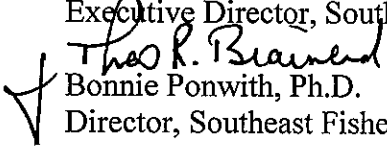**UNITED STATE DEPARTMENT OFCOMMERCE**
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149 U.S.A.

May 5, 2009

MEMORANDUM TO: Bob Mahood
                 Executive Director, South Atlantic Fisheries Management Council

FROM: Bonnie Ponwith, Ph.D.
                 Director, Southeast Fisheries Science Center

SUBJECT: SAFMC/SSC Analytical and Data Requests

In your memorandum dated April 15, 2009, the Southeast Fisheries Science Center (SEFSC) was requested to provide (1) Probability density distributions of MSY and tabulated quantiles of MSY for gag and vermilion snapper, (2) a revision of the probability density distributions of MSY and tabulated quantiles of MSY for golden tilefish, and (3) updates on NOAA Fisheries working groups addressing revised National Standards and guidelines for implementing the MSRA.

Items (1) and (2) are addressed below.

For item (3), the NS1 Working Group is writing a Technical Memorandum on methods to incorporate uncertainty into fishing level recommendations. The memorandum will offer possible approaches, such as the P* approach already considered by the SAFMC, but will not be formulaic in the sense of technical guidance. We expect that the tiered approach to catch levels drafted by the SAFMC SSC will be entirely consistent with approaches described by the Working Group. For further information, we suggest contacting the chair of the Working Group, Rick Methot (richard.methot@noaa.gov).

Cc: T. Brainerd
     T. Jamir
     P. Thompson

MSY of gag grouper (*Mycteroperca microlepis*)

The distribution of MSY of gag was computed using results from the SEDAR10 benchmark assessment assuming constant catchability for the fishery-dependent abundance indices. That assessment used a Monte Carlo/bootstrap approach to quantify uncertainty in key parameters and output, such MSY (Figure 1). Quantiles of MSY estimates are in Table 1.

Table 1. Quantiles of MSY estimates (in metric and British units).

Quantile	MSY (mt)	MSY (1000 lb)
0%	391.0	862.0
5%	444.4	979.7
10%	460.1	1014.3
11%	462.8	1020.3
12%	465.0	1025.2
13%	466.6	1028.6
14%	468.1	1032.0
15%	469.4	1034.8
16%	471.0	1038.3
17%	472.1	1040.8
18%	472.8	1042.3
19%	474.6	1046.4
20%	475.7	1048.7
21%	477.3	1052.3
22%	479.3	1056.7
23%	480.2	1058.7
24%	482.5	1063.7
25%	483.8	1066.5
26%	484.9	1069.1
27%	485.9	1071.2
28%	487.1	1074.0
29%	488.0	1075.8
30%	489.0	1078.1
31%	490.0	1080.4
32%	491.3	1083.2
33%	492.0	1084.8
34%	493.6	1088.3
35%	494.8	1090.9
36%	496.1	1093.7
37%	497.4	1096.6
38%	498.3	1098.6
39%	499.1	1100.4

40%	500.2	1102.7
41%	501.3	1105.1
42%	502.5	1107.9
43%	503.3	1109.6
44%	503.9	1111.0
45%	504.8	1113.0
46%	505.6	1114.7
47%	506.2	1115.9
48%	506.9	1117.5
49%	507.7	1119.3
50%	509.0	1122.2
55%	514.1	1133.4
60%	521.2	1149.0
65%	527.5	1163.0
70%	534.2	1177.8
75%	541.5	1193.9
80%	549.3	1210.9
85%	558.4	1231.1
90%	574.1	1265.7
95%	591.9	1305.0
100%	800.8	1765.5

Figure 1. Distribution of MSY of gag grouper.
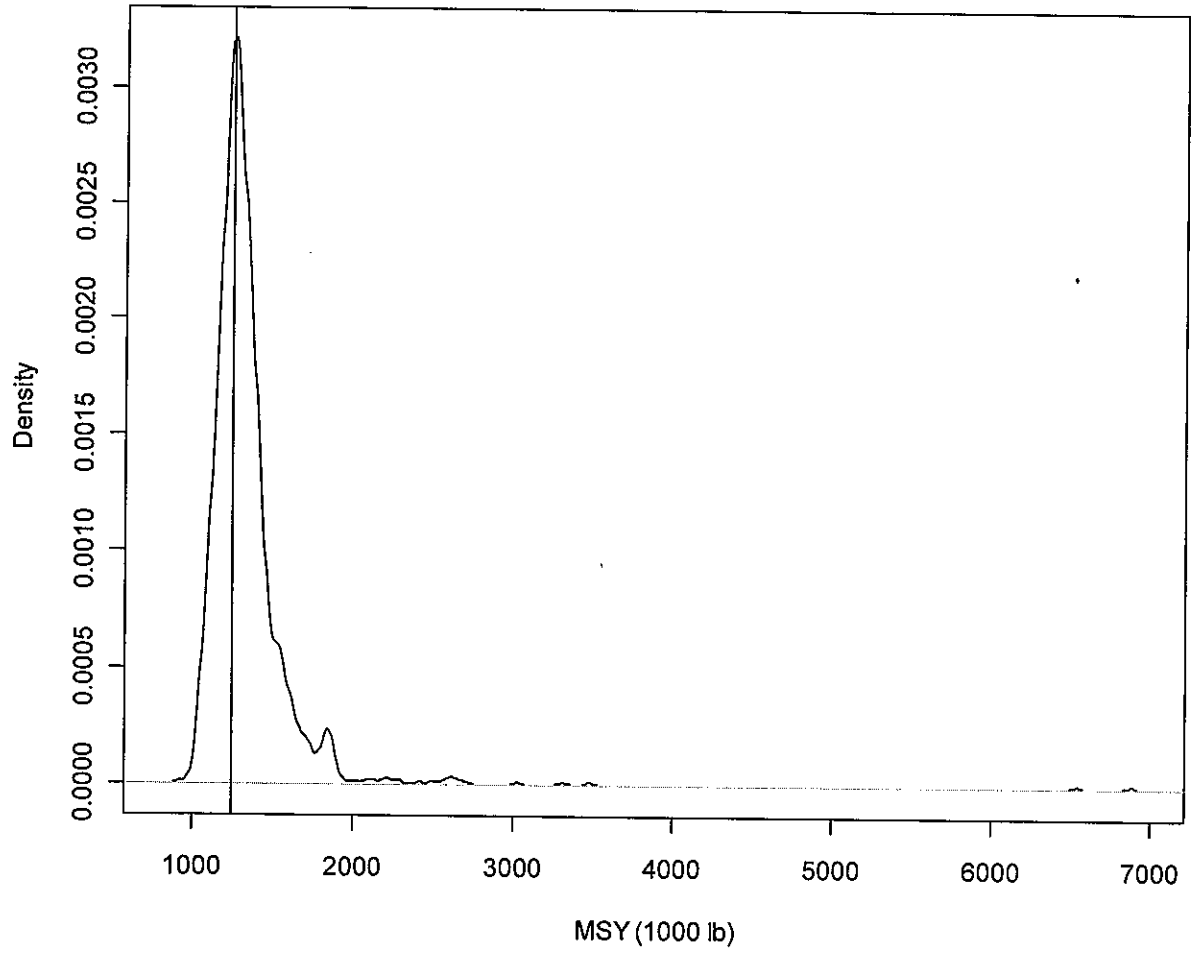
MSY of vermilion snapper (*Rhomboplites aurorubens*)

The distribution of MSY of vermilion snapper was computed using results from the SEDAR17 benchmark assessment. As described in the assessment report, a bootstrap approach was used to quantify uncertainty in key parameters of the spawner-recruit relationship, and then a Monte Carlo approach to quantify uncertainty in resulting benchmarks, such MSY (Figure 2). Quantiles of MSY estimates are in Table 2.

Table 2. Quantiles of MSY estimates (in British units).

Quantile	MSY (1000 lb)
0%	543.96
5%	1110.36
10%	1215.45
11%	1231.16
12%	1247.32
13%	1261.47
14%	1276.76
15%	1290.53
16%	1303.82
17%	1316.32
18%	1328.86
19%	1341.81
20%	1353.45
21%	1364.56
22%	1374.88
23%	1385.63
24%	1396.06
25%	1406.29
26%	1416.51
27%	1426.70
28%	1437.30
29%	1447.09
30%	1456.68
31%	1466.74
32%	1476.19
33%	1485.85
34%	1495.01
35%	1504.71
36%	1514.16
37%	1523.42
38%	1531.98

39%	1540.94
40%	1550.24
41%	1559.31
42%	1567.79
43%	1577.08
44%	1586.02
45%	1595.41
46%	1604.25
47%	1612.98
48%	1621.77
49%	1631.02
50%	1639.86
55%	1685.49
60%	1732.69
65%	1781.61
70%	1833.01
75%	1890.44
80%	1954.62
85%	2032.23
90%	2129.10
95%	2276.26
100%	3552.11

Figure 2. Distribution of MSY of vermilion snapper.

Distribution of MSY

Density

MSY (1000 lb)
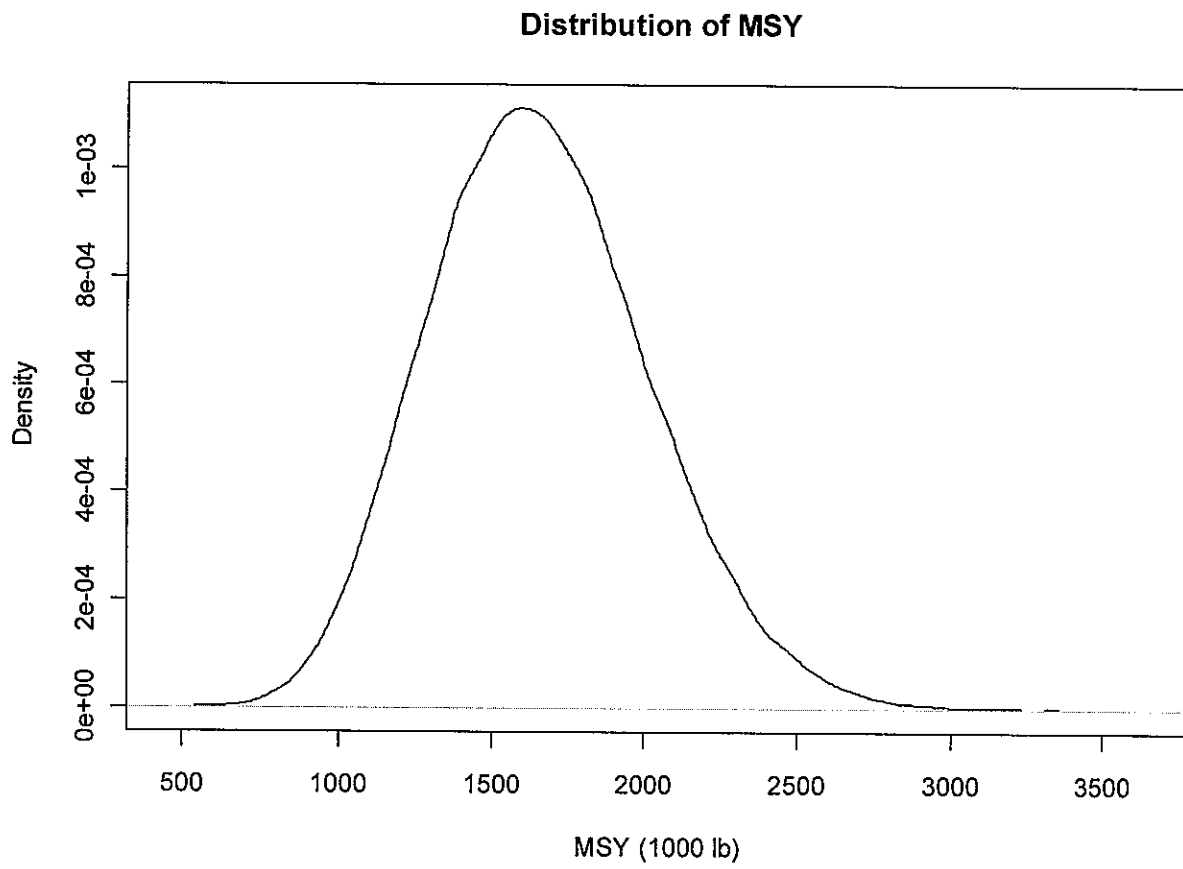
MSY of tilefish (*Lopholatilus chamaeleonticeps*)

The distribution of MSY of tilefish was computed using results from the SEDAR4 benchmark assessment. That assessment used a Monte Carlo/bootstrap approach to quantify uncertainty in key parameters and output, such MSY (Figure 3). Quantiles of MSY estimates are in Table 3.

Table 3. Quantiles of MSY estimates (in metric and British units).

Quantile	MSY (mt)	MSY (1000 lb)
0%	47.51	104.73
5%	91.53	201.78
10%	104.92	231.30
11%	106.70	235.23
12%	109.20	240.75
13%	111.27	245.32
14%	112.83	248.75
15%	114.74	252.96
16%	116.40	256.63
17%	117.18	258.35
18%	118.91	262.16
19%	120.34	265.30
20%	121.67	268.24
21%	122.87	270.89
22%	124.20	273.81
23%	125.96	277.69
24%	127.41	280.89
25%	128.32	282.90
26%	130.13	286.89
27%	131.32	289.52
28%	131.93	290.86
29%	132.87	292.93
30%	134.50	296.53
31%	135.32	298.33
32%	135.93	299.67
33%	137.18	302.44
34%	138.40	305.11
35%	139.38	307.29
36%	140.78	310.37
37%	141.64	312.26
38%	142.22	313.54
39%	143.42	316.19

40%	144.74	319.09
41%	145.52	320.83
42%	146.66	323.32
43%	147.04	324.17
44%	147.95	326.18
45%	149.09	328.70
46%	149.86	330.39
47%	150.45	331.69
48%	150.93	332.74
49%	151.66	334.35
50%	152.59	336.40
55%	158.26	348.90
60%	163.68	360.86
65%	170.52	375.93
70%	176.94	390.09
75%	182.87	403.16
80%	190.77	420.57
85%	198.38	437.35
90%	208.98	460.72
95%	229.22	505.34
100%	329.10	725.53

Figure 3. Distribution of MSY of tilefish.

Distribution of MSY