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Subject: Fw: CAHA Species Management Table
Date: 02/23/2009 10:23 AM
Importance: High
Attachments: [CAHA Species Mgmt Matrix Proposal #2.02.20.09.doc](#)

Pete B. and Dave A.,

See revised table submitted by Walker. I've asked NPS natural resource staff to review it and provide comments. Can FWS and WRC accept it (i.e., support it) as revised, or do you have any changes that must be made before you could accept it?

(Dave A. - Note that Walker included Wilson's plover in the same column as AMOY. Does this adequately address your concern previously expressed to me?)

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----- Forwarded by Mike Murray/CAHA/NPS on 02/23/2009 10:15 AM -----

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02/20/2009 07:37 PM

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Subject CAHA Species Management Table

Attached please find the revisions to the species management table that I spoke of during our meetings this week. Our proposal is contingent upon implementation of resource protection measures in this table.

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CAHA Species Mgmt_Matrix_Proposal #2.02.20.09.doc

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Survey Time and Frequency	Piping Plover	American Oystercatcher and Wilson's Plover	Colonial Waterbirds
All Bird Species	<p><u>Species Management 1 (SM1)</u>: Will use larger, longer lasting buffers with less monitoring to alleviate the need for constant monitoring and frequent fencing changes. Will be applied at all resource areas other than inlets and Cape Point. Estimated staffing requirements TBD by NPS.</p> <p><u>Species Management 2 (SM2)</u>: Will use smaller buffers and require more frequent monitoring and fencing changes. Will be applied at inlets and Cape Point at the discretion of NPS. Estimated staffing requirements TBD by NPS.</p> <p>This method is less predictable for Seashore visitors, relies on variable closure and opening dates depending on presence of birds, requires additional skilled staff, and requires additional resources.</p> <p>If NPS is unable to monitor areas as described, unable to implement SM1 as described, or determines that SM1 or SM2 are inadequate to protect natural resources, then NPS will implement USGS Protocol Option A or B.</p> <p>NPS is committed to implementing science-based resource protection and management practices. NPS also recognizes that new or additional data, and scientific studies, may indicate that species management and protection actions should be altered to adequately protect natural resources.</p> <p>Disturbance is defined as follows: "Human disturbance is any activity that changes the contemporaneous behavior or physiology of one or more individuals within a breeding colony of waterbirds" (Nisbet 2000). This definition shall be applied to nesting Colonial Waterbirds, Piping Plover, Wilson's Plover, American Oystercatcher, and non-breeding shorebirds.</p> <p>Dogs are prohibited within 100 yards of all natural resource closures, including natural resource areas for migrating and wintering shorebirds. Pet restrictions and leash regulations will be strictly enforced.</p>		

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<p>Pre-Nesting Surveys</p>	<p>By March 1, all potential habitats will have been evaluated. PIPL prenesting closures will be recommended based upon that habitat evaluation. Those closures will be installed by March 15.</p> <p>March 15 – July 15: Survey prenesting areas at least 3 times per week. Outside of prenesting areas and existing closures, survey suitable habitat 3 times per week; more often if breeding PIPL are observed in the area. If prenest closures allow pedestrian and/or ORV access corridors, survey daily.</p> <p>Survey for Wilson’s plover during piping plover surveys.</p> <p>Prenesting buffers will not be modified in cases where the beach erodes into the buffered habitat.</p> <p>Bodie Island, Cape Point & South Beach, Hatteras Inlet, N & S Ocracoke Island, and historic nesting areas active in the past 10 years:</p>	<p>March 15 – July 15 survey historic breeding areas (last ten years) at least 3 times per week. If/when AMOY pairs are observed in an area, survey site daily. As of May 1 turtle staff will observe for AMOYs during daily patrols. Turtle patrol will take over monitoring after July 15th. If pre-nesting closures allow pedestrian and/or ORV access corridors, survey daily.</p> <p>Bodie Island, Cape Point & South Beach, Hatteras Inlet, N & S Ocracoke Island, and historic nesting areas active in the past 10 years:</p>	<p>April 1 – July 15 survey historic Least Tern, Common Tern, and Gull-billed Tern breeding areas (last ten years) at least 3 times per week. April 1 – Aug 15 survey historic Black Skimmer breeding areas (last ten years) at least 3 times per week If/when CWB are observed in an area, survey site daily. As of May 1 turtle staff will observe for CWBs during daily patrols (i.e., survey for CWB while observing for AMOY.) Turtle patrol will take over monitoring after July 15th. If pre-nesting closures allow pedestrian and/or ORV access corridors, survey daily.</p> <p>Bodie Island, Cape Point & South Beach, Hatteras Inlet, N & S Ocracoke Island, and historic nesting areas active in the past 10 years:</p>
<p>Pre-Nesting Buffers</p>	<p><u>SM1</u>: Areas designated as SM1 Resource Areas will not allow ORV or pedestrian access during the pre-nesting period.</p> <p><u>SM2</u>: Areas designated as SM2 may have a narrow ORV (where permitted) and/or pedestrian access corridor until nesting activity (including but not limited to territorial behavior, courtship, mating, scraping, confirmed scrapes, and other breeding or nest building activities) is observed. Standard buffer distances in Table 1 will apply immediately upon observation of nesting activity and will not be reduced to allow an ORV or pedestrian corridor. Bodie Island: Due to location of waterbird colonies and shorebird nesting sites, and the location of nesting habitats for these species, the closure of the ORV and pedestrian corridor will begin at the northernmost boundary of the pre-nesting closures as delineated in Alt E. Cape Point and South Beach: North side corridor to be not more than 50m, established as delineated in Alt E; Hatteras Inlet: pre-nesting closure to include all suitable nesting habitat (dune to ocean) and nesting sites active in the past 10 years; S. Ocracoke: as delineated in Alt E; N. Ocracoke: pre-nesting closure to include all suitable nesting habitat (dune to ocean) and nesting sites active in the past 10 years.</p>		

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	<p>Deliberate attempts to harass or disturb birds, or vandalize fencing, will result in immediate closure of the corridor.</p>		
	<p>SM1/SM2: In February or March of each year, NPS natural resource staff will conduct an annual assessment of piping plover breeding habitat to plan pre-nesting closures in historic breeding areas that are adapted to current habitat and physiographic conditions. Historic breeding areas will be closed by posting symbolic fencing by March 15. Closures will be removed if no breeding activity is seen in the area by July 15, or 2 weeks after chicks in the area have fledged, whichever comes later.</p>	<p>SM1/SM2: Pre-nesting closures will be installed by March 15 in areas that had nest(s) in the past 10 years, if habitat is still suitable. Closures will be removed if no breeding activity is seen in the area by July 15, or 2 weeks after the site is abandoned by AMOY or Wilson's Plover, whichever comes later.</p>	<p>SM1/SM2: Pre-nesting closures will be established for CWB by April 1 in areas that had a colony (or colonies) in the past 10 years, if habitat is still suitable. Closures will be removed if no breeding activity is seen in the area by July 31, or two weeks after the site has been abandoned by CWB, whichever comes later.</p> <p>NPS natural resource staff will conduct an annual assessment of colonial waterbird breeding habitat to plan pre-nesting closures that are adapted to current habitat and physiographic conditions.</p>
<p>Courtship/Mating Surveys:</p>	<p><u>All areas with pre-nesting closures and pedestrian and/or ORV corridors will be surveyed daily from establishment to removal of the pre-nesting closure.</u></p> <p><u>SM1:</u> If PIPL, AMOY, WIPL, or CWB are observed exhibiting territorial or courtship behavior in suitable habitat, or if scrapes are observed in the absence of courtship behavior, observe 3 times per week. Survey potential new habitat 2 times per week; increase to 3 times week once birds are observed in the area.</p> <p><u>SM2:</u> PIPL monitored as described for SM1. If AMOY or CWB are observed exhibiting territorial or courtship behavior in suitable habitat, or if scrapes are observed in the absence of courtship behavior, observe daily. Survey potential new habitat 2 times per week; increase to 3 times per week once birds are observed in the area.</p>		

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<p>Courtship/Mating Buffers:</p>	<p><u>SM1, SM2:</u> If courtship or copulation is observed outside of existing prenesting closure, or inside the closure but within 50 m of the closure boundary, establish or expand buffer to ensure 50 m buffer for the observed birds. Buffer will be increased in 50 m increments if disturbance occurs.</p> <p>If nest buffer is less than 75 m observe nesting activity daily to determine if disturbance is occurring. Observations will continue until 50 passages of pedestrians or vehicles within 10m of the closure boundary are recorded. If no disturbance is observed, observations can be terminated. At the first disturbance, buffer will be expanded by 50 m if human disturbance is observed. Observations; observations will continue until 50 additional passages are documented and buffer will be expanded by an additional 50 m if human disturbance occurs again.</p>	<p><u>SM1:</u> Outside of existing pre-nesting closure, or inside the closure but within 300 m of the closure boundary, if one observation of scraping or territorial behavior has been documented or if a scrape is being maintained, a 300 meter buffer will be established around the bird activity.</p> <p><u>SM2:</u> Outside of existing pre-nesting closure, or inside the closure but within 150 m of the closure boundary, if one observation of scraping or territorial behavior has been documented or if a scrape is being maintained, a 150 meter pedestrian/ORV buffer will be established around the bird activity Courtship site will be monitored daily and the buffer will be adjusted as needed. Buffer will be increased in 50 m increments if disturbance occurs.</p> <p>If, in the judgment of NPS Resources Management staff, a pair has abandoned a territory and established a new territory at another location, the buffer may be removed at the abandoned territory after two weeks with no activity.</p>	<p><u>SM1:</u> Outside of existing pre-nesting closure, or inside the closure but within 300 m of the closure boundary, if one observation of scraping or territorial behavior has been documented or if scrapes are being maintained, a 300 meter buffer will be established around the scrape locations.</p> <p><u>SM2:</u> Outside of existing pre-nesting closure, or inside the closure but within the buffer distance prescribed below of the closure boundary, if one observation of scraping or territorial behavior has been documented or if scrapes are being maintained, establish a buffer around the scrape location. Buffer will be 100 meters for least terns and 200 meters if the colony contains common terns, gull-billed terns or black skimmers. Colony will be monitored daily as new nest sites are being established and buffers will be adjusted as needed. Buffer will be increased in 50 m increments if disturbance occurs.</p>
<p>Nesting Surveys:</p>	<p>Nesting survey (walk-through to looks for nests) conducted every 3 days.</p>	<p>Nesting survey (walk-through to looks for nests) conducted when observations suggest a nest is present.</p>	<p>Colonies will be surveyed by foot during the "peak" nesting period which is during the last week of May and the first week of June.</p>

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<p>Nest Observation:</p>	<p><u>SM1, SM2:</u> Observe nests daily from a distance that does not disturb the birds, based on professional judgment. Approach nests once per week to observe and record data.</p> <p>If nest buffer is less than 75 m observe nest daily to determine if disturbance is occurring. Observations will continue until 50 passages of pedestrians or vehicles within 10m of the closure boundary are recorded. If no disturbance is observed, observations can be terminated. At the first disturbance, buffer will be expanded by 50 m if human disturbance is observed. Observations; observations will continue until 50 additional passages are documented and buffer will be expanded by an additional 50 m if human disturbance occurs again.</p>	<p><u>SM1:</u> Observe nests at least 3 times per week from a distance. For incubating birds that cannot be observed from a distance, check nests on a weekly basis (or as staff is available).</p> <p><u>SM2:</u> Observe nests daily from a distance that does not disturb the birds, based on professional judgment. For incubating birds that cannot be observed from a distance, check nests every 3 days.</p>	<p><u>SM1:</u> Observe colonies at least three times per week from a distance. For incubating birds that cannot be observed from a distance, check colonies on a weekly basis.</p> <p><u>SM2:</u> Observe nests daily from a distance that does not disturb the birds, based on professional judgment. For incubating birds that cannot be observed from a distance, check colonies every three days.</p>
<p>Nesting Buffers:</p>	<p><u>All species:</u> The park retains the discretion to expand buffers under SM1 and SM2 depending on staffing and bird behavior. In unprotected areas, a closure will be established immediately when a nest with egg(s) is found. When nesting occurs in the immediate vicinity of paved roads, parking lots, campgrounds, buildings and other facilities, NPS retains the discretion to provide resource protection to the maximum extent possible while still allowing those sites to remain operational. Buffers will remain in place for 2 weeks after a nest is lost to determine if pair will re-nest, if no other species nesting in area.</p> <p><u>SM1, SM2:</u> NPS shall not reduce buffers to accommodate ramp access. After July 31, closures will be removed outside of prenesting closures two weeks after all nesting is complete or all chicks in area have fledged, whichever is later.</p> <p>Deliberate attempts to harass or disturb birds, or vandalize fencing, shall result in immediate expansion of the buffer by 50m for the first act, an additional 100m for the second act, and 500m for the third act.</p>		
	<p><u>SM1, SM2:</u> Establish 50 m buffer around piping plover nests occurring outside existing closures. If bird leaves nest due to human disturbance, buffer will be increased in 50 m increments until disturbance is abated. If the nest buffer falls within the intertidal zone a</p>	<p><u>SM1:</u> Use buffer of 300 m.</p> <p><u>SM2:</u> Use buffer of 150 m around nests occurring outside of existing closures.</p> <p><u>All:</u> Establish buffer immediately</p>	<p><u>SM1:</u> Use buffer of 300 m for all species.</p> <p><u>SM2:</u> Use buffer of 100 m for least terns and 200 m if the colony contains common terns, gull-billed terns or black skimmers.</p> <p><u>All:</u> Establish buffer immediately when</p>

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	<p>full-beach closure will result.</p> <p>If buffer is adequate to prevent human disturbance, a designated ORV or pedestrian access corridor can be maintained during incubation. During breeding season, pets are prohibited in pass-through corridors or at the points and spits.</p> <p>If nest buffer is less than 75 m observe nest daily to determine if disturbance is occurring. Observations will continue until 50 passages of pedestrians or vehicles within 10m for the closure boundary are recorded. If no disturbance is observed, observations can be terminated. At the first disturbance, buffer will be expanded by 50 m if human disturbance is observed. Observations; observations will continue until 50 additional passages are documented and buffer will be expanded by an additional 50 m if human disturbance occurs again.</p>	<p>when nest is located. Increase buffer in 50 meter increments if necessary to prevent human disturbance. If the buffer falls within the intertidal zone a full-beach closure will result.</p> <p>For AMOY nests that occur inside a pre-nesting closure at one of the points or spits <u>and</u> requires a buffer expansion of the pre-nesting area, if the nest is lost due to overwash or predation, the buffer expansion shall be removed to the original pre-nesting closure after two weeks with no activity.</p>	<p>nest/colony is located. Increase buffer in 50 meter increments if necessary to prevent human disturbance. If the buffer falls within the intertidal zone a full-beach closure will result.</p> <p>Colony will be monitored daily for presence of new nesting activity and buffers will be adjusted as needed.</p> <p>For a colony that occurs inside a pre-nesting closure at one of the points or spits <u>and</u> requires buffer expansion of the pre-nesting area, if the colony is over-washed or predated, the buffer expansion shall be removed to the original pre-nesting closure after two weeks with no activity.</p>
Pass-through Corridors during Courtship/Mating and Incubation	n/a	n/a	n/a
Adult Foraging Surveys & Buffer:	<p>Survey suitable piping plover breeding habitat 3 times per week to monitor for adults (with an associated scrape or nest territory) foraging outside of an existing closure. If observe foraging outside of existing closure, survey site <u>daily</u>. If observe foraging outside of buffer on two consecutive surveys, establish or expand the buffer using flexible increments based on observed bird behavior to include foraging site if the foraging area is associated with a</p>	No additional buffers/closures.	No additional buffers/closures.

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	<p>prenesting closure. These closures are intended to provide foraging opportunities close to breeding sites. Remove closure if no foraging observed for a 2-week period during the breeding season, or when associated breeding activity has concluded.</p>		
Unfledged Chicks Surveys:	<p><u>SM1</u>.: Observe brood once daily.</p> <p><u>SM2</u>.: Observe brood at least 1 hour each in am and pm daily. Have monitor(s) present during periods of ORV or pedestrian access.</p> <p>Observations end once chicks have fledged. Chicks are considered fledged at 35 days or are observed in sustained flight of >15 m.</p>	<p><u>SM1</u>.: Observe brood at a minimum every other day.</p> <p><u>SM2</u>.: Observe brood once daily. Observations end once the chicks have fledged. Chicks are considered fledged if they have been observed to be proficient in flying or observed in sustained flight of >30 m.</p>	<p>Colonies will be surveyed by foot during the “peak” hatching period which should fall 21 days after initial nest counts.</p> <p>A follow-up survey by foot should be conducted during the “peak” fledge which should fall 20 days after hatch counts.</p> <p><u>SM1</u>: Observe colony every other day.</p> <p>Tern and skimmer chicks will often move 100m or more from their colony site, often toward the nearest shoreline.</p> <p><u>SM2</u>: Observe colony daily.</p> <p>Observations end after no unfledged chicks have been observed on 3 consecutive survey days. Closure can be removed after July 31 or two weeks after all chicks have fledged, whichever is later.</p>
Unfledged Chick Buffers:	<p><u>SM1</u>: Establish a minimum 1000 meter buffer on either side of brood based on observation of bird behavior and terrain conditions at site. No ORV or pedestrian access until all chicks have fledged.</p> <p><u>SM1</u>: For the first 2 weeks after hatching, establish a 1000 m buffer for ORVs .</p> <p>Based on mobility of the brood, at the discretion of park management, the</p>	<p><u>SM1</u>: Establish a 300 meter buffer when unfledged chicks are present. Include foraging and roosting habitat from the ocean (low water line) to the dune (or sound shoreline, if applicable), if accessible. Closure would be removed 2 weeks after fledging (observed flight of 30 meters);.</p> <p>The closure will extend for 300m</p>	<p><u>SM1</u>: Use 300 m buffer. If chicks move outside of the buffer, it will be adjusted to include an additional 200 meters from the chick(s) location outside of the closure.</p> <p><u>SM2</u>: Establish a 200 meter buffer around the chick(s) location. Adjust buffer as needed when chicks are mobile. Monitor daily if shoreline in front of colony open to ORV use.</p>

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	<p>buffer can be reduced after the first two weeks to 500 m for ORVs and 200 m for pedestrians (at Cape Point and South Point). Points and spits would only be accessible from 7 a.m. to 7 p.m. as long as unfledged PIPL chicks are in the area and only if prescribed buffers can be maintained. The 7 a.m. opening (shall) be delayed until the chicks have been located. If chicks are highly mobile, the 1000 m buffer may need to be maintained. Buffer moves with chicks. Vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to PIPL chicks because of steep topography, dense vegetation, or other naturally occurring obstacles.</p> <p>SM1/SM2: The closure will extend for 1000m on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting closure will extend from the ocean side low water line to the bayshore low water line or to the dune line if no bayshore habitat exists.</p>	<p>on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting closure will extend from the ocean side low water line to the bayshore low water line or to the dune line if no bayshore habitat exists.</p> <p><u>SM2</u>: Establish a 200 meter buffer around the unfledged chick(s) location. Include foraging and roosting habitat from the ocean (low water line) to the dune (or sound shoreline), if accessible. Adjust/increase buffer as needed when chicks are mobile. Buffer moves with chicks.</p> <p>The closure will extend for 200m on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting closure will extend from the ocean side low water line to the bayshore low water line or to the dune line if no bayshore habitat exists.</p> <p>All: ORV access would not be allowed until 2 weeks after AMOY chicks have fledged (observed flight of 30 meters);</p>	
<p>SM1/SM2: Reopen access corridor outside of pre-nesting area after chicks fledge (except for AMOYs where the area will remain closed to ORVs for an additional 2 weeks). Dogs are prohibited within 100m of all natural resource closures established for breeding birds and chicks. Closure can be removed after July 31 or two weeks after all chicks have fledged, whichever is later, except for site with Black Skimmers. At sites with Black Skimmers, closure can be removed after August 31 or two weeks after all chicks have fledged, which ever is later.</p>			

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<p>Non-breeding / Wintering Survey</p>	<p>NPS will monitor presence, abundance and behavior of migrating and wintering PIPL, AMOY, WIPL, and REKN 3 times per month at the points and spits July 1 through May 31 following the existing NPS winter monitoring protocol. In addition, the International Shorebird Survey (ISS) protocol will be used to document other migrating/wintering species.</p> <p>NPS will document the distribution and abundance of migrating and wintering shorebirds within the Seashore, following the International Shorebird Survey (ISS) protocols.</p> <p>Non-breeding shorebird surveys will begin on July 1 and continue until May 31.</p> <p>Survey sites TBD, but should include Cape Point, South Beach, all inlet spits (ocean and soundside habitats), and selected ocean facing beaches between Buxton and Salvo, Hatteras Village to Hatteras Inlet, and Ocracoke.</p>		
<p>Non-breeding / Wintering Areas</p>	<p>Non-breeding and wintering areas will be considered natural resource protection areas.</p> <p>Points and Spits: An annual migrating/wintering habitat assessment will be conducted at the points and spits by NPS. Migrating/wintering <u>resource closures</u> will be established and will be based on foraging, resting, and roosting habitats used by migrating and wintering Piping Plovers, Red Knots, and other shorebirds in the past 10 years, and suitable habitat types based on the results of the annual surveys. Access to inlet shoreline where permitted will be maintained via a corridor TBD by NPS Resources Management staff based on an annual habitat assessment.</p> <p>Other Areas: To benefit Red Knots, Willets, Sanderlings, Black-bellied Plovers, Piping Plovers, and all other species of migrating and wintering shorebirds, NPS will establish resource protection areas for migrating and wintering shorebirds (open to pedestrians, unless closed for breeding birds or other reasons) that will provide relatively less disturbed foraging, resting, and roosting areas for migrating and wintering birds.</p> <p>Migrating/wintering <u>resource closures will be maintained year round. Dogs will be prohibited within 100m of all migrating/wintering resource closures.</u> The following activities are compatible with the non-breeding/wintering shorebird resource protection areas: fishing, beach walking, birding, kayaking, kite boarding, paddle boarding, photography, picnicking, sailing, shelling, stargazing, sunbathing, surfing, swimming, wildlife viewing and wind surfing.</p> <p>The activities listed above singly or collectively could result in disturbance that is incompatible with protection of habitat for migrating and wintering shorebirds. Human disturbance in these areas will have to be monitored and should any single activity or collective activities become excessive (definition TBD), NPS will implement seasonal or additional restrictions on compatible uses.</p>		
<p>Data Collected</p>	<p>Collect data as recommended by USGS (<i>Cohen 2005</i>) and use GPS to document nest locations.</p> <p>Record locations where territorial/courtship behavior occurs, including</p>	<p>Collect data as recommended by USGS (<i>Meyers 2005</i>) and use GPS to document nest locations.</p> <p>Record presence and abundance of birds. Assess productivity and</p>	<p>Collect data as recommended by USGS (<i>Erwin 2005</i>) and use GPS to document colony locations.</p> <p>Record presence and abundance of birds.</p>

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	scrape locations. Estimate where adult and chick foraging occurs. Chicks should never be disturbed to obtain this information. Record presence and abundance of birds. Assess productivity and reasons for nest failure.	reasons for nest failure.	
Future Research	Species Management protocols as outlined in this table will not prevent qualified biologists or ornithologists associated with a major university from conducting scientific research that will add to the existing knowledge of species or improve resource protection within the Seashore.		
Goals, Objectives, and Desired Conditions	NPS will develop goals, objectives, and desired conditions of all species of breeding birds within the Seashore, taking into consideration the best available scientific data regarding habitat conditions, historical distribution and abundance of breeding populations, carrying capacity of breeding species, fledging success, and productivity. NPS will work to achieve these goals, which may require additional resource protection measures at some or all locations. NPS will develop these goals in cooperation with USFWS, USGS, and NCWRC.		
Sea Turtles (a minimum of 7 field personnel is required to meet the daily monitoring requirements on the Park's 67 miles of shoreline). NPS will follow monitoring recommendations in the Atlantic Loggerhead Recovery Plan.			
Survey Time and Frequency	<p>Sea turtle patrol will begin on May 1, unless leatherback nests have been reported within the state, in which case CAHA will follow the direction of NCWRC. Patrol will continue until September 15, or two weeks after the last sea turtle nest or crawl is found, whichever is later.</p> <p>Conduct daily morning surveys by ATV/UTVs and possibly ORVs for crawls and nests on all beaches before public ORV use. Daily surveys for nests end September 15, or two weeks after the last sea turtle nest or crawl was found, whichever is later. Periodic monitoring (e.g., every two to three days) for unknown nesting and emerging hatchlings will continue, especially in areas of high visitation from that date until November 15.</p> <p>Monitoring will also occur for post-hatchling washbacks during periods when there are large quantities of seaweed washed ashore or following severe storm events. Nest observations stop when all nests have hatched or excavation indicates that the nest was not viable.</p> <p>Once a light filter fence is installed, monitor nests daily for signs of hatchling emergence.</p>		
Data Collected	<p>Follow the North Carolina Wildlife Resources Commission Handbook and record:</p> <ul style="list-style-type: none"> -Turtle species -Nest vs. false crawl -Location (physical description and GPS location) -If nest needs to be relocated and, if so, why and where (new physical description and GPS location), number of eggs relocated, and time of day -Necessary protective measures for nest and hatchlings 		

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	<p>-Information regarding any post hatching nest excavation and analysis</p> <p>Examine all nests after hatching to determine productivity rates. Excavate nests in the evening a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, unearth nest cavities 80–90 days after the lay date. Any live hatchlings found during excavations will be released after dark on the same day as excavation.</p> <p>For strandings the following will be recorded: species, location, measurements, and signs of human interactions. Samples and photos will be collected when necessary. Necropsies will be conducted when possible.</p>
Nest Closures/ Buffers	<p>Establish a buffer approximately 10 meters by 10 meters with symbolic fencing and signage around nest. Closure size may be modified due to environmental conditions at the nest site.</p> <p>Approximately 50– 55 days into incubation, closures expanded to the surf line. The width of the closure based on the type and level of use in the area of the beach where the nest was laid:</p> <ul style="list-style-type: none"> a. Vehicle-free areas with little or no pedestrian traffic – 25 meters wide (total width); b. Villages or other areas with high levels of day use –50 meters wide (total width); c. Areas with ORV traffic –105 meters wide (total width). <p>Opposite the surf line on the landward side of the closure, expand the closed area to 15 meters where possible, but no less than 10 meters landward from the nest. Pedestrian traffic detours behind the nest area clearly marked with signs and reflective arrows.</p> <p>Where present within closure, vehicle tracks manually smoothed with rakes or a steel mat attached to an ATV, so as not to impede hatchlings attempting to reach the surf.</p> <p>Use light filtering fence behind nests nearing hatch dates to block light pollution from the villages and vehicles operating on the beach after dark.</p> <p>If multiple nests are located near each other (within 150 feet), and have similar hatch dates (14 days), then closures will encompass all nests in the area, and will not be removed until all nests within the closure have hatched.</p>
Night Driving Restrictions	<p>Night driving restrictions will begin May 7th and continue until September 15th.</p> <p>Beach routes will be closed to ORV use from 30 minutes after sunset and will remain closed until nest search by sea turtle patrol has been completed and nests are marked with symbolic fencing. NPS will attempt to open each section of beach as soon as possible each morning.</p>
Nest Relocation	<p>By April 15th, areas deemed unsuitable for turtle nests (i.e. high erosion rate) will be identified by Park staff. Maps and descriptions of these areas will be analyzed by NCWRC prior to nesting season.</p> <p>When a nest is found, staff assesses need for nest relocation and follows relocation guidance identified in the NCWRC handbook.</p> <p>If it is determined the nest will not be relocated, it will be immediately protected with a symbolic fencing and signs and will measure approximately 10 meters by 10 meters in size. Closure size may vary at the discretion of staff due to the environmental factors at a nest location.</p> <p>If a nest is threatened by an imminent storm event, NPS will consult with NCWRC to determine appropriate action.</p>
Light Management	<p>Establish turtle friendly lighting standards and/or reduce light for all Seashore (NPS) structures.</p> <p>Encourage concessioners to install turtle friendly lighting.</p>

	Develop educational material to inform visitors about their impact on the success of sea turtle nests.
Research	Support research efforts looking at the sex ratios of sea turtles. Respond to sea turtle strandings in a timely manner, and report all information, pictures, and signs of human interaction to NCWRC. Necropsies of strandings will be done when possible.
Seabeach Amaranth	
Survey Time and Frequency	August An annual survey of potential habitat will be conducted. Some bird closure areas may not be surveyed due to the potential to disturb nesting birds. Some areas may not be surveyed until just prior to re-opening an area to ORV traffic. July– September Before opening any species closure or identifying alternate ORV corridors, survey for seedlings/plants. End observations when all plants have died back.
Data Collected	Record location of all individual plants or plant clusters using a GPS and note if the plant is located in an area open or closed to recreational use.
Buffers	April 15 – November 30 If a plant/seedling is found outside of an existing closure, the Seashore will erect symbolic fencing with signage creating a 10 meter by 10 meter buffer around the plant. If plants are located next to each other, the area will be expanded to create one enclosure protecting several plants. If a SBA is found during the survey prior to reopening a bird closure to ORV and pedestrian use, the Seashore will protect the SBA as described above and reopen the areas of the bird closure where no plants exist. Areas reopened if no plants are present by September 1. Where plants occur, the closed areas will be reopened after the plants have died.

See Shorebird/Waterbird Buffer Summary on next page.

Table 1. Shorebird / Waterbird Buffer Summary for SELC Proposed Alternatives

Species	Breeding Behavior/ Nest Buffer	Unfledged Chicks
	SM1 / SM2	SM1 / SM2
Piping Plover	50 m / 50 m	1000 m / 200-1000 m
American Oystercatcher	300 m / 150 m	300 m / 200 m
Least Terns	300 m / 100 m	300 m / 200 m
Other Species CWB	300 m / 200 m	300 m / 200 m