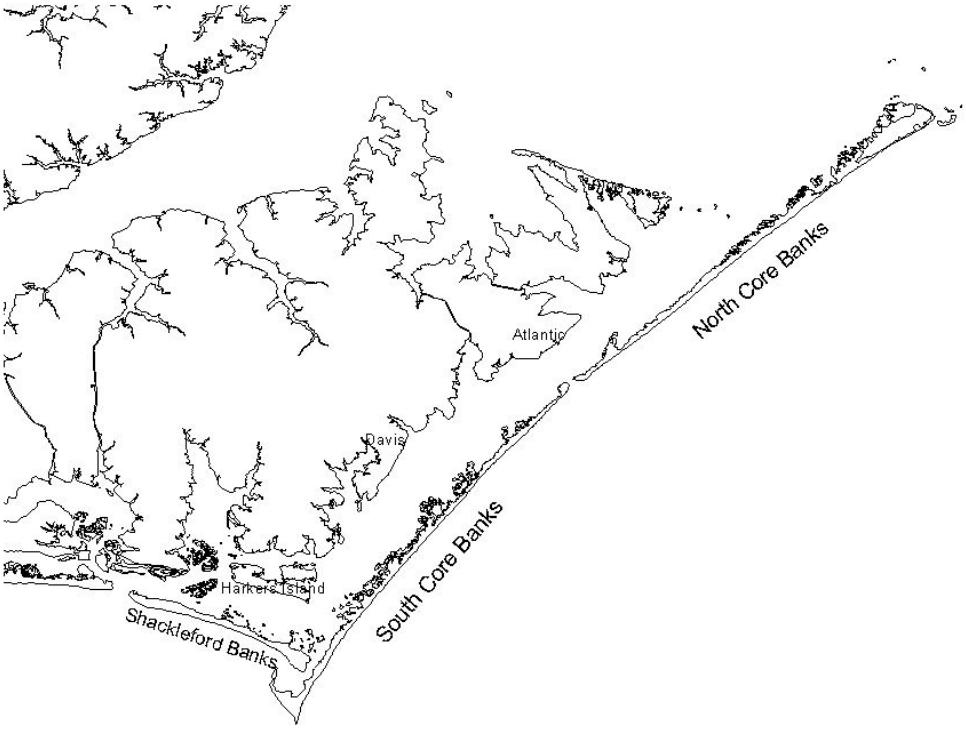
# RED KNOT (*Calidris canutus*) MONITORING AT CAPE LOOKOUT NATIONAL SEASHORE

## 2007 SUMMARY REPORT




NATIONAL PARK SERVICE
CAPE LOOKOUT NATIONAL SEASHORE
131 CHARLES STREET
HARKERS ISLAND, NC 28531

## Introduction

Serious declines in the population of red knots (*Calidrus canutus*) led to several petitions to the U.S. Fish and Wildlife Service for protection under the Endangered Species Act. In September 2006 the red knot was designated as a candidate for Endangered Species Act protection (Federal Register, 2006). Red knots use the Outer Banks of North Carolina as a stopover site in spring and fall migration. While not as important as some other coastal sites, the Outer Banks may still contribute to the survival of this species.

Previous monitoring of red knots at Cape Lookout National Seashore (CALO) was limited to surveys as part of a broader shorebird study in 1992 and 1993. North Core Banks had greater numbers of red knots than other areas in the Outer Banks (Dinsmore and Collazo, 1995) but surveys in that study did not include any of the areas south of New Drum Inlet.

This report contains a summary of monitoring results for 2007 and comparisons to results from the earlier study and discussions of long-term monitoring of red knots at CALO.

## Methods

Surveys for red knots were made of the entire ocean beach and inlet areas on North Core Banks, South Core Banks and Shackleford Banks beginning in mid-March. The area between Old Drum Inlet and Ophelia Inlet was not monitored (Figure 1).

Our survey frequency and timing followed the International Shorebird Census guidelines for spring and fall. Counts were done near the 5$^{th,}$ 15$^{th,}$ and 25$^{th}$ of the month from March 15$^{th}$ to June 15$^{th}$ and from July 15$^{th}$ to October 15$^{th}$.

Surveys were conducted by the park biologist or biological science technicians with experience identifying shorebirds. Surveys were at different times of day, tides and weather conditions. Monitors recorded the number of red knots observed, the mile location, the latitude and longitude, the amount of human disturbance, tide level and the accuracy of the count (See Appendix 1).

The early spring counts were missed due to staff turn over. Counts began on May 15$^{th}$, 2007. The June 15$^{th}$ count was missed. Results were entered in a Microsoft Access database and mapped using ArcMap 9.2.

## Results

Most of the red knots counted during our surveys were found on North Core Banks with an average of 103 birds found. South Core Banks averaged 66 birds and Shackleford Banks only 18. The peak numbers were during spring migrations with 1396 birds counted in the May 15 census. There was also a small peak in August and September when fall migrants moved through (Figure 2). No banded red knots were observed

during our surveys. Red knots were distributed over the entire length of the seashore (Figure3).

## Discussion

Our monitoring confirmed the importance of the seashore as a stopover site for red knots, particularly during spring migration. The relative abundance of red knots on North Core Banks during peak spring migration was 24 birds/kilometer compared to 34 birds/kilometer in 1992-1993. The island likely has the greatest number of knots in the Outer Banks. Although the Outer Banks may not be as important as some other sites in the region, the area still provides habitat that may be important for the recovery and long-term survival of red knots.

The methods used in this study would be easy to replicate with just a few trained monitors. Red knot surveys should continue to be integrated into the park's long-term monitoring program.

## Literature Cited

Dinsmore, S.J. and J.A. Collazo. 1995. Seasonal numbers, distribution and population dynamics of shorebirds on the outer banks of North Carolina. In Factors Affecting Reproduction and Migration of Waterbirds on the North Carolina Barrier Islands. Final Report to the National Park Service.

# Figure 1. Areas Surveyed for Red Knots

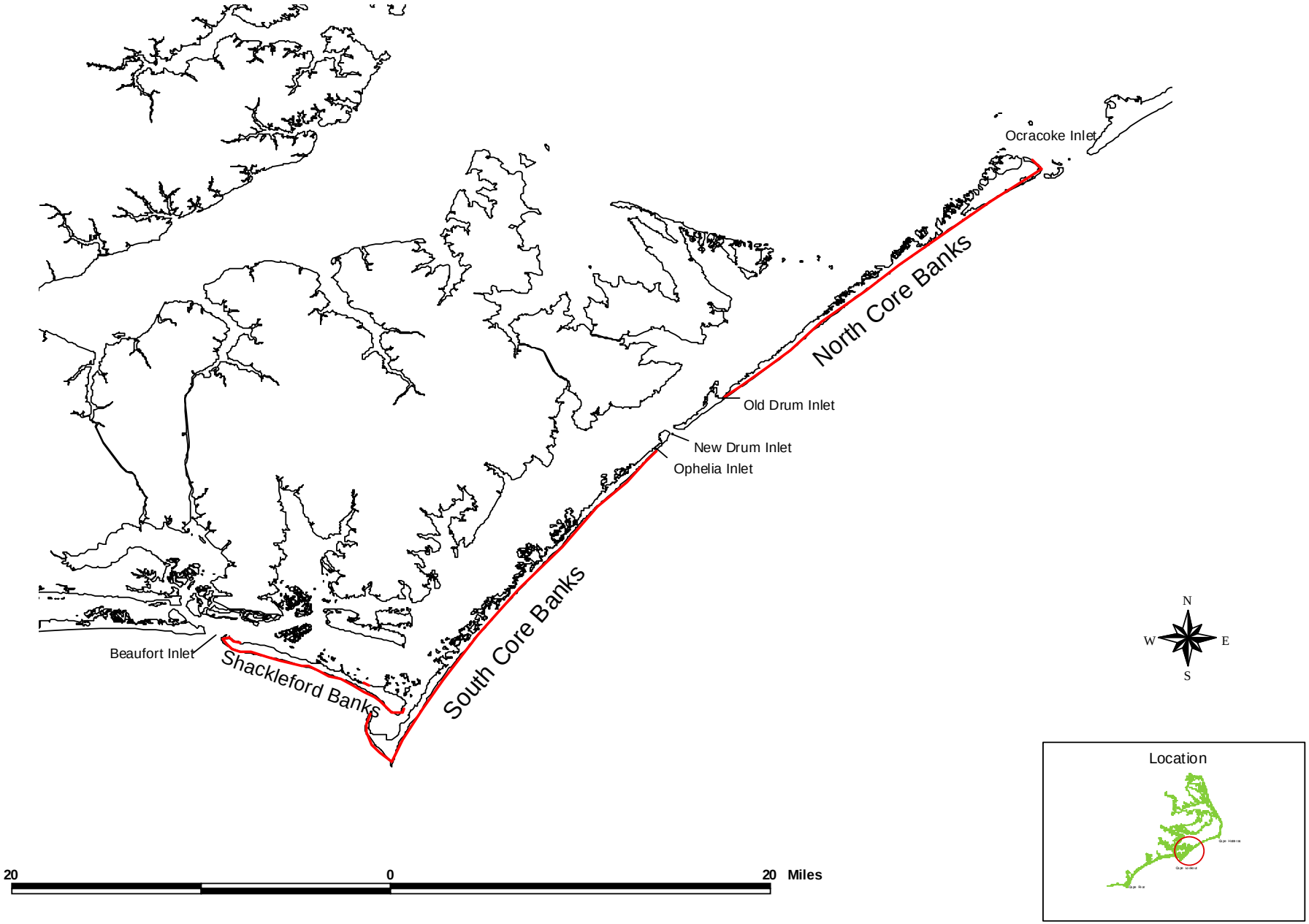


**Figure 2. Number of Red Knots Counted at Cape Lookout National Seashore in 2007**

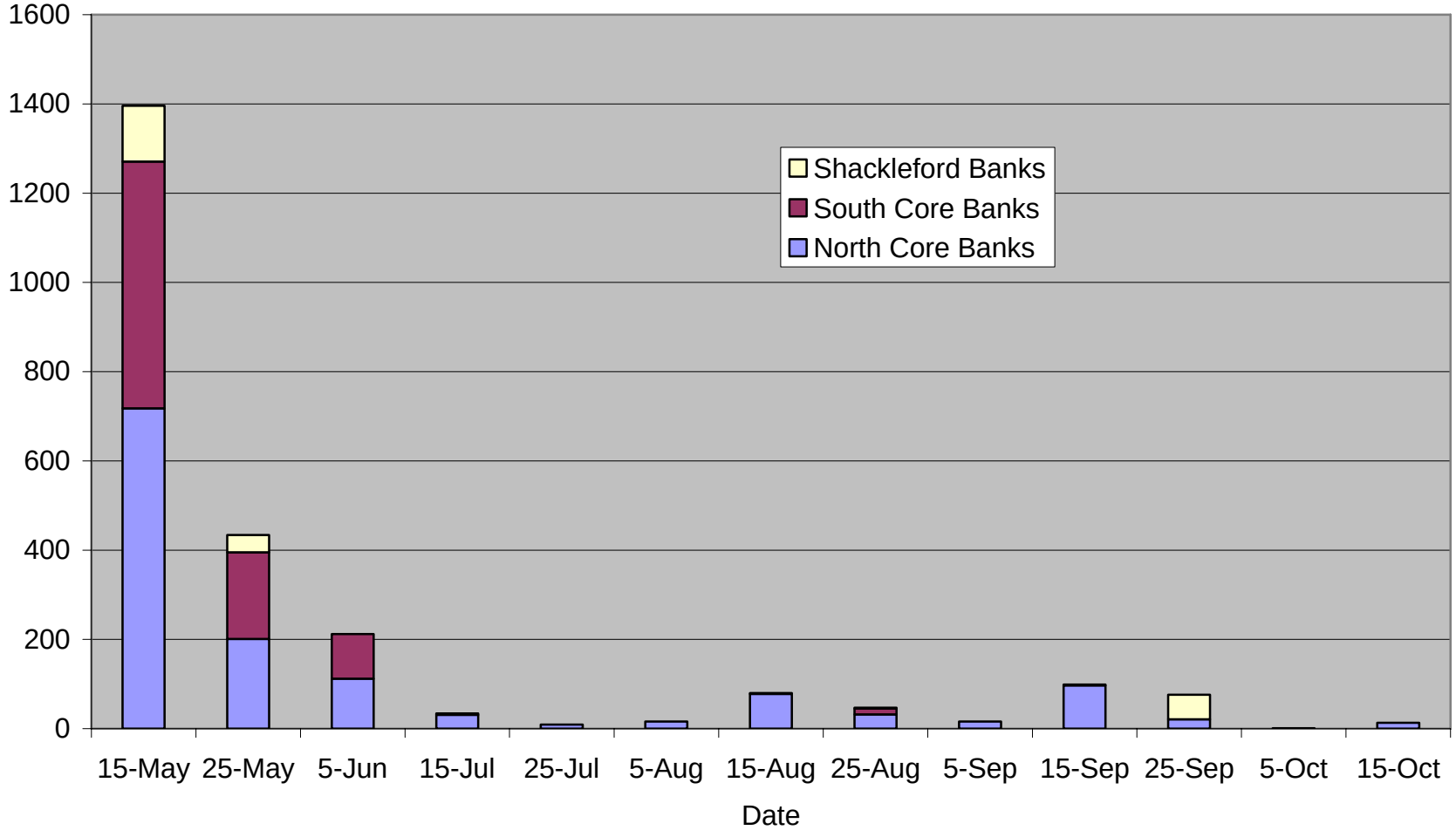
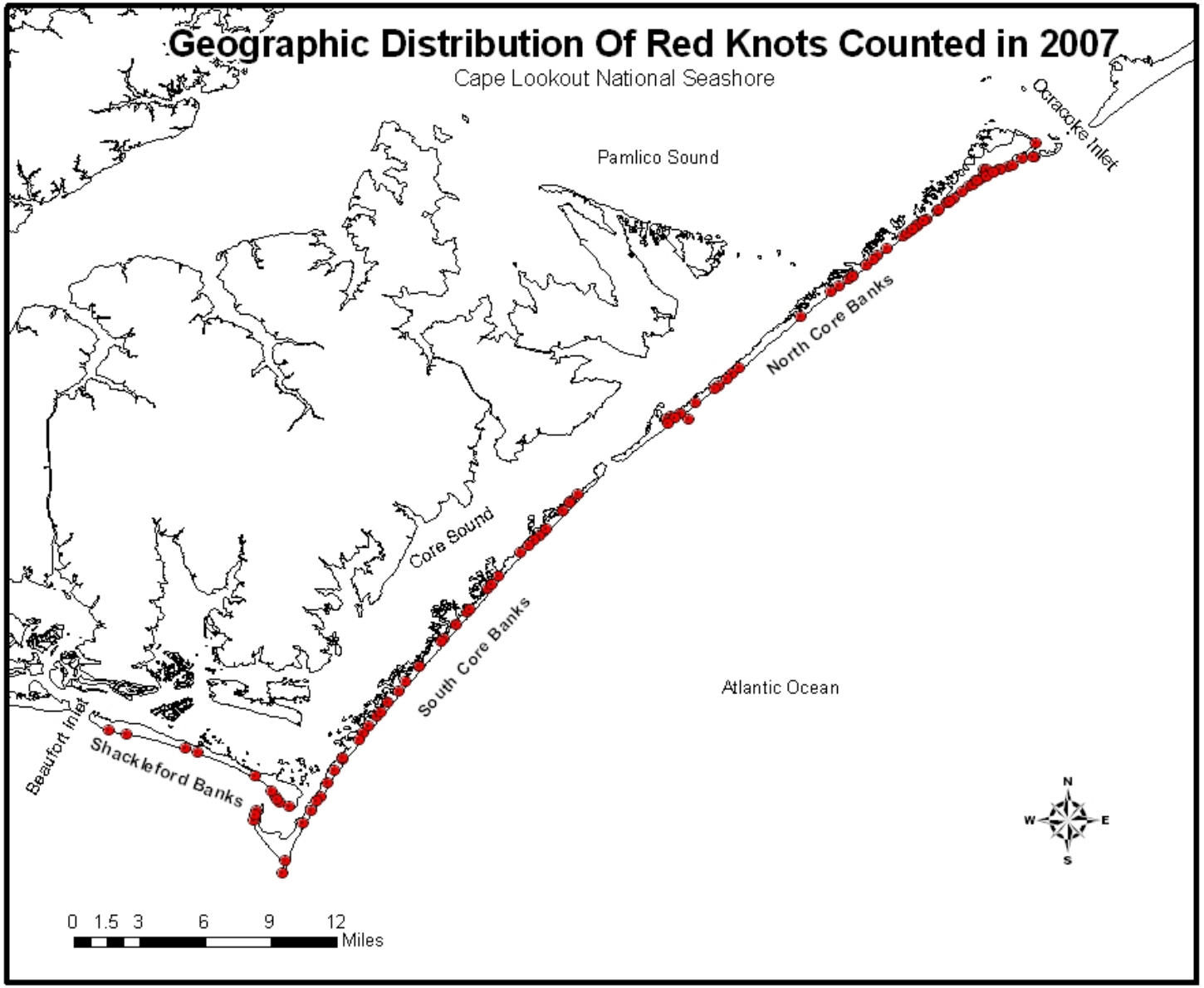


Figure 3. Geographic Distribution of Red Knots Counted in 2007.



**Appendix 1**

**RED KNOT (*Calidris canutus)* SURVEY DATA SHEET**
**Cape Lookout National Seashore**

Name of Observer:_____

Date_____ Island_____

| # of REKN | Mile | Latitude (decimal degrees) | Longitude (decimal degrees) | Human Disturbance | Tide | Accuracy |
|---|---|---|---|---|---|---|
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Human disturbance: During this census, shorebirds were:
A=undisturbed, B=disturbed 1-2 times, C=3-4 times, D=5-10 times, E=>10 times, X= unknown

TIDE (coastal sites): 1=high, 2=near high/RISING, 3=near high/ FALLING,
4=half/RISING,5=half/FALLING, 6=near low/RISING, 7=near low/FALLING, 8=LOW, 9=unknown.

ACCURACY: Please indicate in each block whether your count is:
* a true count, ** an extrapolated estimate, or circle a "guestimate"

Appendix 2. 2007 Red Knot Survey Data

| Month | Day | Observer | Island | # REKN | Mile | Latitude | Longitude | Disturbance | Tide | Accuracy |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 15 | Martin | SCB | 19 | 37 | 34.67833 | -76.48197 | A | 7 | * |
| 5 | 15 | Martin | SCB | 47 | 38.4 | 34.66134 | -76.49608 | A | 7 | * |
| 5 | 15 | Martin | SCB | 102 | 39 | 34.65333 | -76.5013 | A | 7 | * |
| 5 | 15 | Martin | SCB | 89 | 40 | 34.63696 | -76.51068 | A | 7 | * |
| 5 | 15 | Martin | SCB | 8 | 41.6 | 34.61952 | -76.52191 | A | 7 | * |
| 5 | 15 | Martin | SCB | 56 | 24 | 34.82225 | -76.35058 | A | 7 | * |
| 5 | 15 | Martin | SCB | 22 | 25.7 | 34.80931 | -76.36334 | A | 7 | * |
| 5 | 15 | Martin | SCB | 15 | 27 | 34.79515 | -76.37839 | A | 7 | * |
| 5 | 15 | Martin | SCB | 8 | 28.3 | 34.78035 | -76.39255 | A | 7 | * |
| 5 | 15 | Martin | SCB | 18 | 30.3 | 34.75673 | -76.41346 | A | 7 | * |
| 5 | 15 | Martin | SCB | 20 | 31 | 34.74854 | -76.42086 | A | 7 | * |
| 5 | 15 | Martin | SCB | 37 | 32 | 34.73935 | -76.42938 | A | 7 | * |
| 5 | 15 | Martin | SCB | 22 | 33.3 | 34.72177 | -76.44522 | A | 7 | * |
| 5 | 15 | Martin | SCB | 37 | 34 | 34.71139 | -76.45409 | A | 7 | * |
| 5 | 15 | Martin | SCB | 11 | 35.3 | 34.69785 | -76.46592 | A | 7 | * |
| 5 | 15 | Martin | SCB | 42 | 36 | 34.68938 | -76.47316 | A | 7 | * |
| 5 | 15 | Sayles | NCB | 222 | 3 | 35.03777 | -76.07703 | C | 8 | * |
| 5 | 15 | Sayles | NCB | 55 | 1 | 35.05235 | -76.04667 | C | 8 | * |
| 5 | 15 | Sayles | NCB | 17 | 4.5 | 35.02353 | -76.09569 | C | 8 | * |
| 5 | 15 | Sayles | NCB | 36 | 5 | 35.01819 | -76.10305 | C | 8 | * |
| 5 | 15 | Sayles | NCB | 68 | 6.05 | 35.00794 | -76.11638 | C | 8 | * |
| 5 | 15 | Sayles | NCB | 34 | 6.7 | 35.00157 | -76.12505 | C | 8 | * |
| 5 | 15 | Sayles | NCB | 19 | 8 | 34.98882 | -76.14207 | D | 8 | * |
| 5 | 15 | Sayles | NCB | 94 | 10 | 34.96906 | -76.16789 | D | 8 | * |
| 5 | 15 | Sayles | NCB | 56 | 12 | 34.94909 | -76.19345 | D | 8 | * |
| 5 | 15 | Sayles | NCB | 48 | 18.2 | 34.88609 | -76.27284 | D | 8 | * |
| 5 | 15 | Sayles | NCB | 69 | 18.8 | 34.88089 | -76.28046 | D | 8 | * |
| 5 | 18 | Sayles | SB | 125 | 47 | 34.62712 | -76.55304 | A | 2 | * |
| 5 | 25 | Sayles | SB | 1 | 47.28 | 34.63002 | -76.5309 | A | 7 | * |
| 5 | 25 | Sayles | SB | 27 | 47.99 | 34.63279 | -76.53711 | A | 7 | * |
| 5 | 25 | Sayles | SB | 9 | 51.79 | 34.66815 | -76.59954 | A | 4 | * |
| 5 | 25 | Sayles | SB | 2 | 54.7 | 34.67994 | -76.65038 | A | 2 | * |
| 5 | 25 | Martin | SCB | 25 | 24 | 34.82887 | -76.3448 | A | 7 | * |
| 5 | 25 | Martin | SCB | 12 | 25.9 | 34.80661 | -76.36591 | A | 8 | * |
| 5 | 25 | Martin | SCB | 10 | 26.2 | 34.80349 | -76.36908 | A | 6 | * |
| 5 | 25 | Martin | SCB | 40 | 29 | 34.77182 | -76.40033 | A | 6 | * |
| 5 | 25 | Martin | SCB | 14 | 30.1 | 34.75868 | -76.41157 | A | 6 | * |
| 5 | 25 | Martin | SCB | 8 | 32 | 34.73808 | -76.43046 | A | 6 | * |
| 5 | 25 | Martin | SCB | 7 | 33.3 | 34.72137 | -76.44545 | A | 6 | * |
| 5 | 25 | Martin | SCB | 13 | 34.7 | 34.70559 | -76.45909 | A | 6 | * |
| 5 | 25 | Martin | SCB | 14 | 35.8 | 34.69195 | -76.47069 | A | 6 | * |
| 5 | 25 | Martin | SCB | 6 | 37.3 | 34.674 | -76.48541 | A | 6 | * |

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|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 25 | Martin | SCB | 5 | 38.3 | 34.66194 | -76.49543 | A | 6 | * |
| 5 | 25 | Martin | SCB | 13 | 39.6 | 34.64527 | -76.50585 | A | 6 | * |
| 5 | 25 | Martin | SCB | 5 | 40.5 | 34.63387 | -76.51257 | A | 6 | * |
| 5 | 25 | Martin | SCB | 11 | 41 | 34.62786 | -76.51635 | A | 6 | * |
| 5 | 25 | Martin | SCB | 9 | 43.4 | 34.59522 | -76.53337 | A | 6 | * |
| 5 | 25 | Martin | SCB | 2 | 46.6 | 34.62079 | -76.55418 | A | 6 | * |
| 5 | 25 | Schulte | NCB | 9 | 17.5 | | | B | 6 | * |
| 5 | 25 | Schulte | NCB | 6 | 7.7 | 34.99345 | -76.13577 | B | 6 | * |
| 5 | 25 | Schulte | NCB | 27 | 5.8 | 35.00912 | -76.11506 | A | 6 | * |
| 5 | 25 | Schulte | NCB | 16 | 5.4 | 35.01199 | -76.11135 | A | 6 | * |
| 5 | 25 | Schulte | NCB | 30 | 4.8 | 35.01917 | -76.10178 | B | 6 | * |
| 5 | 25 | Schulte | NCB | 46 | 4.1 | 35.02642 | -76.09195 | A | 6 | * |
| 5 | 25 | Schulte | NCB | 7 | 2.2 | 35.0419 | -76.06805 | A | 6 | * |
| 5 | 25 | Schulte | NCB | 24 | 2.1 | 35.04351 | -76.06541 | B | 6 | * |
| 5 | 25 | Schulte | NCB | 17 | 2 | 35.04514 | -76.06104 | A | 6 | * |
| 5 | 25 | Schulte | NCB | 19 | 1.7 | 35.04652 | -76.05611 | A | 6 | * |
| 6 | 5 | Sayles | NCB | 5 | 18.24 | 34.88633 | -76.27255 | B | | * |
| 6 | 5 | Sayles | NCB | 8 | 10.38 | 34.96531 | -76.17279 | A | | * |
| 6 | 5 | Sayles | NCB | 13 | 9.29 | 34.97595 | -76.15861 | A | | * |
| 6 | 5 | Sayles | NCB | 21 | 8.58 | 34.98297 | -76.14947 | A | | * |
| 6 | 5 | Sayles | NCB | 12 | 6.29 | 35.00561 | -76.11998 | A | | * |
| 6 | 5 | Sayles | NCB | 4 | 4.5 | 35.02317 | -76.09654 | A | | * |
| 6 | 5 | Sayles | NCB | 11 | 3.38 | 35.03382 | -76.08166 | A | | * |
| 6 | 5 | Sayles | NCB | 38 | 2.54 | 35.04125 | -76.07006 | A | | * |
| 6 | 6 | Martin | SCB | 6 | 23.2 | 34.83354 | -76.34015 | B | 6 | * |
| 6 | 6 | Martin | SCB | 15 | 24 | 34.828 | -76.34556 | A | 6 | * |
| 6 | 6 | Martin | SCB | 11 | 25.5 | 34.81103 | -76.36153 | A | 6 | * |
| 6 | 6 | Martin | SCB | 43 | 26.5 | 34.80009 | -76.37294 | A | 6 | * |
| 6 | 6 | Martin | SCB | 6 | 28.7 | 34.77509 | -76.39762 | B | 6 | * |
| 6 | 6 | Martin | SCB | 2 | 36.6 | 34.68272 | -76.47838 | A | 6 | * |
| 6 | 6 | Martin | SCB | 5 | 44 | 34.58705 | -76.53561 | A | 6 | * |
| 6 | 6 | Martin | SCB | 12 | 46.8 | 34.6245 | -76.55406 | A | 2 | * |
| 6 | 8 | Sayles | SB | 0 | | | | | 3 | * |
| 7 | 14 | Sayles | SB | 3 | 47.97 | 34.63651 | -76.54030 | A | 8 | * |
| 7 | 15 | Tracy | NCB | 2 | 8.26 | 34.98621 | -76.14530 | A | 1 | * |
| 7 | 15 | Tracy | NCB | 3 | 2.1 | 35.04476 | -76.07200 | A | 1 | * |
| 7 | 15 | Tracy | NCB | 26 | 2.6 | 35.04123 | -76.07200 | A | 1 | * |
| 7 | 15 | Martin | SCB | 0 | | | | | | |
| 7 | 25 | Rikard | SCB | 0 | | | | | | |
| 7 | 25 | Sayles | NCB | 9 | 4 | 35.02317 | -76.09654 | A | 7 | * |
| 7 | 27 | Sayles | SB | 0 | | | | | | |
| 8 | 3 | Sayles | SB | 0 | | | | | | |
| 8 | 5 | Tracy | NCB | 2 | 6.5 | 35.00864 | -76.11632 | A | 6 | * |
| 8 | 5 | Tracy | NCB | 1 | 3.2 | 35.03928 | -76.07258 | A | 6 | * |
| 8 | 5 | Tracy | NCB | 13 | 0 | 35.05297 | -76.03884 | A | 6 | * |
| 8 | 6 | Martin | SCB | 0 | | | | | | |
| 8 | 15 | Altman | SCB | 0 | | | | | | |
| 8 | 15 | Sayles | NCB | 12 | 18.64 | 34.88402 | -76.27897 | A | 4 | * |
| 8 | 15 | Sayles | NCB | 8 | 17.86 | 34.88197 | -76.26730 | A | 4 | * |

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|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 15 | Sayles | NCB | 10 | 16.37 | 34.90406 | -76.24761 | A | 4 | * |
| 8 | 15 | Sayles | NCB | 12 | 3.2 | 35.03543 | -76.07905 | A | 4 | * |
| 8 | 15 | Sayles | NCB | 11 | 2.93 | 35.03776 | -76.07555 | A | 4 | * |
| 8 | 15 | Sayles | NCB | 18 | 2.55 | 35.04499 | -76.07000 | A | 4 | * |
| 8 | 15 | Sayles | NCB | 6 | 2.09 | 35.04477 | -76.06225 | A | 4 | * |
| 8 | 15 | Sayles | NCB | 1 | 0.57 | 35.05293 | -76.03911 | A | 4 | * |
| 8 | 17 | Sayles | SB | 2 | 48.54 | 34.64993 | -76.55406 | A | 4 | * |
| 8 | 24 | Altman | SCB | 6 | 38 | | | B | 2 | * |
| 8 | 24 | Altman | SCB | 7 | 39 | | | B | 2 | * |
| 8 | 24 | Sayles | SB | 2 | 47.7 | 34.63507 | -76.53915 | A | 6 | * |
| 8 | 25 | Tracy | NCB | 5 | 18 | 34.88237 | -76.28131 | A | 3 | * |
| 8 | 25 | Tracy | NCB | 13 | 4.4 | 35.02405 | -76.09488 | B | 3 | * |
| 8 | 25 | Tracy | NCB | 10 | 2.6 | 35.04072 | -76.07036 | B | 3 | * |
| 8 | 25 | Tracy | NCB | 4 | 1.8 | 35.04506 | -76.06078 | A | 3 | * |
| 9 | 5 | Altman | SCB | 0 | | | | | | |
| 9 | 5 | Sayles | NCB | 3 | 17 | | | A | 7 | * |
| 9 | 5 | Sayles | NCB | 13 | 4 | | | B | 6 | * |
| 9 | 7 | Sayles | SB | 0 | | | | | | |
| 9 | 14 | Sayles | SB | 2 | 54 | 34.67731 | -76.63849 | A | 3 | * |
| 9 | 15 | Tracy | NCB | 3 | | 34.88348 | -76.27646 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 6 | | 34.90252 | -76.24963 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 7 | | 34.91171 | -76.23817 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 4 | | 34.91545 | -76.23355 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 7 | | 34.97376 | -76.16138 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 6 | | 35.00345 | -76.12267 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 6 | | 35.06629 | -76.11880 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 12 | | 35.01258 | -76.11041 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 10 | | 35.03735 | -76.07626 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 8 | | 35.04307 | -76.06595 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 23 | | 35.04763 | -76.05306 | A | 2 | * |
| 9 | 15 | Tracy | NCB | 5 | | 35.06174 | -76.03785 | A | 2 | * |
| 9 | 17 | Altman | SCB | 0 | | | | | | |
| 9 | 25 | Altman | SCB | 0 | | | | | | |
| 9 | 25 | Tracy | NCB | 1 | | 34.87993 | -76.28091 | A | 8 | * |
| 9 | 25 | Tracy | NCB | 5 | | 34.89316 | -76.26248 | A | 8 | * |
| 9 | 25 | Tracy | NCB | 6 | | 34.90867 | -76.24161 | A | 8 | * |
| 9 | 25 | Tracy | NCB | 6 | | 35.01146 | -76.11192 | A | 8 | * |
| 9 | 25 | Tracy | NCB | 3 | | 35.03033 | -76.08633 | A | 8 | * |
| 9 | 28 | Sayles | SB | 25 | 48 | 34.64017 | -76.54239 | A | 1 | * |
| 9 | 28 | Sayles | SB | 30 | 51.3 | 34.66573 | -76.59152 | A | 3 | * |
| 10 | 3 | Altman | NCB | 0 | | | | A | 2 | * |
| 10 | 4 | Altman | SB | 0 | | | | | 1 | * |
| 10 | 5 | Altman | SCB | 1 | 38 | | | A | 1 | * |
| 10 | 15 | Altman | NCB | 13 | 9 | 34.97575 | -76.15882 | B | 1 | * |
| 10 | 16 | Altman | SCB | 0 | | | | | | |
| 10 | 17 | Altman | SB | 0 | | | | | | |
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