APPENDIX B: USFWS South Carolina Field Office Piping Plover and Red Knot Survey Minimum Survey Requirements To Document Site Abundance and Distribution

Required skills, training, and equipment for conducting surveys

1. Piping plover monitors must be capable of detecting and recording locations of roosting and foraging plovers, accurately reading and recording bands, and documenting observations in legible, complete field notes. Aptitude for monitoring includes keen powers of observation, familiarity with avian biology and behavior, experience observing birds or other wildlife for sustained periods, tolerance for adverse weather, experience in data collection and management, and patience. Monitors must also be able to captain a boat (if applicable) and walk long distances carrying field gear.

2. A training workshop for new surveyors on piping plover survey methodology and band identification provided by the South Carolina Field Office (SCFO) must be completed prior to the start of the first monitoring season.

3. Binoculars, a GPS unit (set to record in decimal degrees in the WGS datum), a 10-60x spotting scope with a tripod, boat access (if applicable), and the SCFO's datasheet must be used to conduct the surveys.

Piping plover survey methodology

4. Nonbreeding piping plover abundance and distribution must be determined through 6 surveys per season (2 during fall migration scheduled ≤3 days apart, 2 during winter scheduled ≤3 days apart, and 2 during spring migration scheduled ≤3 days apart). Suitable habitat must be surveyed by walking the survey area (weather and tide permitting, no surveys should be conducted if sustained winds exceed 20 mph) during the survey window (July 15 – May 15).

5. Surveys should be scheduled around the peak of migration (September in Fall and March in Spring) based on input from the SCFO. Winter surveys must be conducted between December 1 and January 31. Surveys should be conducted around mid-tide when birds will still be foraging, making legs easier to see for re-sighting bands, but more concentrated.

6. All unbanded and banded piping plovers must be recorded on the SCFO datasheet. Weather data must be collected at the beginning of each survey. The presence/absence of bands, GPS coordinate, plumage, behavior, and habitat type must be recorded for each piping plover.

7. Band resightings must be read and documented during each survey.

8. GPS coordinates must be collected in decimal degrees during each survey for each bird as close to the location of the bird as possible without causing a change in behavior (if the bird is spending most of its time watching the monitor instead of continuing the behavior it was exhibiting when it was first spotted).

9. Recreation and disturbance must be documented during the surveys. The number of people, dogs (on and off leash), bicycles, vehicles, etc. must be recorded during the surveys. Additionally, any activity causing a disturbance (change in behavior, particularly if the disturbance flushes the birds) to roosting or foraging birds must be noted on the datasheet.

10. Survey data must be recorded in the field on the SCFO datasheet and transcribed into the Microsoft Access database (provided by the SCFO). Electronic hard copies of the datasheets and the database must be provided annually by June 15 to the SCFO.

Red Knot

11. Red knots must be recorded during the piping plover surveys when both species are present. Additional surveys for red knots during their peak season must follow the same protocol outlined above. Band combinations, flag color and alphanumeric codes, and geolocators must be noted on the datasheet if applicable. All resightings must be reported on www.bandedbirds.org.

How To Resight and Report Banded Piping Plovers

Be careful not to disturb the bird. A slow, quiet approach avoids harassment and allows the observer to carefully scan the band combination. Using a spotting scope facilitates accurate observations from a distance.

Please record:

1. Location where the bird was seen (GPS coordinates are helpful).
2. Date when the bird was seen.
3. Any observations of the bird's behavior (e.g., roosting, foraging).
4. Band combination:
   a. Band combinations should be recorded in the following sequence: upper left (UL; above the "knee"), lower left (LL; below the "knee"), upper right (UR), lower right (LR). "Right" and "left" are from the bird's perspective, not the observer's (just like a person's right and left legs).
   b. Band types include flags (band with tab sticking out), metal, and color bands.
   c. Some bands may have alpha-numeric codes printed on the band or the flag (e.g., A1). The code, in addition to the color and location of the band or flag should be documented. Both the color of the band and the code (e.g., white writing on a green band) should be noted.
   d. Some bands are split (a single band with two colors; e.g., orange/blue) or triple split (a single band with three colors; e.g., blue/orange/blue).
   e. Sometimes two bands of the same color are placed over each other, appearing like one very tall band.
   f. Some piping plovers are banded on the upper legs only, and bands can be stacked (one above the other) on the upper leg.
   g. Record leg positions where bands are absent.
   h. Note if the color or type of any of the bands is uncertain or if some parts of a leg were not seen clearly.
   i. Recognize that band colors can fade over time.

Left Figure: This band combination below would be recorded as: metal (UL), dark blue (LL), black flag (UR), red over black (LR). The abbreviated band combination (refer to http://www.fws.gov/charleston/pdf/PIPL/20141205_usfws_pipl_survey_datasheet.pdf) would be recorded as: X,B:Lf,RL. Middle Figure: Examples of alpha-numeric gray, black, and white flags. Right Figure: Example in yellow circle shows use of an alpha-numeric code on a color band.

For banded piping plovers seen in South Carolina, please send this information along with the observer's contact information to melissa_bimbi@fws.gov.

For more information about band resighting, please consult http://www.fws.gov/charleston/pdf/PIPL_Band_Identification_Training.pdf

Datasheet Habitat Descriptor Definitions

Back beach – dry sand, beach landward of the mean high water (MHW) line and seaward of the dune line.

Dune – A mound, hill, or ridge of wind-blown sand, either bare or covered with vegetation located landward of the back beach.

Ephemeral pool – a temporary water feature located on the beach.

Mudflat – intertidal area typically located behind sand spits adjacent to inlets. They appear darker in color than sand, and are soft and slick to walk on. The closest vegetation is typically *Spartina* sp.

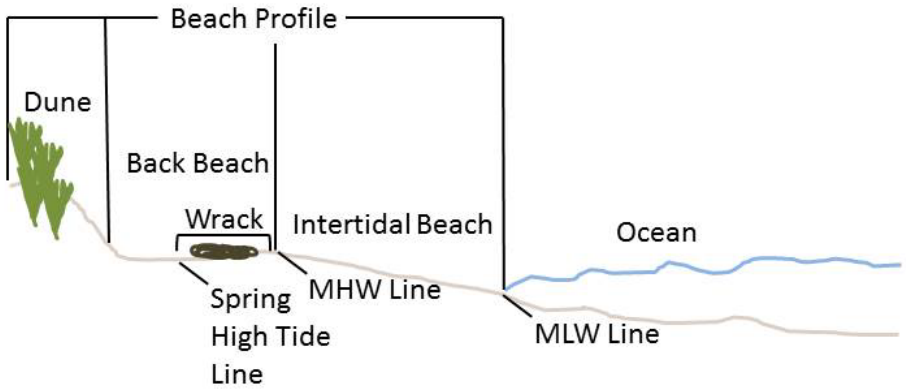
Intertidal beach – wet, smooth sand; beach seaward of the MHW line and landward of the mean low water (MLW) line.

Sandflat – flat, rippled intertidal area along sound shorelines or around the mouth of an inlet. They are firm to walk on.

Dense vegetation – vegetation located on the back beach or dunes that provides >75% cover.

Washover – beach sand that has been transported landward of the beach/dune system by storm waves, areas where sand and shells become the top layer of once vegetated areas following a storm event.

Wrack – organic plant material deposited between the MHW line and the spring high tide line.



Nonbreeding PIPL/REKN Survey Data Sheet **Page___of___**

Date:_________**Location**: ____________________________________**Observer(s)**: ____

Survey #:_____**Survey Coverage**: (circle one): ALL NE SW **Survey Type**: (circle one): Population Foraging Roosting S/R

Start Time:______ **End Time**:______ **General weather** (circle one): Sunny Partly cloudy Cloudy Rain Fog Other (describe)

Temp:____°F **Wind Direction** (circle one): N NE E SE S SW W NW **Wind Speed** (circle one): 0-5 6-10 11-15 16-20 >21 MPH

Tidal stage at start of survey (circle one): Low Mid High (Rising/Falling)

Disturbance (#): Pedestrian(s)______Boat(s)_____Bicycle(s)_____ATV(s)_____ORV(s)_____Dog(s) On______Dog(s) Off______

PIPL/REKN #	ULU	ULL	LLU	LLL	URU	URL	LRU	LRL	Flag or band Code	Latitude	Longitude	Plumage	Behavior	Habitat	Notes

Abbreviation Key							
Band Color		**Plumage**		**Behavior**		**Habitat**	
A	Gray	B	Basic (nonbreeding)	D	Disturbed	M	Mudflats
B	Dark blue	A	Alternate (breeding)	FR	Foraging	S	Sandflats
b	Light blue	P	Partial (some breeding)	R	Roosting	B	Beach
f	Flag			L	Loafing	D	Dunes
G	Dark green			T	Territorial	WR	Wrack
g	Light green			O	Other	IT	Ocean intertidal
L	Black					WA	Washover
N	No band seen (leg position not visible)					VS	Vegetation sparse (<75%)
O	Orange					VT	Vegetation thick (>75%)
P	Pink					EP	Ephemeral pool
R	Red					O	Other
U	Purple						
W	White						
X	Metal						
Y	Yellow						
-	No band (no band on that leg position)						
/	Split band (color/color on one band)						
//	Triple split band (color/color/color on one band)