	5
BOHA_SNAK_V_R_090_2012	90	<i>Elymus repens</i>	Quackgrass	3
BOHA_SNAK_V_R_090_2012	90	<i>Lepidium latifolium</i>	Broadleaved pepperweed	4
BOHA_SNAK_V_R_090_2012	90	<i>Phragmites australis</i>	Common reed	1
BOHA_SNAK_V_R_090_2012	90	<i>Solidago sempervirens</i>	Seaside goldenrod	4
BOHA_SNAK_V_R_091_2012	91	Wrack and litter	Wrack and litter	1
BOHA_SNAK_V_R_091_2012	91	<i>Distichlis spicata</i>	Saltgrass	6
BOHA_SNAK_V_R_091_2012	91	<i>Spartina alterniflora</i>	Smooth cordgrass	2
BOHA_SNAK_V_R_092_2012	92	Dead grass	Dead grass	2
BOHA_SNAK_V_R_092_2012	92	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_092_2012	92	<i>Spartina alterniflora</i>	Smooth cordgrass	6

Appendix B: Vegetation plot data (continued)

Table 1. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012.

Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager (continued).

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_SNAK_V_R_093_2012	93	Water	Permanent water (e.g. pond)	5
BOHA_SNAK_V_R_093_2012	93	<i>Spartina alterniflora</i>	Smooth cordgrass	4
BOHA_SNAK_V_R_094_2012	94	Dead grass	Dead grass	2
BOHA_SNAK_V_R_094_2012	94	Wrack and litter	Wrack and litter	2
BOHA_SNAK_V_R_094_2012	94	<i>Ascophyllum nodosum</i>	Knotted wrack (brown alga)	3
BOHA_SNAK_V_R_094_2012	94	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_095_2012	95	Dead grass	Dead grass	2
BOHA_SNAK_V_R_095_2012	95	Bare ground	Bare ground	5
BOHA_SNAK_V_R_095_2012	95	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_095_2012	95	<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)	3
BOHA_SNAK_V_R_095_2012	95	<i>Spartina alterniflora</i>	Smooth cordgrass	3
BOHA_SNAK_V_R_096_2012	96	Dead grass	Dead grass	2
BOHA_SNAK_V_R_096_2012	96	Bare ground	Bare ground	2
BOHA_SNAK_V_R_096_2012	96	<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)	5
BOHA_SNAK_V_R_096_2012	96	<i>Spartina alterniflora</i>	Smooth cordgrass	4
BOHA_SNAK_V_R_097_2012	97	Dead forb	Dead forb	3
BOHA_SNAK_V_R_097_2012	97	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_SNAK_V_R_097_2012	97	<i>Spartina patens</i>	Saltmeadow cordgrass	6
BOHA_SNAK_V_R_098_2012	98	Wrack and litter	Wrack and litter	6
BOHA_SNAK_V_R_099_2012	99	Dead grass	Dead grass	2
BOHA_SNAK_V_R_099_2012	99	Bare ground	Bare ground	3
BOHA_SNAK_V_R_099_2012	99	<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)	4
BOHA_SNAK_V_R_099_2012	99	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_100_2012	100	Dead grass	Dead grass	2
BOHA_SNAK_V_R_100_2012	100	Bare ground	Bare ground	3
BOHA_SNAK_V_R_100_2012	100	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_100_2012	100	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_SNAK_V_R_101_2012	101	Dead grass	Dead grass	5
BOHA_SNAK_V_R_101_2012	101	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_101_2012	101	<i>Distichlis spicata</i>	Saltgrass	3
BOHA_SNAK_V_R_101_2012	101	<i>Spartina alterniflora</i>	Smooth cordgrass	3
BOHA_SNAK_V_R_102_2012	102	Bare ground	Bare ground	4
BOHA_SNAK_V_R_102_2012	102	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_102_2012	102	<i>Salicornia maritima</i>	Slender glasswort	3
BOHA_SNAK_V_R_102_2012	102	<i>Spartina alterniflora</i>	Smooth cordgrass	4
BOHA_SNAK_V_R_103_2012	103	Wrack and litter	Wrack and litter	2
BOHA_SNAK_V_R_103_2012	103	<i>Ascophyllum nodosum</i>	Knotted wrack (brown alga)	3

Appendix B: Vegetation plot data (continued)

Table 1. Salt marsh vegetation plot data for Calf, Peddocks, and Snake Island sampled in 2012. Modified Braun-Blanquet cover classes: 0:absent, 1: <1%, 2: 1-5%, 3: 6-25%, 4: 26-50%, 5: 51-75%, 6: 76-100%. Digital data are available from the NETN data manager (continued).

Island and Station ID	Map label	Scientific Name	Common Name	Cover Class
BOHA_SNAK_V_R_103_2012	103	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_104_2012	104	Dead grass	Dead grass	2
BOHA_SNAK_V_R_104_2012	104	Wrack and litter	Wrack and litter	2
BOHA_SNAK_V_R_104_2012	104	<i>Limonium carolinianum</i>	Lavender thrift	2
BOHA_SNAK_V_R_104_2012	104	<i>Spartina alterniflora</i>	Smooth cordgrass	6
BOHA_SNAK_V_R_106_2012	106	Bare ground	Bare ground	5
BOHA_SNAK_V_R_106_2012	106	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_106_2012	106	<i>Limonium carolinianum</i>	Lavender thrift	2
BOHA_SNAK_V_R_106_2012	106	<i>Suaeda linearis</i>	Annual seepweed	3
BOHA_SNAK_V_R_107_2012	107	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_107_2012	107	<i>Limonium carolinianum</i>	Lavender thrift	2
BOHA_SNAK_V_R_107_2012	107	<i>Salicornia maritima</i>	Slender glasswort	4
BOHA_SNAK_V_R_107_2012	107	<i>Spartina alterniflora</i>	Smooth cordgrass	3
BOHA_SNAK_V_R_107_2012	107	<i>Suaeda maritima</i>	Herbaceous seepweed	4
BOHA_SNAK_V_R_108_2012	108	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_108_2012	108	<i>Atriplex patula</i>	Spear saltbush	5
BOHA_SNAK_V_R_108_2012	108	<i>Elymus repens</i>	Quackgrass	3
BOHA_SNAK_V_R_108_2012	108	<i>Phragmites australis</i>	Common reed	5
BOHA_SNAK_V_R_108_2012	108	<i>Solidago sempervirens</i>	Seaside goldenrod	4
BOHA_SNAK_V_R_112_2012	112	Dead grass	Dead grass	2
BOHA_SNAK_V_R_112_2012	112	Bare ground	Bare ground	2
BOHA_SNAK_V_R_112_2012	112	Wrack and litter	Wrack and litter	2
BOHA_SNAK_V_R_112_2012	112	<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)	5
BOHA_SNAK_V_R_112_2012	112	<i>Spartina alterniflora</i>	Smooth cordgrass	5
BOHA_SNAK_V_R_113_2012	113	Wrack and litter	Wrack and litter	3
BOHA_SNAK_V_R_113_2012	113	<i>Fucus vesiculosus</i>	Bladderwrack (brown alga)	4
BOHA_SNAK_V_R_113_2012	113	<i>Spartina alterniflora</i>	Smooth cordgrass	6

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 035/120326, April 2013

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