Transect Report

Overview

This report provides summary statistics and figures for ongoing transect sampling. The first section of the report focuses on the current sampling (Winter 2019-2020) and how the collected data compare to last year's sampling (Winter 2018-2019). So far 17 days have been sampled this season. The second half of the report gives summaries of all of the data that have been collected since the beginning of the project (2010-05-27). In total, 93 days have been sampled over this entire project.

Definition of Localities

LOCALITY	LOCATION
BT	Big Trout
CK	Cedar Key
CR	Corrigan's Reef
HB	Horseshoe Beach
LC	Lone Cabbage
LT	Little Trout
NN	No Name

Definition of Strata

STRATA	DEFINITION
Y_NA	Harvest, No Rock
Y_SM	Harvest, Small Rock
N_NA	No Harvest, No Rock
N_SM	No Harvest, Small Rock
N_LG	No Harvest, Large Rock
N_PILOT	No Harvest, Pilot Rocks

Current Sampling

Here, we provide a progress bar showing how much of the sampling has been completed for this season, plus summary tables and plots comparing live counts and density of oysters between this current season and last year. **The current sampling period is period 20, and last year's sampling period is period 18.**

Field Work Progress

Control Sites: 112.5%

Rock Sites: 96.97%

Percentage Complete
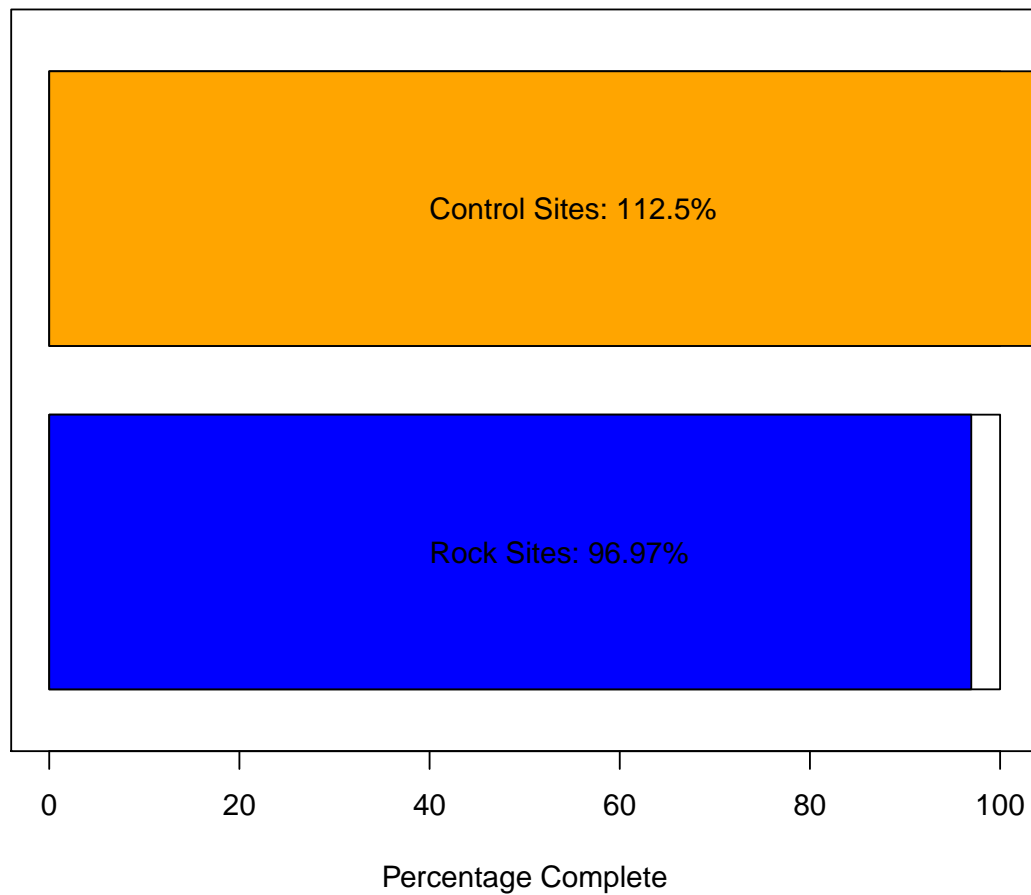
Summary Tables for Periods 18 and 20

These summary tables provide summary statistics on live counts and oyster densities for just periods **18 (Winter 2018-2019) and 20 (Winter 2019-2020).**

Summary statistics include:
- Locality or Strata or Period - Mean
- Median
- Standard Deviation (SD)
- Variance (Var)
- Coefficient of variation (CV)
- Standard Error (SE)
- Lower 95% Confidence Interval assuming normal distribution (L95)
- Upper 95% Confidence Interval assuming normal distribution (U95)
- Bootstrap Mean (Bstrap Mean)
- Lower 95% Confidence Interval from Bootstrap Values (L95 Bstrap)
- Upper 95% Confidence Interval from Bootstrap Values (U95 Bstrap)

```
Total Counts by Locality
 Locality Mean Median   SD      Var   CV  SE L95  U95 Bstrap_Mean L95_Bstrap U95_Bstrap
       BT 2316   1192 2713 7359423 1.17 959 436 4195        2303        936       4203
       LC 1358    907 1646 2710832 1.21 186 992 1723        1356       1032       1746
       LT 1108    883  680  461737 0.61 188 739 1478        1109        775       1492
       NN  780    649  692  478603 0.89 245 301 1260         794        432       1272


Total Counts by Strata
  Strata Mean Median   SD      Var   CV   SE  L95  U95 Bstrap_Mean L95_Bstrap U95_Bstrap
    N_LG 1965   1057 2476 6132879 1.26  662  667 3262        1961        940       3369
    N_NA 1337    890 1444 2084019 1.08  241  865 1808        1329        956       1907
  N_PILOT 356    356   NA      NA   NA   NA   NA   NA         176         10        349
    N_SM 2352   3060 1497 2241005 0.64  669 1040 3664        2363       1110       3471
    Y_NA  926    700  830  689027 0.90  127  678 1174         926        708       1164
    Y_SM 2190   1376 3040 9243678 1.39 1075   83 4297        2183        779       4415


Total Counts by Period
 Period Mean Median   SD     Var   CV  SE  L95  U95 Bstrap_Mean L95_Bstrap U95_Bstrap
     18  982    695  935  874733 0.95 120  748 1217         979        762       1204
     20 1851   1226 2148 4614979 1.16 317 1230 2472        1842       1324       2449

Density by Locality
 Locality Mean Median  SD   Var   CV SE L95 U95 Bstrap_Mean L95_Bstrap U95_Bstrap
       BT  321    279 216 46621 0.67 76 171 471         321        202        477
       LC  187    174 140 19483 0.75 16 156 218         186        156        215
       LT  289    249 159 25148 0.55 44 203 375         290        214        372
       NN  238    154 256 65757 1.08 91  60 415         239        109        422


Density by Strata
  Strata Mean Median  SD   Var   CV SE L95 U95 Bstrap_Mean L95_Bstrap U95_Bstrap
    N_LG  137    134  91  8230 0.66 24  89 184         136         93        185
    N_NA  276    239 185 34329 0.67 31 215 336         275        217        340
  N_PILOT 102    102  NA    NA   NA NA  NA  NA          51          4         99
    N_SM  189    135 149 22063 0.79 66  58 319         188         78        308
    Y_NA  205    199 157 24556 0.77 24 158 252         206        162        256
    Y_SM  135    105 117 13779 0.87 42  53 216         134         58        211
```

Density by Period

Period	Mean	Median	SD	Var	CV	SE	L95	U95	Bstrap_Mean	L95_Bstrap	U95_Bstrap
18	177	155	131	17117	0.74	17	144	210	177	145	210
20	260	206	189	35730	0.73	28	206	315	258	209	314

Summary Plots for Periods 18 and 20

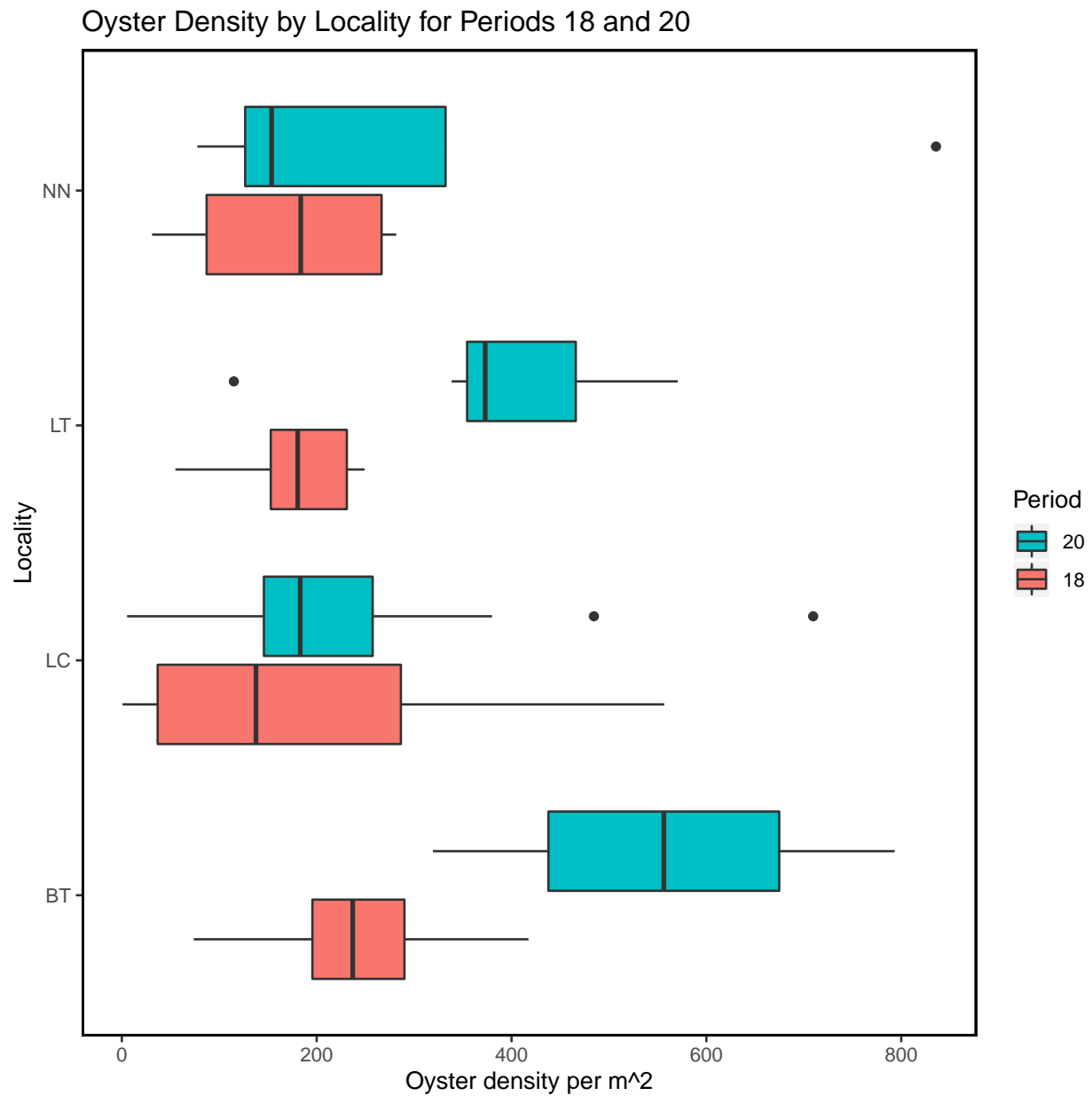Oyster Density by Locality for Periods 18 and 20

Figure- Calculated oyster density by locality for periods 18 (Winter 2018-2019) and 20 (Winter 2019-2020) with the last sample date of period 20 as 2020-01-13.
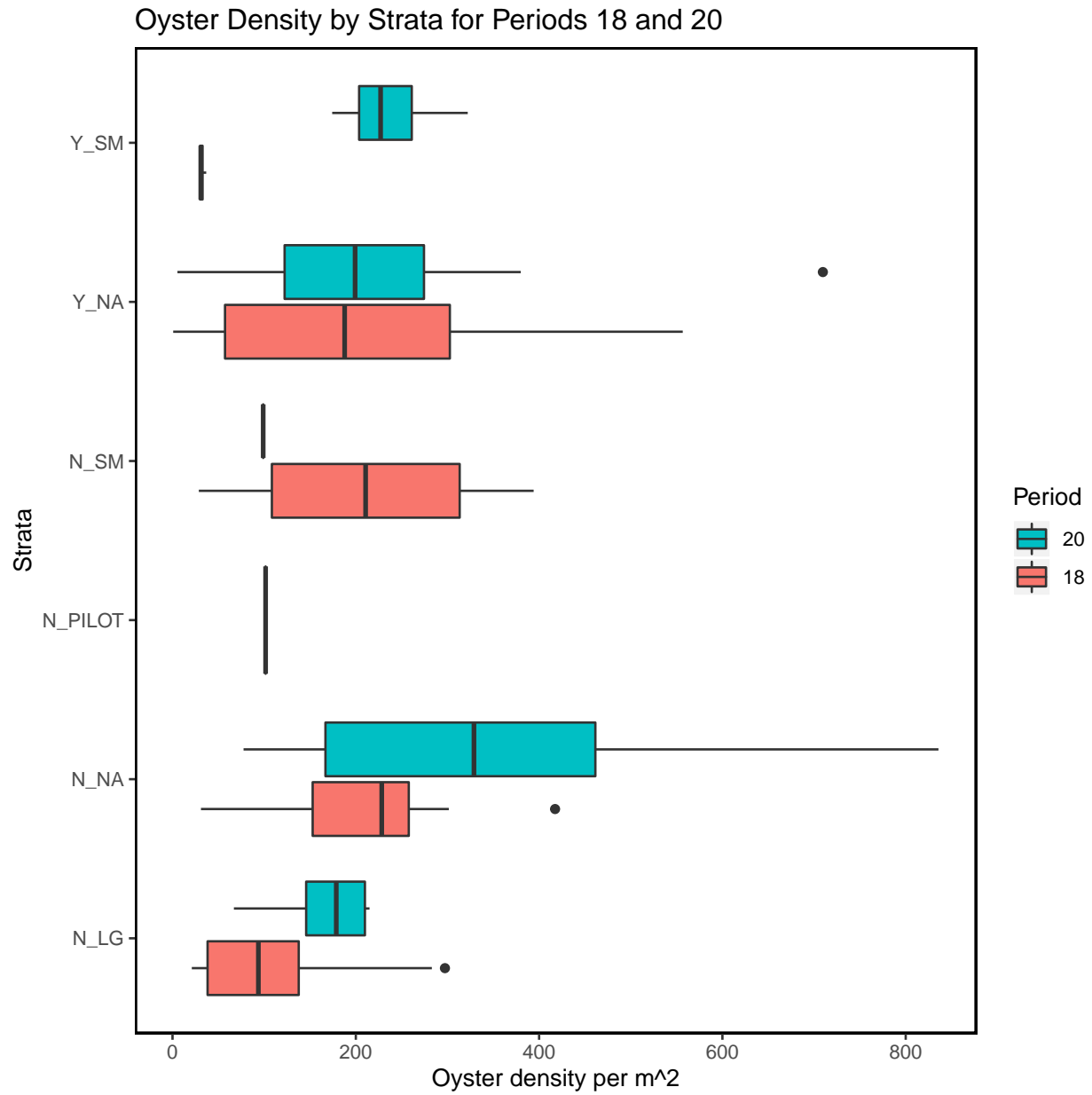
Figure- Calculated oyster density by strata for periods 18 (Winter 2018-2019) and 20 (Winter 2019-2020) with the last sample date of period 20 as 2020-01-13.

The following summary plot is calcualted in R using the `geom_density` (https://ggplot2.tidyverse.org/reference/geom_density.html) statistical function in `ggplot`. The `geom_density` function computes and draws kernel density estimates, which is then represented as a smoothed version of a histogram.
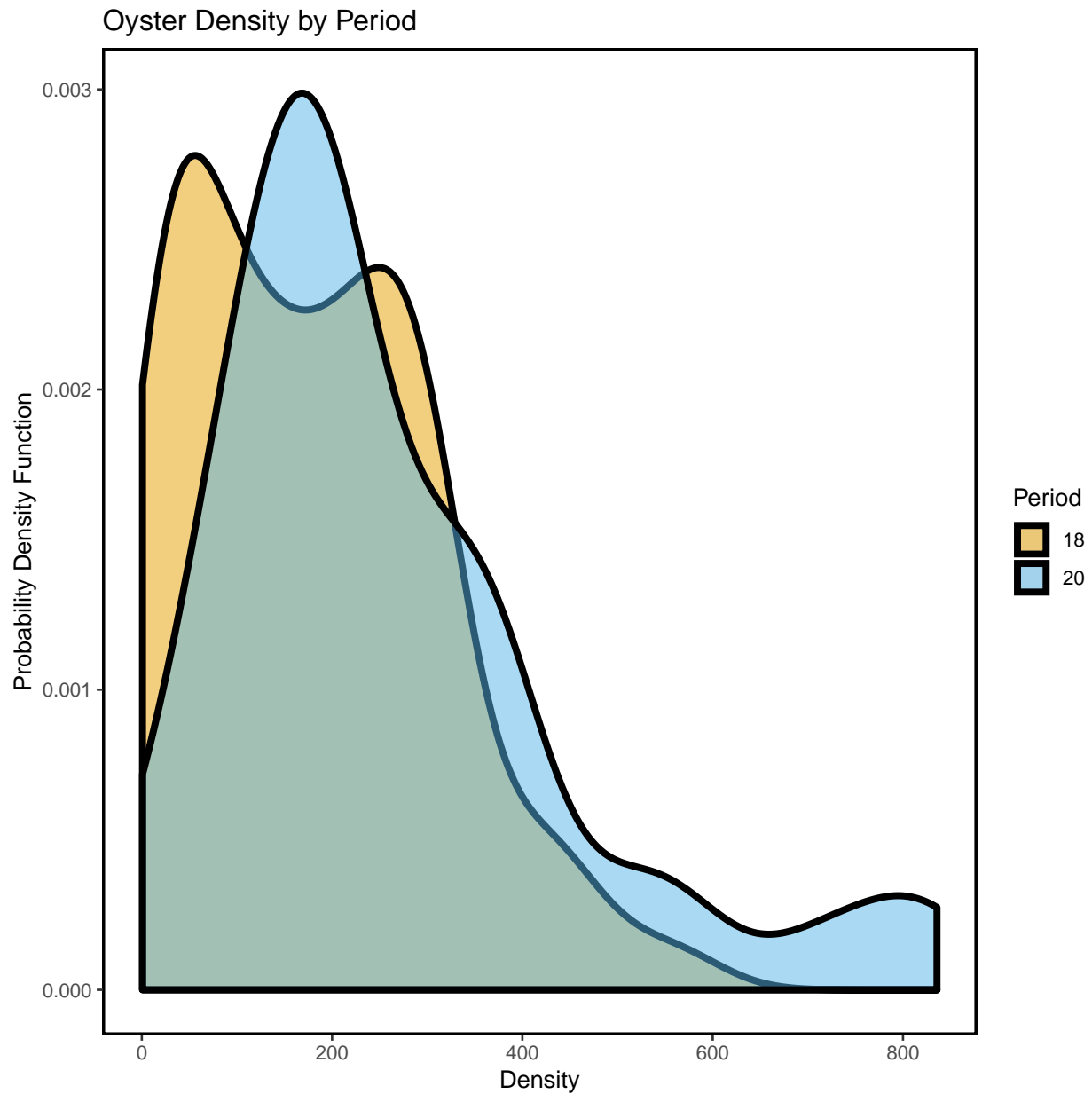

Figure- Calculated oyster density by periods 18 (Winter 2018-2019) and 20 (Winter 2019-2020) using a probability density function with the last sample date of period 20 as 2020-01-13.

Sampling for all Periods

Next, we provide summary tables and plots for all transect sampling. These data were collected between 2010-05-27 and 2020-01-13.

Definitions of Periods

PERIOD	SEASON	YEAR
1	Summer	2010
2	Winter	2010-2011
3	Summer	2011
4	Winter	2011-2012
5	Summer	2012
6	Winter	2012-2013
7	Summer	2013
8	Winter	2013-2014
9	Summer	2014
10	Winter	2014-2015
11	Summer	2015
12	Winter	2015-2016
13	Summer	2016
14	Winter	2016-2017
15	Summer	2017
16	Winter	2017-2018
17	Summer	2018
18	Winter	2018-2019
19	Summer	2019
20	Winter	2019-2020

Summary of Effort for all Periods

These effort summaries show the total number of transects and total number of meters walked per locality, strata, locality per period, and strata per period. **These tables contain all data collected on the transects.**

```
Effort by Locality
 Locality Number of Transects Total Length (m)
      BT                    8              334
      CK                   26              712
      CR                   46             1330
      HB                   45             1129
      LC                  158             7390
      LT                   13              353
      NN                    8              210


Effort by Strata
   Strata Number of Transects Total Length (m)
    N_LG                   14             1400
    N_NA                   93             3166
 N_PILOT                   13              799
    N_SM                    5              450
    Y_NA                  171             4876
    Y_SM                    8              766


Effort by Period
 Period Number of Transects Total Length (m)
      1                   42             1086
      2                   30              753
      3                   25              619
      6                   33              874
      7                    8              528
     10                    8              512
     11                    8              511
     16                    8              528
     18                   61             2632
     19                   35              921
     20                   46             2493


Effort by Locality and Period
 Period Locality Number of Transects Total Length (m)
      1       CK                    9              242
      1       CR                   10              300
      1       HB                   12              293
      1       LC                   11              250
     10       LC                    8              512
     11       LC                    8              511
     16       LC                    8              528
     18       BT                    6              238
     18       LC                   45             2128
     18       LT                    6              182
     18       NN                    4               84
     19       CK                    9              221
     19       CR                    9              227
     19       HB                    9              247
```

19	LC	8	226
2	CR	9	283
2	HB	11	271
2	LC	10	199
20	BT	2	96
20	LC	33	2100
20	LT	7	171
20	NN	4	126
3	CR	9	269
3	HB	7	184
3	LC	9	167
6	CK	8	248
6	CR	9	250
6	HB	6	134
6	LC	10	242
7	LC	8	528

Effort by Strata and Period

Period	Strata	Number of Transects	Total Length (m)
1	N_NA	8	149
1	Y_NA	34	937
10	N_NA	4	256
10	N_PILOT	4	256
11	N_NA	4	255
11	N_PILOT	4	256
16	N_NA	4	264
16	N_PILOT	4	264
18	N_LG	9	595
18	N_NA	18	571
18	N_SM	4	366
18	Y_NA	26	723
18	Y_SM	4	376
19	N_NA	5	80
19	Y_NA	30	841
2	N_NA	8	148
2	Y_NA	22	605
20	N_LG	5	805
20	N_NA	18	590
20	N_PILOT	1	23
20	N_SM	1	83
20	Y_NA	17	602
20	Y_SM	4	390
3	N_NA	8	147
3	Y_NA	17	472
6	N_NA	8	178
6	Y_NA	25	695
7	N_NA	8	528

Effort Plot Summaries for all Periods

Total Transect Length Sampled by Locality
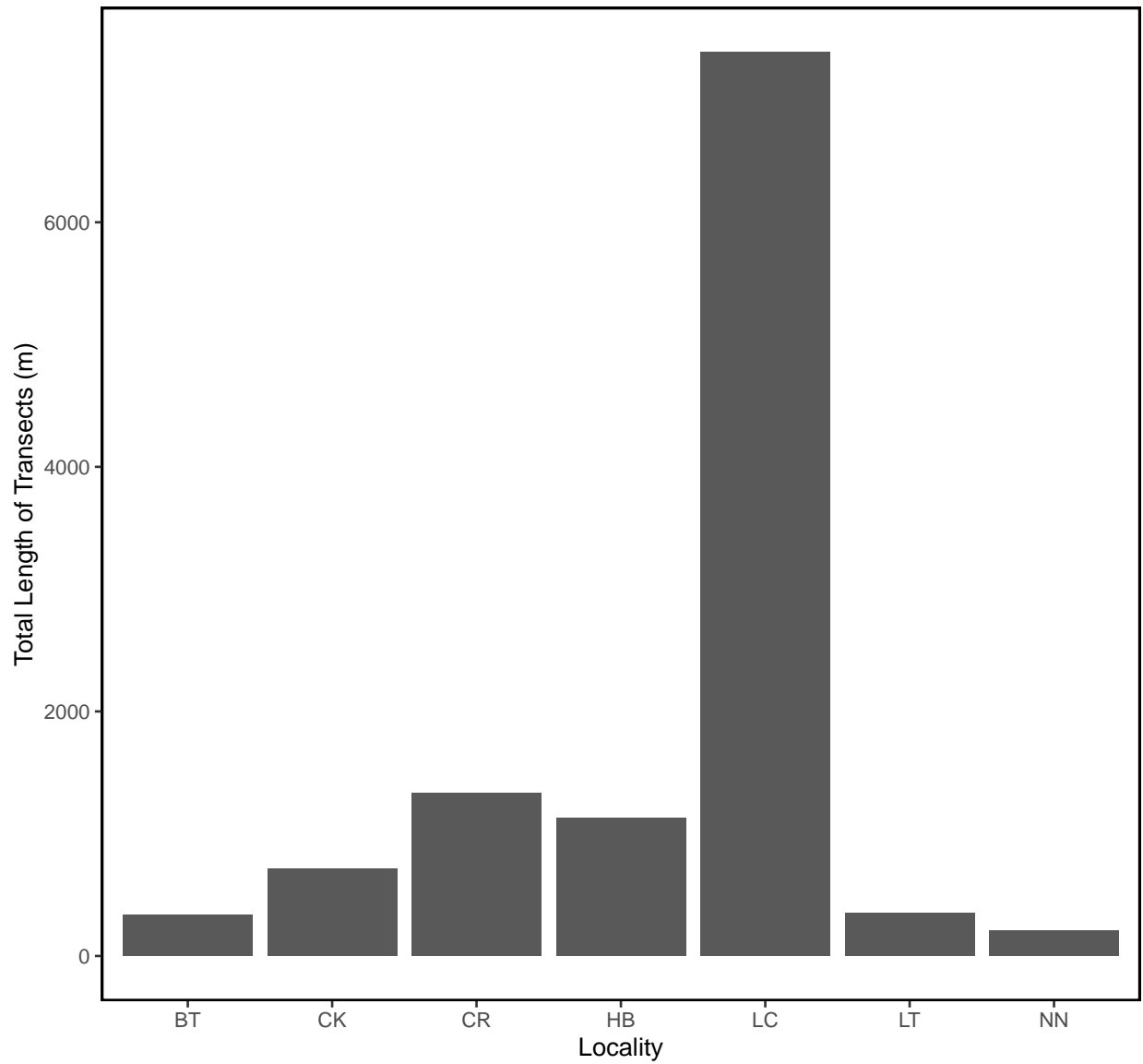
Figure – Bar plot of total transect length in meters sampled by locality for all periods.
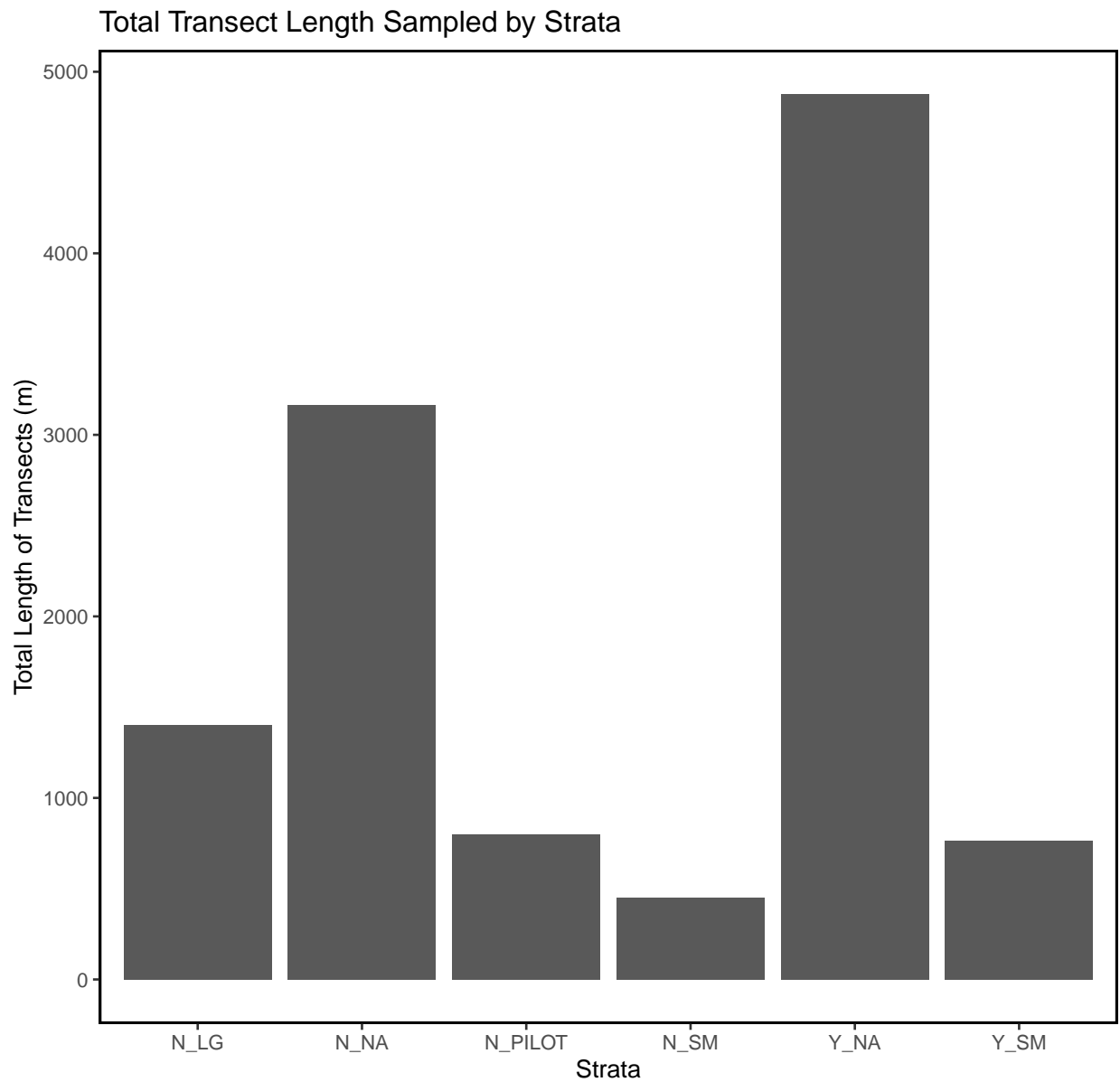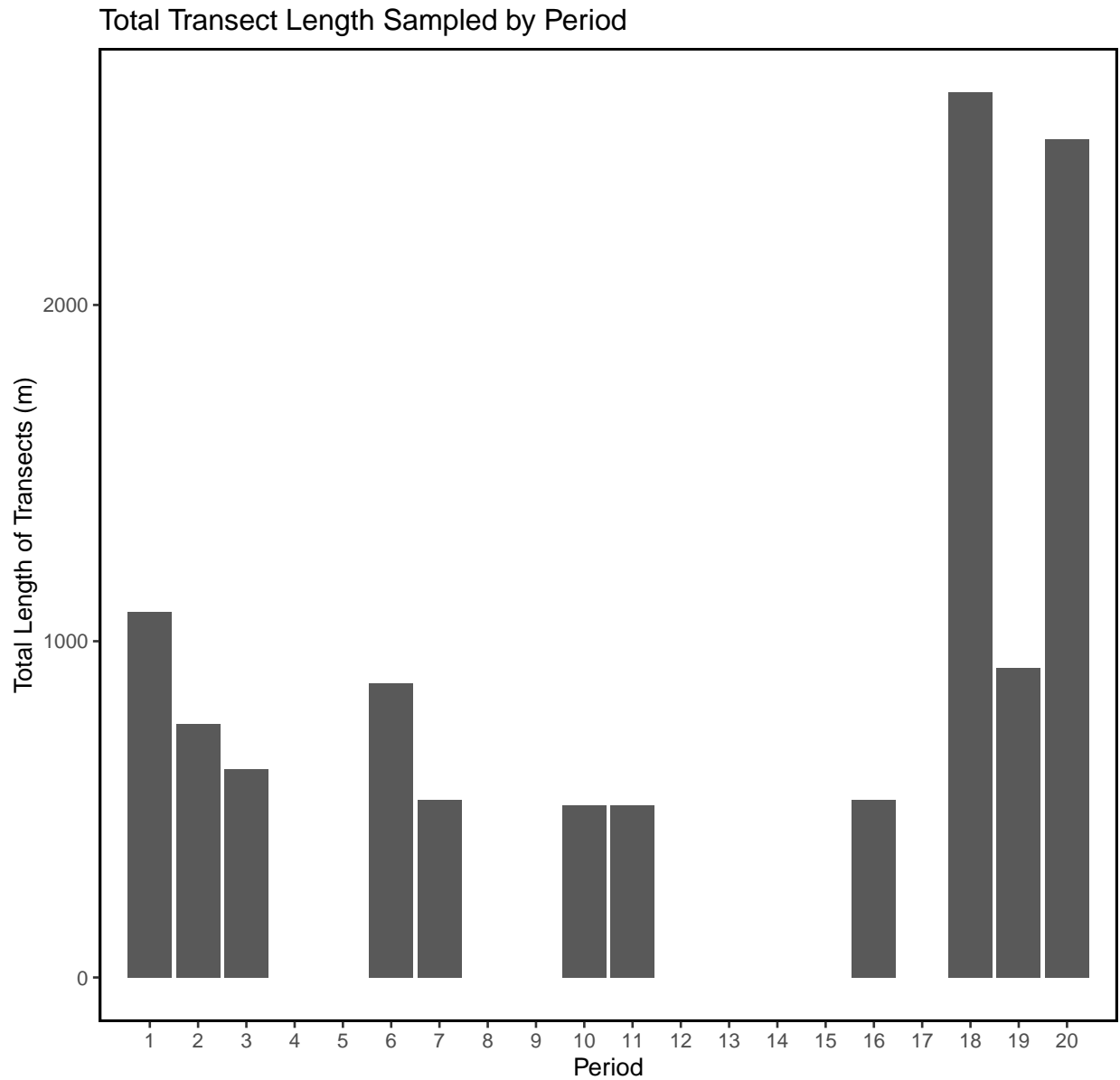
Total Transect Length Sampled by Strata

Figure – Bar plot of total transect length in meters sampled by strata for all periods.

Total Transect Length Sampled by Period

Figure– Bar plot of total transect length in meters sampled by period for all periods.

Summary Tables for all Periods

These summaries display summary statistics of live oysters by locality, strata, and period. These contain all data collected on the oyster transects.

The summary statistics include:
- Locality or Strata or Period - Mean
- Median
- Standard Deviation (SD)
- Variance (Var)
- Coefficient of variation (CV)
- Standard Error (SE)
- Lower 95% Confidence Interval assuming normal distribution (L95)
- Upper 95% Confidence Interval assuming normal distribution (U95)
- Bootstrap Mean (Bstrap Mean)
- Lower 95% Confidence Interval from Bootstrap Values (L95 Bstrap)
- Upper 95% Confidence Interval from Bootstrap Values (U95 Bstrap)

Live Count Statistics for all Periods

Total Counts by Locality

Locality	Mean	Median	SD	Var	CV	SE	L95	U95	Bstrap_Mean	L95_Bstrap	U95_Bstrap
BT	2316	1192	2713	7359423	1.17	959	436	4195	2288	960	4244
CK	857	444	1091	1190933	1.27	214	438	1277	856	487	1258
CR	1026	716	1035	1072162	1.01	153	727	1325	1022	721	1318
HB	902	364	1047	1095622	1.16	158	592	1211	905	608	1211
LC	988	638	1309	1714526	1.33	105	782	1194	988	790	1214
LT	1108	883	680	461737	0.61	188	739	1478	1110	771	1480
NN	780	649	692	478603	0.89	245	301	1260	786	410	1272

Total Counts by Strata

Strata	Mean	Median	SD	Var	CV	SE	L95	U95	Bstrap_Mean	L95_Bstrap	U95_Bstrap
N_LG	1965	1057	2476	6132879	1.26	662	667	3262	1965	887	3495
N_NA	1060	823	1138	1295006	1.07	119	828	1293	1055	848	1297
N_PILOT	1046	1109	627	392853	0.60	174	705	1386	1050	751	1405
N_SM	2352	3060	1497	2241005	0.64	669	1040	3664	2355	1110	3471
Y_NA	795	431	942	886815	1.18	73	653	938	792	662	932
Y_SM	2190	1376	3040	9243678	1.39	1075	83	4297	2196	734	4449

Total Counts by Period

Period	Mean	Median	SD	Var	CV	SE	L95	U95	Bstrap_Mean	L95_Bstrap	U95_Bstrap
1	1404	1018	1288	1657932	0.92	199	1014	1793	1385	1026	1772
2	890	476	945	893727	1.06	176	546	1234	878	555	1218
3	738	296	817	668064	1.11	167	411	1065	727	422	1071
6	433	176	534	284791	1.23	96	245	621	432	265	621
7	50	29	56	3186	1.12	20	11	90	49	17	88
10	1207	1074	671	449607	0.56	237	743	1672	1189	799	1674
11	886	776	678	459708	0.77	240	416	1356	889	505	1352
16	494	366	467	217855	0.95	165	170	817	495	221	816
18	982	695	935	874733	0.95	120	748	1217	975	758	1226
19	555	329	573	328431	1.03	97	365	745	561	375	743
20	1851	1226	2148	4614979	1.16	317	1230	2472	1843	1284	2477

Density Statistics for all Periods

Density by Locality

Locality	Mean	Median	SD	Var	CV	SE	L95	U95	Bstrap_Mean	L95_Bstrap	U95_Bstrap
BT	321	279	216	46621	0.67	76	171	471	323	208	464
CK	241	112	321	102795	1.33	63	118	365	241	125	365
CR	288	181	294	86231	1.02	43	203	373	288	208	376
HB	257	101	303	92052	1.18	46	168	347	257	168	350
LC	160	121	161	25829	1.01	13	134	185	159	134	185
LT	289	249	159	25148	0.55	44	203	375	288	207	373
NN	238	154	256	65757	1.08	91	60	415	240	111	424

Density by Strata

Strata	Mean	Median	SD	Var	CV	SE	L95	U95	Bstrap_Mean	L95_Bstrap	U95_Bstrap
N_LG	137	134	91	8230	0.66	24	89	184	136	90	182
N_NA	283	212	275	75876	0.97	29	226	339	283	228	341
N_PILOT	111	111	60	3604	0.54	17	79	144	111	80	145
N_SM	189	135	149	22063	0.79	66	58	319	185	71	321
Y_NA	193	108	225	50478	1.16	17	159	227	192	161	230
Y_SM	135	105	117	13779	0.87	42	53	216	135	66	207

Density by Period

Period	Mean	Median	SD	Var	CV	SE	L95	U95	Bstrap_Mean	L95_Bstrap	U95_Bstrap
1	393	300.8	362.6	131444	0.92	56	283.8	503.1	391	280.3	509.9
2	255	119.0	285.2	81348	1.12	53	151.3	358.9	253	155.2	353.7
3	234	85.3	269.3	72523	1.15	55	126.1	341.6	235	128.7	338.6
6	122	72.2	150.9	22769	1.24	27	68.6	174.9	121	73.9	180.1
7	5	2.9	5.6	31	1.12	2	1.1	8.9	5	1.7	8.6
10	124	113.3	67.4	4536	0.54	24	76.9	170.3	123	82.1	169.8
11	90	79.5	67.8	4596	0.75	24	43.4	137.4	91	46.5	137.0
16	49	36.3	46.4	2154	0.95	16	16.9	81.2	49	18.7	80.1
18	177	154.5	130.8	17117	0.74	17	144.3	210.0	178	146.9	212.4
19	160	85.6	171.9	29552	1.08	29	102.9	216.8	160	104.9	219.1
20	260	206.3	189.0	35730	0.73	28	205.6	314.9	260	207.4	320.7

Summary Density Plots for all Periods
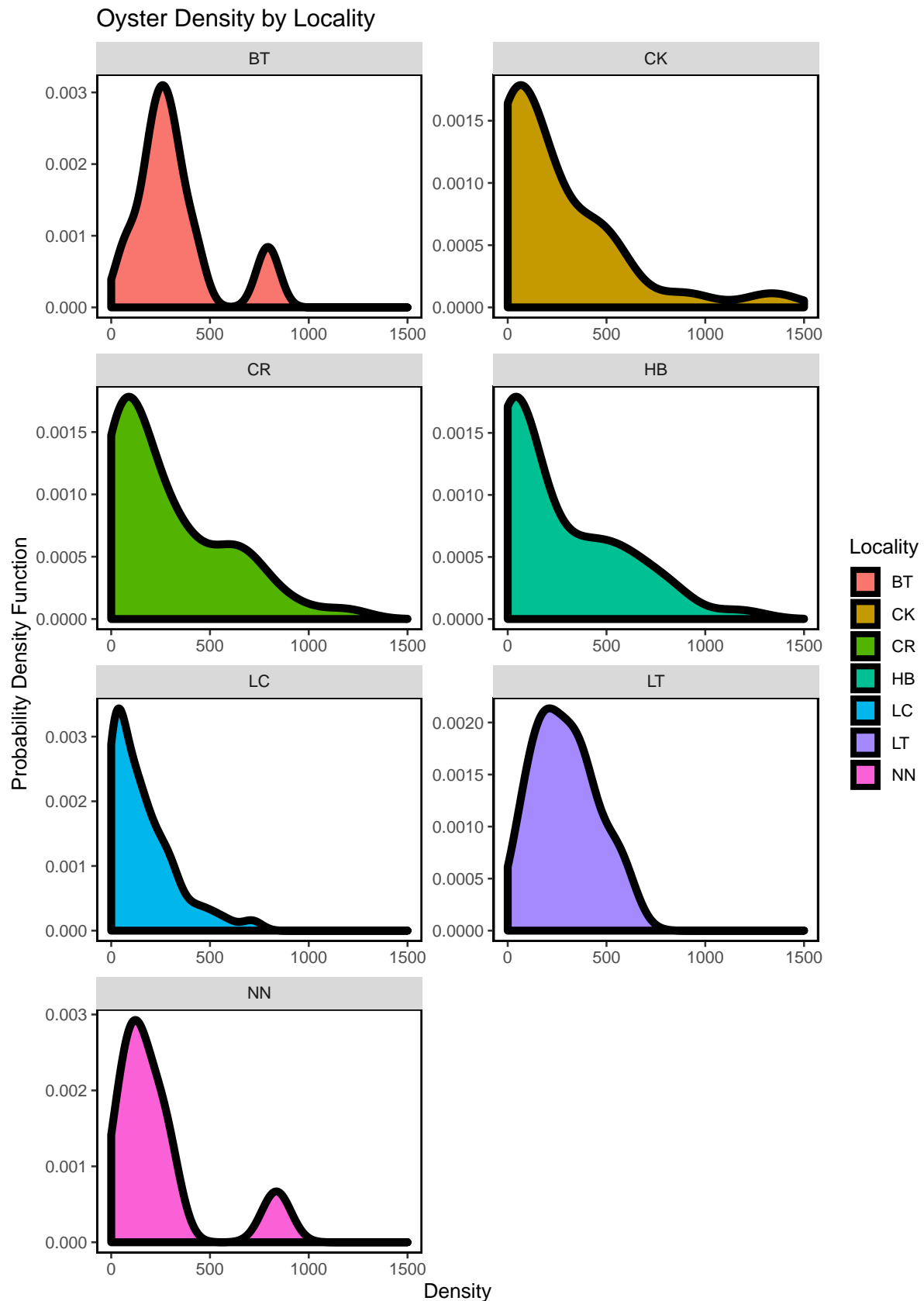
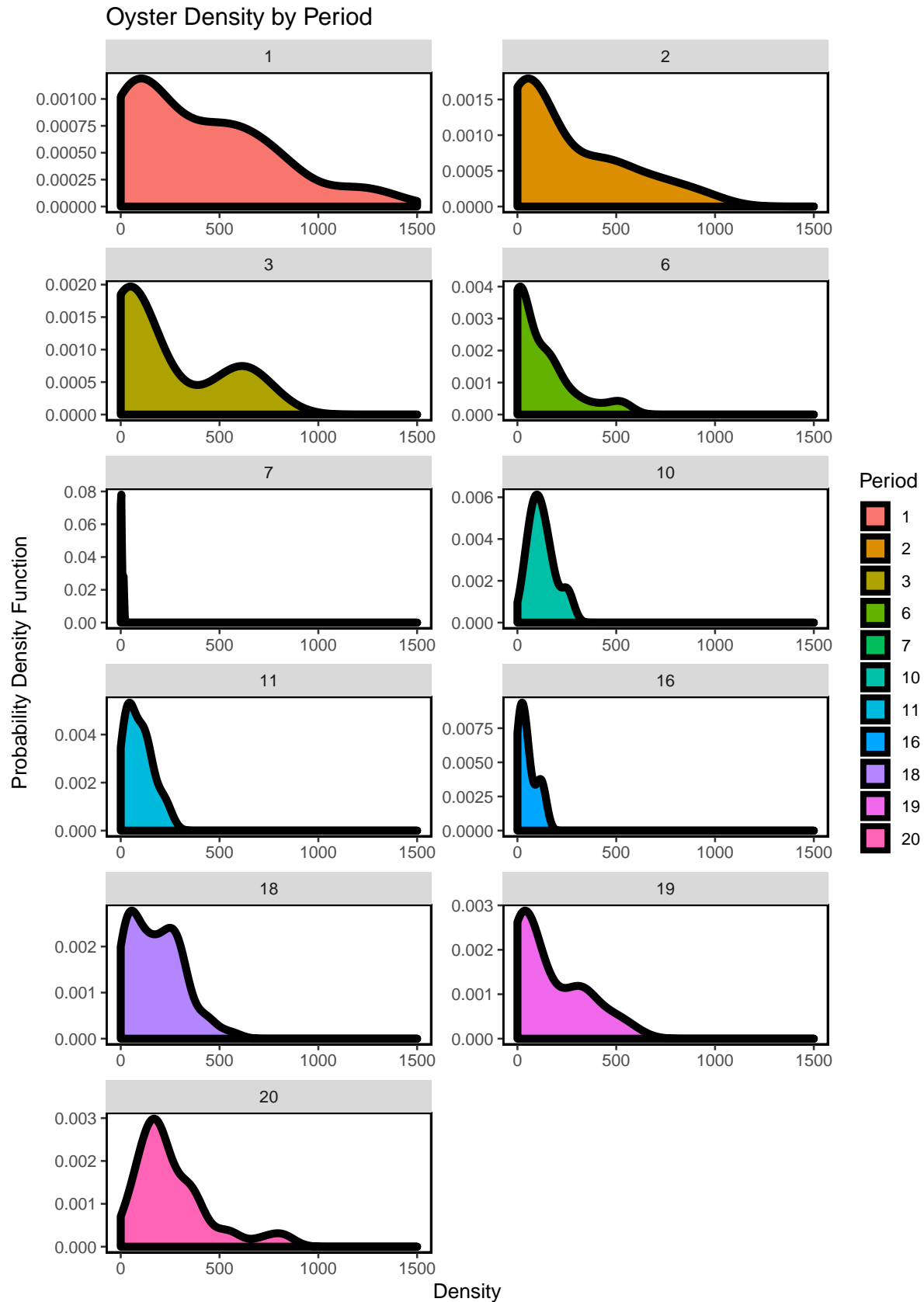## Oyster Density by Locality

Figure– Calculated oyster density by locality for all periods including period 20 (current period).
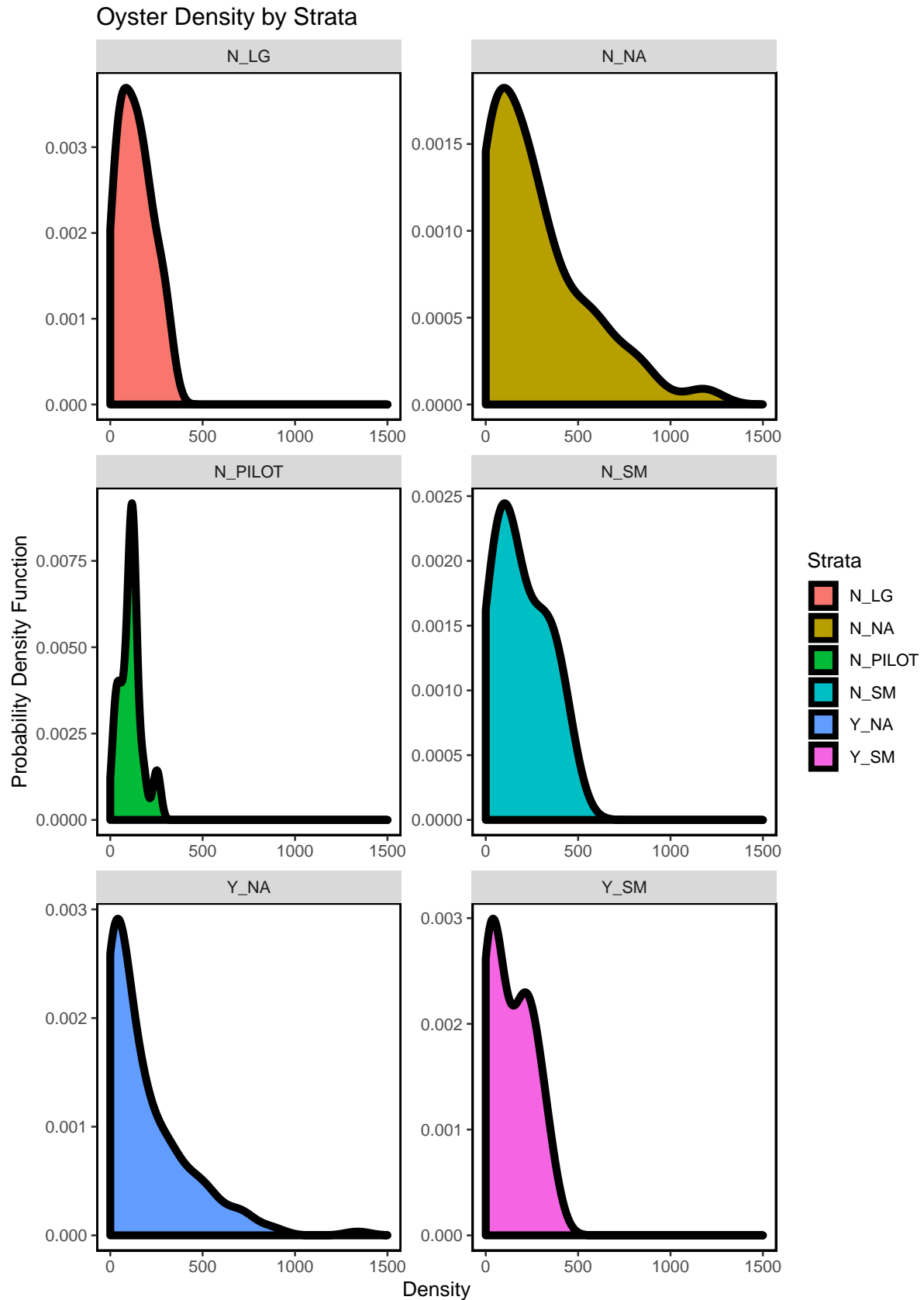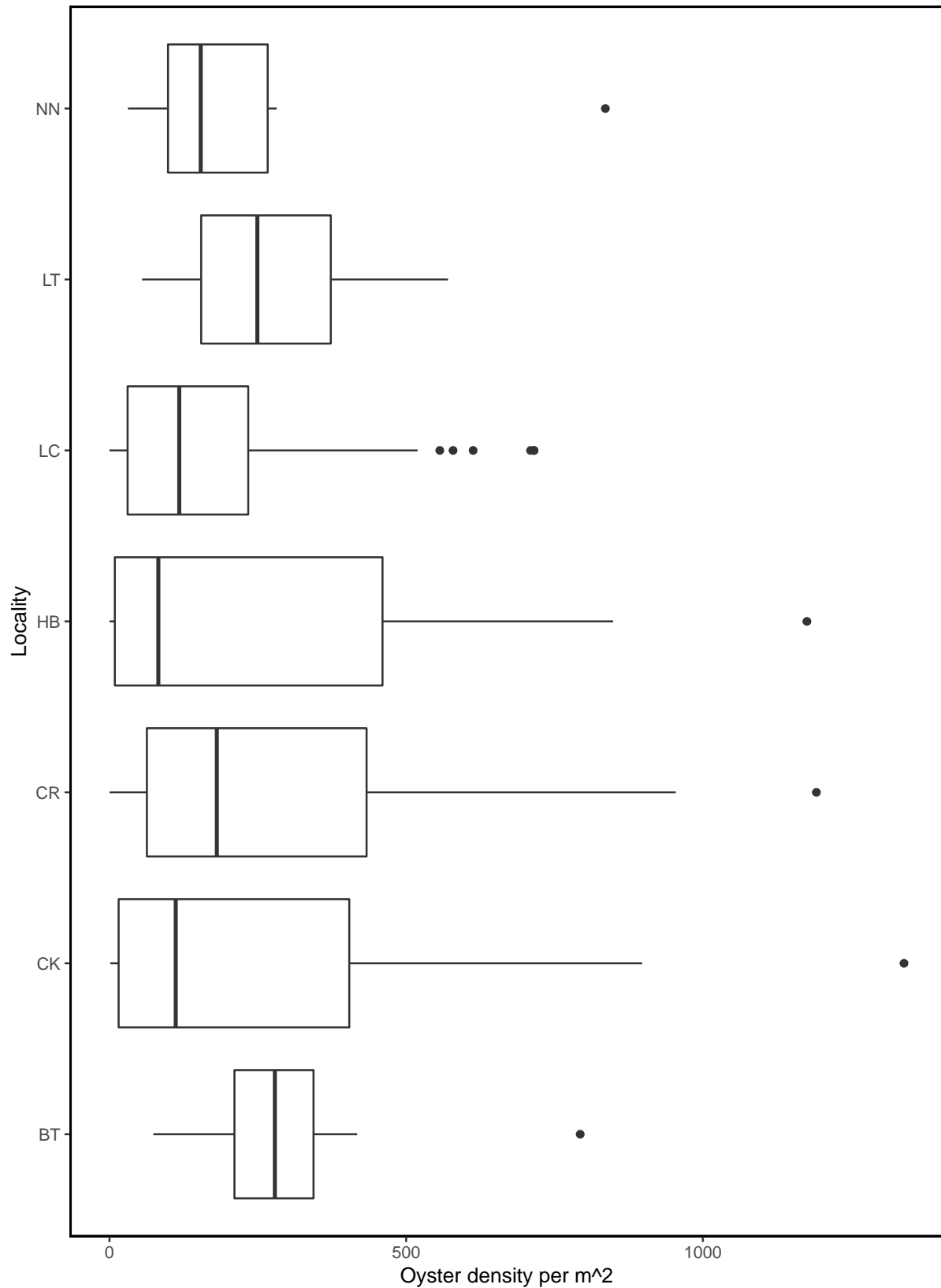
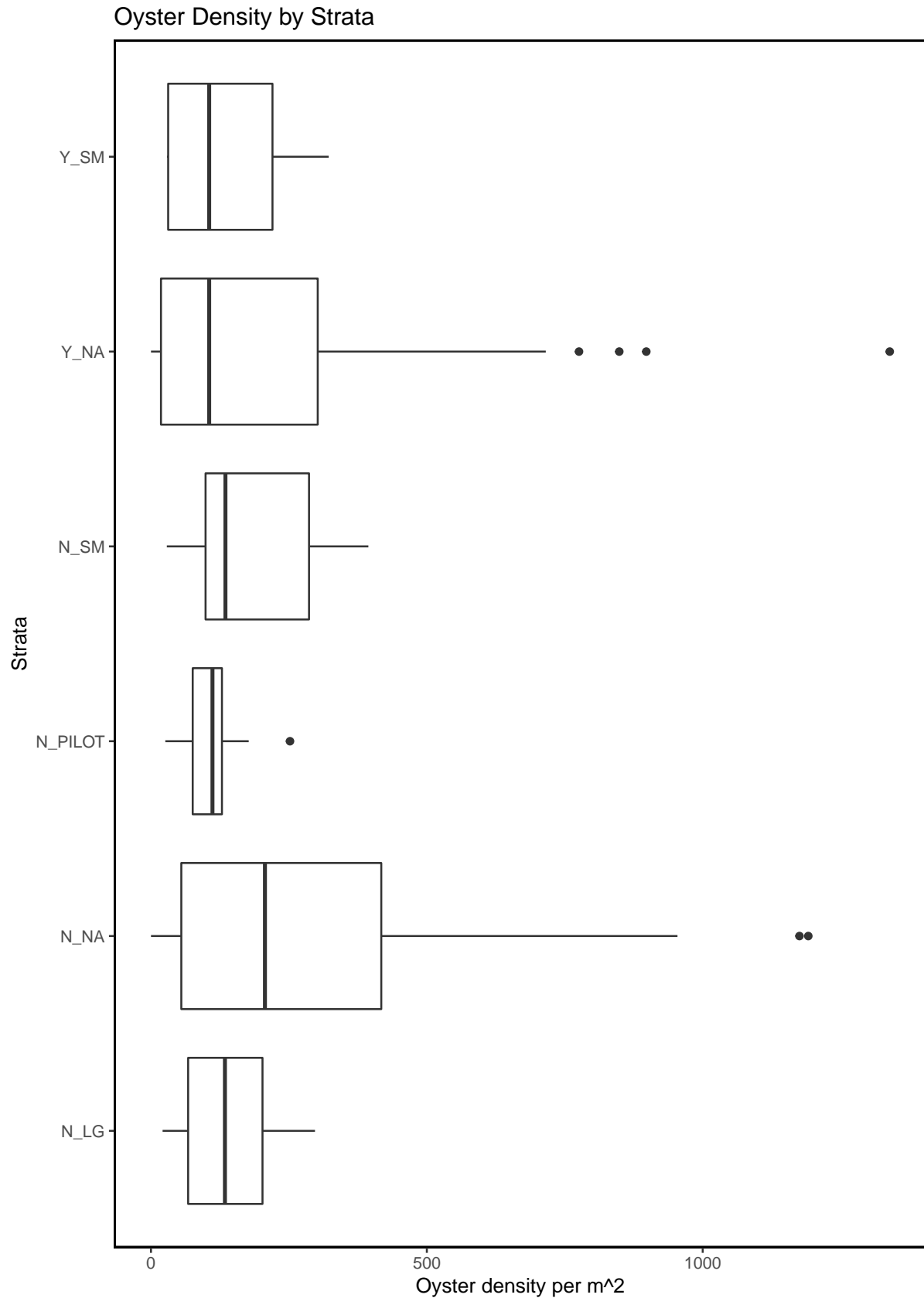Figure– Calculated oyster density by strata for all periods including period 20 (current period).

Figure– Calculated oyster density for all periods including period 20 (current period) using a probability density fu
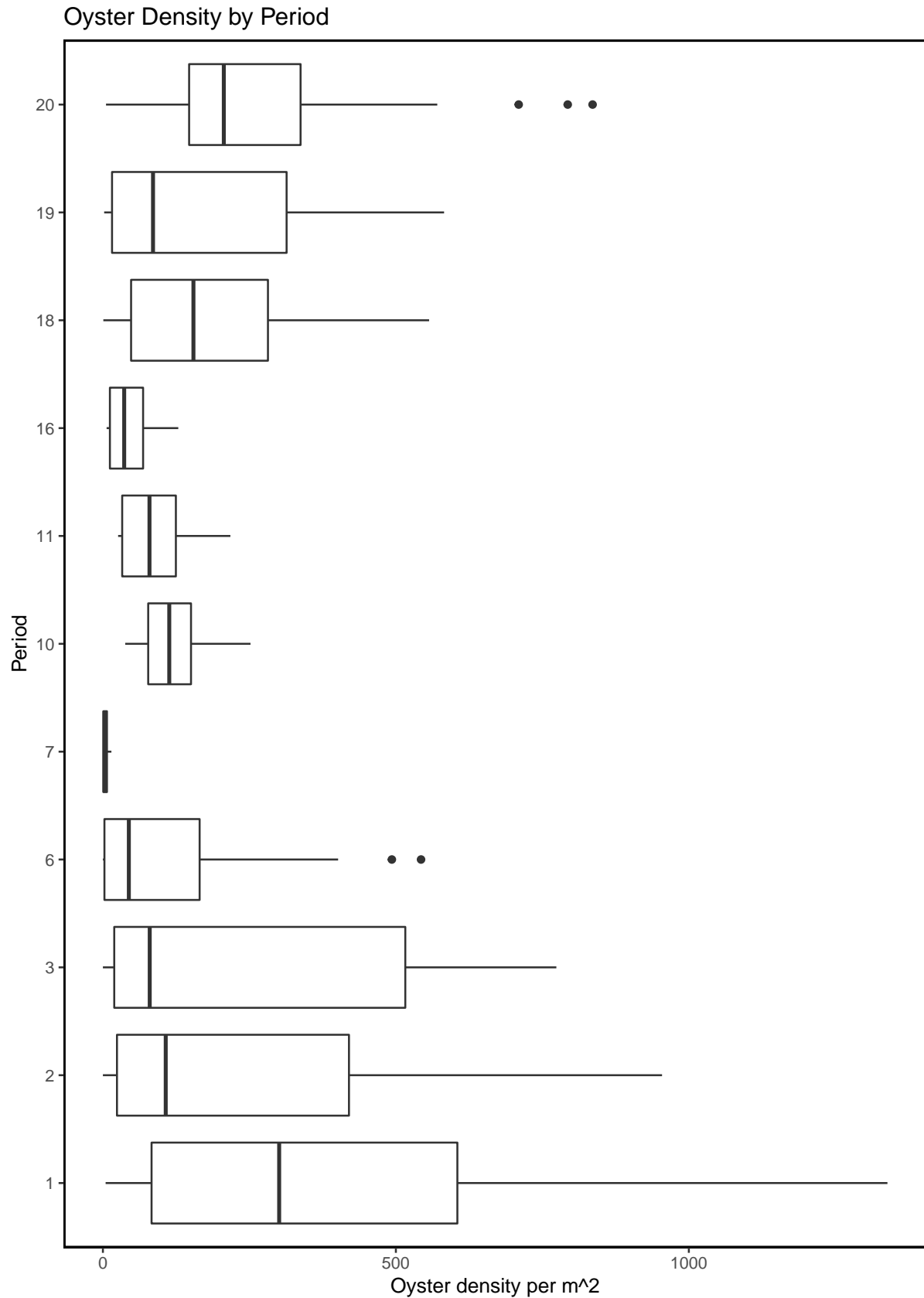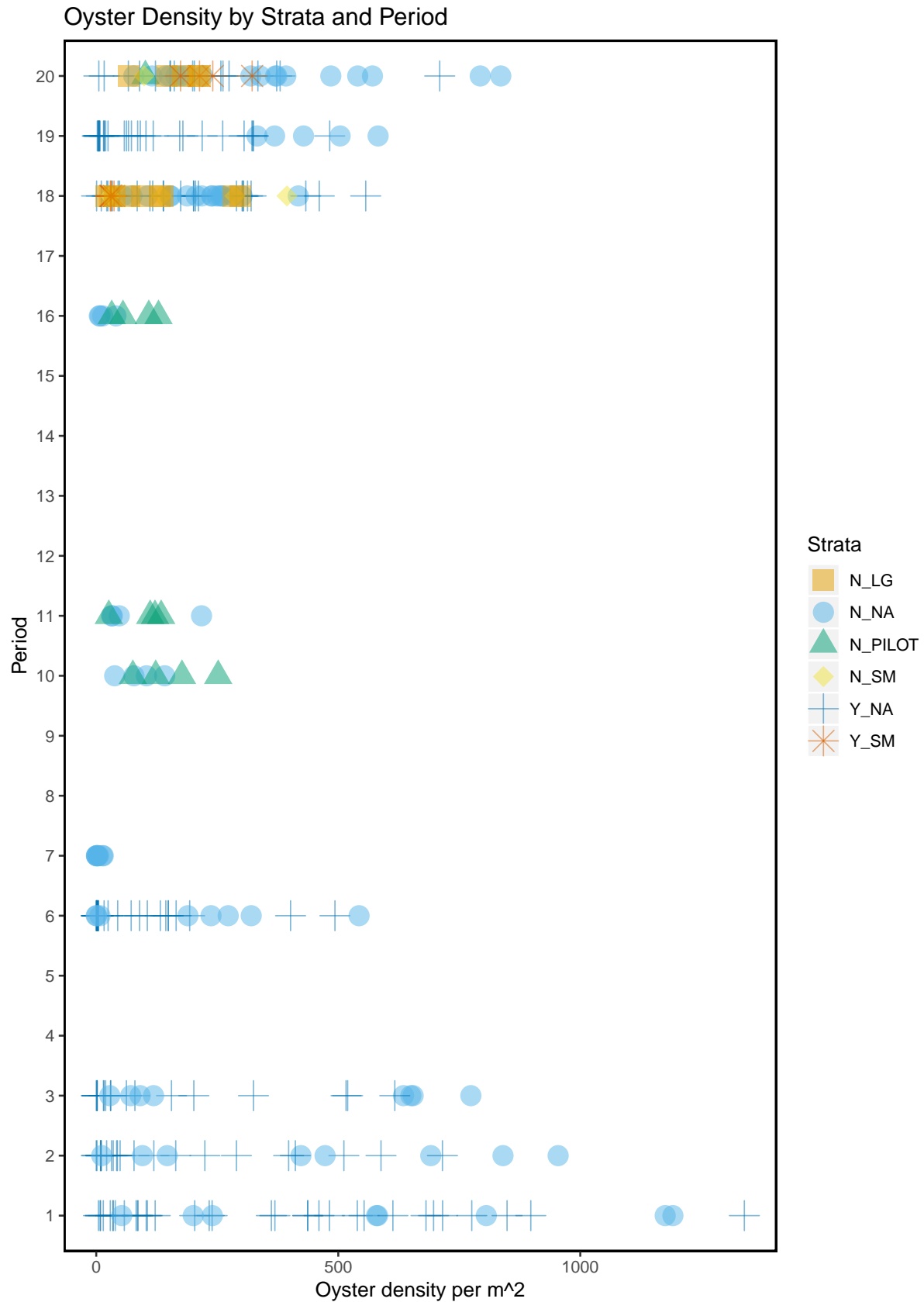
Oyster Density by Locality

Figure– Box plot depicting density by locality for all periods including period 20 (current period).

Oyster Density by Strata

Figure– Box plot depicting density by strata for all periods including period 20 (current period).

Oyster Density by Period

Figure– Box plot depicting density by period for all periods including period 20 (current period).

Figure – Oyster density by locality and period for all periods including period 20 (current period).

Oyster Density by Strata and Period

Figure – Oyster density by strata and period for all periods including period 20 (current period).

Summary Plots for Pilot Study Sites

A subset of the oyster transect locations were sampled over time for a pilot study. Here we provide plots of live oyster counts and density for these pilot stations with Lone Cabbage (LCO10B, LCO11A, LCO8B, LCO9A).
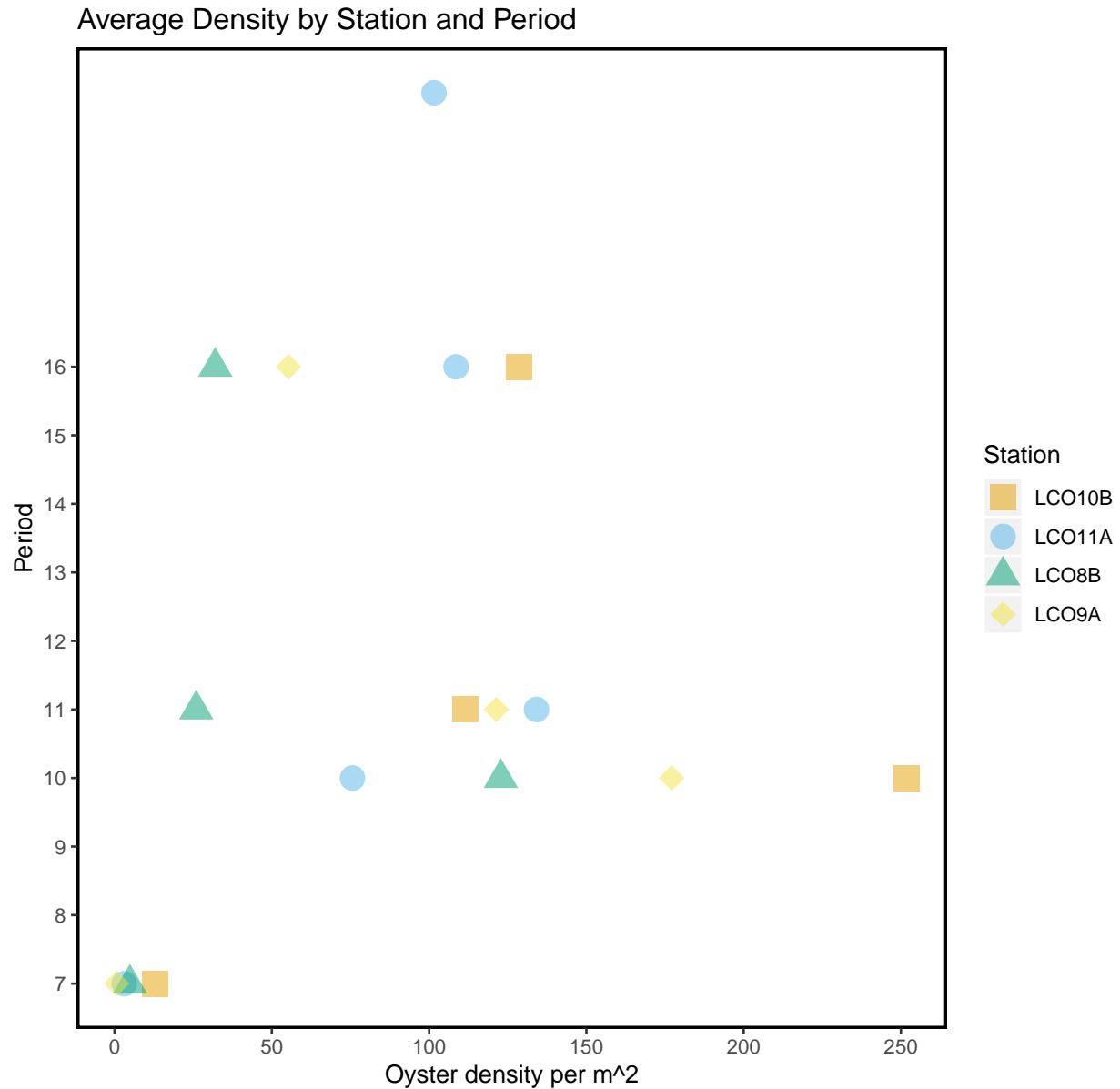

Figure – Average density comparison by period for all stations that were sampled during the pilot study.
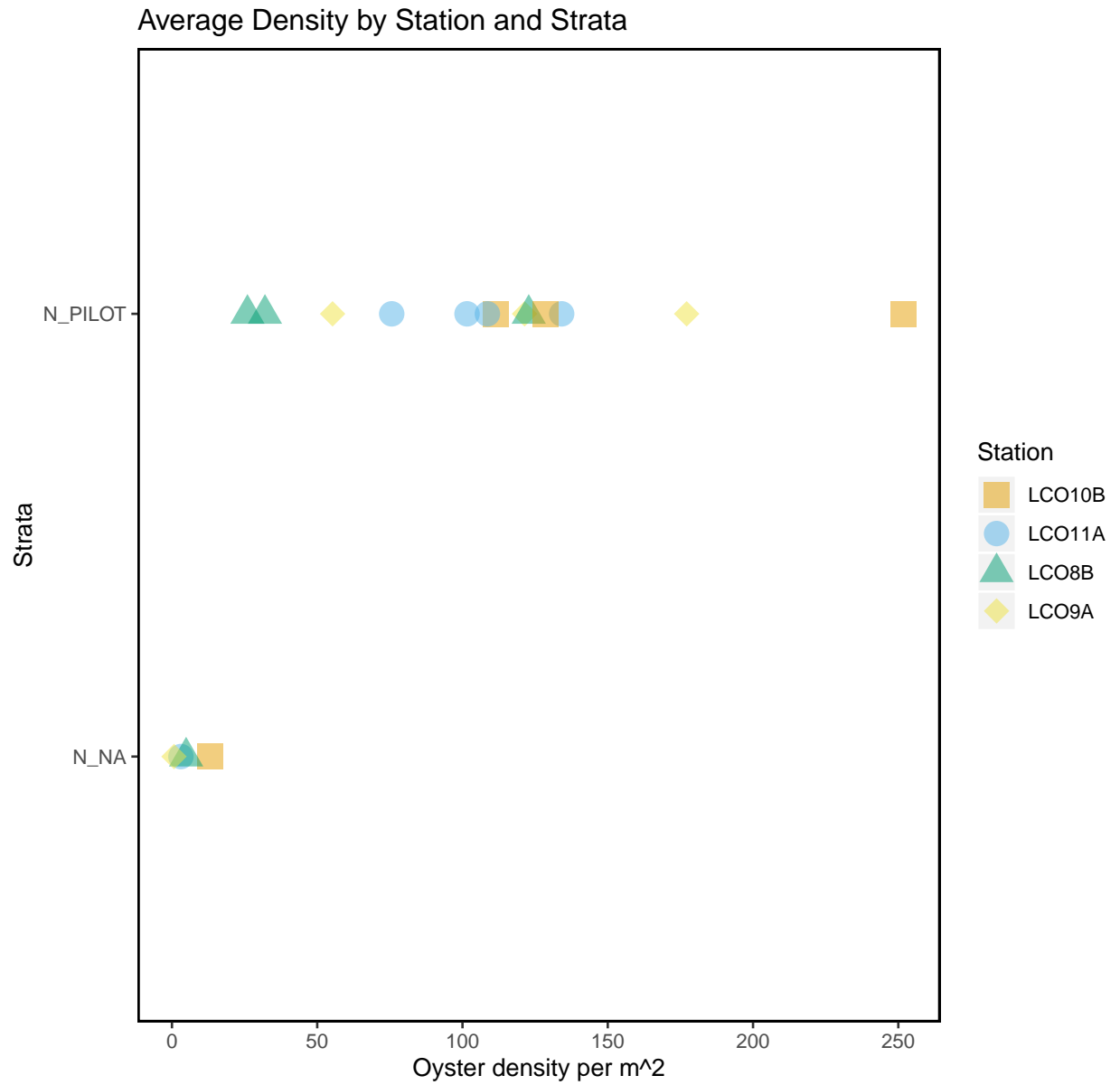
Average Density by Station and Strata

Figure – Average density comparison by strata and period for all stations that were sampled during the pilot stuc
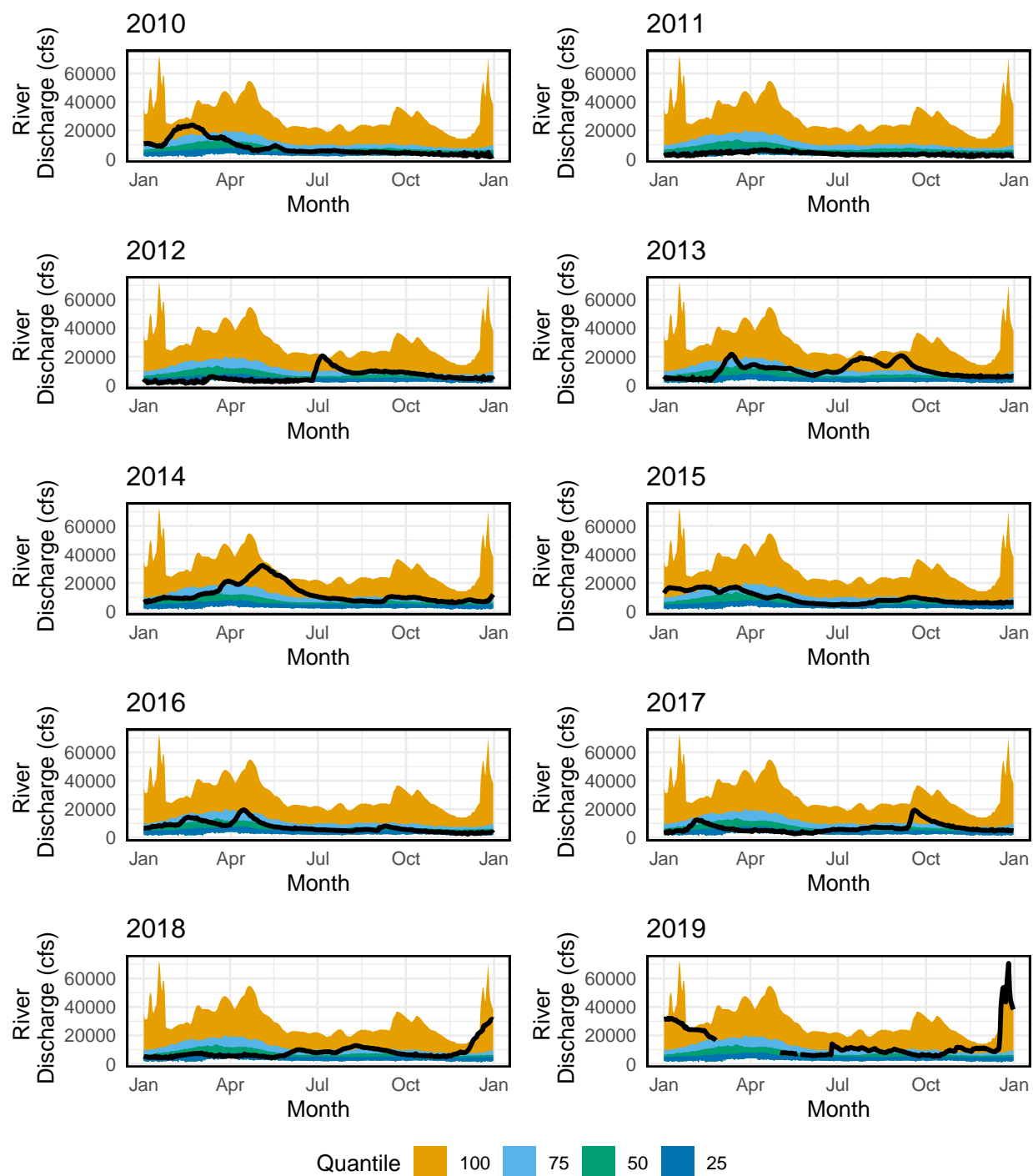
River Discharge Quartile Plots

Figure- Water discharge data are provided by the R package `waterData`. River discharge data are measured at USGS gauge 02323500 (Wilcox) Florida as mean daily discharge in cubic feet per second (by convention) in the black line. Quartiles are represented 0-25, 25-50, 50-75, and 75-100.

Latest Data Entered

Displayed are the entries for the last date of sampling (2020-01-13).

date	station	tran_length	count_live	count_dead	treatment	strata
2020-01-13	LC018	2.5	61	2	rocks	Y_SM
2020-01-13	LC018	5.0	70	1	rocks	Y_SM
2020-01-13	LC018	7.5	45	0	rocks	Y_SM
2020-01-13	LC018	10.0	23	0	rocks	Y_SM
2020-01-13	LC018	12.5	46	4	rocks	Y_SM
2020-01-13	LC018	15.0	25	4	rocks	Y_SM
2020-01-13	LC018	17.5	30	0	rocks	Y_SM
2020-01-13	LC018	20.0	47	0	rocks	Y_SM
2020-01-13	LC018	22.1	32	3	rocks	Y_SM
2020-01-13	LC018	2.5	36	2	rocks	Y_SM
2020-01-13	LC018	5.0	130	4	rocks	Y_SM
2020-01-13	LC018	7.5	112	3	rocks	Y_SM
2020-01-13	LC018	10.0	75	0	rocks	Y_SM
2020-01-13	LC018	12.5	140	11	rocks	Y_SM
2020-01-13	LC018	15.0	143	7	rocks	Y_SM
2020-01-13	LC018	17.5	87	2	rocks	Y_SM
2020-01-13	LC018	20.0	144	9	rocks	Y_SM
2020-01-13	LC018	21.3	42	2	rocks	Y_SM
2020-01-13	LC018	2.5	117	3	rocks	Y_SM
2020-01-13	LC018	5.0	126	12	rocks	Y_SM
2020-01-13	LC018	7.5	75	5	rocks	Y_SM
2020-01-13	LC018	10.0	84	6	rocks	Y_SM
2020-01-13	LC018	12.5	87	8	rocks	Y_SM
2020-01-13	LC018	15.0	94	6	rocks	Y_SM
2020-01-13	LC018	17.5	81	4	rocks	Y_SM
2020-01-13	LC018	20.0	124	5	rocks	Y_SM
2020-01-13	LC018	20.9	15	1	rocks	Y_SM