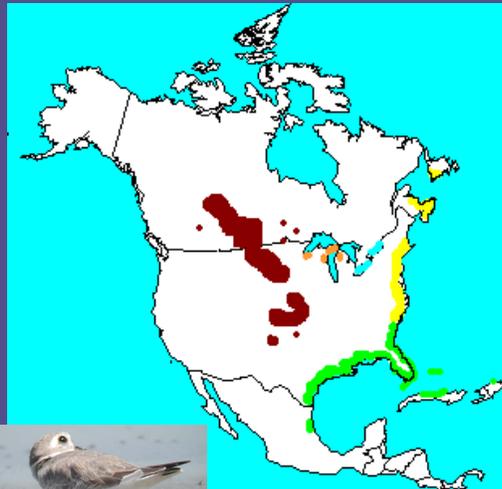


The winter ecology of the Piping Plover (*Charadrius melodus*) in coastal Georgia

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Department of Biology
Georgia Southern University
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- q Atlantic Coast Population
- q Northern Great Plains Population
- q Great Lakes Population
- q Wintering Range (All Populations)

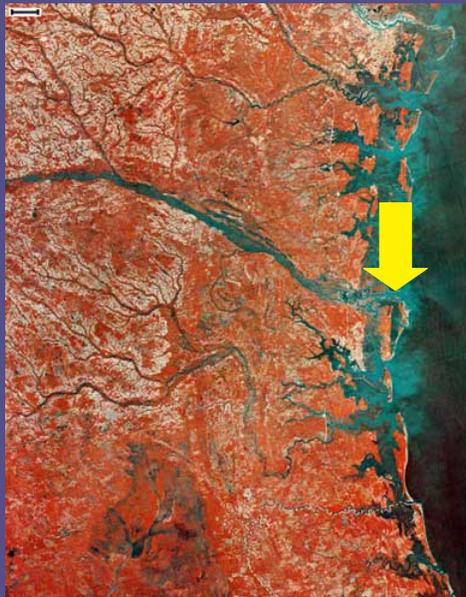
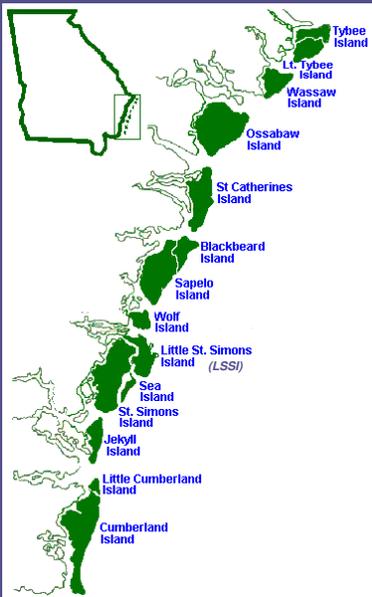


Atlantic Coast
Population

Northern Great Plains
Population



Great Lakes
Population

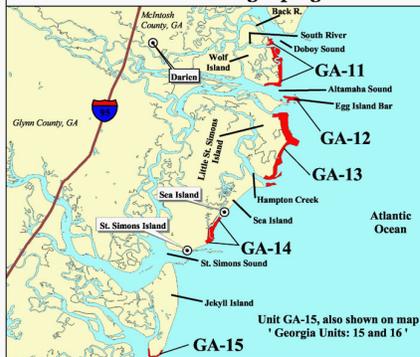


The Western Hemisphere Shorebird Reserve Network (WHSRN)



- WHSRN's Mission is to conserve shorebird species and their habitats across the Americas through a NETWORK of key SITES.
- Little St. Simons Island was recognized as the 40th Shorebird Reserve Site in 2001. It is also labeled as one of the top 500 Important Bird Areas by the American Bird Conservancy!

General locations of the designated critical habitat for the Wintering Piping Plover.



Use Constraints: This map is intended to be used as a guide to identify the general areas where Wintering Piping Plover critical habitat has been designated. Included within the designation of critical habitat are all land areas to the mean lower low water. Refer to the narrative unit descriptions as the precise legal definition of critical habitat.

Georgia Units: 11, 12, 13 and 14

Some locations have been slightly enlarged for display purposes only.

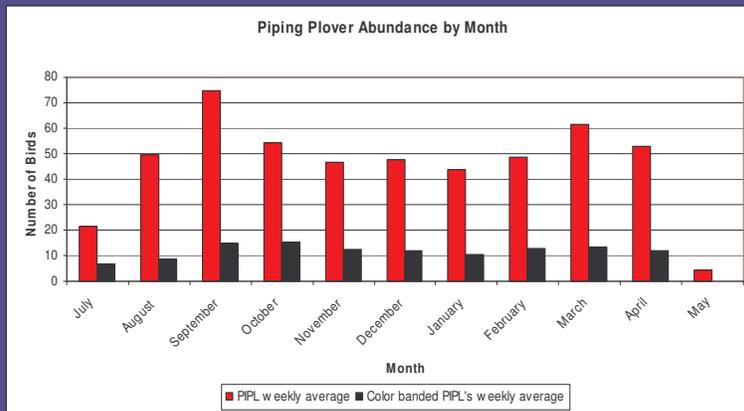
- In 2001, the U.S. Fish and Wildlife Service designated 137 areas as critical habitat for wintering Piping Plovers throughout the continental United States.
- Little St. Simons Island is a privately owned undeveloped barrier Island.

So, what is the purpose of our research and what are we hoping to find?



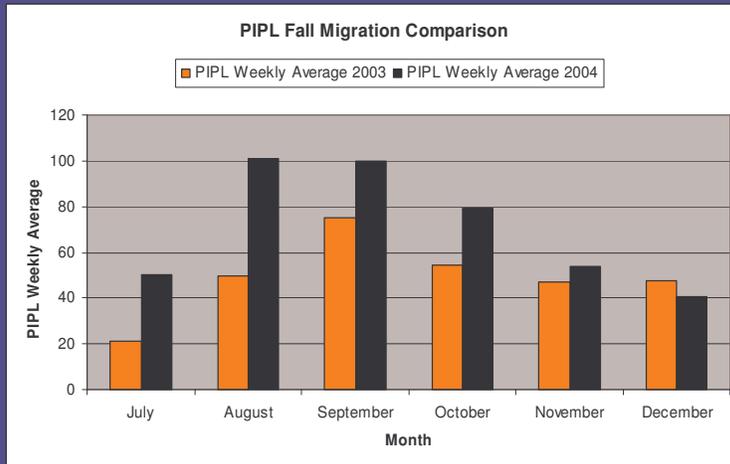
- How many Piping Plovers winter on Little St. Simons Island, and what is the relative abundance of birds from the three breeding populations?
- What are the residence times of the three breeding populations on Little St. Simons Island?
- What is the spatial distribution of Piping Plovers and is there site faithfulness over consecutive seasons for all three breeding populations on Little St. Simons Island?
- Is this spatial distribution related to features of habitat such as beach structure, beach composition, or prey availability?

How many Piping Plovers winter on Little St. Simons Island?



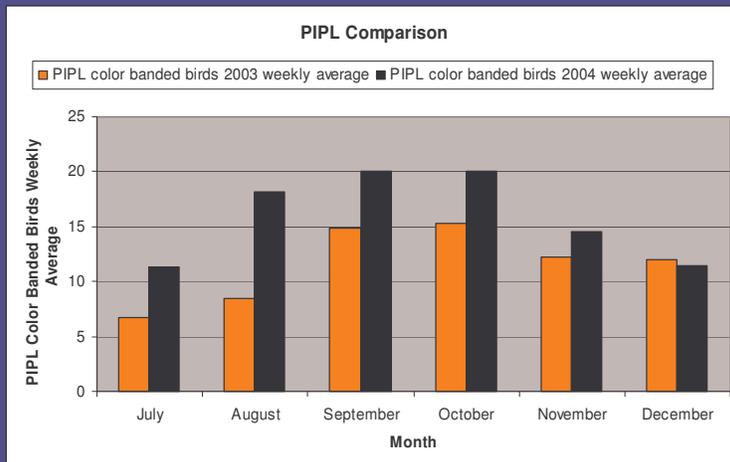
- During the 2003-2004 wintering season, we found a weekly average of 53 Piping Plovers on LSSI.
- The high count during Fall migration (September) was 109.

Was there a difference in the total PIPL's detected during Fall Migration (August – October) between successive years?



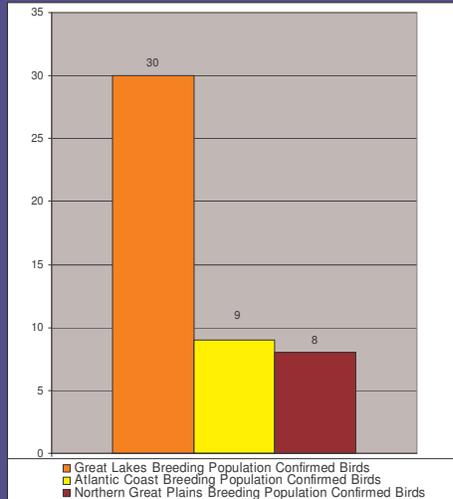
∅ Could this higher detection rate (39.3 %) be true population increases or better sampling technique?

What about color banded PIPL's? Was there more color banded PIPL's detected during the 2004-2005 Fall Migration (July – October)?



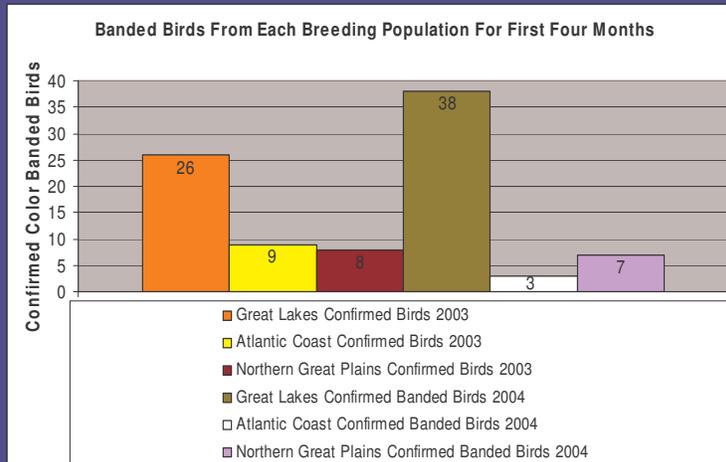
∅ Could this higher detection rate (34.8 %) of color bands be true population increases or more experience reading color band combinations?

What is the relative abundance of Piping Plovers from each of the three breeding populations?



- 30 from the Great Lakes population
- 9 from the Atlantic Coast population
- 8 from the Northern Great Plains population
- wintered on or migrated through LSSI during the 2003-2004 winter season.

Was there a difference in the PIPL's detected from each of the three breeding populations during Fall Migration (August – October) between successive years?



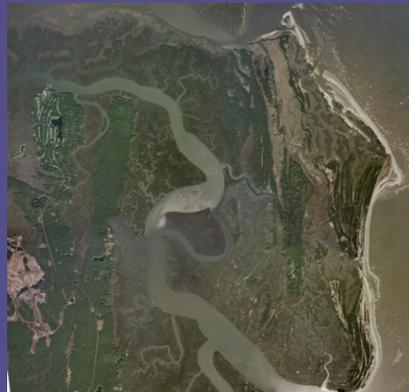
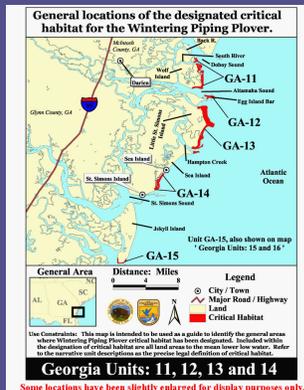
- While fewer Atlantic Coast birds were detected this could be due to the active effort to remove color bands?

What are the residence times of the three breeding populations on Little St. Simons Island?

Wintering Season		2003		-	2004	
Breeding Population	n	Median Arrival Date	Range	n	Median Departure Date	Range
Great Lakes	15	21-Aug	21 Jul - 19 Sep	15	15-Apr	3 Mar - 3 May
Great Plains	3	14-Sep	12 Sep - 19 Sep	3	20-Apr	16 Apr - 24 Apr
Atlantic Coast	2	30-Sep	19 Sep - 10 Oct	2	12-Apr	4 Apr - 20 Apr
Wintering Season		2004		-	2005	
Great Lakes	18	31-Jul	13 Jul - 22 Sep			
Great Plains	4	9-Aug	21 Jul - 23 Aug			
Atlantic Coast	3	9-Aug	31 Jul - 22 Aug			

- q The Great Lakes birds appeared to reside longer than the other two breeding populations.
- q Preliminary data suggest earlier arrival dates for all three populations during the 2004-2005 wintering season.

What is the spatial distribution of Piping Plovers?



- q Little St. Simons Island is an undeveloped barrier Island.
- q Is there variability within different sections of beach?

Spatial Distribution over the 2003 – 2004 Wintering Season (October – February).



Low tide 17.2 PIPL's (n=18)	High tide 7.3 PIPL's (n=6)
Low tide 12.9 PIPL's (n=18)	High tide 21.5 PIPL's (n=6)
Low tide 18.1 PIPL's (n=18)	High tide 15.3 PIPL's (n=6)
Low tide 3.0 PIPL's (n=6)	High tide No data collected

Spatial Distribution over 2003 –2004 migration season (August – September) and (March – April).



Low tide 23.7 PIPL's (n=15)	High tide 11.4 PIPL's (n=7)
Low tide 8.8 PIPL's (n=12)	High tide 37.5 PIPL's (n=11)
Low tide 22.0 PIPL's (n=14)	High tide 14.7 PIPL's (n=10)
Low tide 7.7** PIPL's (n=6)	High tide 11.4** PIPL's (n=4)

** Only surveyed in March and April, not August and September!

Is there site faithfulness over consecutive seasons for all three breeding populations on Little St. Simons Island?

Breeding Population	n	Winter Site Faithful	Migration Site Faithful
Great Lakes	14	10	4
Northern Great Plains	4	2	2
Atlantic Coast		Unknown	Unknown

q 67 % (10/15) of the Great Lakes birds that wintered in 2003-2004 returned to winter within the same section of beach for 2004-2005. **

q 67 % (2/3) of the Northern Great Plains birds returned to winter within the same section of beach for 2004-2005. **

** 2 birds were potential winter mortalities

** The third Great Plains bird died on his breeding grounds in 2004 L



q This Great Lakes breeding male first arrived on 29 July 2003. He was seen 97 % (38/39 sightings) of the time within the same section of beach throughout the 2003-2004 wintering season. He was last seen on 7 April 2004.

q He returned on 17 July 2004. He continues to spend his winter within the same section of beach (30/30 sightings).

q He is the oldest known PIPL on LSSI and was originally banded in 1996.



- q This Great Lakes breeding male first arrived on 21 July 2003. He was seen 89 % (32/36 sightings) of the time around the same section of beach throughout the 2003-2004 wintering season. He was last seen on 14 April 2004.
- q He returned on 18 July 2004. He continues to spend his winter within the same section of beach (25/25 sightings).
- q He was reported on LSSI during the winters of 2000-2001 and 2001-2002.

Is this spatial distribution related to features of habitat such as beach structure, beach composition, or prey availability?



- q Resource sampling and behavioral observations are in progress during the 2004-2005 wintering season.
- q We will address these issues using the following questions:

What could be so attractive about LSSI?

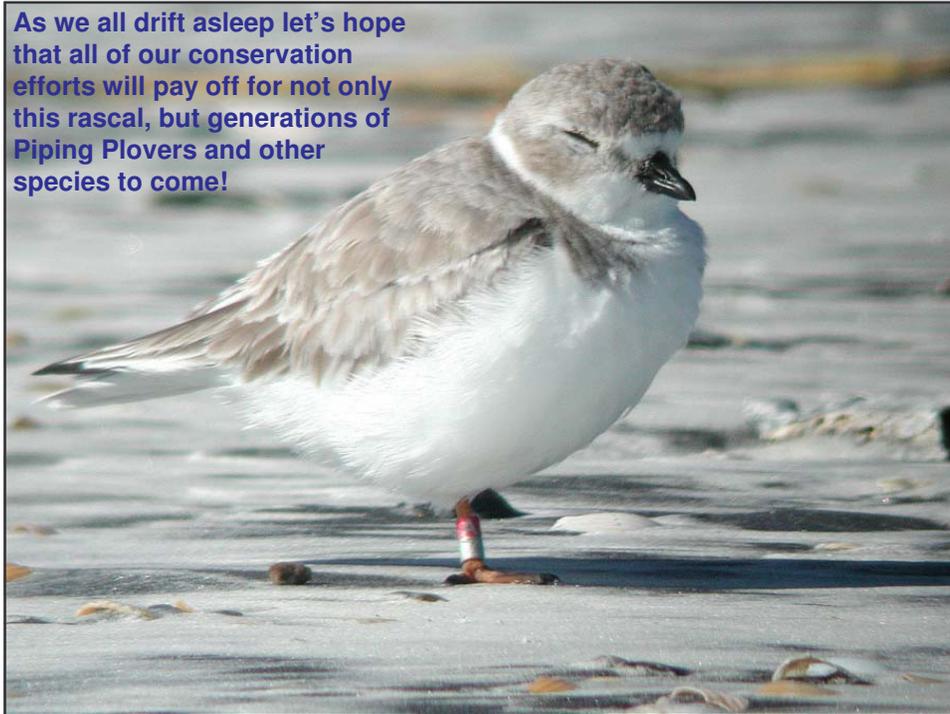


- Due to large tidal amplitudes, LSSI results in large tidal flats.
- Could the sediment size be an indicative marker for detecting optimum PIPL foraging habitat?
- What impact does the Altamaha River Delta have?
- Prey samples and sediment samples are being collected to answer these questions.



- Could the prey availability be higher on different sections of the Island that results in higher density of PIPL's in those areas?
- Within these different sections of the Island, will the PIPL's have different foraging techniques?
- 5-min focal observations are being conducted during the 2004-2005 wintering season to answer these questions.

As we all drift asleep let's hope that all of our conservation efforts will pay off for not only this rascal, but generations of Piping Plovers and other species to come!



Acknowledgments



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- Pat and Doris Leary for pictures of color banded birds and the Georgia Department of Natural Resources for their assistance.
- This project couldn't have been done without the permission of the Lodge on Little St. Simons Island.
- Thank you to Clay George, Pat and Doris Leary, Amy Logan, Duane Noel, and Andrew Grosse for assistance in the field.

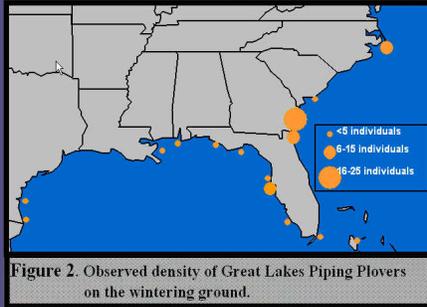


Figure 2. Observed density of Great Lakes Piping Plovers on the wintering ground.

- q These figures were produced by Jennifer Stucker.
- q Fig. 2 Great Lakes distribution over the Atlantic and Gulf coast. (>35 GL birds have wintered on GA coast 1995-2003.)
- q Figure 3 displays 7 birds showing site fidelity in successive years.
- q ~230 banded birds in Atlantic Coast, ~180 banded birds in Great Lakes, and ~350 Great Plains banded birds.



Figure 3. Site fidelity of Great Lakes Piping Plovers during migration and winter. This map shows the distribution of individual Great Lakes Piping Plovers reported within ~2 kilometers of the same location in successive years.