

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

2017 SUMMARY REPORT



A flagged Red Knot GF (CPM) and Sanderling Foraging in the Intertidal Zone on North Core Banks. NPS Photo 2015

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Introduction

Serious declines in the population of red knots (*Calidrus canutus rufa*) led the U.S. Fish and Wildlife Service (USFWS) to provide protection under the Endangered Species Act. In December 2014, the red knot was designated as a threatened species (USFWS, 2014). 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 anywhere else in the Outer Banks (Dinsmore et al, 1998) 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 2017, comparisons to results from earlier studies and discussion 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 (NCB) and South Core Banks (SCB) beginning in mid-March. The area between Old Drum Inlet and Ophelia Inlet was not monitored in 2017.

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

Surveys were conducted by the park biologist or biological science technicians who have 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).

Results

Most of the red knots counted during our surveys were found on NCB with an average of 218 birds per count. SCB averaged 86 birds per count. NCB had the highest count of 1,240 birds on May 5. SCB highest count of 637 birds was on May 15. The peak numbers for the core banks were during spring migration with 1,741 birds counted during the May 15 census. The spring migration from 15 March to 5 June averaged 612 birds. There was also a small peak in early August of fall migrants (Figure 1). The fall migration from 15 July to 25 October averaged 87 birds. Red knots were distributed over the length of the core banks (Figures 2 & 3)

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 58 birds/ kilometer compared to 34 birds/ kilometer in 1992-1993, Table 1 (Dinsmore et al, 1998). This is the fourth highest relative abundance recorded. Relative abundance has fluctuated for this migratory species from a low of 14 in 2009 to a high of 89 in 2014. Peak counts during spring migration ranged from April 25 to May 25. NCB has averaged more birds overall and had the highest peak counts. Monitoring data from 2006 to 2017 reveals the highest counts consistently occurred from Ocracoke Inlet to mile 7 on NCB; from Ophelia Inlet to mile 28, and mile 43-44 on SCB. Figure 4 illustrates the counts by mile section for the last 12 years of monitoring and Appendix 2 contains this data. Although the Outer Banks may not be as important as some other sites in the region such as Delaware Bay, the area still provides habitat that may be important for the recovery and long-term survival of red knots.

Table 1. Red knot Relative Abundance on North Core Banks, 1992-2017.

Year	Date	Peak Count	Kilometers	Relative Abundance
1992-1993			34	34
2006	5-May	618	30.3	20
2007	15-May	718	30.6	23
2008	15-Apr	1287	30.6	42
2009	25-May	525	36	14
2010	15-May	927	36	26
2011	15-May	648	36	18
2012	25-April	1370	29.8	46
2013	25-May	854	29.8	29
2014	15-May	2666	29.8	89
2015	15-May	2201	29.8	74
2016	15-May	2124	29.8	71
2017	15-May	1741	29.8	58

Literature Cited

Dinsmore, S.J., J.A. Collazo, and J.R. Walters. 1998. Seasonal numbers and distribution of shorebirds on North Carolina's Outer Banks. *Wilson Bulletin* 110:171-182.

U.S. Fish and Wildlife Service. 2014. Determination of Threatened and Endangered status of the Rufa Red Knot. *Federal Register* Vol.79 No.238:73706-73748.

Figure 1. Number of Red Knots Counted at Cape Lookout National Seashore in 2017.

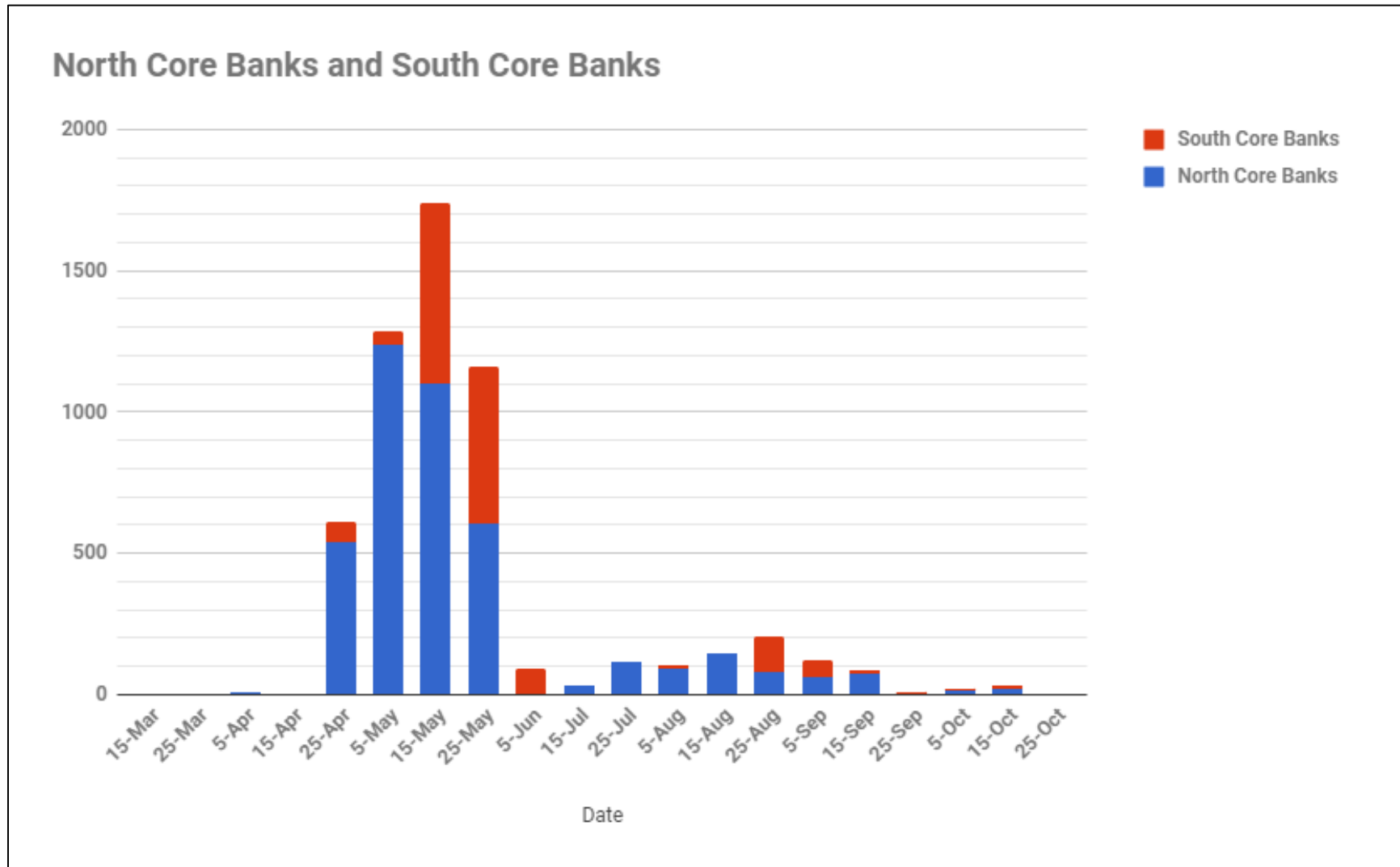


Figure 2. Geographic Distribution of Red Knots Counted on North Core Banks with Total Counts per Mile Section (# 555) in 2017.

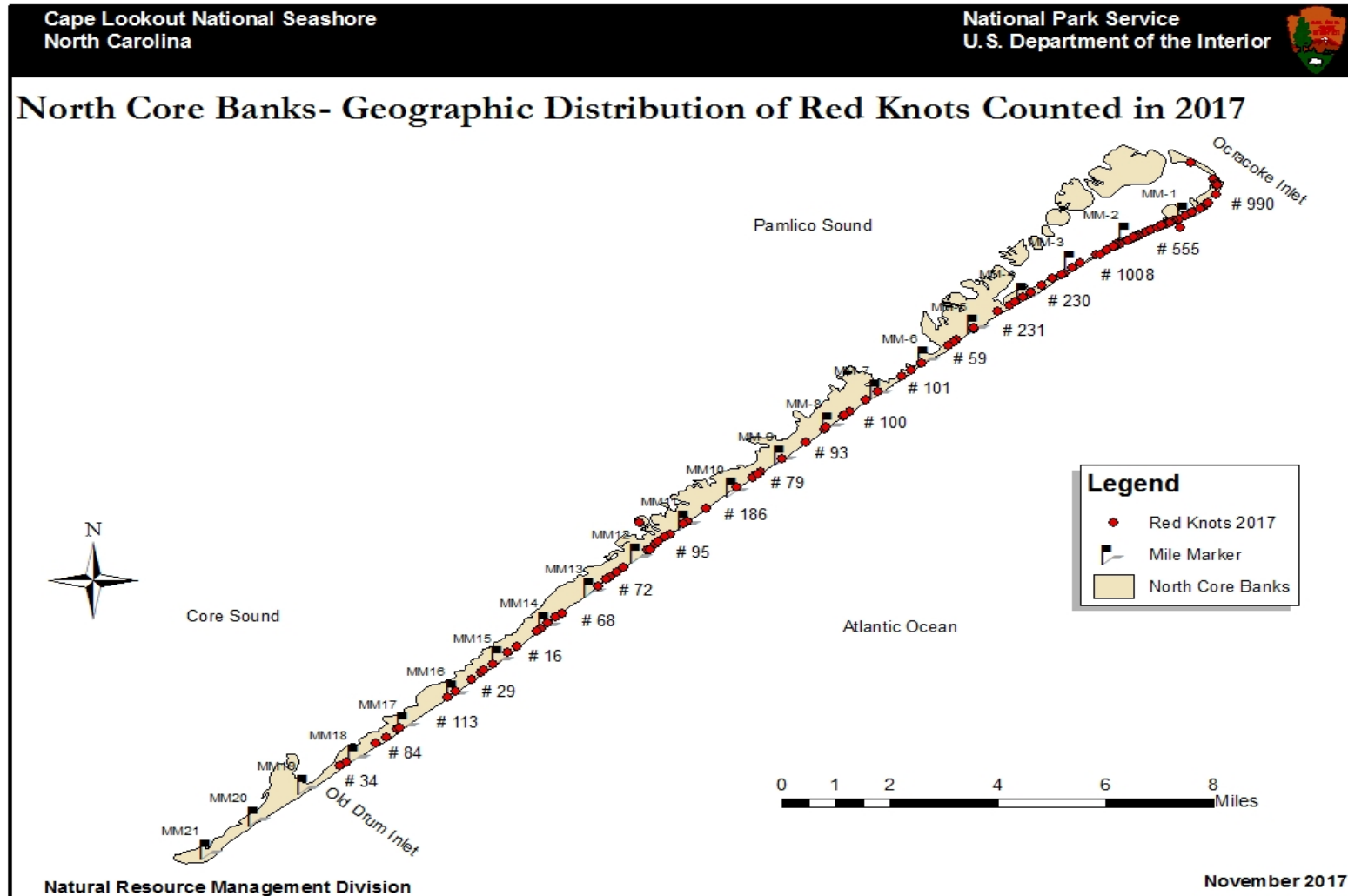


Figure 3. Geographic Distribution of Red Knots Counted on South Core Banks with Total Counts per Mile Section (# 14) in 2017.

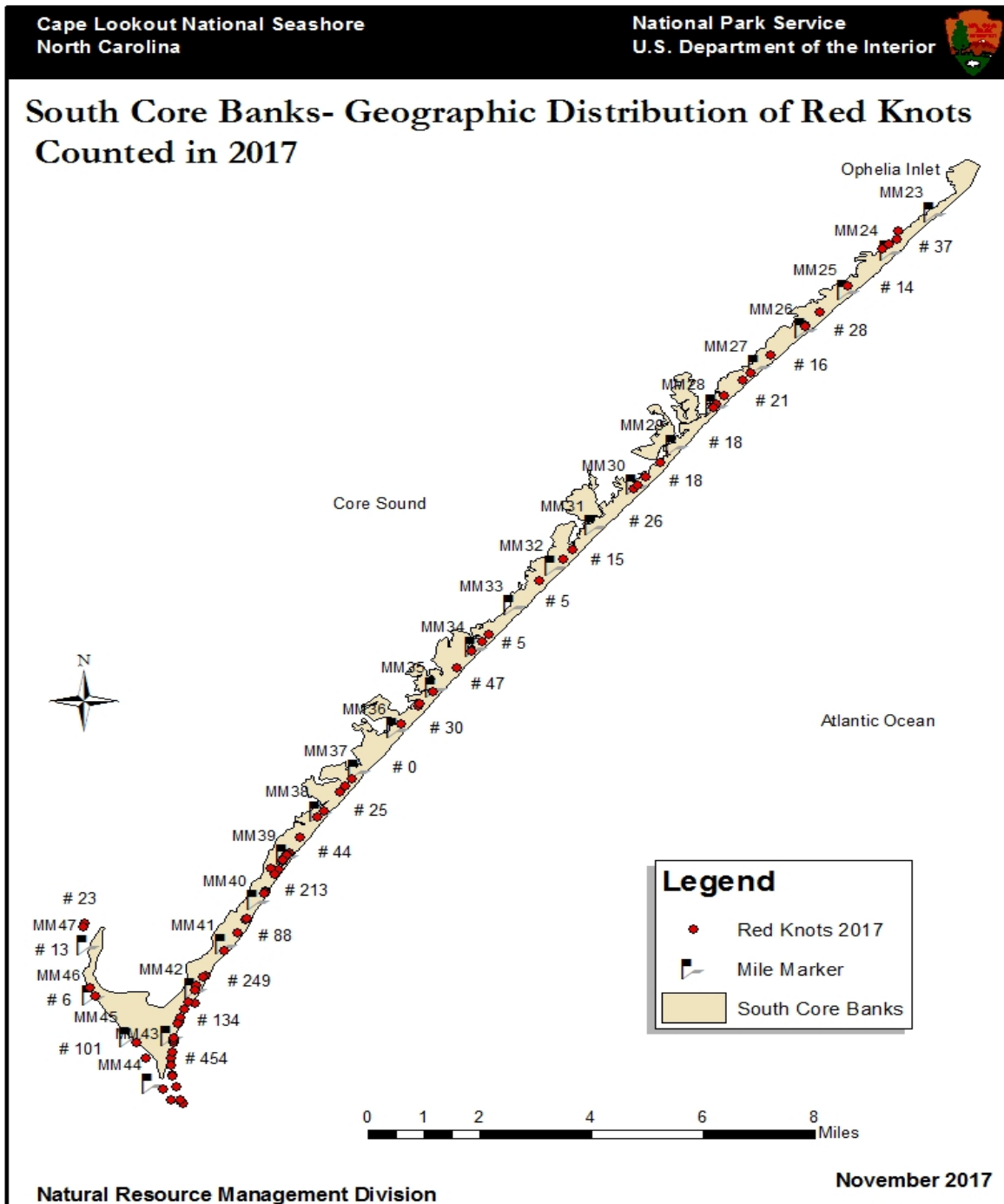
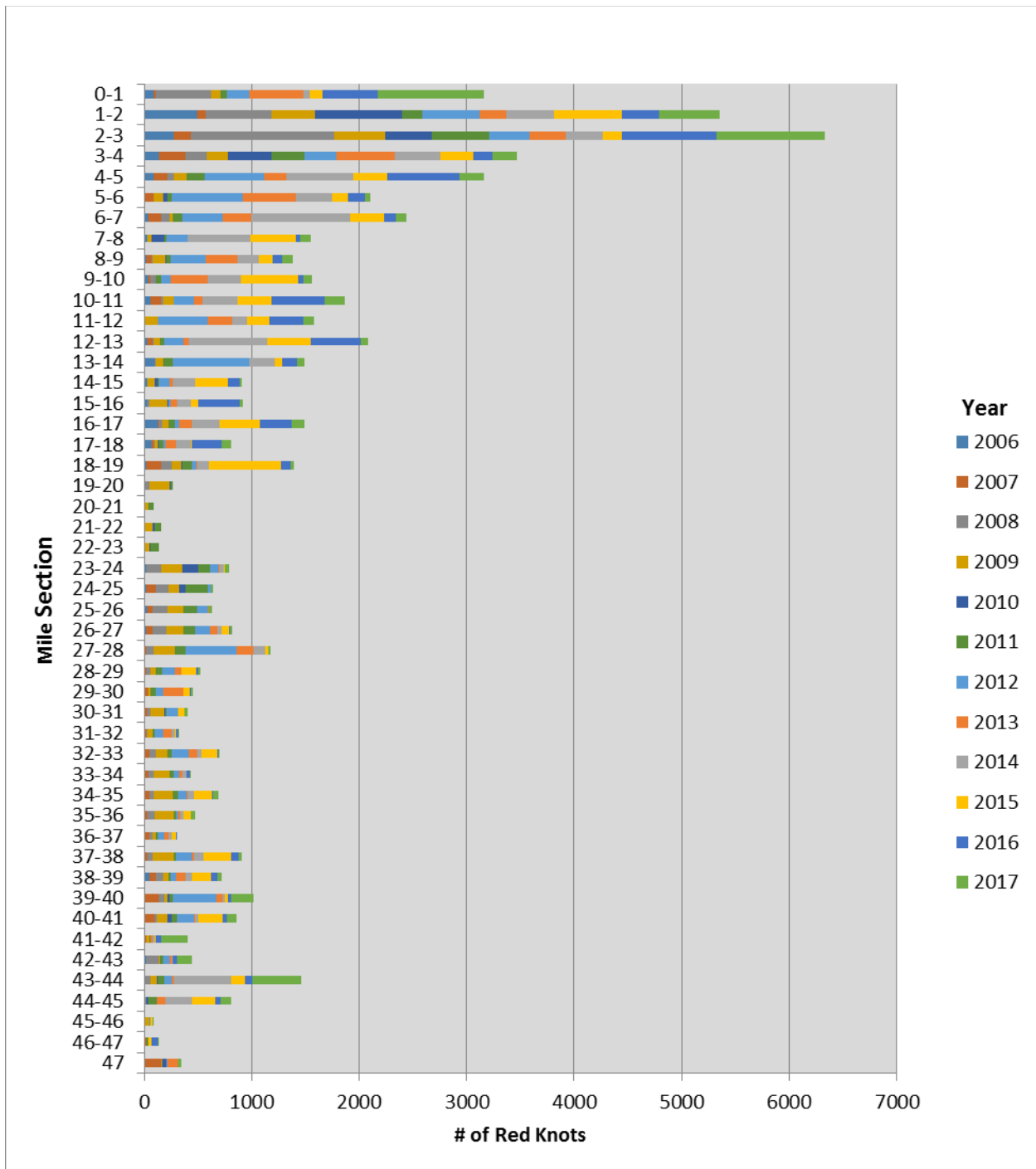


Figure 4. The Number of Red Knots by Mile Section from 2006 to 2017.



Appendix 2

Red Knot Count Data, yearly totals, from 2006 to 2017 by Mile Section.

Mile	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Sum	Average
47	0	158	0	4	48	0	7	97	3	0	0	23	340	28
46-47	0	14	1	0	0	24	1	2	0	23	62	13	140	12
45-46	0	0	0	48	0	4	3	3	0	15	6	6	85	7
44-45	0	5	10	0	20	82	2	77	248	218	49	101	812	68
43-44	0	9	48	65	4	61	65	20	536	127	73	454	1462	122
42-43	14	0	127	8	0	23	65	14	10	0	45	134	440	37
41-42	0	19	0	26	0	8	8	21	15	12	50	249	408	34
40-41	0	94	23	96	42	52	157	8	27	235	39	88	861	72
39-40	11	122	55	31	12	31	407	59	23	33	23	213	1020	85
38-39	47	59	68	47	0	22	51	93	57	181	54	44	723	60
37-38	0	25	55	195	0	22	150	16	92	255	69	25	904	75
36-37	0	44	36	26	0	23	54	46	31	39	3	0	302	25
35-36	4	25	64	187	0	19	19	18	25	76	1	30	468	39
34-35	0	50	39	172	0	57	72	18	59	162	11	47	687	57
33-34	5	29	51	150	0	36	57	27	36	0	29	5	425	35
32-33	0	45	63	109	0	42	158	79	32	156	8	5	697	58
31-32	0	20	10	51	0	16	84	79	25	8	17	15	325	27
30-31	0	32	30	128	7	9	105	5	0	62	0	26	404	34
29-30	0	40	2	14	0	52	71	183	0	63	7	18	450	38
28-29	0	14	41	52	0	61	114	58	1	143	22	18	524	44
27-28	0	15	68	200	0	99	481	152	112	23	0	21	1171	98
26-27	21	53	128	163	0	109	140	66	37	70	11	16	814	68
25-26	30	45	144	142	0	129	99	13	3	0	0	28	633	53
24-25	15	96	112	103	58	211	23	3	1	1	0	14	637	53
23-24	17	6	137	192	155	101	78	15	42	4	4	37	788	66
22-23				45	16	77							138	46
21-22				81	14	59							154	51
20-21				38	0	53							91	30

Mile	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Sum	Average
19-20			49	190	9	15							263	66
18-19	21	139	98	89	8	84	39	17	109	668	88	34	1394	116
17-18	72	20	2	33	7	47	18	96	139	7	283	84	808	67
16-17	126	10	35	50	6	56	42	114	258	379	300	113	1489	124
15-16	29	0	19	172	1	0	20	67	130	69	383	29	919	77
14-15	29	0	4	64	35	6	94	29	209	310	111	16	907	76
13-14	100	0	11	69	0	89	705	2	240	70	138	68	1492	124
12-13	24	56	5	66	0	35	174	51	737	400	468	72	2088	174
11-12	7	0	0	119	0	6	463	228	132	213	316	95	1579	132
10-11	57	102	20	98	3	0	186	74	325	317	496	186	1864	155
9-10	36	26	47	2	0	48	87	348	305	534	46	79	1558	130
8-9	18	54	4	123	5	41	328	295	198	125	95	93	1379	115
7-8	26	6	0	33	121	20	197	4	576	432	35	100	1550	129
6-7	40	116	83	31	0	81	376	267	920	322	100	101	2437	203
5-6	8	79	0	92	41	33	666	492	336	151	151	59	2108	176
4-5	87	132	61	115	1	169	552	207	624	309	674	231	3162	264
3-4	136	246	196	197	405	307	303	544	422	303	180	230	3469	289
2-3	273	160	1333	473	437	530	383	334	347	177	875	1008	6330	528
1-2	491	78	618	404	804	196	526	249	443	638	347	555	5349	446
0-1	89	14	515	93	3	53	211	501	60	115	519	990	3163	264