

Boston Harbor Islands Volunteer Guide for Coastal Breeding Birds



Outer Boston Harbor from Outer Brewster Island looking west (2007, CLT).

Species Ecology and Survey Methods

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updated May, 2010**

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General Volunteer Information

What to expect: All survey trips will leave from the dock at UMASS Boston at 0700 on scheduled days. A field schedule, including make-up days, will be provided in advance, but is subject to change due to weather and nesting conditions. Survey trips will return to UMASS by approximately 1200 each day.

Surveys will not take place if wind or precipitation reduces visibility or if extreme temperatures create unnecessarily stressful conditions for nesting birds. Boat transportation will be provided by UMASS Boston using their 26ft landing craft, which is an open vessel that carries up to 6 passengers. Expect a bumpy, windy, and sometimes wet ride with variable weather conditions on the water.



UMASS Boston landing craft on Outer Brewster (2007, CLT)

Surveys will be conducted using both ground and boat-based methods. Landing on some of the islands can be precarious, and may involve wading a short distance in to shore. Expect to hike over rough and variable terrain.

What to wear: We recommend dressing in layers, as weather conditions can be highly variable on the islands. Covered shoes with good ankle support are a good choice and long pants and long-sleeved shirts are suggested to avoid exposure to sun, poison ivy, and brambles. Keeping in mind that many of the species surveyed will attempt to defecate on researchers as a defense mechanism, hats are also highly recommended!

What to bring: Although all necessary equipment will be provided by NPS, volunteers may wish to bring their own binoculars. Individuals are responsible for bringing their own water and snacks. Sunscreen and bug repellent may be desirable.

Directions & Parking: All scheduled trips will leave from the boat dock at UMASS Boston on Dorchester Bay. The campus is accessible by MBTA or parking is available for \$6/day. See http://www.umb.edu/parking_transport/index.html

Schedule Changes: Although we will do our best to stick to the schedule, weather and other factors may create changes. Whenever possible, we will make decisions about weather cancellations and notify participants by e-mail at least 12 hours in advance.

Questions about Coastal Breeding Bird Monitoring Protocol or Field Schedule?

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Questions about volunteering in the park or other park programs?

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Common Eider (*Somateria mollissima*)



Common Eider, breeding male and female (Andreas Trepte).

Identification:

- length: 24", wingspan: 38"
- largest sea duck
- large wedge-shaped head
- long bill, broad wings, heavy body
- male, strikingly tuxedo patterned
- female, dark gray or rusty brown with fine black barring

Range: year round resident of North Atlantic coast; winters south to New England; breeds throughout Arctic Canada, south to Maine coast with several small populations in Massachusetts

Diet/Feeding: dives for food; eats almost entirely mollusks, echinoderms, crustaceans, and a few fish

Nesting Habitat: often nests colonially, near rocky seacoast or on offshore islands

Nest Construction: concealed in sheltered spot on open grassy site under rock shelf or vegetation near the coast; nest made of matted seaweed, moss, grass or sticks; lined with down

Breeding Ecology: pairs are monogamous, female incubates and tends young; young are precocial

Number of Broods: 1

Clutch Size: generally 4-6 eggs

Eggs: shape variable, sometimes oval; smooth and slightly glossy; pale green, olive, grayish, or bluish; no spotting; 77 x 52 mm

Length of Incubation: 25-30 days

Days to Fledge: 65-75 days

Description of Chicks: precocial and downy; uniform grayish-brown; bluish gray bill and legs



Common Eider nest and eggs on Calf Island (2005, CLT).

Conservation Status: low continental conservation concern, though Arctic population may be experiencing declines

Current BOHA Status: Over 200 pairs nesting on the outer islands with the densest colony site located on Calf Island

Double-crested Cormorant

(Phalacrocorax auritus)



Double-Crested Cormorant.
(Rodney Krey, USFW©)

Identification:

- length: 27", wingspan: 50"
- large dark waterbird
- long, thin neck
- hooked bill
- gular area squared-off and orange
- often perches with wings spread to dry
- adults have small white plumes on head during the breeding season

Range: year round resident of Pacific, Alaskan, South Atlantic and Florida coasts; breeds

throughout North America along coasts and throughout the interior northern US; migrating populations winter in Mexico, the Caribbean and Gulf coasts

Diet/Feeding: primarily schooling fish

Nesting Habitat: nests in trees or on cliff ledges overlooking water

Nest Construction: constructs platform nest of sticks, seaweed, and other drift, lined with finer materials

Breeding Ecology: pairs are monogamous, both sexes incubate and tend young; young are altricial

Number of Broods: 1, but lost clutch may be replaced

Clutch Size: generally 3-4 eggs, sometimes 2-7

Eggs: long; pale blue shell with uneven chalky outer layer; no spotting; 51 x 38 mm

Length of Incubation: 25-29 days

Days to Fledge: 35-42 days

Description of Chicks: altricial and naked on hatching; skin blackish-brown; thick short black wooly down appears at 6 days



Double-crested Cormorant nest (Middle Brewster, 2005, CLT).

Conservation Status: not currently at risk; populations have increased since the 1970s

Current BOHA Status: approximately 1100 pairs nesting on the outer islands; 80-150 pairs nesting on Sarah Island and approximately 15 on Sheep

Great Black-backed Gull

(Larus marinus)



Great black-backed gull (2007, CLT).

Identification:

- length: 30", wingspan: 65"
- largest gull in North America
- dark gray back and wings
- bright yellow bill with red spot
- pink legs

Range: year round resident of North Atlantic coasts; winters south from New York to Florida; breeds north to arctic Canada

Diet/Feeding: scavenger; feeds on birds, eggs, fish (often pirated), squid, small mammals, carrion, offal, berries, grain

Nesting Habitat: nests colonially on bare or grassy areas, rock outcrops along rocky coasts, off shore islands, or grassy slopes; occasionally nests on lake margins and in salt marshes

Nest Construction: constructs saucer shaped nest of mounded seaweed, sod, moss and rubbish lined with fine grass

Breeding Ecology: pairs are monogamous, both sexes incubate and tend young; young are semiprecocial

Number of Broods: 1

Clutch Size: generally 2-3 eggs

Eggs: smooth, non-glossy with a fine granular surface; pale olive, buff or greenish marked with specks, spots or blotches of blackish-brown or olive-brown markings; 77 x 54 mm

Length of Incubation: 26 days

Days to Fledge: 49-56 days

Description of Chicks: semi-precocial and downy; spotted; heavy dark bill with light tip; heavy pinkish-gray legs and feet



Great black-backed gull chick and eggs pipping (2007, CLT).

Conservation Status: not currently at risk

Current BOHA Status: approximately 300 pairs nesting in BOHA, primarily on the outer islands and on Sarah Island

Herring Gull (*Larus argentatus*)



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Adult Herring Gull.

Identification:

- length: 25", wingspan: 58"
- relatively slender
- light gray back and upper wings
- black wing tips
- bright yellow bill with red spot
- pink legs

Range: year round resident of North Atlantic coasts and Great Lakes; winters throughout eastern US and along Pacific coast; breeds throughout Canada

Diet/Feeding: scavenger; omnivorous – eats anything from garbage to berries; opportunistic predator on adult birds, eggs, and young of other gulls

Nesting Habitat: nests colonially near water on rocky terraces, grassy hummocks, along lake margins and in salt marshes

Nest Construction: constructs saucer shaped nest of grass, moss and debris lined with fine grass and sometimes feathers; uses perennial nest sites constantly rebuilt

Breeding Ecology: pairs are monogamous, both sexes incubate and tend young; young are semiprecocial

Number of Broods: 1

Clutch Size: generally 2-3 eggs, but sometimes 1-4

Eggs: smooth and non-glossy with a fine granular surface; light olive, buff or greenish marked with specks, spots or blotches of blackish-brown, olive, or olive-brown markings; 70 x 48 mm

Length of Incubation: 24-28 days

Days to Fledge: 35 days

Description of Chicks: semi-precocial and downy; spotted; black bill with pink tip; legs and feet pinkish



Herring Gull nest with eggs and chicks on Sheep Island (2005, CLT).

Conservation Status: low continental conservation concern

Current BOHA Status: between 700-1200 pairs nesting in BOHA, primarily on the outer islands and on Sarah Island

Great Egret (*Ardea alba*)



Great Egret, breeding adult.

Identification:

- length: 46", wingspan: 72"
- largest white egret
- tall, slender, and long-necked
- black legs and feet
- long, thick yellow bill
- holds neck in an "S" curve in flight
- green lores during breeding season

Range: widespread species, a year round resident of southern US Atlantic and Pacific coasts south throughout Gulf and western Mexico; winters throughout Central and South America; breeds along US coasts and inland rivers and lakes

Diet/Feeding: stalks and strikes prey; eats primarily fish, but also small vertebrates and aquatic invertebrates

Nesting Habitat: nests colonially often with other species in trees and shrubs; nests near fresh or salt water in woodlands and thickets

Nest Construction: large platform nest of sticks twigs and stems; unlined or lined with fine materials

Breeding Ecology: pairs are monogamous, both male and female incubate and tend young; young are semialtricial

Number of Broods: 1

Clutch Size: 4-5 eggs

Eggs: pale greenish blue; lacking spots; smooth and non-glossy; 56 x 41mm

Length of Incubation: 23-26 days

Days to Fledge: 42-49 days

Description of Chicks: semi-altricial and downy white; bill pink on hatching, then yellow; legs gray-green



Great egret nest with chick & eggs (2009, CLT).

Conservation Status: widespread; not currently at risk

Current BOHA Status: Approximately 80 pairs generally nest in colonies Sarah, Sheep, and Outer Brewster Islands

Snowy Egret (*Egretta thula*)



Snowy Egret adult in breeding plumage (Manomet).

Identification:

- length: 24", wingspan: 41"
- medium-sized, long-legged wader
- small and slender compared to Great Egret
- yellow feet, black legs
- black bill
- yellow to red lores during breeding season

Range: widespread species, a year round resident of southern US Atlantic and Pacific coasts south throughout South America; winters throughout

Central America; also breeds along US coasts and inland rivers and lakes

Diet/Feeding: stalks and strikes prey; eats primarily fish, but also small vertebrates and aquatic invertebrates

Nesting Habitat: nests colonially often with other species; nests near fresh or salt water in woodlands, thickets, or marsh

Nest Construction: flat and flimsy platform nest of sticks twigs and stems; unlined or lined with fine twigs and rushes

Breeding Ecology: pairs are monogamous, both male and female incubate and tend young; young are semialtricial

Number of Broods: 1

Clutch Size: usually 3-4 eggs, sometimes up to 6

Eggs: pale greenish blue, lacking spots; smooth and non-glossy; 43 x 32mm

Length of Incubation: 20-24 days

Days to Fledge: 30 days

Description of Chicks: semi-altricial and downy white; bill and feet pale yellow; skin light green



Snowy Egret chicks in nest on Sheep Island (2005, CLT).

Conservation Status: high continental conservation concern

Current BOHA Status: 50 pairs generally nest in colonies in BOHA on Sarah, Sheep, and Outer Brewster Islands

Black-crowned Night-Heron

(Nycticorax nycticorax)



© William L. Newton/CLO

Adult Black-crowned Night-Heron.

breeds across most of the US and southern Canada, south to southern South America; winters along coasts from middle US and south throughout Central and South America

Diet/Feeding: stalks and strikes prey; eats primarily fish, but also insects, eggs, and young birds, small mammals, amphibians, and other lower vertebrates

Nesting Habitat: nests colonially sometimes with other species; nests in all kinds of fresh and salt water wetlands and coastal habitats; may nest on the ground or in trees

Nest Construction: variable, but usually a platform with shallow hollow of twigs, reeds, or similar material lined with finer materials

Breeding Ecology: pairs are monogamous, both male and female incubate and tend young; young are semialtricial

Identification:

- length: 25", wingspan: 44"
- very stocky
- large-headed with short neck
- yellow legs and feet
- black bill
- distinctive red eye
- tucks neck in close to body during flight

Range: widespread species; breeds across most of the US and southern Canada, south

Number of Broods: 1

Clutch Size: usually 3-5 eggs

Eggs: pale greenish blue, sometimes more green or wholly blue; lacking spots; smooth and non-glossy; 53 x 47 mm

Length of Incubation: 24-26 days

Days to Fledge: 42-49 days

Description of Chicks: semi-altricial and downy; grayish-brown; bill gray; legs and feet gray-green



Black-crowned Night-Heron egg and chick in outer island colony (2005, CLT).

Conservation Status: moderate continental conservation concern

Current BOHA Status: approximately 330 pairs nest in BOHA in colonies on Calf, Middle Brewster, Outer Brewster, Sheep and Sarah Islands

Glossy Ibis (*Plegadis falcinellus*)



Adult Glossy Ibis.

Identification:

- length: 23", wingspan: 36"
- medium-sized, long-legged, long-necked wader
- decurved bill
- body plumage iridescent purplish-red but appearing black at a distance
- iridescent green wings and tail

Range: year round resident of south Atlantic US coast, Florida Gulf coast, and throughout the Caribbean; breeds along Atlantic coast north to New England

Diet/Feeding: gleans and probes for prey; eats primarily aquatic invertebrates, but also insects and small vertebrates

Nesting Habitat: nests colonially often with other species in marshes and swamps; may nest on the ground or in shrubs or trees

Nest Construction: large, shallow, cupped platform of sticks, twigs, and dried plant material; well-lined with finer materials

Breeding Ecology: pairs are monogamous, mainly the females incubate, but males also; both sexes tend young; young are semialtricial

Number of Broods: 1

Clutch Size: usually 2-4 eggs

Eggs: dull blue or greenish blue; lacking spots; darker than heron eggs; 53 x 37 mm

Length of Incubation: 21 days

Days to Fledge: 28+ days

Description of Chicks: semi-altricial and downy; black and white patches on crown; bill pink with black bands; feet yellowish



Glossy Ibis nest in outer island colony (2005, CLT).

Conservation Status: low continental conservation concern

Current BOHA Status: approximately 8-25 pairs nest in BOHA in colonies on Outer Brewster and Sheep Islands

American Oystercatcher

(*Haematopus palliatus*)



American Oystercatcher
(Snake Island, 2005, CLT).

Identification:

- length: 17.5", wingspan: 32"
- large shorebird
- stocky shape
- heavy red bill
- pink legs
- yellow eye
- piping call

Range: year round and winter resident of coastal Florida, Central America, Caribbean, and South America; also breeds along the US Gulf and Atlantic coasts, north to Massachusetts

Diet/Feeding: feeds exclusively on aquatic invertebrates

Nesting Habitat: nests on sandy or rocky coasts and islands

Nest Construction: shallow scrape in loose substrate, often amid shells, peddles, or grass; sometimes lined with shells

Breeding Ecology: pairs are monogamous, both sexes incubate and tend young; young are precocial

Number of Broods: 1

Clutch Size: usually 3 eggs

Eggs: smooth, glossy; yellowish with stone, grayish, or buffy tints; boldly spotted or blotched with brownish-black markings that vary in size; 56 x 39mm

Length of Incubation: 24-29 days

Days to Fledge: 35+ days, but bill not fully developed for prying apart shellfish until 8-9 weeks

Description of Chicks: precocial and downy; dark on top, white underneath; legs and feet gray; bill dark with pinkish base; subadults with dark tip at end of bill



American Oystercatcher nest (Sheep Island, 2007, CLT).

Conservation Status: North American population listed as a species of high concern under the US Shorebird Conservation Plan

Current BOHA Status: breeding pairs on 15-18 islands in BOHA, usually 1-3 pairs per island

Willet (*Catoptrophorus semipalmatus*)



Willet (2006, CLT).

Identification:

- length: 15", wingspan: 26"
- large long-legged shorebird
- drab gray body
- obvious black & white wing pattern in flight
- long, thick, straight bill
- bill black or blue-gray with darker tip
- blue-gray legs

Range: Eastern North American population strictly coastal; year round resident of South Atlantic and Gulf coasts; breeds north to Maritime Canada; winters along coast south to Northern Chile

Diet/Feeding: aquatic insects, worms, crustaceans, mollusks, fish

Nesting Habitat: nests in salt marshes, beaches and islands

Nest Construction: shallow scrape on bare ground, in short grass, under a plant tuft, or well-concealed in vegetation; lined with grasses, shells, or other debris

Breeding Ecology: pairs are monogamous, both sexes incubate and tend young; young are precocial

Number of Broods: 1

Clutch Size: usually 4 eggs, rarely 5

Eggs: oval, smooth, and moderately glossy; very pale greenish, olive, buff, stone or slightly pinkish-buff; finely speckled, spotted or blotched with medium to dark brown, purplish-brown, pale gray, or purple; 55 x 39 mm

Length of Incubation: 22-29 days

Days to Fledge: estimated at 28 days

Description of Chicks: precocial and downy; buff head and undersides, dark stripe through eye; dark patches on flanks and wings



Willet nest on Snake Island (2007, CLT)

Conservation Status: listed as a species of moderate concern under the US Shorebird Conservation Plan

Current BOHA Status: 1+ breeding pairs on Snake Island

Spotted Sandpiper (*Actitis macularia*)



Spotted Sandpiper.

Identification:

- length: 7.5", wingspan: 15"
- short-necked, long-tailed
- exaggerated bobbing motion
- spotted breast

Range: breeds throughout central and northern US, north to Canada; winters from southern US south through Central and northern South America

Diet/Feeding: flying insects, worms, crustaceans, mollusks, fish, carrion

Nesting Habitat: semi-open vegetation near water

Nest Construction: scrape on elevated site in grass, rocks, or shrubs; nest lined with grass, moss, or occasionally feathers

Breeding Ecology: pairs are polyandrous, male incubates and tends young; young are precocial

Number of Broods: 2-3

Clutch Size: usually 4 eggs

Eggs: smooth, slightly glossy; creamy or pale creamy buff; fine profusely speckling or sparser spots or blotches; 43 x 32 mm

Length of Incubation: 20-24 days

Days to Fledge: 17-21 days

Description of Chicks: precocial and downy; underside white; dark streak from bill through eye



Spotted Sandpiper nest.

Conservation Status: listed as a species of low concern under the US Shorebird Conservation Plan

Current BOHA Status: breeding pairs on many islands; up to 11 nests detected on Rainsford in 2003

Least Tern (*Sterna antillarum*)



Adult least tern.
(Rainsford, 2005, CLT)

Identification:

- length: 8.5", wingspan: 20"
- smallest tern
- sexes similar
- relatively long, very narrow wings
- short, forked tail
- black cap with white forehead, breast, and belly
- pale gray back and upperwing
- unique yellow bill

Range: long distance migrant; winters in Central and South America; breeds throughout the US, along both coasts, and inland lakes and rivers.

Diet/Feeding: dives from the air or skims the water surface to obtain fish and aquatic invertebrates

Nesting Habitat: nests in colonies on broad expanses of open sandy or gravelly beach; open areas with short sparse vegetation are preferred

Nest Construction: shallow scrape on the ground, generally unlined but occasionally lined with shells or pebbles

Breeding Ecology: pairs are monogamous, both sexes incubate and tend young; young are semiprecocial

Number of Broods: 1, may re-nest if first brood lost

Clutch Size: 2-3 eggs, laid 1 per day on consecutive days

Eggs: smooth, non-glossy; very pale, tinted olive or buff; spotted in brown, blackish-brown or shades of gray; 32 x 23mm

Length of Incubation: 20-22 days

Days to Fledge: 19-20+ days

Description of Chicks: semi-precocial and downy; sandy buff on head and underparts; legs, feet, and bill pinkish-gray



Least tern nest with one egg and one day-old chick. Eggs are approximately the size of a quarter. (Rainsford, 2005, CLT)

Conservation Status: High continental conservation concern; inland population federally endangered; species of special concern in Massachusetts

Current BOHA Status: small shifting colonies moving between Rainsford and Lovells; approx. 40-120 nests annually

Common Tern (*Sterna hirundo*)



Adult Common Tern in breeding plumage. (Spinnaker, 2007, CLT)

Identification:

- length: 14", wingspan: 31"
- medium sized tern with slender pointed bill
- sexes similar
- long, deeply forked tail
- black cap, white face
- red legs
- orange-red bill with black tip

Range: long-distance migrant; winters in South America; breeds in fresh and salt water habitats throughout the US

Diet/Feeding: dives from the air or skims the water surface to obtain fish; occasionally eats other aquatic invertebrates

Nesting Habitat: nests in colonies on islands or coastal beaches with sparse matted vegetation; also well adapted to artificial platforms

Nest Construction: shallow scrape in sand, shells, pebbles, or beach wrack; sometimes lined with grass, shells, or seaweed

Breeding Ecology: pairs are monogamous, both sexes incubate and tend young; young are semiprecocial

Number of Broods: 1

Clutch Size: 2-3 eggs, laid 1 per day on consecutive days

Eggs: smooth, non-glossy; creamy or tinted very pale yellowish, greenish or olive; spotted in brown, blackish-brown or shades of gray; 42 x 30mm

Length of Incubation: 21-27 days

Days to Fledge: 26-27 days

Description of Chicks: semi-precocial and downy; buff underparts with blotching on head; legs and feet pink to yellow-orange; orange bill with black tip



Common tern nest on Snake Island (2005, CLT).

Conservation Status: low continental conservation concern; species of special concern in Massachusetts

Current BOHA Status: small colony of approximately 15 nests on Snake Island; large colony (~350-400 nests) on platform off Spinnaker Island, in Hull (outside park boundaries)

Survey Methods – Common Eider

Target Species: Common Eider (COEI)

Survey Frequency: every 3 years

Survey Type: complete ground-based survey of incubating females; secondary count with a boat-based survey of chicks on the water

Target Islands: Calf, Little Calf, Green, Middle Brewster, Outer Brewster, Great Brewster, The Graves, Shag Rocks

Target Breeding Stage: incubation; secondary count post fledging

Approximate Survey Dates: May 15 – June 1; secondary count June 15 – July 15

Survey Instructions:

In BOHA, eider have generally been found nesting under overhanging vegetation (primarily sumac) near shore on the outer islands. With 4-5 observers, spread 10-15' apart, walk in a line and progress through suitable vegetation on each island, watching for flushing females.

When a female is flushed, search the immediate area to locate the nest. Record the nest's contents (# eggs and/or chicks) and gps its location, when possible. Maintain constant vocal communication with other observers as you search to assure



Sumac habitat used by nesting COEI on Calf Island (2005, CLT).

complete coverage of each island and reduce the chances of double-counting nests. To reduce disturbance and increase the likelihood of finding nests, time surveys appropriately for the peak incubation period.



Incubating female COEI on Calf Island (2003, CLT).

Approximately two-three weeks following ground-based surveys, return to the Outer Harbor to record the numbers of chicks observed on the water rafting in crèches.

Data Collected for each Island

- species
- island surveyed
- date of survey
- survey starting and ending times
- weather conditions (temperature, cloud cover, precipitation/visibility, wind speed & direction)
- total # of active nests and contents (# eggs, chicks)
- gps location of each nest, when possible
- field map marked with date and approximate nest searching area

Survey Methods – Gulls and Cormorants

Target Species: Double-crested Cormorant (DCCO), Great Black-backed Gull (GBBG), Herring Gull (HERG)

Survey Frequency: every 3 years

Survey Type: boat-based estimate of visible active nests

Target Islands: Outer Islands, Georges, Gallops, Sheep, Hangman, Sarah, Ragged

Target Breeding Stage: incubation

Approximate Survey Dates: May 10 – June 5



DCCO colony on Middle Brewster Island (2007, CLT).

Survey Instructions:

Circle the entire perimeter of each island, where gulls or cormorants are present, in a small boat traveling at approximately 3 miles per hour as close to shore as the boat Captain will allow (between 30-150 feet offshore).

Use two independent observers to record the number of active nests determined by the presence of an incubating adult, an adult standing on or in a recognizable stick nest, or the presence of visible chicks within a stick nest. Be careful not to overestimate

the number of active nests by counting nearby adults that are not on a nest.

Record the approximate location of each nesting colony, noting the date and species present, on a field map.

Note any available evidence indicating the breeding stage for each species (presence of eggs or chicks, adults engaged in nest building, feeding chicks, etc.)

High resolution digital photography will also be used.



Nesting colony on offshore rocks in Outer Boston Harbor (2007, CLT).

Data Collected for each Island

- species
- island surveyed
- date of survey
- survey starting and ending times
- weather conditions (temperature, cloud cover, precipitation/visibility, wind speed & direction)
- # visible, active nests (2 counts, 1 from each observer)
- field map marked with date and approximate colony location

Survey Methods – Wading Birds

Target Species: Great Egret (GREG), Snowy Egret (SNEG), Black-crowned Night-Heron (BCNH), Glossy Ibis (GLIB)

Survey Frequency: every 3 years

Survey Type: complete ground-based survey of active nests

Target Islands: Calf, Middle Brewster, Outer Brewster, Sarah, Sheep Islands

Target Breeding Stage: incubation

Approximate Survey Dates: May 15 – June 5



Juvenile GREG on Sarah Island colony (2005, CLT).

Survey Instructions:

Determine the location of active colonies by observing wading bird activity, such as adults delivering food.

Record colony location and site conditions. Carefully approach the colony site, noting the estimated # of adults present, by species, as they flush. Be sure to obtain a gps track of your progress through the colony. Record your starting time.

With 2-3 observers, work through the colony

systematically, recording nests and nest contents as you go. Identify active nests by species whenever possible based on nest/egg characteristics, nestlings, or by the attending adult.

Make sure to distinguish wading bird nests from those of other species (like DCCO or gulls), which may nest nearby, especially on Sarah and Sheep.



Black-crowned Night-Heron nest, Outer Islands (2005, CLT).

Upon exiting the colony, record your ending time and any additional notes. Note: Surveys will be discontinued if signs of stress are observed, such as hypothermic or overheated young, branching older young, or harassment by potential predators – be sure to report any observations of stress immediately.

Data Collected for each Island / Colony

- species
- island surveyed
- date of survey
- survey starting and ending times
- weather conditions (temperature, cloud cover, precipitation/visibility, wind speed & direction)
- # adults estimated to be present, by species (count number flushed on approach)
- GPS location of colony boundaries
- field map marked with date and approximate colony boundaries
- total count of active nests (tallied by species) and nest contents (# eggs, chicks)

Survey Methods – Large Shorebirds

Target Species: American Oystercatcher (AMOY), Willet (WILL)

Survey Frequency: annually

Survey Type: boat-based estimate of nesting pairs

Target Islands: all islands (AMOY); Snake (WILL)

Target Breeding Stage: adults defending nest, incubating or brooding chicks

Approximate Survey Dates: May 15 – July 15



Breeding AMOY on Rainsford Island (2005, CLT).

Survey Instructions:

Circle the entire perimeter of each island in a small boat traveling at approximately 3 miles per hour as close to shore as the boat Captain will allow (between 30-150 feet offshore).

While circling, scan the shoreline carefully for the presence of American Oystercatchers or Willets. Note evidence of breeding pairs, such as agitation and defensive maneuvers as

you approach a particular location, the presence of an incubating adult, or the presence of unfledged chicks on the shore.

Record the number of breeding pairs observed on each island by species. Also be sure to record the approximate location and date of your observations on a field map. While you may wish to include records of presumed non-breeding adults, be sure to list these as such in the 'Notes' column.



American oystercatcher nest (2007, CLT).

Be on the lookout for banded oystercatchers. Follow instructions for recording and reporting sightings.

Data Collected for each Island

- species
- island surveyed
- date of survey
- survey starting and ending times
- weather conditions (temperature, cloud cover, precipitation/visibility, wind speed & direction)
- # nesting pairs by species
- field map marked with date and approximate nesting pair location
- note nesting behavior, presence of AMOY chicks, and presence of presumed non-breeding adults

Survey Methods – Small Shorebirds

Target Species: Spotted Sandpiper (SPSA); can also be used to gather information on American Oystercatchers (AMOY) and possible future colonization by Piping Plovers (PIPL) when implemented

Survey Frequency: every 3 years

Survey Type: walking survey; estimate of incubating adults flushed from nests, direct nest counts

Target Islands: all islands (SPSA)

Target Breeding Stage: incubation

Approximate Survey Dates: May 15 – June 15



Nesting Spotted Sandpiper.

Survey Instructions:

With 3-4 observers, spread out in a line and progress through suitable vegetation on each island, watching for flushing male sandpipers.

When a individual is flushed from a nest, search the immediate area to locate the nest. Record the nest's contents (# eggs and/or chicks) and gps its location, when possible.

Maintain constant vocal communication with other observers as you search to assure complete coverage of each island and reduce the chances of double-counting nests. To reduce disturbance and increase the likelihood of finding nests, time surveys appropriately for the peak incubation period, which is difficult for this species because they generally double, or even triple, brood.

While conducting shorebird surveys, be on the lookout for Piping Plovers, which are not currently known to nest in Boston Harbor, but may colonize the area in the future.

Data Collected for each Island

- species
- island surveyed
- date of survey
- survey starting and ending times
- weather conditions (temperature, cloud cover, precipitation/visibility, wind speed & direction)
- total # of active nests and contents (# eggs, chicks)
- gps location of each nest, when possible
- field map marked with date and approximate nest searching area

Survey Methods – Terns

Target Species: Least Tern (LETE), Common Tern (COTE)

Survey Frequency: annually, with 2-3 counts for LETE colonies

Survey Type: complete, ground-based nest count

Target Islands: Rainsford (LETE), Lovells (LETE); Snake (COTE)

Potential Future Colony Sites: Spectacle

Target Breeding Stage: peak egg laying; 2-3 eggs in most nests

Approximate Survey Dates: June 10 – June 25



LETE colony on Lovell's Island (2005, CLT).

Survey Instructions:

Determine the location of active colonies by observing tern activity from a distance (note incubating adults or adults delivering food).

Record colony location and site conditions. Carefully approach the colony site, noting the estimated # of adults present as they flush. Be sure to note the gps location of the colony boundary as you enter. Record your starting time.

Working in pairs (or groups of 3 or more for particularly wide colonies), divide the beach into swaths

approximately 10 feet wide. Designate a recorder to walk with you below the high tide line, or outside of the colony, but within earshot to avoid stepping on nests. Working as a team, call out nest locations and contents as you proceed

through the colony. Communicate with your partner(s) to avoid double-counting or under-counting nests.

CAUTION: Tern eggs and nests are extremely well-camouflaged and very easily stepped on. Carefully scan the ground below your foot with every single step, then scan the area around you for nests before stepping again.



COTE chicks on Snake Island (2005, CLT).

Upon exiting the colony, note your gps location again. For irregularly shaped colonies, you may also want to obtain additional gps points along the edges. Record your ending time and any additional notes.

Data Collected at each Colony Site

- species
- island surveyed
- date of survey
- survey starting and ending times
- weather conditions (temperature, cloud cover, precipitation/visibility, wind speed & direction)
- # adults estimated to be present (count number flushed on approach)
- GPS location of colony in UTM's (can collect several points at edges)
- field map marked with date and approximate colony boundaries
- total count of occupied nests, tallied by nest contents (empty scrape; 1, 2, or 3 eggs; 1, 2, or 3 chicks present)

Sample Survey Data Sheet

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BOHA Waterbird Monitoring Program Trip Details Form

Field

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.

Place field map here.

1. Form Completed By: _____

2. Date: _____

3. Trip Type (Circle one): _____ Ground-based Survey Boat-based Survey

4. Island(s) Surveyed: _____

5. Observers: _____

6. Number of Survey Teams: _____

7. Start Time: _____ 8. End Time: _____

9. Trip Coverage (Circle one): _____ Complete Partial
(If partial indicate on map and explain in Notes)

Environmental Conditions			
10. Temperature:	_____	(Fahrenheit)	
11. % Cloud Cover:	_____	(0-100%)	
12. Wind Speed:	_____	(0-5; 5-10; 10-15)	
13. Wind Direction:	_____		
14. Tide Level:	High	Mid	Low

Were these data collected:		
15. Colony Pictures?	Yes	No
16. GPS Track?	Yes	No
17. GPS Unit ID (if boat-based): _____		

18. Target Species	Phenology (incubating, hatching, chick rearing, fledging)
a	_____
b	_____
c	_____
d	_____
e	_____

19. Notes: (flush counts, ancillary species, habitat descriptions, survey effort, major changes in environ. conditions):

The purpose of the Trip Details form is to summarize the trip conditions under which individual boat- or ground-based surveys took place. This form should act as something of a coversheet for and be filed with any Boat-based, Ground-based, or Photo Scoring Forms that are filled out in association with this trip.

Field	Requirements
1.	Form Completed By: Full name of individual who completes the form and can be contacted for questions.
2.	Date: Date (day, month, year) that the trip took place.
3.	Trip Type: Was this trip conducted by boat or from land/ground? Circle only one. Changing the Trip Type requires a new Trip Details Form be filled out (i.e. it is a separate trip).
4.	Islands Surveyed: The name of the all the islands visited during this trip.
5.	Observers: The full name of all the observers that participated in this trip.
6.	Number of Survey Teams: Number of survey teams (observer/recorder pairs) collecting data on this trip.
7.	Start Time: The time that the trip started (24 hr format).
8.	End Time: The time that the trip ended (24 hr format).
9.	Trip Coverage: Taking all the teams' effort into account was the entire route/island surveyed?
10.	Temperature: Temperature in degrees Fahrenheit; recorded at trip start
11.	% Cloud Cover: Percentage of sky with clouds (0-100%); recorded at trip start
12.	Wind Speed: Wind speed as determined by the Beaufort Scale (see chart below); recorded at trip start
13.	Wind Direction: Dominant direction wind is blowing from at start of survey (N, NE, E, SE, S, SW, W, NW)
14.	Tide Level: Level of tide at start of survey (High, Mid, Low)
15.	Colony Pictures?: Were pictures taken during this trip to assess species abundance? Yes or No.
16.	GPS track?: Was a GPS track documenting the path of this trip taken? Yes or No.
17.	GPS Unit ID: Unique name/ID found on GPS unit used during this trip.
18.	Target Species & Phenology: What bird species were specifically surveyed for during this trip and what phenology stage were they observed to be in?
19.	Notes: Place for additional notes on the trip, including but not limited to: counts of flushed target species, names of non-target species observed, quantification of survey effort, and major changes in the environmental conditions during the survey.

Modified Beaufort Wind Scale (used to determine wind speed; Field 12)

Wind Speed (knots)	Wind Effects
0 - 5	Ranges from calm air to light breeze; flat water to wavelets with glassy crests; not breaking
5 - 10	Gentle breeze; large wavelets; crest begin to break; scattered whitecaps
10 - 15	Moderate breeze; Small waves with breaking crests; fairly frequent white horses.

SpeciesCode	CommonName
AMOY	American Oystercatcher
BCNH	Black-crowned Night-Heron
COEI	Common Eider
COTE	Common Tern
DCCO	Double-crested Cormorant
GBBG	Great Black-backed Gull
GLIB	Glossy Ibis
GREG	Great Egret
HERG	Herring Gull
LETE	Least Tern
MALL	Mallard Duck
PIPL	Piping Plover
SNEG	Snowy Egret
SPSA	Spotted Sandpiper
UNKN	Unknown species
UNWB	Unknown Wading Bird
WILL	Willet

The purpose of the Ground-based Survey Form is to record data collected by individual survey teams when conducting a ground-based trip. Upon completion, the Ground-based Survey Forms should be gathered by the trip leader from all survey teams and attached to their corresponding Trip Details Form. For more information on the methods used to collect data during ground-based surveys, please see the project's Standard Operating Procedures.

Field	Requirements
1.	Date: Date (day, month, year) that the survey took place.
2.	Island: The name of the island where the survey was conducted.
3.	Observer(s): The full name of all the observers that participated in this survey.
4.	Recorder: Full name of the person who filled out the datasheet for this survey (only one recorder please!).
5.	GPS Unit ID: Provide name/unique ID for specific GPS unit used during this ground survey.
6.	Start Time: The time that the trip started (24 hr format).
7.	End Time: The time that the trip ended (24 hr format).
8.	Survey Coverage: Extent to which the island's nesting resources were surveyed. Circle one. See this survey's GPS track for more detail regarding survey coverage.
9.	Non-target spp?: Check this box if this observation records information on a species other than one of those specifically targeted by this survey.
10.	Species: Four-letter code of the species this record is about. See table below for codes. When recording species not listed below, use the species' full name or define code used in notes.
11.	Unit: Defines what is being counted - Nest (N), Pair (P), or Adult (Ad).
12.	Count: Number of Units (Field 11) observed.
13.	# Eggs: Number of eggs observed when the Unit (Field 11) is Nest.
14.	# Chicks: Number of chicks observed when the Unit (Field 11) is Nest.
15.	X Coord: 6 digit UTM coordinate where the observation was made (NAD83, Zone 19).
16.	Y Coord: 7 digit UTM coordinate of where the observation was made (NAD83, Zone 19).
17.	Notes: Place for additional notes on the species or nest observed.
18.	Certification: Place for team member to sign the datasheet to indicate that it has been reviewed to insure data are complete and legible. If multiple pages are produced, each are reviewed and signed independently.
19.	Page ___ of ___: Page number relative to total number of pages filled out by this team to complete this survey.

SpeciesCode	CommonName
AMOY	American Oystercatcher
BCNH	Black-crowned Night-Heron
COEI	Common Eider
COTE	Common Tern
DCCO	Double-crested Cormorant
GBBG	Great Black-backed Gull
GLIB	Glossy Ibis
GREG	Great Egret
HERG	Herring Gull
LETE	Least Tern
MALL	Mallard Duck
PIPL	Piping Plover
SNEG	Snowy Egret
SPSA	Spotted Sandpiper
UNKN	Unknown species
UNWB	Unknown Wading Bird
WILL	Willet

The purpose of this Boat-based Survey Form is to record data collected by individual survey teams when conducting a boat based trip coinciding with DCCO and Gull incubation. Upon completion, the Boat-based Survey Forms should be gathered by the trip leader from all survey teams and attached to their corresponding Trip Details Form. For more information on the methods used to collect data during boat-based surveys, please see the project's Standard Operating Procedures.

Field	Requirements
1.	Date: Date (day, month, year) that the survey took place.
2.	Start Time: The time that the trip started (24 hr format).
3.	Observer(s): The full name of all the observers that participated in this survey.
4.	Recorder: Full name of the person who filled out the datasheet for this survey (Only one recorder please!).
5.	Non-target spp?: Check this box if this observation records information on a species other than one of those specifically targeted by this survey.
6.	Island: The name of the island where the observation is made.
7.	Segment: Survey segment of the island that this observation was made.
8.	Species: Four-letter code of the species this record is about. See table below for codes. When recording species not listed below, use the species' full name or define code used in notes.
9.	Unit: Defines what is being counted - Nest (N), Pair (P), Adult (A), or Incubating Adult (IA).
10.	Count: Number of Units (Field 9) observed.
11.	Notes: Place for additional notes on the species or nest observed.
12.	Certification: Place for team member to sign the datasheet to indicate that it has been reviewed to insure that data are complete and legible. If multiple pages are produced, each are reviewed and signed independently.
13.	Page __ of __: Page number relative to total number of pages filled out by this team to complete this survey.

SpeciesCode	CommonName
AMOY	American Oystercatcher
BCNH	Black-crowned Night-Heron
COEI	Common Eider
COTE	Common Tern
DCCO	Double-crested Cormorant
GBBG	Great Black-backed Gull
GLIB	Glossy Ibis
GREG	Great Egret
HERG	Herring Gull
LETE	Least Tern
MALL	Mallard Duck
PIPL	Piping Plover
SNEG	Snowy Egret
SPSA	Spotted Sandpiper
UNKN	Unknown species
UNWB	Unknown Wading Bird
WILL	Willet

The purpose of this Boat-based Survey Form is to record data collected by individual survey teams when conducting a boat based trip coinciding with occurrence of COEI creches. Upon completion, the Boat-based Survey Forms should be gathered by the trip leader from all survey teams and attached to their corresponding Trip Details Form. For more information on the methods used to collect data during boat-based surveys, please see the project's Standard Operating Procedures.

- | Field | Requirements |
|-------|---|
| 1. | Date: Date (day, month, year) that the survey took place. |
| 2. | Start Time: The time that the trip started (24 hr format). |
| 3. | Observer(s): The full name of all the observers that participated in this survey. |
| 4. | Recorder: Full name of the person who filled out the datasheet for this survey (only one recorder please!). |
| 5. | Non-target spp?: Check this box if this observation records information on a species other than one of those specifically targeted by this survey. |
| 6. | Island: The name of the island where the observation is made. |
| 7. | Segment: Survey segment of the island that this observation was made. |
| 8. | Species: Four-letter code of the species this record is about. See table below for codes. When recording species not listed below, use the species' full name or define code used in notes. |
| 9. | # Adult Males: Number of common eider adult males observed |
| 10. | # Females: Number of common eider females observed |
| 11. | # Chicks: Number of common edier chicks observed. |
| 12. | # Juv Males: Number of uvenile males observed. |
| 13. | Notes: Place for additional notes on the species or nest observed. |
| 14. | Certification: Place for team member to sign the datasheet to indicate that it has been reviewed to insure that data are complete and legible. If multiple pages are produced, each are reviewed and signed independently. |
| 15. | Page __ of __: Page number relative to total number of pages filled out by this team to complete this survey. |

SpeciesCode	CommonName
AMOI	American Oystercatcher
BCNH	Black-crowned Night-Heron
COEI	Common Eider
COTE	Common Tern
DCCO	Double-crested Cormorant
GBBG	Great Black-backed Gull
GLIB	Glossy Ibis
GREG	Great Egret
HERG	Herring Gull
LETE	Least Tern
MALL	Mallard Duck
PIPL	Piping Plover
SNEG	Snowy Egret
SPSA	Spotted Sandpiper
UNKN	Unknown species
UNWB	Unknown Wading Bird
WILL	Willet

This Photo Scoring Form is used to record the number of incubating adult birds counted from a mosaic of digital photos taken of coastal bird nesting colonies.

GENERAL INSTRUCTIONS

- 1) Locate the appropriate photo mosaic to be counted and review its associated Trip Details Form. Photos are named using the photo naming convention shown at the bottom of this form.
- 2) Before counting, each scorer should make a copy of the photo mosaic being scored. To name the new file simply add an underscore and the scorer's initials to the end of the existing photo file's name (ex. [Existing File Name]_CLT).
- 3) Each scorer should use their own Photo Scoring Form to record their counts.
- 4) Open the photo mosaic using the Paint or a similar program (Paint can be located here on any PC computer: Start --> All Programs --> Accessories).
- 5) As they are counted, birds should be marked with a bright color using the paint brush tool.
- 6) Final counts for each species observed should be recorded on the Photo Scoring Form.
- 7) The marked up photo should be saved and stored in the same folder as the original photo.

Field Requirements

1. **Trip Date:** Date (day, month, year) that the boat trip took place.
 2. **Photo Scorer:** Full name (first and last) of the person scoring the photo.
 3. **Score Date:** Date that the photo was scored.
 4. **Island:** The name of the island where the observation is made.
 5. **Segment:** Survey segment of the island that this observation was made.
 6. **Species:** Four-letter code of the species this record is about. See table below for codes. When recording species not listed below, use the species' full name or define code used in notes.
 7. **Count - Incubating Adults:** Number of incubating adults counted on this island segment by species.
 8. **Notes:** Place for additional notes on the species or nest observed.
 9. **Certification:** Place for team member to sign the datasheet to indicate that it has been reviewed to insure that data are complete and legible. If multiple pages are produced, each are reviewed and signed independently.
 10. **Page ___ of ___:** Page number relative to total number of pages filled out by this team to complete this survey.
-

<p>Naming Photos</p> <p>Before scoring: Boat_[Date]_[Island]_[SurveySegment] ex. Boat_20090612_LittleCalf_East</p> <p>After scoring: Boat_[Date]_[Island]_[SurveySegment]_[Scorer's Initials] ex. Boat_20090612_LittleCalf_East_CLT</p>
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SpeciesCode	CommonName
AMOY	American Oystercatcher
BCNH	Black-crowned Night-Heron
COEI	Common Eider
COTE	Common Tern
DCCO	Double-crested Cormorant
GBBG	Great Black-backed Gull
GLIB	Glossy Ibis
GREG	Great Egret
HERG	Herring Gull
LETE	Least Tern
MALL	Mallard Duck
PIPL	Piping Plover
SNEG	Snowy Egret
SPSA	Spotted Sandpiper
UNKN	Unknown species
UNWB	Unknown Wading Bird
WILL	Willet

Sample Field Maps



BOHA Breeding Coastal Bird Monitoring Protocol Field Map: Overview

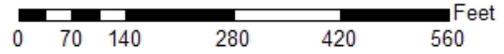


0 650 1,300 2,600 3,900 5,200 Kilometers

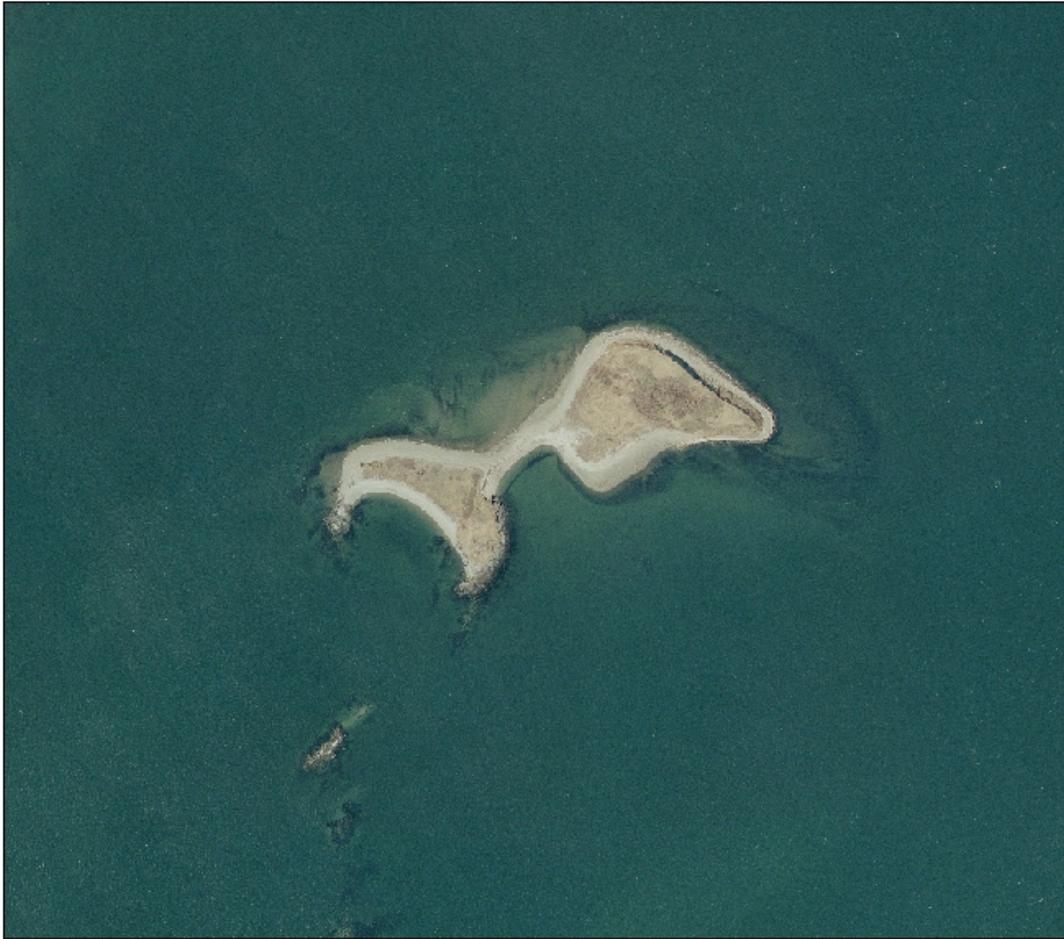
Created by: Carol Lynn Trocki, URI, 04/07
Background Datalayer: February 2003, 1:5,000
scale ortho image from MassGIS



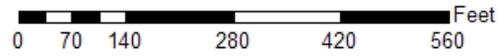
**BOHA Breeding Coastal Bird
Monitoring Protocol
Field Map: Calf Island**



Created by: Carol Lynn Trocki, URI, 05/07
Background Datalayer: February 2003, 1:5,000
scale ortho image from MassGIS



**BOHA Breeding Coastal Bird
Monitoring Protocol
Field Map: Rainsford Island**



Created by: Carol Lynn Trocki, URI, 05/07
Background Datalayer: February 2003, 1:5,000
scale ortho image from MassGIS

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