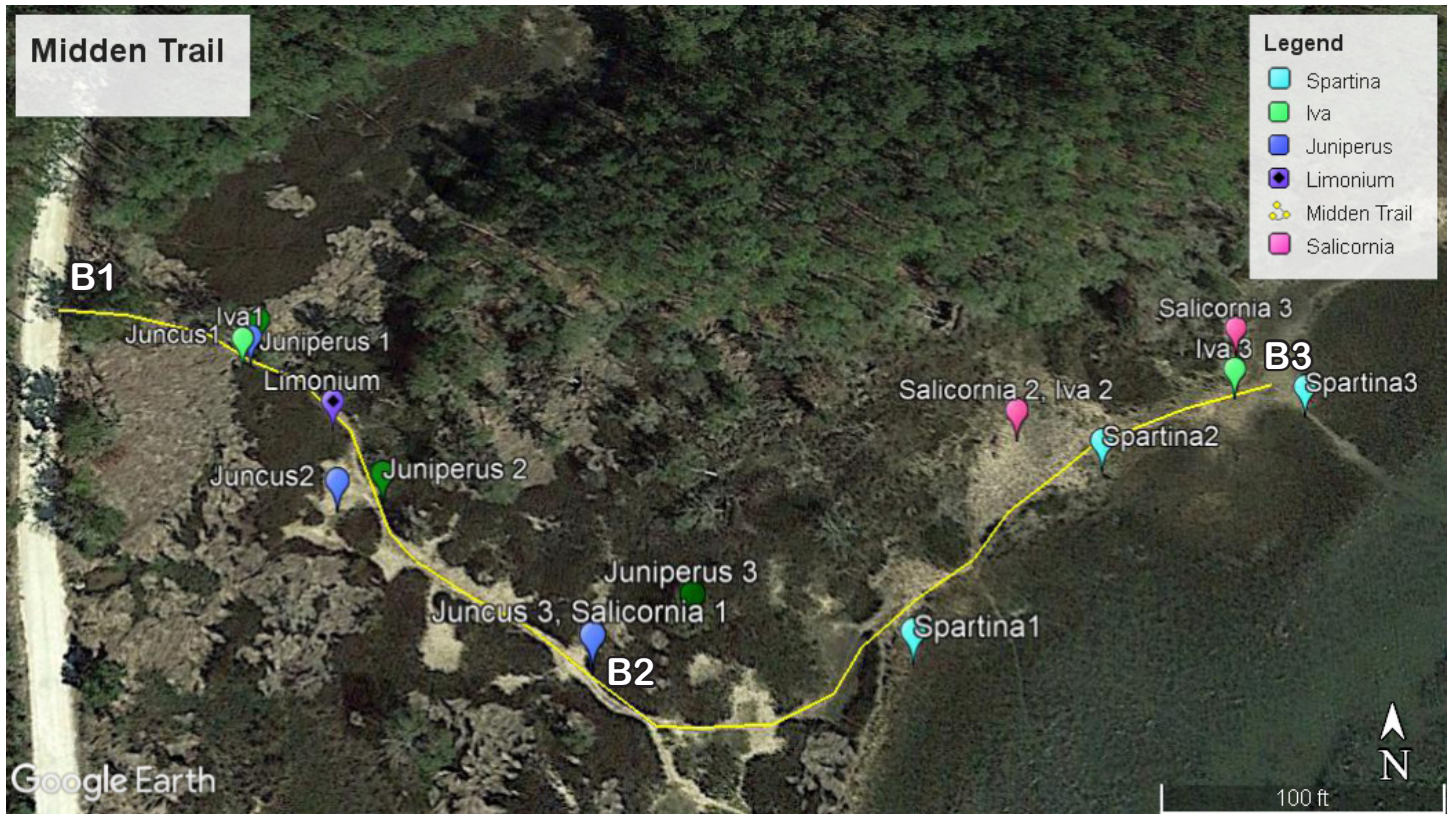


PHENOLOGY GUIDE- SALT MARSH SITES

Midden Trail



MIDDEN TRAIL SPECIES SUMMARY

PLANTS

Spartina alterniflora
Juncus roemerianus
Salicornia depressa
Limonium carolinianum
Iva frutescens
Morella cerifera
Juniperus virginiana

Common name

Smooth Cordgrass
 Black needlerush
 Virginia glasswort
 Sea lavender
 Marsh elder
 Wax myrtle
 Eastern red cedar

Method

Plot survey- 3 plots
 Plot survey- 3 plots
 Plot survey- 3 plots
 Individual plant -3 plants
 Individual plant- 3 plants
 Individual plant- 3 plants
 Individual plant- 3 plants

BIRDS

Rallus longirostris
Tringa semipalmata
Ardea herodias
Megaceryle alcyon
Pandion haliaetus
Haliaeetus leucocephalus
Passerina ciris
Agelaius phoeniceus

Common name

Clapper rail
 Willet
 Great blue heron
 Belter kingfisher
 Osprey
 Bald eagle
 Painted bunting
 Red-winged blackbird

Method

3 minute observation (3 sites)
 3 minute observation (3 sites)
 3 minute observation (3 sites)
 3 minute observation (3 sites)
 3 minute observation (3 sites)
 3 minute observation (3 sites)
 3 minute observation (3 sites)

INSECTS

Agraulis vanillae
Danaus plexippus
Anax junius
Erythrodiplax berenice

Common name

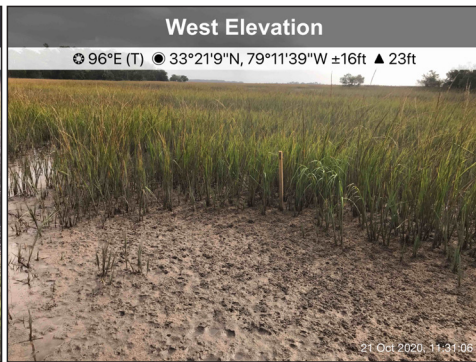
Gulf fritillary
 Monarch
 Common green darner
 Seaside dragonlet

Method

MIDDEN TRAIL PLOTS



Spartina 1



Spartina 2



Spartina 3



Juncus 1



Juncus 2



Juncus 3



Salicornia 1



Salicornia 2



Salicornia 3



Limonium 1



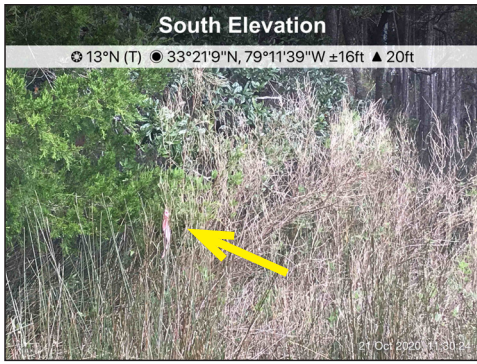
Limonium 2



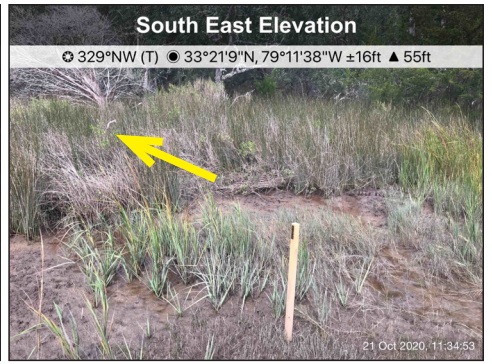
Limonium 3



Iva 1



Iva 2



Iva 3

Need photo

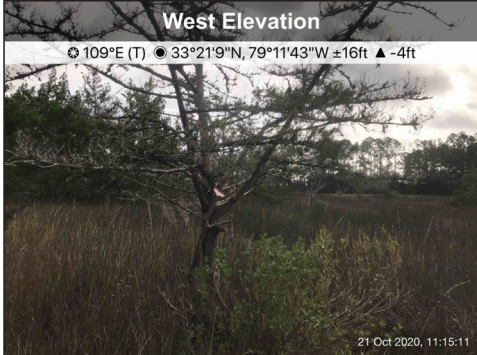
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Need photo

Morella 1

Morella 2

Morella 3



Juniperus 1



Juniperus 2



Juniperus 3

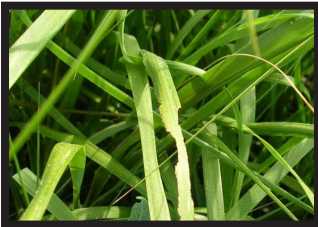
Smooth cordgrass *Sporobolus alterniflorus* (*Spartina alterniflora*)

The dominant plant of estuaries along the Atlantic and Gulf coasts from Canada, south to Florida and west to Texas. It has been introduced to the west coast of the US where it has become an invasive plant. Smooth cordgrass forms extensive dense monotypic stands in intertidal zones. The stems are erect and coarse and up to 1/2 diameter at their base and range from 1 to 7 feet tall. Leaf blades range from 1 to 2 feet long and 1/4 to 5/8 inch wide. Smooth cordgrass is noticeably taller and more robust along well-drained creek margins and other regularly flooded areas. It can tolerate low oxygen and high salinity soils, and excretes salt through special glands embedded in the leaves. The plant expands by production of rhizomes, and can spread up to 2 feet laterally in a year. Seed production is erratic, existing marshes are maintained by growth and extension of rhizomes.



Initial growth

New growth of the plant is visible after a period of no growth (winter or drought), either as new green shoots sprouting from nodes on existing stems, new green shoots breaking through the soil surface, or re-greening of dried stems or leaves. For each shoot, growth is considered “initial” until the first leaf has unfolded or has fully re-greened.



Leaves

One or more live, green, unfolded leaves are visible on the plant. A leaf is considered “unfolded” once it unrolls slightly from around the stem and begins to fall away at an angle from the stem.

✓P What percentage of the plant is green?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Flower heads

One or more fresh flower heads are visible on the plant. Flower heads, which include many small flowers arranged in spikelets, emerge from inside the stem and gradually grow taller.

✓P How many fresh flower heads are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



Open Flowers

One or more open, fresh flowers are visible on the plant. A flower is considered “open” when reproductive parts (male anthers or female stigmata) can be seen protruding from the spikelet.

✓P What percentage of all fresh flowers (unopened plus open) on the plant are open?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Seeds

One or more seeds are visible on the plant. The seed is a tiny grain, hidden within tiny bracts and grouped into small clusters that are closely arranged along alternating branches on a large, narrow and spike-like plume, that changes texture from soft or watery to hard and drops from the plant.

✓P How many fruits are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

✓P What percentage of all fruits (unripe + ripe) on plant are ripe?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more

Black Needlerush *Juncus roemerianus*

This coarse, grass-like plant forms monotypic stands along the high marsh from Delaware south to Florida and west to Texas. Viewed from a distance it appears grayish-green to black. Stiff round leaves taper to a sharp point and vary in height from 1 to 6 feet tall and from 1/8 to 1/4 inch in diameter at the base. New leaves are produced almost year round. New stands are established by seeds, while existing stands expand through growth of the rhizomes. More than 60 species of birds reportedly use black needlerush at some time during the year.



Initial growth

New growth of the plant is visible after a period of no growth (winter or drought) as new green shoots breaking through the soil surface. For each shoot, growth is considered "initial" until the exposed, green portion of the shoot has reached approximately 2 inches (5 cm) in length.

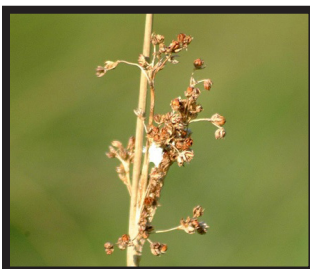


Leaves

One or more live, green, unfolded leaves are visible on the plant. A leaf is considered "unfolded" once the exposed, green portion of the leaf (or shoot) has reached approximately 2 inches (5 cm) in length.

✓ P What percentage of the plant is green?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more

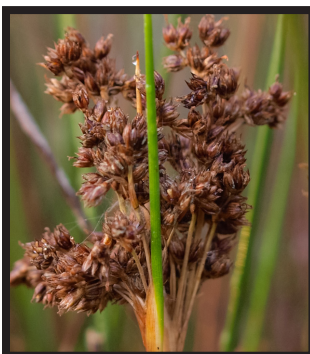


Flowers or flower buds

One or more fresh open or unopened flowers or flower buds are visible on the plant. Count entire flowerhead spikes as one flower.

✓ P How many flowers heads are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



Flowers

One or more open, fresh flowers are visible on the plant. Flowers are chestnut to redish brown. Flowers are considered "open" when the reproductive parts (male stamens or female pistils) are visible between or within unfolded or open flower parts (petals, floral tubes or sepals). Do not include wilted or dried flowers.

✓ P What percentage of all fresh flower heads (buds plus unopened plus open) on the plant are open?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Fruits

The fruit is a tiny capsule and is clustered with many others at the ends of many short branches that arise together near the base of the seed head. The capsule changes from green to brown. A fruit is considered ripe when it has turned brown and has split open to expose the seeds.

✓ P How many fruits are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

✓ P What percentage of fruits (unripe+ripe) on the plant are ripe?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more;

Virginia glasswort *Salicornia virginica*

Two species of glasswort, or pickleweed, occur in the salt pannes and salt meadows from Canada southe to Florida and west to Texas. The annual species, *Salicornia bigelovii*, is distinguished by short jointed stems and turns bright red in the fall and woody as it ages. *Salicornia virginica* is a perenial species that typically remains green throughout the fall. It grows from 4 to 12 inches tall and often forms mats of mostly unbranched succulent stems that may be erect, spreading or decumbent. As the leaves absorb salts and accumulate them, the stem tissues die and release the salt. This is seen as grey or brown sections of stem that appear dead and eventually fall off the plant. The stem is edible.



Perennial glasswort has mostly unbranched stems.



Annual glasswort has short jointed stems that appear as a string of beads.

Need photo

Initial growth/spread

New growth of the plant is visible after a period of no growth (winter or drought), either from above-ground buds with green tips, or new green or white shoots breaking through the soil surface. Growth is considered "initial" on each bud or shoot until the first leaf has fully unfolded. Seedlings look superficially like the seedlings of many cacti.

Stems

One or more live, succulent stems. The leaves are reduced in size to small appressed, fleshy, scalelike appendages. Sections of stems turn grey or brown as salt accumulates

✓P What percentage of the stems are green?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more

Flowers

One or more fresh open or unopened flowers or flower buds are visible on the plant. Flowering heads develop as spikes near the top of individual stems. Count the number of flowering stems, not individual flowers.

✓P How many floweing stems are present? Estimate the number of flower heads and not the number of individual flowers.

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

Seeds

One or more seeds are visible on the plant. Seeds are ovoid, brown or gay and about 1/16 inch in diameter.

✓P How many seeds are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

Sea lavender *Limonium carolinianum*

Sea lavender is a broadleaf perennial herb found in the upper marsh from Labrador south to Florida and west to Texas. The leaves are simple and obovate, with blades ranging from 2 to 6 inches long and 1/4 to 2 inches wide. The fleshy leaves are often covered in salt or clay because suspended particles in the high tide water settle out on them. Sea lavender is most easily spotted by its lavender colored flowers that develop on large, loose panicles that can reach 1 to 2 feet high. It reproduces primarily by rhizomes, and is commonly associated with smooth cordgrass, saltmeadow cordgrass, sea-oxeye, and the glasworts.

Need photo

Initial growth

New growth of the plant is visible after a period of no growth (winter or drought), either from above-ground buds with green tips, or new green or white shoots breaking through the soil surface. Growth is considered "initial" on each bud or shoot until the first leaf has fully unfolded.



Leaves

One or more live, fully unfolded leaves are visible on the plant. A thin layer of salt or mud often covers the leaves near the ground- rub off this layer to check for live leaves. Leaf blades gradually shrivel, dry and drop as they accumulate salts.

✓ P What percentage of the plant is green?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more

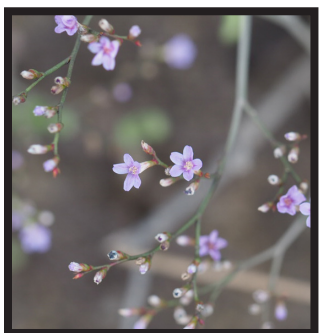
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Flower buds

Unopened flowers or flower buds are visible on the plant. Include flower buds or inflorescences that are swelling or expanding.

✓ P How many flower buds are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



Open flowers

Open, fresh flowers are visible on the plant. Flowers are considered "open" when the reproductive parts (male stamens or female pistils) are visible between or within unfolded or open flower parts (petals, floral tubes or sepals). Do not include wilted or dried flowers.

✓ P What percentage of all fresh flowers (buds plus unopened plus open) on the plant are open?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Fruits

One or more ripe fruits are visible on the plant. *Not enough information was available to write detailed fruit definitions for this species.*

✓ P How many fruits are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

✓ P What percentage of fruits (unripe+ripe) on the plant are ripe?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more;

Marsh elder *Iva frutescens*

Also called high tide bush, this shrub grows almost exclusively along the landward limit of tidal marshes. It grows from 3 to 8 feet tall with a spread of 4 to 6 feet with multiple, highly branched stems. The leaves are late deciduous and slightly succulent, growing in a simple opposite arrangement. Three prominent veins running the length of the leaf aid in identification. Marsh elder serves as a resting and nesting site for various birds, including red-winged blackbirds, painted buntings and marsh wrens.



Breaking leaf buds

A leaf bud is considered “breaking” once a green leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk (petiole) or leaf base.

✓P How many buds are breaking?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



Young leaves

A leaf is considered “young” and “unfolded” once its entire length has emerged from a breaking bud, stem node or growing stem tip, so that the leaf stalk (petiole) or leaf base is visible at its point of attachment to the stem, but before the leaf has reached full size or turned the darker green color or tougher texture of mature leaves on the plant.

✓P How many young leaves are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



Flowers or flower buds

Flower heads are inconspicuous, greenish white on terminal racemes. Count the number of buds on a raceme and multiply by the number of racemes.

✓P How many buds or flowers present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

✓P What percentage of all fresh flowers (buds plus unopened plus open) on the plant are open?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Fruits

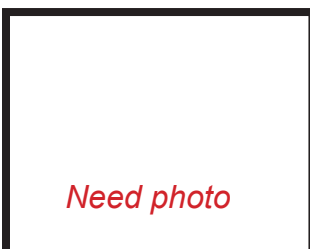
Fruits are small and dry, blackish brown and covered with pale resin dots. They have a single seed attached at a single point. The fruit does not split open when ripe

✓P How many fruits are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

✓P What percentage of fruits (unripe+ripe) on the plant are ripe?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more;



Die off

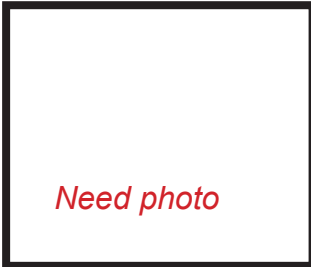
Although tolerant of occasional flooding, sea level rise has increased flood frequency causing die back. Branches may be nearly dead or completely dead with lichen growing on them.

✓P What percentage of the branches are dead?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more

Wax myrtle *Morella cerifera*

Wax myrtle is one of the most common shrubs of coastal habitats, found from the landward edge of primary dunes to the upper edge of salt marshes from south New Jersey south to Florida and west to Texas. It is evergreen, grows up to 25 feet high, and can grow from a single trunk or as a multistemmed shrub. Leaves are simple, entire, leathery, waxy and aromatic when crushed. The seeds serve as food for tree swallows, Carolina wrens, sparrows and migratory warblers.



Breaking leaf buds

A leaf bud is considered “breaking” once a green leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk (petiole) or leaf base.

✓P How many buds are breaking?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



Young leaves

A leaf is considered “young” and “unfolded” once its entire length has emerged from a breaking bud, stem node or growing stem tip, so that the leaf stalk (petiole) or leaf base is visible at its point of attachment to the stem, but before the leaf has reached full size or turned the darker green color or tougher texture of mature leaves on the plant.

✓P How many young leaves are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



Flowers or flower buds

The male inflorescence is initially compact but eventually unfolds to become longer and fuller. The female inflorescence is small with petal-less flowers. Both male and female inflorescences emerge from buds all along the stem.

✓P How many bud and flower clusters are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000



✓P What percentage of all fresh flowers (buds plus unopened plus open) on the plant are open?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Fruits

The fruit is dry, warty-looking and berrylike and changes from green to light green with a whitish-blue, pale blue, or grayish-blue waxy coating. A fruit is considered ripe when it has turned light green with a waxy coating.

✓P How many fruits are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

✓P What percentage of fruits (unripe+ripe) on the plant are ripe?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more;



Die off

Although tolerant of occasional flooding, sea level rise has increased flood frequency causing die back. Branches may be nearly dead or completely dead with lichen growing on them.

✓P What percentage of the branches are dead?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more

Eastern red cedar *Juniperus virginiana*

Juniperus virginiana provides food and shelter for many species of birds and mammals, including winter food for pheasant, mule deer, and whitetail deer. Eastern redcedar is an evergreen, conifer shrub to tree growing 30 to 70 feet tall. Male and female cones occur on separate trees. The small male cones bear pollen, and the slightly larger female cones become berry-like in maturity. This species is wind-pollinated.



Pollen Cones (Male)

Cones have overlapping scales that are initially tightly closed, then spread apart to open and release pollen. Cones are considered “open” when the scales have spread apart to release pollen. Include cones that are unopened or open, but do not include wilted or dried cones that have already released all of their pollen.

✓P How many fresh pollen cones are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; More than 1,000

✓P What percentage of all fresh pollen cones (unopened plus open) on the plant are open?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Seed cones (Female)

An unripe seed cone is berry-like and green. A seed cone is considered ripe when it has turned dark blue, purple or brownish blue, often covered with a whitish film that rubs off.

✓P How many seed cones are present?

Less than 3; 3 to 10; 11 to 100; 101 to 1,000; 1,001 to 10,000; More than 10,000;

✓P What percentage of all fresh seed cones (unopened plus open) on the plant are ripe?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Die off

Although tolerant of occasional flooding, sea level rise has increased flood frequency causing die back. Branches may be nearly dead or completely dead with lichen growing on them.

✓P What percentage of the branches are dead?

Less than 5%; 5-24%; 25-49%; 50-74%; 75-94%; 95% or more



Phenophase Definitions for Birds

As you report on phenophase status (Y, N or ?) on the datasheets, refer to the definitions on this sheet to find out what you should look for, for each phenophase in each species. For reporting animal abundance, if a specific question is included below the phenophase, choose the best answer to the question. If there is no specific question, enter the number of individual animals you observed in each phenophase. Feel free not to report on phenophases or abundances if they seem too difficult or time-consuming.

ACTIVITY

Total: This is the total number of individuals are seen moving in any activities or at rest.

Feeding: One or more individuals are seen feeding or foraging. If possible, record the name of the species or substance being eaten or describe it in the comments field.

Song: One or more individuals are heard singing. Singing refers to stereotypical, simple or elaborate vocalizations (most commonly by males) used as part of territorial proclamation or defense, or mate attraction. It does not include relatively simple calls used for other forms of communication.

Territorial individuals: One or more individuals are seen or heard defending a territory. This may be indicated by calls or song used as part of a territorial proclamation, chasing of an individual of the same species from a breeding area (but do not confuse this with courtship behavior, which in some species may involve chasing), or calls or displays directed at individuals of the same or a different species to defend a feeding area.

Nest building: One or more adults are seen constructing a nest or carrying nesting material.

Occupied nest: One or more adults are seen sitting on a nest, entering or leaving a nest site under circumstances indicating its use for nesting (including nest defense behavior), or live eggs or nestlings are seen in a nest.

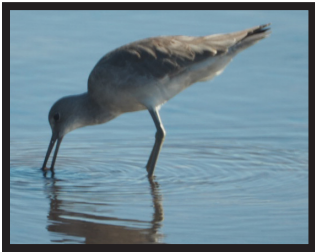
Nestlings: One or more young are seen or heard in a nest.

Fledged young: One or more young are seen covered with smooth contour feathers and no longer any fluffy, natal down feathers. This includes young incapable of sustained flight and young which are still dependent on adults.

Dead adult: One or more dead individuals are seen.

Dead young: One ore more dead nestlings or young are seen.

Willet *Tringa semipalmata*



ID: About the size of a crow. Grey plumage above and whitish below in winter, in summer body is heavily barred. Long blue-grey legs and fairly long, straight bill. Distinctive black and white wing pattern in flight.

Activity: Gathers in flocks when migrating and roosting.

Feeding: Solitary when foraging. Walks purposfully, picking or probing ground for prey. Feeds on crustaceans and some plant material.



Calls: A loud *pee-wee-wee* or a descending *haaa*. Alarm call an intense *klik klik*.

Territorial display: Strongly territorial throughout the year, and very noisy during the breeding season. Territorial song a rolling *pilly-will-willet*.

Nest building: Often nest in colonies in grassy marshes. The grass is bent over to form the foundation, then lined with finer grass.

Occupied nest: Both parents help incubate eggs for 22 to 29 days.

Nestlings: The young leave the nest within a day of hatching.

Fledged young: Both parents defend and tend young up to 4 weeks.



Great Blue Heron *Ardea herodias*



ID: The largest waterbird in our marshes. Blue-grey feathers with black patch on shoulder, long yellow bill.

Activity: Often seen standing on the edge of a stream. Flies with legs extended and neck folded.

Feeding: Feed by spearing fish with its bill, tossing them into the air, and catching them headfirst and swallowing.

Calls: When alarmed, flies off with a grunt. Otherwise silent.

Nest building: Nests in colonies. Nest is built of sticks in trees standing in water.

Occupied nest: 2-4 eggs, 1-2 broods

Nestlings: At 1-2 weeks they are about 6 inches; 2-4 weeks almost 12 inches; 4 to 6 weeks almost 4 feet.

Fledged young: Fledge at 7 to 8 weeks old, adult plumage by 2 years old



Belted Kingfisher *Megaceryle alcyon*



ID: White breast, blue-grey crest, back wings, chest and breast band. Female has a second lower breast band of rusty red. The beak and head are large in relation to the body.

Activity: Solitary except for nesting. Often seen perched on poles, trees and power lines. Flies in a characteristic erratic manner.

Feeding: Feed by diving head first into the water. Occasionally they will hover like an osprey before diving.

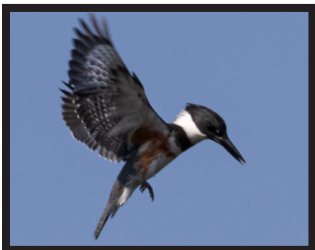
Calls: A thin dry rattle usually given as the bird flies over the water.

Territorial display: Calls while flying over water. During breeding season a pair defends a territory against other kingfishers. A territory along a stream includes just the streambed and the vegetation along it, and averages 0.6 mile long.

Nest building: Nest is a deep hole dug into the side of a clay bank. Nests can be as far into the bank as 15 feet.

Occupied nest: Male and female take turns with one calling from a perch and waiting for the mate to leave before entering the nest tunnel.

Nestlings: Nestling period of 27-29 days, clutch size 5 to 8 eggs



White Ibis *Eudocimus albus*



ID: Long, down-curved bill, orange or red in adults. Nearly solid white body with black wingtips seen in flight. Immature birds have brown head and back with white underparts.

Activity: Social. Often seen foraging most often in wet areas with less than 8 inches of water and sparse, short vegetation, but they also forage on lawns and in parks.

Feeding: Feed in shallow waters by probing for crustaceans, insects and worms. They also stab or pinch fish, frogs, lizards, snails, and newts. Feed in tight groups.

Calls: Do not vocalize much. Hoars croaking *kraah*.

Territorial: If a male feels threatened, he lunges at a rival male and snaps his bill. If a rival gets too close, the territory owner attacks by biting or holding down the rival's wing or head.

Nest building: Gather in rookeries. Nest is a platform of sticks placed in trees or shrubs often over open water. The location of breeding colonies often changes from year-to-year. The male gathers sticks for the nest either from the ground, a nearby nest, or a dead tree. He gives the sticks to the female, which she arranges into a messy platform about 10 inches wide and 2-4 inches tall.

Occupied nest: 2-4 eggs, 1 brood.

Fledged young: Parents feed the chicks for 40-60 days after they leave the nest. Immature birds are seen with adults.



Osprey *Pandion haliaetus*



ID: Broad dark line runs through the eye to the back of the head. Wings form a wide shallow M in flight. Dark brown back, white underneath, black patch on the wrist, banded tail.

Activity: Hovers over water. Seen perching in isolated trees.

Feeding: Dives feet-first from as much as 100 feet catching fish in sharp talon. After the catch it adjusts the fish head-forward and flies back to a perch to eat. The only hawk on the continent that eats almost exclusively live fish.

Calls: High-pitched whistles or down-slurred chirps given in alarm.

Territorial display: They vigorously chase other Ospreys that encroach on their nesting areas.

Courtship: aerial "sky-dance," dangling legs, often clasping a fish or nesting material in his talons, the male alternates periods of hovering with slow, shallow swoops as high as 600 feet or more above the nest site.

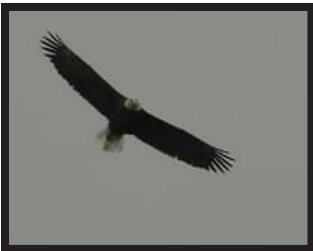
Nest building: Nests are usually built on snags, treetops, or crotches between large branches and trunks; on cliffs or human-built platforms. Built of sticks and lined with bark, sod, grasses, vines, algae, or flotsam and jetsam. After generations of adding to the nest year after year, Ospreys can end up with nests 10–13 feet deep and 3–6 feet in diameter

Occupied nest: 1 to 4 eggs, 1 brood

Nestlings: Nestling period of 50 to 55 days.



Bald Eagle *Haliaeetus leucocephalus*



ID: Adult, white head and tail, juvenile dark head.

Activity: Soars and glides with wings held at right angle, slow powerful wingbeats, perches on prominent large trees

Feeding: Scavenges on carrion and steals prey from other birds, eats fish, birds, mammals, reptiles. Frequently harasses birds including Ospreys and other eagles to steal their food, and occasionally do the same to mammals such as river or sea otters.

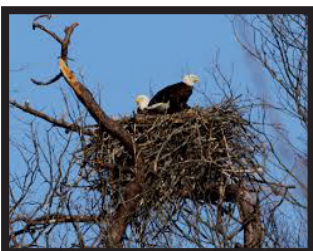
Calls: high pitched voice, 3-4 notes followed by a rapidly descending series

Territorial display: Defend their territories from a variety of intruders, including raptors and ravens, coyotes and foxes, and are often harassed or chased by their fellow raptors and by songbirds including blackbirds, crows, and flycatchers.

Courtship: "Cartwheel courtship flight" -two bald eagles will fly up high, lock talons and then get into a cartwheel spin as they fall toward the ground

Nest building: The pair will work together to gather material to build the nest starting with the largest branches and slowly working in smaller pieces, can take a couple of months. They tend to use tall, sturdy conifers that protrude above the forest canopy.

Nestlings: Nestling period of 56 to 98 days



Painted Bunting *Passerina ciris*



ID: Finch-like. Adult male brightly colored, females olive, immature males and some females bright green

Activity: Found in brushy areas at forest edge in late spring to early fall. Migrate to south Florida and Caribbean in winter.

Feeding: Eat seeds for most of the year, switching to mostly insects in the breeding season. Forage for seeds and insects on the ground or in low shrubbery near open grassy areas.

Calls: soft, ringing upward slurred *pwip*, song a sweet rambling relative clear warble

Territorial display: Males vigorously defend territories of about 3 acres, fighting other males by pecking, grappling, and striking each other with their wings.

Courtship: Male spreads his feathers like a miniature male turkey, while the female pecks at the ground.

Nest building: Deep cup in dense tangle or shrub

Occupied nest: 1 to 3 broods May-August

Nestlings: 3-4 eggs, nestling period of 9 days



Red-winged blackbird *Agelaius phoeniceus*



ID: Sparrow-like. Males with red bar on wing, females are brown with a heavily streaked breast.

Activity: Join other blackbirds to form large flocks.

Feeding: "Rolling": birds at the rear fly to the front where there is fresh food, the flock appears to inch forward, forages for seeds, grains and insects

Calls: metallic *oke-a-lee*, or *kronk-a-rhee*

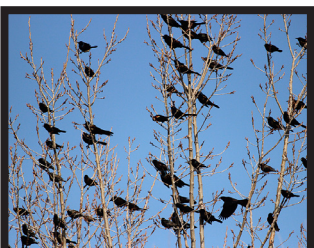
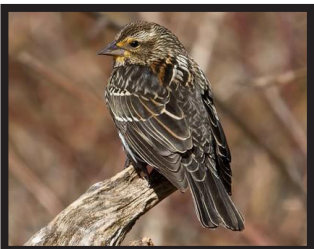
Territorial display: Males perch on stalks and call. Both males and females defend nests from intruders and predators.

Courtship: Spend much of the breeding season sitting on a high perch over their territories and singing

Nest building: Small nest near the ground or water surface is lashed to wetland shrubs and tall grasses

Occupied nest: 1-2 broods March-June, 3-4 eggs

Nestlings: Young can climb and swim before they can fly. Nestling period of 11 to 14 days.



Salt Marsh Field Data Sheets

Site Midden Trail Boardwalk

Date _____ Start Time _____ End Time _____

Observers _____

Weather sunny partial clouds overcast light rain steady rain

Temperature _____ Tide _____ Wind _____

Notes:

Sporobolus alterniflorus (*Spartina alterniflora*) Smooth Cordgrass

| Plot #1 | Plot #2 | Plot #3 |
|--|--|--|
| Initial growth YES NO ? | Initial growth YES NO ? | Initial growth YES NO ? |
| Leaves YES NO ? | Leaves YES NO ? | Leaves YES NO ? |
| % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 |
| Flower heads YES NO ? | Flower heads YES NO ? | Flower heads YES NO ? |
| #heads <3 3-10 11-100 101-1,000 >1,000 | #heads <3 3-10 11-100 101-1,000 >1,000 | #heads <3 3-10 11-100 101-1,000 >1,000 |
| Open flowers YES NO ? | Open flowers YES NO ? | Open flowers YES NO ? |
| %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 |
| Seeds YES NO ? | Seeds YES NO ? | Seeds YES NO ? |
| #seeds <5 5-24 25-49 50-74 75-94 >95 | #seeds <5 5-24 25-49 50-74 75-94 >95 | #seeds <5 5-24 25-49 50-74 75-94 >95 |
| Notes | Notes | Notes |

Juncus roemerianus Black Needlerush

| Plot #1 | Plot #2 | Plot #3 |
|---|---|---|
| Initial growth YES NO ? | Initial growth YES NO ? | Initial growth YES NO ? |
| Leaves YES NO ? | Leaves YES NO ? | Leaves YES NO ? |
| % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 |
| Flower heads YES NO ? | Flower heads YES NO ? | Flower heads YES NO ? |
| #heads <3 3-10 11-100 101-1,000 >1,000 | #heads <3 3-10 11-100 101-1,000 >1,000 | #heads <3 3-10 11-100 101-1,000 >1,000 |
| Open flowers YES NO ? | Open flowers YES NO ? | Open flowers YES NO ? |
| %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 |
| Fruits YES NO ? | Fruits YES NO ? | Fruits YES NO ? |
| #fruits <5 5-24 25-49 50-74 75-94 >95 | #fruits <5 5-24 25-49 50-74 75-94 >95 | #fruits <5 5-24 25-49 50-74 75-94 >95 |
| Notes | Notes | Notes |

Salicornia virginica Virginia glasswort

| Plot #1 | Plot #2 | Plot #3 |
|---|---|---|
| Initial growth YES NO ? | Initial growth YES NO ? | Initial growth YES NO ? |
| Stems YES NO ? | Stems YES NO ? | Stems YES NO ? |
| % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 |
| Flowers YES NO ? | Flowers YES NO ? | Flowers YES NO ? |
| #heads <3 3-10 11-100 101-1,000 >1,000 | #heads <3 3-10 11-100 101-1,000 >1,000 | #heads <3 3-10 11-100 101-1,000 >1,000 |
| Seeds YES NO ? | Seeds YES NO ? | Seeds YES NO ? |
| #seeds <5 5-24 25-49 50-74 75-94 >95 | #seeds <5 5-24 25-49 50-74 75-94 >95 | #seeds <5 5-24 25-49 50-74 75-94 >95 |
| Notes | Notes | Notes |

Limonium carolinianum Sea lavender

| Plant #1 | Plant #2 | Plant #3 |
|--|--|--|
| Initial growth YES NO ? | Initial growth YES NO ? | Initial growth YES NO ? |
| Leaves YES NO ? | Leaves YES NO ? | Leaves YES NO ? |
| % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 | % green <5 5-24 25-49 50-74 75-94 >95 |
| Flower buds YES NO ? | Flower buds YES NO ? | Flower buds YES NO ? |
| #buds <3 3-10 11-100 101-1,000 >1,000 | #buds <3 3-10 11-100 101-1,000 >1,000 | #buds <3 3-10 11-100 101-1,000 >1,000 |
| Open flowers YES NO ? | Open flowers YES NO ? | Open flowers YES NO ? |
| %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 |
| Fruits YES NO ? | Fruits YES NO ? | Fruits YES NO ? |
| #fruits <5 5-24 25-49 50-74 75-94 >95 | #fruits <5 5-24 25-49 50-74 75-94 >95 | #fruits <5 5-24 25-49 50-74 75-94 >95 |
| % ripe <5 5-24 25-49 50-74 75-94 >95 | % ripe <5 5-24 25-49 50-74 75-94 >95 | % ripe <5 5-24 25-49 50-74 75-94 >95 |
| Notes | Notes | Notes |

Marsh Field Data Sheet ___Mlidden Trail ___Boardwalk DATE _____

Iva frutescens Marsh elder

| Plant #1 | Plant #2 | Plant #3 |
|---|---|---|
| Leaf buds YES NO ? | Leaf buds YES NO ? | Leaf buds YES NO ? |
| #buds <3 3-10 11-100 101-1,000 >1,000 | #buds <3 3-10 11-100 101-1,000 >1,000 | #buds <3 3-10 11-100 101-1,000 >1,000 |
| Young leaves YES NO ? | Young leaves YES NO ? | Young leaves YES NO ? |
| #young <3 3-10 11-100 101-1,000 >1,000 | #young <3 3-10 11-100 101-1,000 >1,000 | #young <3 3-10 11-100 101-1,000 >1,000 |
| Flowers YES NO ? | Flowers YES NO ? | Flowers YES NO ? |
| #flowers <3 3-10 11-100 101-1,000 >1,000 | #flowers <3 3-10 11-100 101-1,000 >1,000 | #flowers <3 3-10 11-100 101-1,000 >1,000 |
| %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 | %open <5 5-24 25-49 50-74 75-94 >95 |
| Fruits YES NO ? | Fruits YES NO ? | Fruits YES NO ? |
| #fruits <5 5-24 25-49 50-74 75-94 >95 | #fruits <5 5-24 25-49 50-74 75-94 >95 | #fruits <5 5-24 25-49 50-74 75-94 >95 |
| % ripe <5 5-24 25-49 50-74 75-94 >95 | % ripe <5 5-24 25-49 50-74 75-94 >95 | % ripe <5 5-24 25-49 50-74 75-94 >95 |
| Die off YES NO ? | Die off YES NO ? | Die off YES NO ? |
| %dead <5 5-24 25-49 50-74 75-94 >95 | %dead <5 5-24 25-49 50-74 75-94 >95 | %dead <5 5-24 25-49 50-74 75-94 >95 |
| Notes | Notes | Notes |

Morella cerifera Wax myrtle

| Plant #1 | | | | Plant #2 | | | | Plant #3 | | | |
|--------------|-----------|-------|--------|--------------|-----------|-------|--------|--------------|-----------|-------|--------|
| Leaf buds | YES | NO | ? | Leaf buds | YES | NO | ? | Leaf buds | YES | NO | ? |
| #buds | <3 | 3-10 | 11-100 | #buds | <3 | 3-10 | 11-100 | #buds | <3 | 3-10 | 11-100 |
| | 101-1,000 | | >1,000 | | 101-1,000 | | >1,000 | | 101-1,000 | | >1,000 |
| Young leaves | YES | NO | ? | Young leaves | YES | NO | ? | Young leaves | YES | NO | ? |
| #young | <3 | 3-10 | 11-100 | #young | <3 | 3-10 | 11-100 | #young | <3 | 3-10 | 11-100 |
| | 101-1,000 | | >1,000 | | 101-1,000 | | >1,000 | | 101-1,000 | | >1,000 |
| Flowers | YES | NO | ? | Flowers | YES | NO | ? | Flowers | YES | NO | ? |
| #flowers | <3 | 3-10 | 11-100 | #flowers | <3 | 3-10 | 11-100 | #flowers | <3 | 3-10 | 11-100 |
| | 101-1,000 | | >1,000 | | 101-1,000 | | >1,000 | | 101-1,000 | | >1,000 |
| %open | <5 | 5-24 | 25-49 | %open | <5 | 5-24 | 25-49 | %open | <5 | 5-24 | 25-49 |
| | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 |
| Fruits | YES | NO | ? | Fruits | YES | NO | ? | Fruits | YES | NO | ? |
| #fruits | <5 | 5-24 | 25-49 | #fruits | <5 | 5-24 | 25-49 | #fruits | <5 | 5-24 | 25-49 |
| | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 |
| % ripe | <5 | 5-24 | 25-49 | % ripe | <5 | 5-24 | 25-49 | % ripe | <5 | 5-24 | 25-49 |
| | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 |
| Die off | YES | NO | ? | Die off | YES | NO | ? | Die off | YES | NO | ? |
| %dead | <5 | 5-24 | 25-49 | %dead | <5 | 5-24 | 25-49 | %dead | <5 | 5-24 | 25-49 |
| | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 |
| Notes | | | | Notes | | | | Notes | | | |

Juniperus virginiana Eastern red cedar

| Plant #1 | | | | Plant #2 | | | | Plant #3 | | | |
|--------------|-----------|--------|--------|--------------|-----------|--------|--------|--------------|-----------|--------|--------|
| Pollen cones | YES | NO | ? | Pollen cones | YES | NO | ? | Pollen cones | YES | NO | ? |
| #cones | <3 | 3-10 | 11-100 | #cones | <3 | 3-10 | 11-100 | #cones | <3 | 3-10 | 11-100 |
| | 101-1,000 | >1,000 | | | 101-1,000 | >1,000 | | | 101-1,000 | >1,000 | |
| %open | <5 | 5-24 | 25-49 | %open | <5 | 5-24 | 25-49 | %open | <5 | 5-24 | 25-49 |
| | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 |
| Seed cones | YES | NO | ? | Seed cones | YES | NO | ? | Young leaves | YES | NO | ? |
| #cones | <3 | 3-10 | 11-100 | #cones | <3 | 3-10 | 11-100 | #cones | <3 | 3-10 | 11-100 |
| | 101-1,000 | >1,000 | | | 101-1,000 | >1,000 | | | 101-1,000 | >1,000 | |
| %ripe | <5 | 5-24 | 25-49 | %ripe | <5 | 5-24 | 25-49 | %ripe | <5 | 5-24 | 25-49 |
| | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 |
| Die off | YES | NO | ? | Die off | YES | NO | ? | Die off | YES | NO | ? |
| %dead | <5 | 5-24 | 25-49 | %dead | <5 | 5-24 | 25-49 | %dead | <5 | 5-24 | 25-49 |
| | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 | | 50-74 | 75-94 | >95 |
| Notes | | | | Notes | | | | Notes | | | |

Site Midden Trail Boardwalk

Replicate B1 B2 B3

DATE _____ Start time _____ End time _____

Observers _____

Weather sunny partial clouds overcast light rain steady rain

Temperature _____ Tide _____ Wind _____

| | Willet | GB heron | Kingfisher | Osprey | B Eagle | P Bunting | RWBB |
|---------------|--------|----------|------------|--------|---------|-----------|-------|
| Total | | | | | | | |
| Feeding | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Comments | | | | | | | |
| Calls/song | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Territorial | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Courtship | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Nest building | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Occupied nest | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Nestlings | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Fledged young | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Dead adult | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Dead young | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? | Y N ? |
| Notes | | | | | | | |

Other Species Observed