Appendix 2a. Recommendations for Stewardship and for Monitoring Sites for Piping Plovers in their Continental U.S. Coastal Migration and Wintering Range

1. Conduct a site assessment to determine the effectiveness of current site management for piping plovers and other shorebird species. For an example of a site assessment tool, go to http://www.whsrn.org/tools.

2. Protect piping plover habitat and areas with high concentrations of other shorebirds. Piping plovers are generally not present between 15 May and 15 July; however, other sensitive shorebirds (particularly nesting shorebirds) may benefit from year-round protection of roosts and restrictions on dogs, off-road vehicles, and wrack-removal.

   2.1. Seasonally close piping plover roosting areas and areas where other shorebirds concentrate.

      2.1.1. Post a 25-m buffer around roosting areas with closure signs connected by string from 15 July through 15 May. Maintain closures by re-posting toppled signs and replacing broken string throughout the season.

      2.1.2. Relocate or adjust closures as habitat conditions change between migration/winter seasons.

   2.2. Prohibit dogs at important piping plover sites (e.g., sites occupied by piping plovers and/or within 1.5 km (one mile) of an unstabilized inlet).

   2.3. Prohibit recreational off-road vehicles, including cars, trucks, 4-wheelers, all-terrain vehicles, and golf carts, at important piping plover sites (e.g., sites occupied by piping plovers or within 1.5 km (one mile) of an unstabilized inlet). Essential vehicles necessary to conduct shorebird surveys or sea turtle nesting surveys within these important sites should adhere to beach driving best management practices to protect nesting sea turtles, sea turtle hatchlings, breeding shorebirds and seabirds and their chicks. Contact your local USFWS Field Office for best management practices for driving on beaches.

   2.4. Do not remove wrack at important piping plover sites. Less restrictive practices protecting wrack within occupied plover habitat or within 1.5 km (one mile) of an inlet should only be considered if sufficient resources are available to detect shifts in shorebird locations. Trash may be removed by hand, but natural material should remain.

3. Conduct surveys to determine the distribution, abundance, and seasonality of piping plovers where data are lacking on site use.

   3.1. Recommended piping plover survey protocol:

      Piping plover abundance and distribution should be determined by conducting two to three intensive surveys per month for at least one full nonbreeding season in order to determine site use. Surveys should be conducted 10 days apart (weather and tide permitting; no surveys should be conducted if winds exceed 15 mph) beginning 15 July and ending 15 May. Surveys should be scheduled +/- 3 days of the 5th, 15th, and 25th of each month, consistent with the International Shorebird Survey protocol. Surveys should be conducted between mid and high tide when piping plovers are more concentrated. Resighting of bands will be easier a few hours before or after high tide when birds are no longer roosting.

If banded birds are observed during a survey, the band combinations should be recorded and band placement and color should be verified through a spotting scope, not with binoculars. Band combinations should be noted in the following order: Upper Left (UL), Lower Left (LL): Upper Right (UR), and Lower Right (LR). The following abbreviations should be used to record band color combinations:

X: metal	b: light blue	C: Atlantic Canada color metal
f: flag	G: dark green	T: other (describe)
R: red	g: light green	/: split band (1 band with 2 colors)
Y: yellow	L: black	//: triple split (1 band with 3 colors)
O: orange	W: white	N: no band seen (area not visible)
B: dark blue	A: gray	–: no band
P: pink	U: purple	

Example: A piping plover with: (UL) orange flag band, (LL) light blue band over a black over orange over black triple split band, (UR) metal band, (LR) light green band would be recorded as **Of,bL/O/L:X,g**. A comma separates the bands of the upper and lower leg and a colon separates the legs from each other.

For more information about resighting and reporting banded piping plovers, see Appendix 2b: How To Resight and Report Banded Piping Plovers.

3.2. Report band combinations to piping.plover@usace.army.mil. Please provide your local USFWS and State wildlife agency a copy of your datasheet(s) as soon after the sighting as possible in case more information about the sighting or the band combination is needed.

3.3. Although piping plovers are the target species for these surveys, any additional observations of other species, especially sensitive species such as red knots and snowy plovers, will help USFWS and State wildlife agencies to identify areas of shorebird concentration and facilitate their management.

3.4. Additional information such as date, location, time, weather conditions, observer name(s) should be collected during each survey (see Appendix 2c: Examples of Data Collection Forms).

3.5. It is equally important to record the absence of piping plovers as well as their presence. Indicate when and where you have surveyed and no birds were observed.

4. Post interpretive signs that inform site users about the importance of shorebird conservation, particularly for the piping plover.

4.1. Interpretive signs should be designed to relay the message to the general public. Photos or graphics should be used wherever possible to convey the message. Text should be succinct and written in non-technical terms (see examples in Appendix 2e: Examples of Effective Signs for Migrating and Wintering Piping Plover Conservation).

4.2. Interpretive signs should depict and explain any signs that site users may observe on the beach. For example, if an area has seasonal closures, visitors will be more likely to recognize the closure signs and understand why the area is closed.

5. Provide outreach programs and materials to promote shorebird conservation with emphasis on the piping plover.

    5.1. Create a site steward program and have staff or volunteers set up a spotting scope outside of closures to allow people to see the birds while learning about shorebird conservation.

    5.2. Offer guided birding trips that observe appropriate buffer distances to avoid disturbance to shorebirds.

    5.3. Provide shorebird identification classes and educational workshops.

    5.4. Develop site-specific outreach materials about shorebird conservation.

Appendix 2b. 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. The use of 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 and 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 as well as where they are present.
    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: The 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 Appendix 2a) would be recorded as: X,BB:Lf,RL. Right Figure: Example in yellow circle shows use of an alpha-numeric code on a color band.

Please send this information with the observer's contact information to piping.plover@usace.army.mil.

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

To download an example spreadsheet for recording banded piping plovers, go to http://www.fws.gov/charleston/pdf/PIPL/example_usfws_pipl_survey_spreadsheet.xlsx.

Appendix 2c. Examples of Data Collection Forms

Below is a Florida example of a field sheet to collect appropriate data on piping plovers or other shorebirds.

Resighting

Pg. 1 of 1

Non-breeding Shorebirds & Seabirds Monitoring

Location: Little Talbot Date: 1/11/11 Observer(s): Bob Smith, Sue Paper

ULU- Upper left top, ULL- Upper left bottom, LLU- Lower left top, LLL- Lower left bottom, URU- Upper right top, URL- Upper right bottom, LRU- Lower right top, LRL- Lower right bottom

Location: Little Talbot Date: 1/11/11 Start/End time: 8:30-14:45

Flock No.	Species	Flag Code (REKN/AMOY)	Flag Color	ULU	ULL	LLU	LLL	URU	URL	LRU	LRL	Confirmed	Comments
1	REKN	AL9	FL						FL		S	Y	flag faded
1	REKN	UU1	FL						FL		S	Y	
1	REKN	H1P	FL		B				FL		S	Y	
1	REKN	NA7	FL		B				FL		S	Y	
1	REKN	LA7	FL						FL		S	Y	
2	PIPL		FG		R		W		FG	R	Y	Y	
0	RUTU	XA9	FL						FL		S	Y	

Tide: high, falling Precipitation: None

Wrack: Yes-(S)parse Abundant No Beach Raking: Y N

Direct Disturbance:

Avian predator (R... Powered water craft (PWC) Aircraft (AIR)

Kite surfing (KITE) Non-powered water craft (NPWC) Dogs off leash (DOG)

Vehicle present (V... Walkers/runners/dog on leash/cyclists (WALK)

Comments: ...ck 1, birds returned and continued foraging

*All birds not associated ...rded as Flock # 0

**Roost/loaf & Forage- put X in box for appropriate behavior(s)

Flock No.	Time flock sighted	Lat/Long	Species	Roost	Forage	# of Banded Birds	# of Bands Read	Total #
1	900	30.433,-81.406	REKN	N	Y	6	5	23
2	945	30.437,-81.406	PIPL	Y	Y	1	1	3
2	945	30.437,-81.406	SEPL	Y	N	0	0	24
2	945	30.437,-81.406	DUNL	Y	Y	0	0	47
2	945	30.437,-81.406	SAND	N	Y	0	0	4
0			SAND	N	Y	0	0	34
0			RUTU	Y	Y	1	1	9
0			WILL	N	Y	0	0	12
0			BBPL	Y	N	0	0	5

Blank Forms

Non-breeding Shorebirds & Seabirds Monitoring

Pg.__of __

Location: _____ **Date:** _____ **Start/End time:** _____

Observer(s): _____ **%Cloud cover:** _____ **Wind:** _____ **Visibility:** _____

Tide: _____ **Surf:** _____ **Precipitation:** _____

Wrack: Yes-(S)parse ☐ Yes-(A)bundant ☐ No ☐ **Beach Raking:** Y ☐ N ☐

Direct Disturbance:

☐ Avian predator (RAPT)	☐ Powered water craft (PWC)	☐ Aircraft (AIR)
☐ Kite surfers (KITE)	☐ Non-powered water craft (NPWC)	☐ Dogs off-leash (DOG)
☐ Vehicle present (VEH)	☐ Walkers/runners/dog on leash/cyclists (WALK)	

Comments:

*All birds not associated with a flock are recorded as Flock # 0

**Roost/loaf & Forage- put X in box for appropriate behavior(s)

Flock No.	Time flock sighted	Lat/Long	Species	Roost	Forage	# of Banded Birds	# of Bands Read	Total #

Resighting

Pg. ___of ___

Location: _______________ **Date:** __________ **Observer(s):** _____________

ULU- Upper Left Upper/(top), ULL- Upper Left Lower/(bottom), LLU- Lower Left Upper/(top), LLL- Lower Left Lower/(bottom), URU- Upper Right Upper/(top), URL- Upper Right Lower/(bottom), LRU- Lower Right Upper/(top), LRL- Lower Right Lower/(bottom)

Flock No.	Species	Flag Code (REKN/AMOY)	Flag Color	ULU	ULL	LLU	LLL	URU	URL	LRU	LRL	Confirmed	Comments

Red Knot	REKN	American Oystercatcher	AMOY	Sanderling	SAND
Least Tern	LETE	Piping plover	PIPL	Snowy Plover	SNPL

South Carolina example of a piping plover survey datasheet.

To download a PDF, go to http://www.fws.gov/charleston/pdf/PIPL/usfws_pipl_survey_datasheet.pdf.
To download an Excel version, go to
http://www.fws.gov/charleston/pdf/PIPL/example_usfws_pipl_survey_spreadsheet.xlsx.

SC Nonbreeding PIPL Survey Data Sheet

Date:_____ Location:_____ Observer(s):_____

Start Time:_____AM/PM End Time:_____AM/PM **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(s): Low Mid High (Rising/Falling)

Disturbance (#): Pedestrian(s)_____Boat(s)_____Bicycle(s)_____ATV(s)_____ORV(s)_____Dog(s) On_____Dog(s) Off_____

PIPL #	Left Upper	Left Lower	Right Upper	Right Lower	Latitude	Longitude	Habitat	Behavior	Notes

Habitat:
1: intertidal zone
2: fresh wrack
3: backshore
4: old wrack
5: dune
6: ephemeral pool
7: washover/blowout
8: dense vegetation
9: other (describe)
10: unknown

Behavior:
1: foraging
2: roosting
3: preening
4: bathing
5: flying
6: aggression
7: walking

Bands:
X: metal band
f: flag
R: red
Y: yellow
O: orange
B: dark blue
b: light blue
W: white
A: gray
G: dark green
g: light green
L: black
S: silver
-: no band
N: no band seen
/: split band
//: triple split band
T: other (describe)
P: pink
U: purple

Total PIPL:_____

Appendix 2d. Example of a State Atlas

The South Carolina Shorebird Project (SCSP) was created and funded in 2006. The project objectives were to: 1) Determine the abundance and distribution of piping plovers within designated critical habitat units in South Carolina, 2) Determine the abundance and distribution of other shorebird species of concern, such as the Wilson's plover, American oystercatcher, red knot, and marbled godwit, within these critical habitat units, 3) Create partnerships to achieve shorebird conservation, and 4) Increase awareness about shorebird conservation through outreach and education. The project includes partners from county, state, and federal agencies, NGOs, and private citizens. Shorebird surveys documented the importance of South Carolina for nonbreeding piping plovers, particularly for the Great Lakes population, and fostered conservation efforts for Wilson's plovers and red knots. The project has also increased awareness and prompted interest in posting seabird colonies at additional sites in the state that were not previously protected. This excerpt is from the SCSP Report for objectives 1 and 2 and represents one of many sites surveyed in South Carolina.

Little Capers Island

County: Beaufort

Survey Area: All sandy inlet beaches, ocean beach, and bay beach at the south end.

Critical Habitat Designation: Unit SC-14, Capers Island.

Habitat conditions: The three sections of the island are accessible only by boat. The northern section has several houses, the central section has a single house, and the southern section is undeveloped. The north and central sections have relatively narrow beaches at high tide with limited roosting habitat except at those inlets with open sandy areas; the southern section of beach is wider with multiple overwash fans and a moderate size open sandy area at the southern end. The beach is relatively flat in slope so there are large intertidal feeding areas, with the inlets providing areas of mud/sand substrate and the beach with sand substrate. All three sections have overwash fans that provide low energy feeding habitat in the fan area, which extends into the marsh.

Habitat Modifications: None observed except on the northern island, which has sand fencing.

Management Measures: None observed.

Comments:

- One of the better locations in the state for Piping Plovers (PIPL), and an important location for birds from the Great Lakes population**.**
- ATV tracks were observed on the northern section. The island is difficult to survey due to the two inlets that bisect the island.
- Although the northern and southern sections can be accessed from interior channels, the middle section is accessible by boat only when the ocean is calm and at mid/high tide, or by wading across the southern inlet at low tide.
- At times, disturbance may be a concern on both the southern and northern sections.
- Movements of individual piping plovers among the three sections of Little Capers Island were documented based on band observations.
- Little Capers Island is one of the top locations in the state for Wilson's Plovers (WIPL).
- American Oystercatchers (AMOY), and Marbled Godwits (MAGO); Red Knots (REKN) were also noted during piping plover surveys.

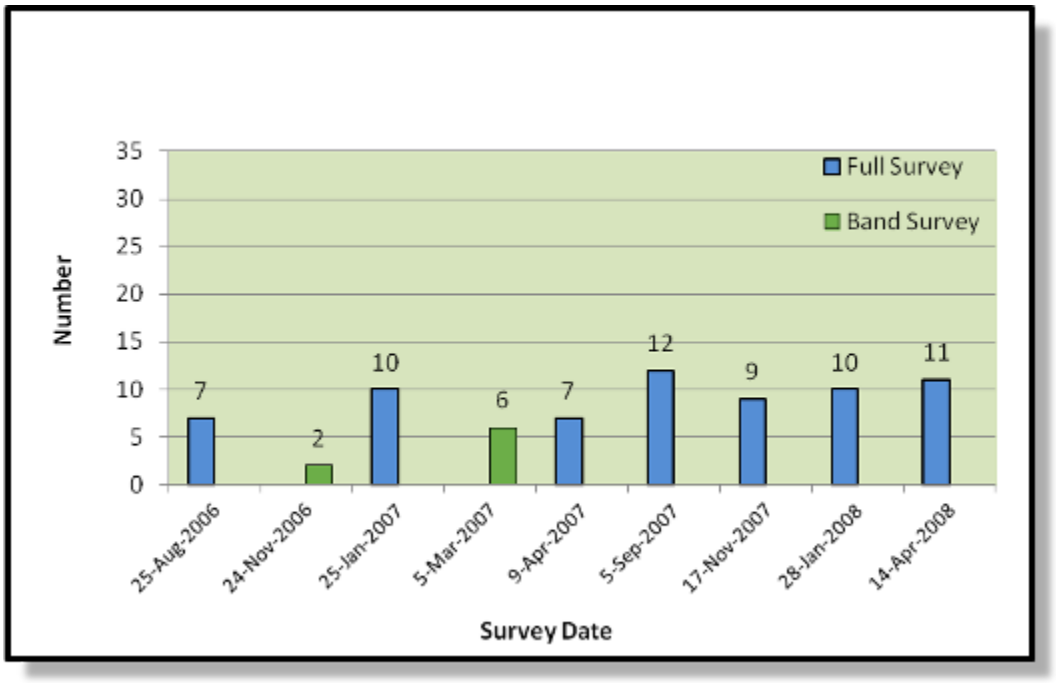

Figure 1. Numbers of piping plovers observed in different seasons and years on Little Capers Island, South Carolina.

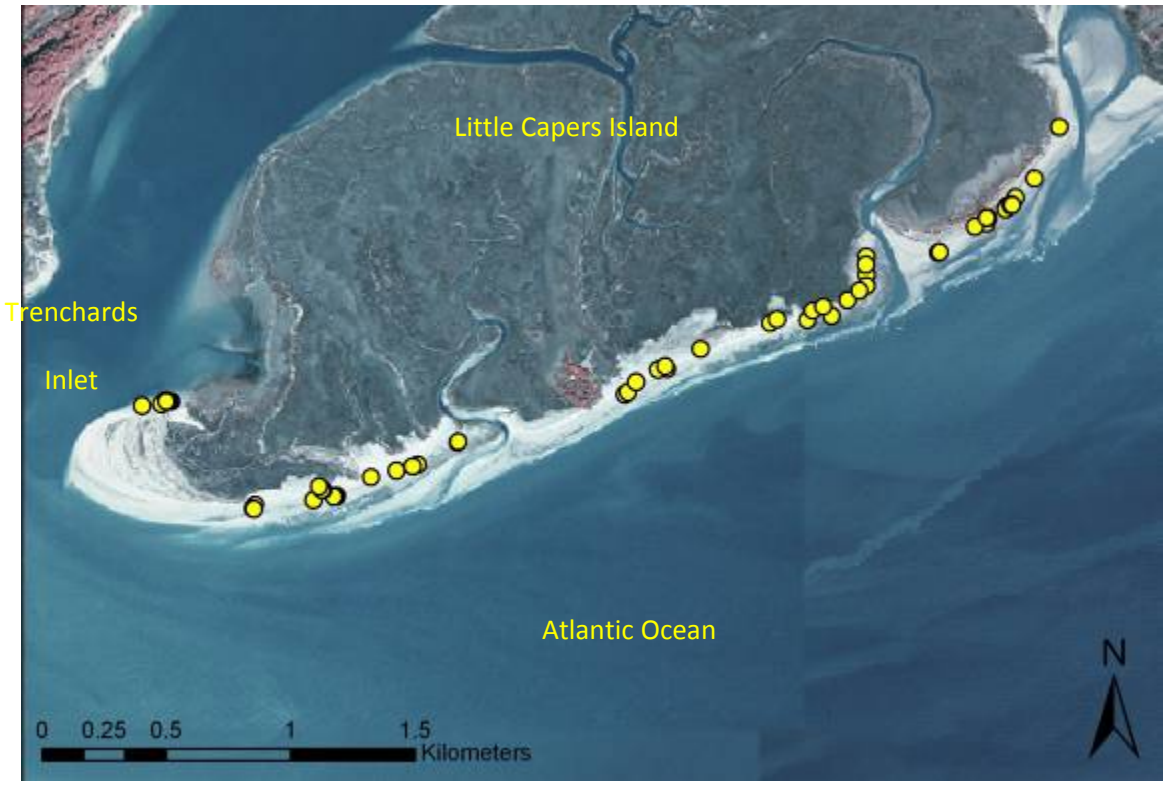

Figure 2. Locations (yellow dots) on Little Capers Island where piping plovers were observed during 2006 to 2008.

Table 1. Band combinations observed on Piping Plovers on Little Capers Island, South Carolina.

PIPL #	Date	Bands[1]	Band #	M or W[2]	Pop[3]	Comments
1	25-Aug-2006	-,X:-,C		M	At C	At C double size metal band, completely faded
2	25-Aug-2006	X,L:-,YO		M	GL US	
3	24-Nov-2006	-,-:X,g		W	GL US	
4	25-Jan-2007	-,-:X,g		W	GL US	
5	25-Jan-2007	O,-:X,O/R		W	GL US	band faded
6	25-Jan-2007	X,Y:-,Ob		W	GL US	
7	25-Jan-2007	X,Y:Wf,Yg		W	GP C	
8	5-Mar-2007	-,-:X,g	ends in 312	W	GL US	1951-26312
9	5-Mar-2007	X,Y:-,Ob		W	GL US	
10	9-Apr-2007	O,-:X,O/R		W	GL US	
11	9-Apr-2007	X,b:O,-		M	GL US	Matches brood marker for adult banded bird seen in 2007-8
12	9-Apr-2007	X,Y:-,Ob		W	GL US	
13	9-Apr-2007	X,Y:Wf,Yg		W	GP C	Central island
14	5-Sep-2007	-,-:X,g		W	GL US	second season at same location
15	5-Sep-2007	O,-:X,-		W	UK	This would match GL bird from 06-7 same location if the split fell off (spit worn first season)
16	5-Sep-2007	Of,BR:X,R		W	GL US	seen at middle island also
17	5-Sep-2007	X,b:Of,LO		W	GL US	previously banded X,b:O,- (matches a bird seen in spring previous year)
18	5-Sep-2007	X,Y:Wf,Yg		W	GP C	
19	17-Nov-2007	-,-:X,g	[]951-[]6312	W	GL US	
20	17-Nov-2007	Of,BR:X,R		W	GL US	
21	17-Nov-2007	X,Y:-,Ob		W	GL US	bird moved across S inlet to N side (middle island)
22	28-Jan-2008	O,-:X,-		W	UK	This would match GL bird from 06-7 same location if the split fell off (spit worn first season)
23	28-Jan-2008	Of,BR:X,R		W	GL US	
24	28-Jan-2008	X,b:Of,LO		W	GL US	
25	28-Jan-2008	X,Y:-,Ob		W	GL US	
26	28-Jan-2008	X,[Y]:Wf,Yg		W	GP C	Y band missing
27	14-Apr-2008	-,-:X,g		W	GL US	
28	14-Apr-2008	Of,BR:X,R		W	GL US	

PIPL #	Date	Bands[1]	Band #	M or W[2]	Pop[3]	Comments
29	14-Apr-2008	X,b:Of,LO		W	GL US	
30	14-Apr-2008	X,[Y]:Wf,Y g		W	GP C	Y band missing

[1] Abbreviations of band combinations are noted in the following order: Upper Left (UL), Lower Left (LL): Upper Right (UR), and Lower Right (LR). A comma separates the upper and lower leg and a colon separates the legs from each other.

X: metal	b: light blue	C: Atlantic Canada color metal
f: flag	G: dark green	T: other (describe)
R: red	g: light green	/: split band (1 band with 2 colors)
Y: yellow	L: black	//: triple split (1 band with 3 colors)
O: orange	W: white	N: no band seen (area not visible)
B: dark blue	A: gray	–: no band
P: pink	U: purple	

[2]M=migrant bird, W=winter bird. A winter bird is a bird that has been documented at a site between December 1 and January 31. A migrant bird is a bird that has not been documented at a site between December 1 and January 31.

[3]Pop=population based on band combination. UK=unknown, ATL US=Atlantic US, ATL C=Atlantic Canada, GL US=Great Lakes US, GL C=Great Lakes Canada, GP US=Great Plains US, GP C=Great Plains Canada.

Table 2. Observations of other shorebirds on Little Capers Island during piping plover surveys.

Date	Tide St.[1]	Tide Dir.[2]	WIPL	AMOY	REKN	MAGO
25-Aug-2006	H	R	66	10	340	3
25-Jan-2007	H	F	0	6	0	0
9-Apr-2007	M	R	73	7	73	0
5-Sep-2007	M	R	18	14	116	2
17-Nov-2007	M	R	1	2	25	13
28-Jan-2008	H	F	0	11	13	2
14-Apr-2008	H	F	50	12	107	0

[1]Tidal Stage. H=High, M=Mid, L=Low.

[2]Tide Direction. R=Rising, F=Falling.

Appendix 2e. Examples of Effective Signs for Migrating and Wintering Piping Plover Conservation


ALCOHOL
CAMPING
DOGS
PROHIBITED
ON ISLAND


CRITICAL
WILDLIFE AREA
CLOSED
TO PUBLIC ACCESS
No vehicles
No entry
No dogs
Pedestrians, vehicles, vessels or dogs are prohibited from entering this area. The take of fish or wildlife within this area is prohibited.
Engaging in any of these activity is a violation of State Law, Chapter 68A-19.005 F.A.C., and violators may be subject to criminal penalties. To report violations, call 888-404-3922.
Funds for this sign provided by the Wildlife Foundation of Florida
Florida Fish and Wildlife Conservation Commission
MyFWC.com


IMPORTANT SHOREBIRD AREA
Migratory shorebirds roost here between October and April
Resident shorebirds nest here on the dry sand between Sept and April
Please enjoy beaches, and by following these simple guidelines, you can help protect our shorebirds too.
Avoid the far ends of the beach during high tide
Please keep your dog under control
Walk and drive below the high tide mark to avoid crushing nests and scaring birds
WWF
Natural Heritage Trust


Save Shorebirds, Share the Beach
Loaf or Die!
Like you, many shorebirds come to the beach to rest and take a break from hectic schedules. For shorebirds, loafing is not lazy. It's life or death. They rest and feed to replenish fat and relax flight muscles before continuing migration. Disturbing these birds just a few times can diminish their chances of survival.
To Share the Beach with Shorebirds:
Keep dogs leashed. Dogs chase exhausted shorebirds and stress nesting birds.
Stay out of areas in or near dunes so you will not accidentally step on chicks or eggs.
Walk or bike around large flocks of birds on the beach, not through them.
Avoid feeding gulls or leaving trash on the beach. Gulls and other predators can be lured to shorebird areas where they eat chicks and eggs.
Spotting Shorebirds
Stay aware so you can give them space.
Shallow Scrapes are Precarious Cradles
Some shorebirds, like Wilson's Plovers, nest on this beach. The plover's nest is a difficult-to-see depression in the sand. The futures of parent plovers and their chicks depend on you. To help, avoid dunes and berms (small sand piles between dunes and beach) where they raise their families. Chicks explore the beach as they mature, so be careful where you step.
Can you find the nesting shorebird in this picture?