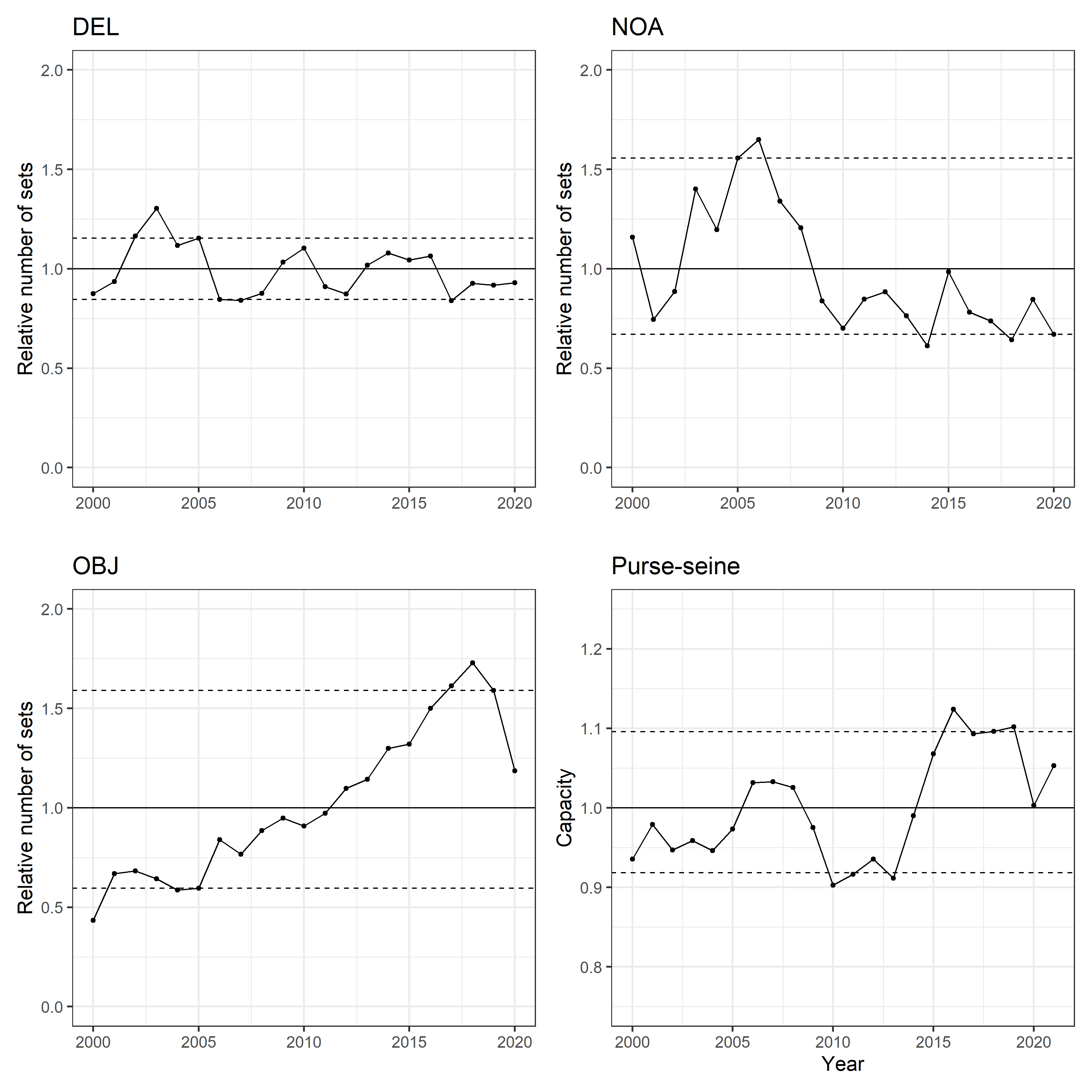
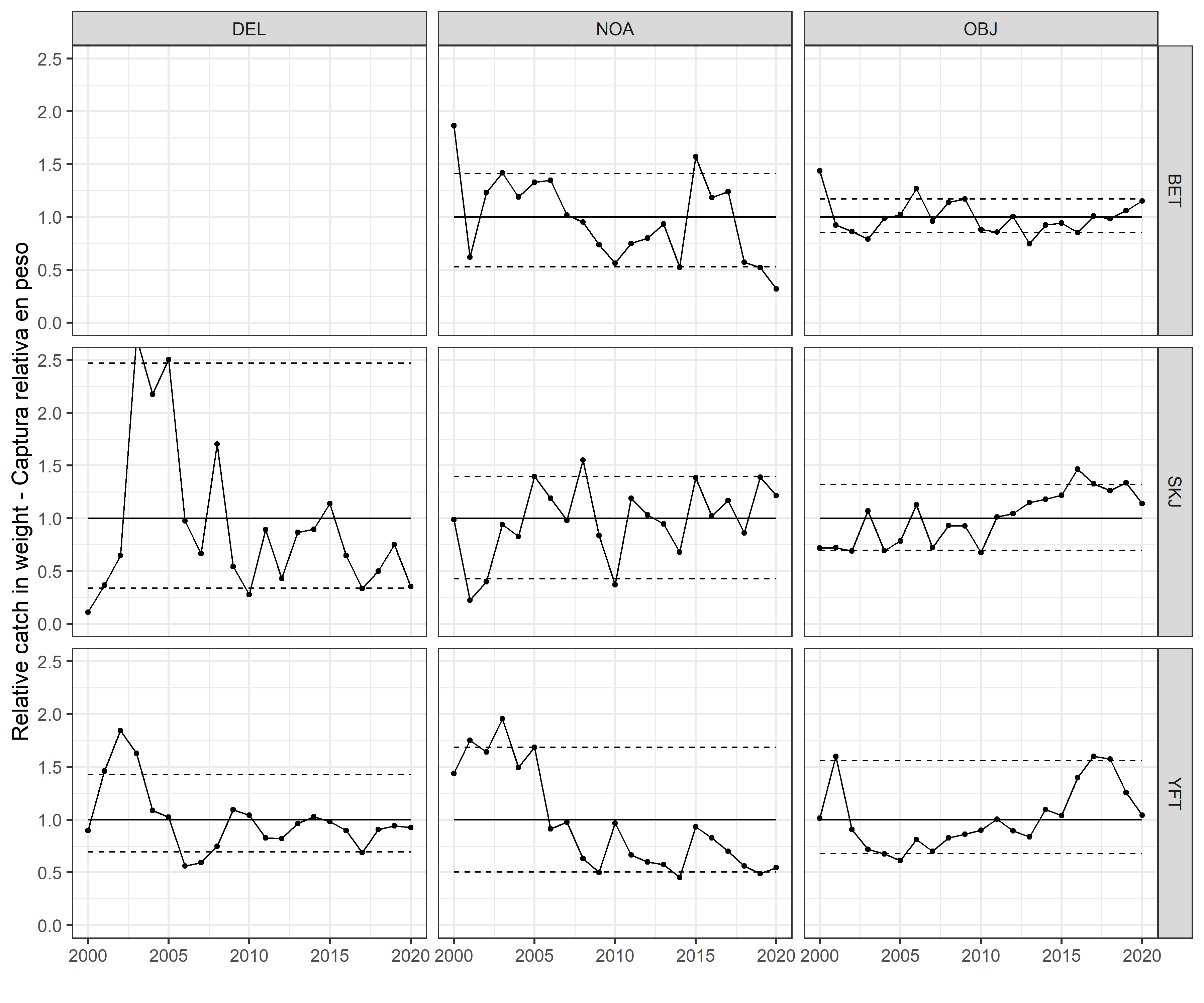
Indicators for SAC13

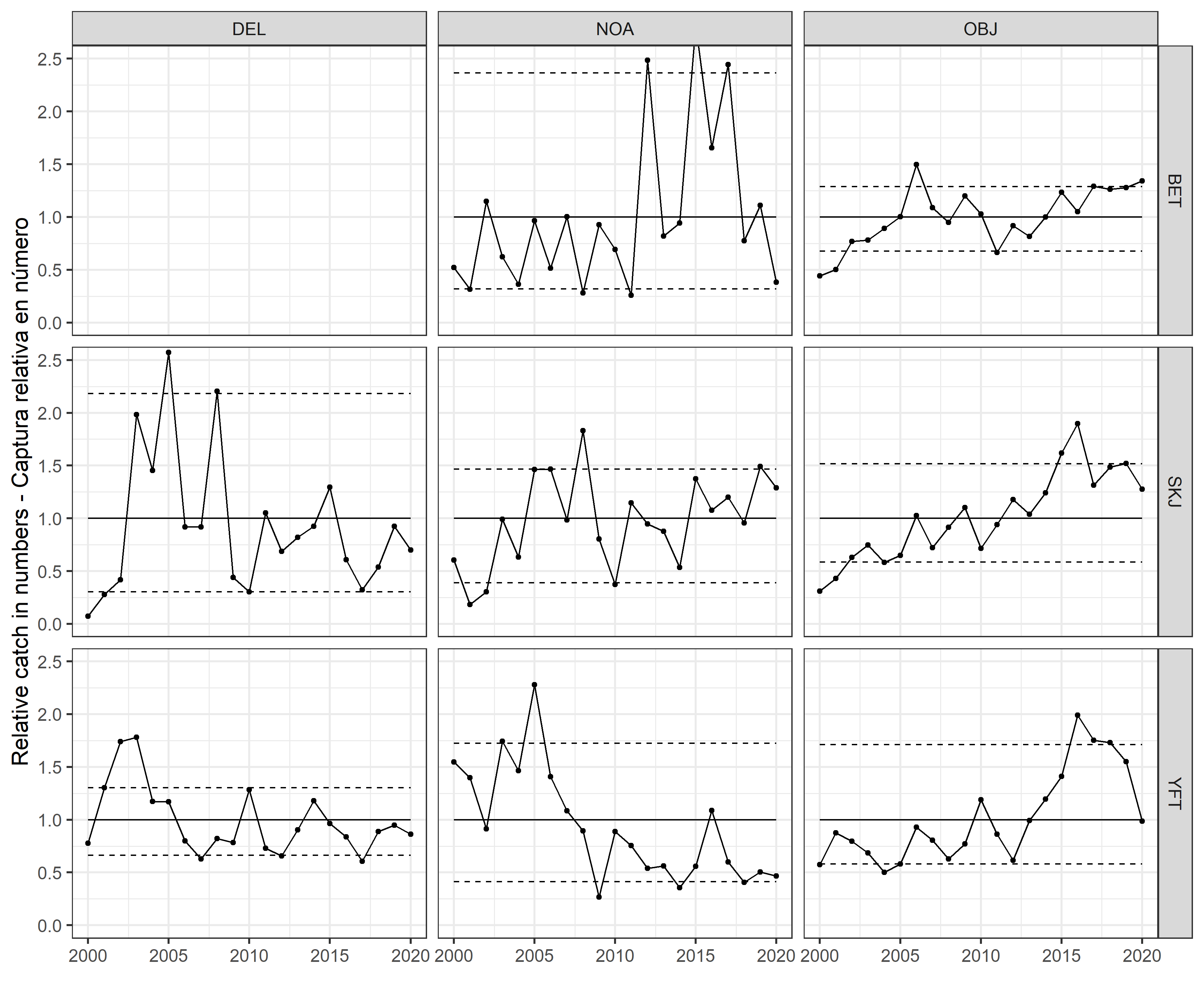
Haikun Xu

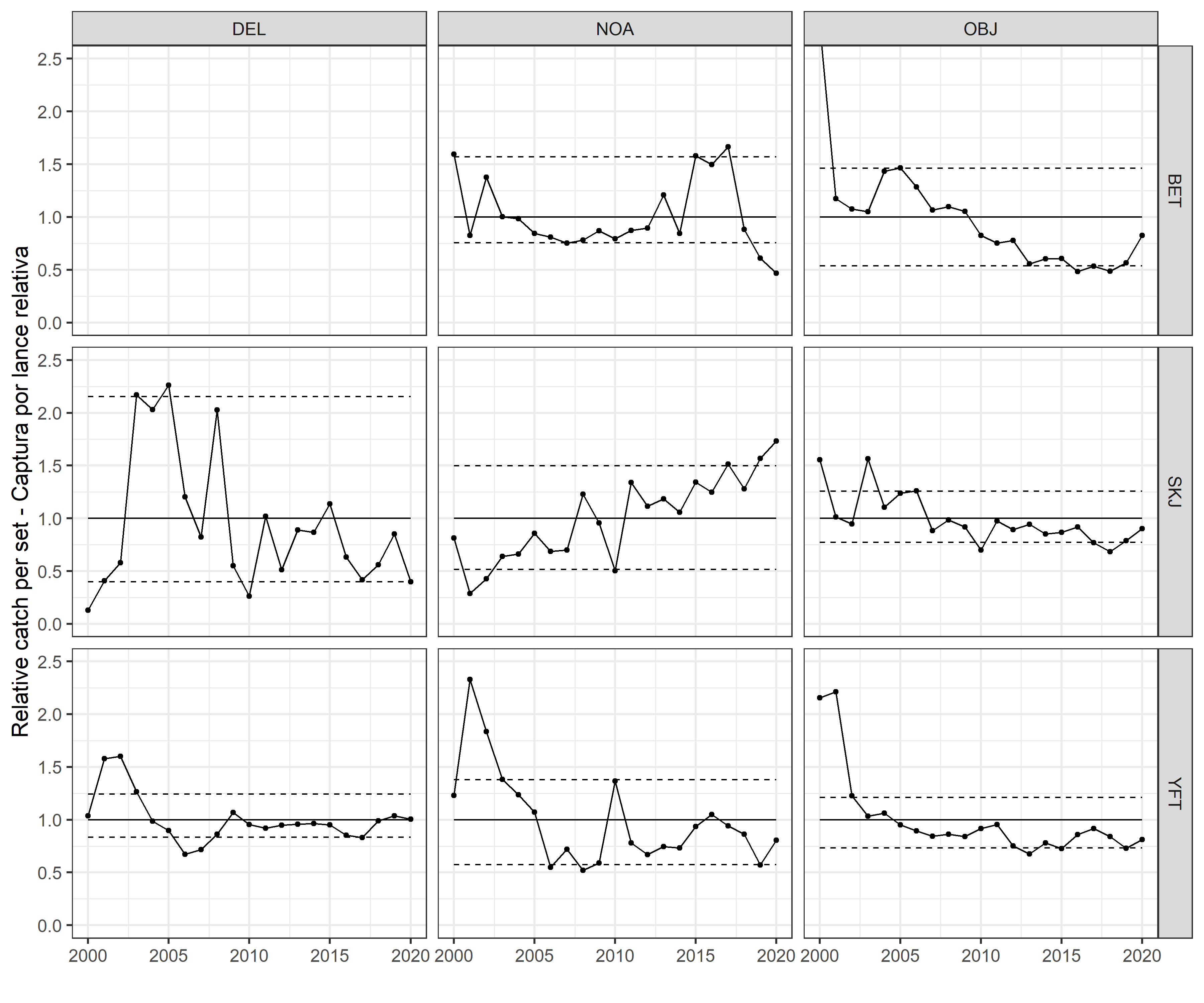
2022-04-07

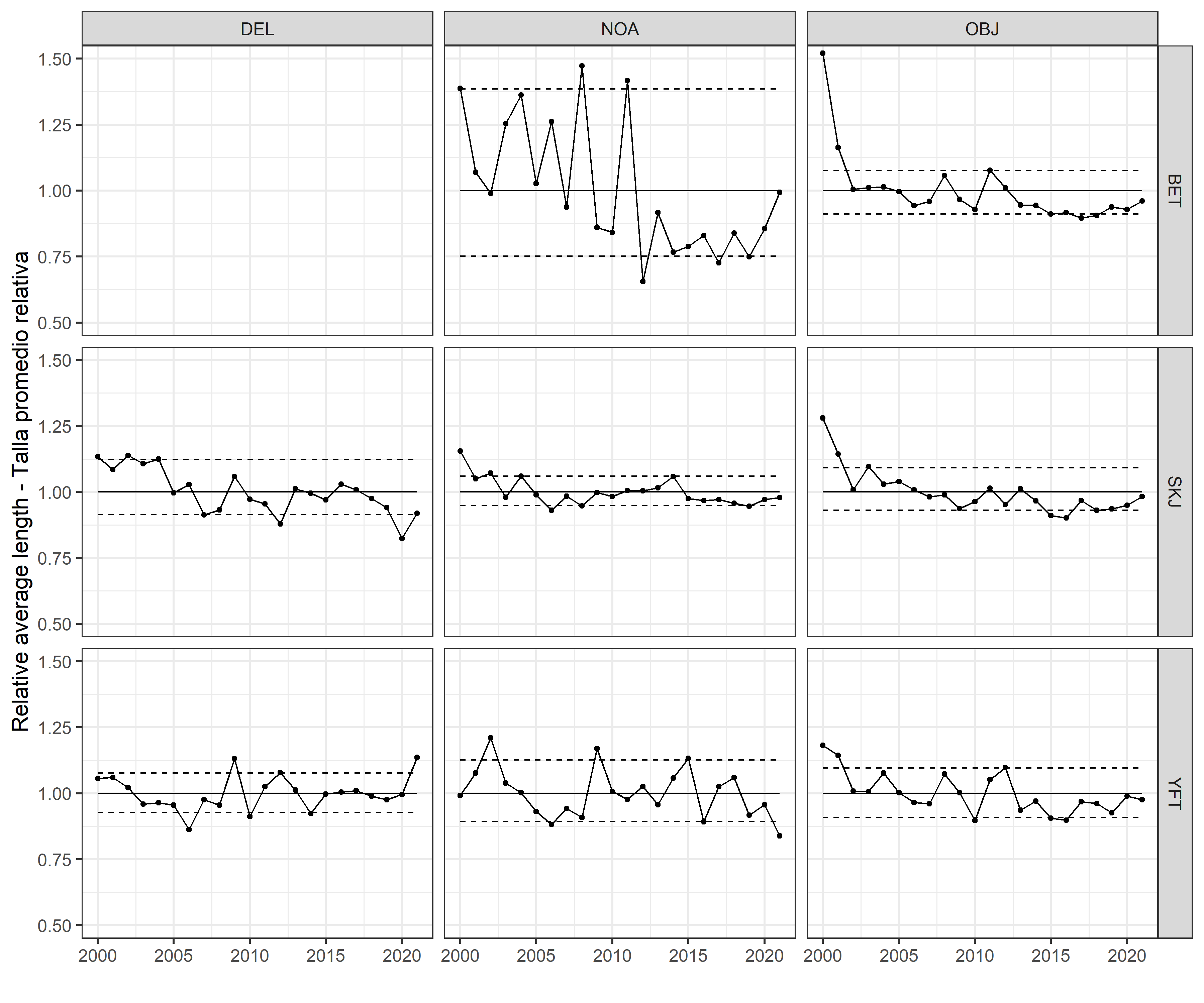
# Figures

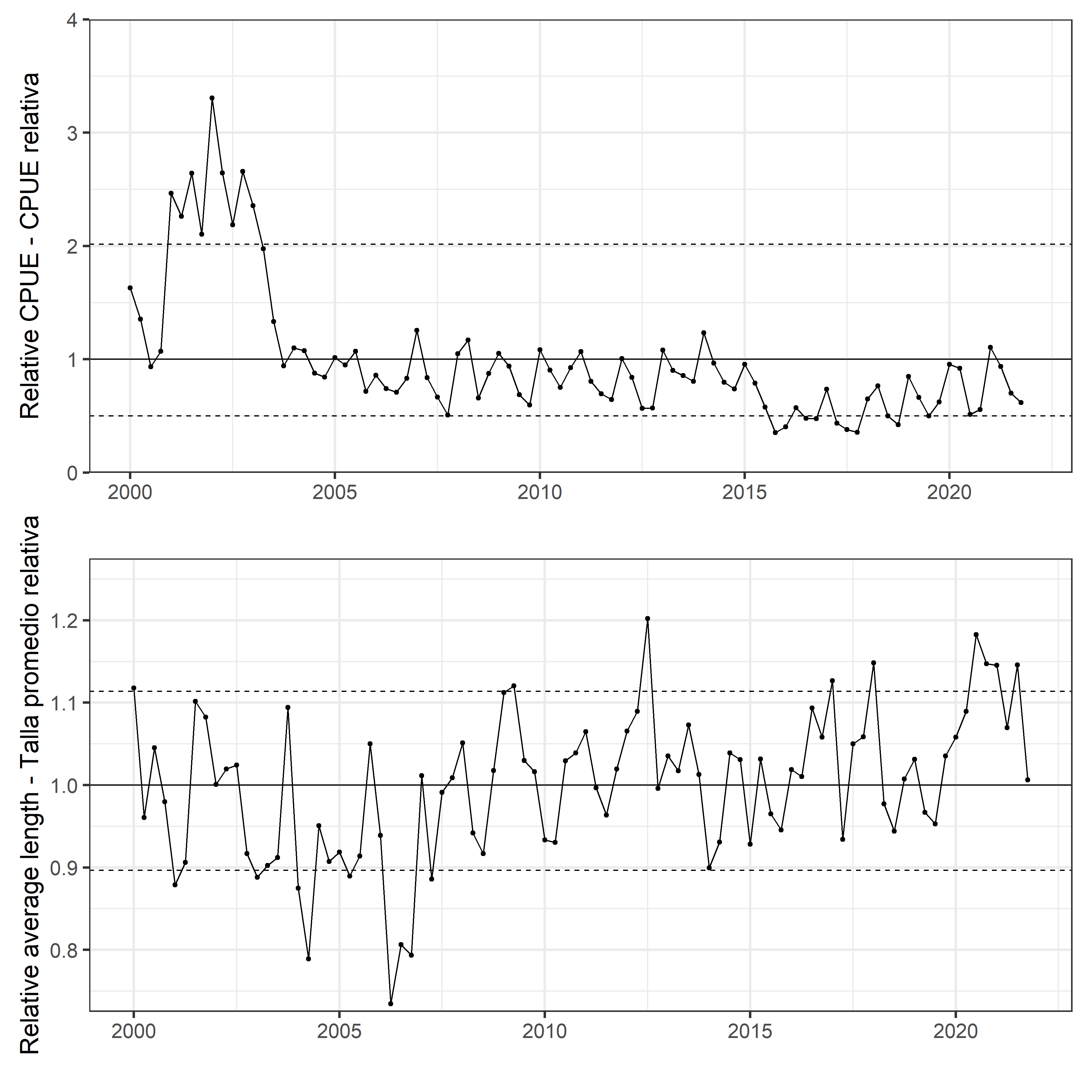
   
Figure 1

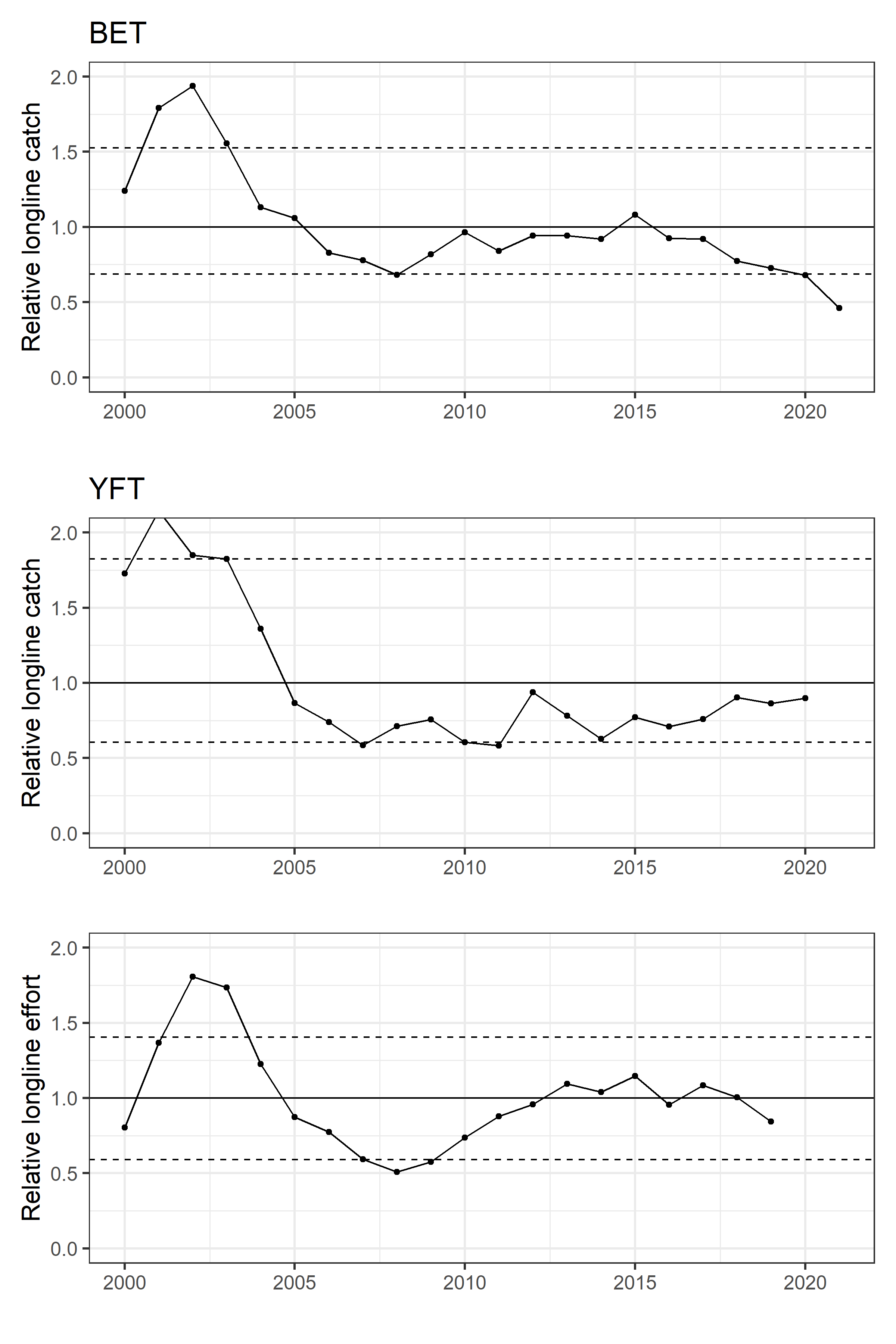
   
Figure 2a

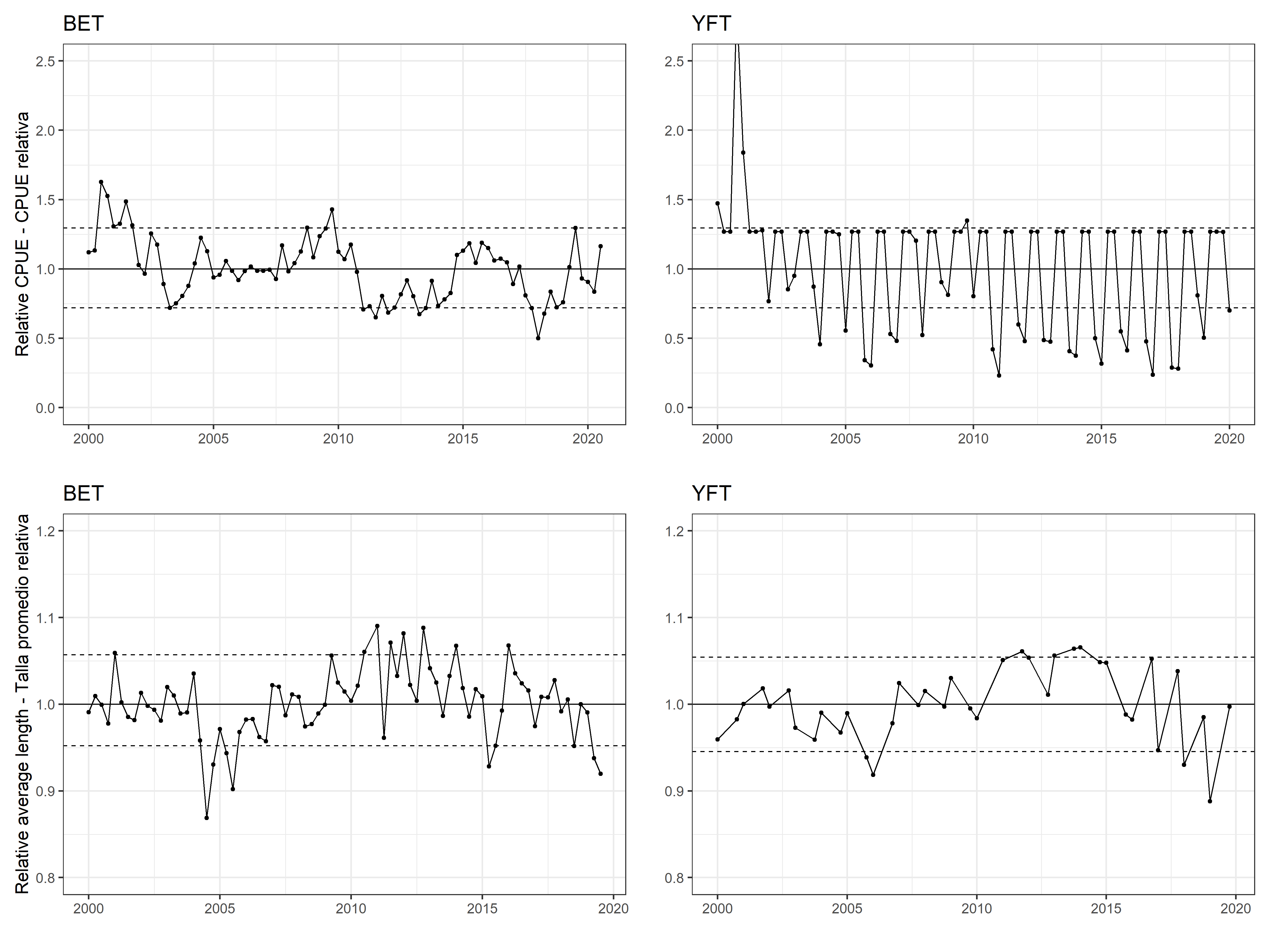
   
Figure 2b

   
Figure 3

   
Figure 4

   
Figure 5

   
Figure 6

   
Figure 7

# Tables

YFT DEL index

| Year | Unit | Fleet | Estimate\_metric\_tons | SD\_log | SD\_mt | CPUE |
| --- | --- | --- | --- | --- | --- | --- |
| 2000.00 | 1 | 1 | 37500.794 | 0.1543339 | 5556.7035 | 1.6291039 |
| 2000.25 | 1 | 1 | 31200.917 | 0.1088272 | 3276.4409 | 1.3554256 |
| 2000.50 | 1 | 1 | 21512.830 | 0.0794786 | 1652.8843 | 0.9345572 |
| 2000.75 | 1 | 1 | 24670.519 | 0.1015864 | 2384.3109 | 1.0717330 |
| 2001.00 | 1 | 1 | 56783.699 | 0.0959257 | 5362.5849 | 2.4667890 |
| 2001.25 | 1 | 1 | 52086.718 | 0.0551963 | 2819.5868 | 2.2627435 |
| 2001.50 | 1 | 1 | 60851.189 | 0.0452373 | 2706.9853 | 2.6434883 |
| 2001.75 | 1 | 1 | 48452.039 | 0.0653489 | 3096.1922 | 2.1048463 |
| 2002.00 | 1 | 1 | 76088.844 | 0.0929388 | 6944.0276 | 3.3054402 |
| 2002.25 | 1 | 1 | 60883.233 | 0.0575256 | 3437.4904 | 2.6448804 |
| 2002.50 | 1 | 1 | 50343.732 | 0.0442606 | 2190.9091 | 2.1870249 |
| 2002.75 | 1 | 1 | 61211.367 | 0.0792914 | 4775.8218 | 2.6591351 |
| 2003.00 | 1 | 1 | 54252.465 | 0.0846527 | 4493.7861 | 2.3568275 |
| 2003.25 | 1 | 1 | 45497.737 | 0.0506925 | 2260.9109 | 1.9765059 |
| 2003.50 | 1 | 1 | 30682.929 | 0.0629735 | 1874.4195 | 1.3329232 |
| 2003.75 | 1 | 1 | 21656.269 | 0.0603623 | 1274.8893 | 0.9407884 |
| 2004.00 | 1 | 1 | 25299.257 | 0.1029832 | 2508.1570 | 1.0990466 |
| 2004.25 | 1 | 1 | 24773.813 | 0.0591187 | 1428.5603 | 1.0762203 |
| 2004.50 | 1 | 1 | 20213.876 | 0.0615277 | 1208.9555 | 0.8781282 |
| 2004.75 | 1 | 1 | 19427.782 | 0.0896123 | 1670.6358 | 0.8439788 |
| 2005.00 | 1 | 1 | 23330.378 | 0.1124495 | 2525.3789 | 1.0135148 |
| 2005.25 | 1 | 1 | 21865.184 | 0.0524717 | 1122.6385 | 0.9498641 |
| 2005.50 | 1 | 1 | 24628.245 | 0.0837779 | 1983.4176 | 1.0698965 |
| 2005.75 | 1 | 1 | 16526.954 | 0.0811319 | 1287.5547 | 0.7179615 |
| 2006.00 | 1 | 1 | 19775.030 | 0.1333299 | 2497.9859 | 0.8590639 |
| 2006.25 | 1 | 1 | 17053.636 | 0.0760195 | 1253.9419 | 0.7408415 |
| 2006.50 | 1 | 1 | 16297.763 | 0.0952798 | 1491.9270 | 0.7080050 |
| 2006.75 | 1 | 1 | 19163.871 | 0.1256647 | 2291.5633 | 0.8325140 |
| 2007.00 | 1 | 1 | 28902.322 | 0.1663748 | 4690.3099 | 1.2555703 |
| 2007.25 | 1 | 1 | 19308.962 | 0.1354531 | 2469.3532 | 0.8388170 |
| 2007.50 | 1 | 1 | 15310.503 | 0.1427262 | 2041.2812 | 0.6651166 |
| 2007.75 | 1 | 1 | 11687.938 | 0.1914215 | 2031.0610 | 0.5077457 |
| 2008.00 | 1 | 1 | 24171.395 | 0.0992627 | 2338.2756 | 1.0500501 |
| 2008.25 | 1 | 1 | 26934.678 | 0.0842383 | 2210.1672 | 1.1700923 |
| 2008.50 | 1 | 1 | 15162.494 | 0.0893388 | 1302.4667 | 0.6586868 |
| 2008.75 | 1 | 1 | 20136.425 | 0.1004330 | 1947.2538 | 0.8747636 |
| 2009.00 | 1 | 1 | 24207.871 | 0.0999885 | 2294.7194 | 1.0516347 |
| 2009.25 | 1 | 1 | 21638.696 | 0.0543975 | 1149.0479 | 0.9400250 |
| 2009.50 | 1 | 1 | 15839.329 | 0.0702119 | 1073.5228 | 0.6880898 |
| 2009.75 | 1 | 1 | 13708.908 | 0.0841227 | 1100.0937 | 0.5955403 |
| 2010.00 | 1 | 1 | 24947.415 | 0.1028588 | 2467.2838 | 1.0837619 |
| 2010.25 | 1 | 1 | 20825.657 | 0.0485782 | 990.4225 | 0.9047051 |
| 2010.50 | 1 | 1 | 17280.233 | 0.0611370 | 1025.7686 | 0.7506853 |
| 2010.75 | 1 | 1 | 21313.484 | 0.0675989 | 1392.3472 | 0.9258972 |
| 2011.00 | 1 | 1 | 24566.164 | 0.1075280 | 2513.7526 | 1.0671996 |
| 2011.25 | 1 | 1 | 18572.224 | 0.0598999 | 1083.7647 | 0.8068118 |
| 2011.50 | 1 | 1 | 16032.622 | 0.0695067 | 1073.8504 | 0.6964868 |
| 2011.75 | 1 | 1 | 14843.127 | 0.0951475 | 1343.1507 | 0.6448129 |
| 2012.00 | 1 | 1 | 23184.400 | 0.1151051 | 2510.6693 | 1.0071733 |
| 2012.25 | 1 | 1 | 19315.401 | 0.0688657 | 1282.2420 | 0.8390968 |
| 2012.50 | 1 | 1 | 13071.153 | 0.0737300 | 928.1697 | 0.5678351 |
| 2012.75 | 1 | 1 | 13134.039 | 0.0932077 | 1171.7849 | 0.5705670 |
| 2013.00 | 1 | 1 | 24913.876 | 0.1056880 | 2507.8585 | 1.0823049 |
| 2013.25 | 1 | 1 | 20790.797 | 0.0525083 | 1064.0259 | 0.9031907 |
| 2013.50 | 1 | 1 | 19694.916 | 0.0560840 | 1074.1263 | 0.8555836 |
| 2013.75 | 1 | 1 | 18534.271 | 0.0730208 | 1306.2886 | 0.8051631 |
| 2014.00 | 1 | 1 | 28402.266 | 0.0943500 | 2590.9510 | 1.2338470 |
| 2014.25 | 1 | 1 | 22219.476 | 0.0640172 | 1382.9318 | 0.9652552 |
| 2014.50 | 1 | 1 | 18382.100 | 0.0499591 | 896.3040 | 0.7985525 |
| 2014.75 | 1 | 1 | 16994.873 | 0.0739647 | 1212.7358 | 0.7382887 |
| 2015.00 | 1 | 1 | 22002.369 | 0.1136010 | 2379.8036 | 0.9558236 |
| 2015.25 | 1 | 1 | 18174.202 | 0.0677915 | 1193.3972 | 0.7895210 |
| 2015.50 | 1 | 1 | 13307.847 | 0.0810218 | 1034.6443 | 0.5781175 |
| 2015.75 | 1 | 1 | 8107.614 | 0.1206129 | 912.8010 | 0.3522098 |
| 2016.00 | 1 | 1 | 9323.261 | 0.0963995 | 847.6169 | 0.4050197 |
| 2016.25 | 1 | 1 | 13202.705 | 0.0661031 | 843.3679 | 0.5735499 |
| 2016.50 | 1 | 1 | 11051.531 | 0.0594068 | 638.1467 | 0.4800990 |
| 2016.75 | 1 | 1 | 10938.590 | 0.0879778 | 924.2274 | 0.4751926 |
| 2017.00 | 1 | 1 | 16917.582 | 0.1012745 | 1637.3032 | 0.7349311 |
| 2017.25 | 1 | 1 | 10057.092 | 0.0757996 | 731.4427 | 0.4368987 |
| 2017.50 | 1 | 1 | 8735.781 | 0.0933192 | 776.1271 | 0.3794985 |
| 2017.75 | 1 | 1 | 8158.244 | 0.1141882 | 874.4202 | 0.3544092 |
| 2018.00 | 1 | 1 | 14966.427 | 0.0748589 | 1081.1864 | 0.6501693 |
| 2018.25 | 1 | 1 | 17607.984 | 0.0625227 | 1069.3695 | 0.7649234 |
| 2018.50 | 1 | 1 | 11540.261 | 0.0789145 | 873.6662 | 0.5013303 |
| 2018.75 | 1 | 1 | 9755.895 | 0.0947934 | 883.4231 | 0.4238141 |
| 2019.00 | 1 | 1 | 19519.390 | 0.0934043 | 1739.8948 | 0.8479584 |
| 2019.25 | 1 | 1 | 15250.163 | 0.0633909 | 939.0215 | 0.6624953 |
| 2019.50 | 1 | 1 | 11500.698 | 0.0832743 | 918.3912 | 0.4996116 |
| 2019.75 | 1 | 1 | 14334.681 | 0.0983519 | 1345.1872 | 0.6227251 |
| 2020.00 | 1 | 1 | 21980.341 | 0.0978006 | 2048.5556 | 0.9548667 |
| 2020.25 | 1 | 1 | 21204.832 | 0.0511103 | 1059.1454 | 0.9211772 |
| 2020.50 | 1 | 1 | 11805.377 | 0.0768099 | 874.8599 | 0.5128474 |
| 2020.75 | 1 | 1 | 12804.384 | 0.0827496 | 1019.4163 | 0.5562462 |
| 2021.00 | 1 | 1 | 25442.314 | 0.1005064 | 2453.2667 | 1.1052612 |
| 2021.25 | 1 | 1 | 21577.685 | 0.0582753 | 1225.1842 | 0.9373746 |
| 2021.50 | 1 | 1 | 16147.942 | 0.0831578 | 1289.1781 | 0.7014965 |
| 2021.75 | 1 | 1 | 14222.092 | 0.0918664 | 1247.5833 | 0.6178340 |

BET LL index

| Year | Unit | Fleet | Estimate\_metric\_tons | SD\_log | SD\_mt | Species | CPUE | low | high |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2000.00 | 1 | 1 | 1722.6199 | 0.0340146 | 57.86134 | Bigeye | 1.1190794 | 0.7200817 | 1.294958 |
| 2000.25 | 1 | 1 | 1743.9128 | 0.0330174 | 56.89852 | Bigeye | 1.1329121 | 0.7200817 | 1.294958 |
| 2000.50 | 1 | 1 | 2503.5322 | 0.0466910 | 115.10356 | Bigeye | 1.6263897 | 0.7200817 | 1.294958 |
| 2000.75 | 1 | 1 | 2350.3548 | 0.0267107 | 62.12223 | Bigeye | 1.5268798 | 0.7200817 | 1.294958 |
| 2001.00 | 1 | 1 | 2011.5344 | 0.0288156 | 57.31596 | Bigeye | 1.3067692 | 0.7200817 | 1.294958 |
| 2001.25 | 1 | 1 | 2040.9766 | 0.0361301 | 72.74992 | Bigeye | 1.3258960 | 0.7200817 | 1.294958 |
| 2001.50 | 1 | 1 | 2288.0325 | 0.0240975 | 54.64593 | Bigeye | 1.4863929 | 0.7200817 | 1.294958 |
| 2001.75 | 1 | 1 | 2024.1914 | 0.0218716 | 43.88384 | Bigeye | 1.3149917 | 0.7200817 | 1.294958 |
| 2002.00 | 1 | 1 | 1582.6472 | 0.0225966 | 35.43338 | Bigeye | 1.0281478 | 0.7200817 | 1.294958 |
| 2002.25 | 1 | 1 | 1485.7983 | 0.0311749 | 45.78567 | Bigeye | 0.9652311 | 0.7200817 | 1.294958 |
| 2002.50 | 1 | 1 | 1931.8638 | 0.0294614 | 56.28913 | Bigeye | 1.2550122 | 0.7200817 | 1.294958 |
| 2002.75 | 1 | 1 | 1809.9789 | 0.0260610 | 46.69998 | Bigeye | 1.1758311 | 0.7200817 | 1.294958 |
| 2003.00 | 1 | 1 | 1372.1264 | 0.0245569 | 33.36465 | Bigeye | 0.8913854 | 0.7200817 | 1.294958 |
| 2003.25 | 1 | 1 | 1108.0707 | 0.0252860 | 27.73643 | Bigeye | 0.7198449 | 0.7200817 | 1.294958 |
| 2003.50 | 1 | 1 | 1157.9876 | 0.0275028 | 31.49162 | Bigeye | 0.7522728 | 0.7200817 | 1.294958 |
| 2003.75 | 1 | 1 | 1240.0989 | 0.0215985 | 26.55034 | Bigeye | 0.8056154 | 0.7200817 | 1.294958 |
| 2004.00 | 1 | 1 | 1350.3998 | 0.0220228 | 29.47518 | Bigeye | 0.8772711 | 0.7200817 | 1.294958 |
| 2004.25 | 1 | 1 | 1599.7167 | 0.0451450 | 71.09820 | Bigeye | 1.0392368 | 0.7200817 | 1.294958 |
| 2004.50 | 1 | 1 | 1884.0893 | 0.0464463 | 86.13336 | Bigeye | 1.2239761 | 0.7200817 | 1.294958 |
| 2004.75 | 1 | 1 | 1735.7508 | 0.0261935 | 44.98487 | Bigeye | 1.1276097 | 0.7200817 | 1.294958 |
| 2005.00 | 1 | 1 | 1446.1941 | 0.0263227 | 37.66775 | Bigeye | 0.9395027 | 0.7200817 | 1.294958 |
| 2005.25 | 1 | 1 | 1473.3586 | 0.0362396 | 52.66198 | Bigeye | 0.9571498 | 0.7200817 | 1.294958 |
| 2005.50 | 1 | 1 | 1627.5780 | 0.0484544 | 77.48512 | Bigeye | 1.0573366 | 0.7200817 | 1.294958 |
| 2005.75 | 1 | 1 | 1517.7875 | 0.0367263 | 54.92471 | Bigeye | 0.9860125 | 0.7200817 | 1.294958 |
| 2006.00 | 1 | 1 | 1416.5746 | 0.0294304 | 41.17453 | Bigeye | 0.9202607 | 0.7200817 | 1.294958 |
| 2006.25 | 1 | 1 | 1515.7055 | 0.0370884 | 55.40535 | Bigeye | 0.9846599 | 0.7200817 | 1.294958 |
| 2006.50 | 1 | 1 | 1564.7503 | 0.0452847 | 69.75629 | Bigeye | 1.0165213 | 0.7200817 | 1.294958 |
| 2006.75 | 1 | 1 | 1516.9984 | 0.0284323 | 42.63175 | Bigeye | 0.9854998 | 0.7200817 | 1.294958 |
| 2007.00 | 1 | 1 | 1518.5725 | 0.0307366 | 46.10321 | Bigeye | 0.9865224 | 0.7200817 | 1.294958 |
| 2007.25 | 1 | 1 | 1528.9092 | 0.0336242 | 50.72315 | Bigeye | 0.9932375 | 0.7200817 | 1.294958 |
| 2007.50 | 1 | 1 | 1428.6003 | 0.0539214 | 75.57567 | Bigeye | 0.9280731 | 0.7200817 | 1.294958 |
| 2007.75 | 1 | 1 | 1799.4918 | 0.0583928 | 102.96350 | Bigeye | 1.1690183 | 0.7200817 | 1.294958 |
| 2008.00 | 1 | 1 | 1513.2848 | 0.0369918 | 55.15928 | Bigeye | 0.9830873 | 0.7200817 | 1.294958 |
| 2008.25 | 1 | 1 | 1604.1544 | 0.0355376 | 56.21001 | Bigeye | 1.0421197 | 0.7200817 | 1.294958 |
| 2008.50 | 1 | 1 | 1733.6645 | 0.0470309 | 80.19503 | Bigeye | 1.1262544 | 0.7200817 | 1.294958 |
| 2008.75 | 1 | 1 | 1996.5706 | 0.0471046 | 92.47406 | Bigeye | 1.2970482 | 0.7200817 | 1.294958 |
| 2009.00 | 1 | 1 | 1668.5123 | 0.0299407 | 49.34885 | Bigeye | 1.0839290 | 0.7200817 | 1.294958 |
| 2009.25 | 1 | 1 | 1903.7409 | 0.0696644 | 129.66047 | Bigeye | 1.2367425 | 0.7200817 | 1.294958 |
| 2009.50 | 1 | 1 | 1986.8167 | 0.0584435 | 113.94209 | Bigeye | 1.2907117 | 0.7200817 | 1.294958 |
| 2009.75 | 1 | 1 | 2198.1789 | 0.0515294 | 111.23338 | Bigeye | 1.4280206 | 0.7200817 | 1.294958 |
| 2010.00 | 1 | 1 | 1729.4529 | 0.0355912 | 60.71688 | Bigeye | 1.1235184 | 0.7200817 | 1.294958 |
| 2010.25 | 1 | 1 | 1648.0448 | 0.0503150 | 81.45563 | Bigeye | 1.0706325 | 0.7200817 | 1.294958 |
| 2010.50 | 1 | 1 | 1810.1391 | 0.0439253 | 78.16990 | Bigeye | 1.1759352 | 0.7200817 | 1.294958 |
| 2010.75 | 1 | 1 | 1506.5464 | 0.0386719 | 57.37884 | Bigeye | 0.9787098 | 0.7200817 | 1.294958 |
| 2011.00 | 1 | 1 | 1089.1438 | 0.0286029 | 30.77967 | Bigeye | 0.7075492 | 0.7200817 | 1.294958 |
| 2011.25 | 1 | 1 | 1124.3752 | 0.0471823 | 52.12950 | Bigeye | 0.7304368 | 0.7200817 | 1.294958 |
| 2011.50 | 1 | 1 | 1002.0706 | 0.0398921 | 39.32979 | Bigeye | 0.6509831 | 0.7200817 | 1.294958 |
| 2011.75 | 1 | 1 | 1240.6561 | 0.0599284 | 72.90493 | Bigeye | 0.8059774 | 0.7200817 | 1.294958 |
| 2012.00 | 1 | 1 | 1054.9941 | 0.0385189 | 40.02068 | Bigeye | 0.6853643 | 0.7200817 | 1.294958 |
| 2012.25 | 1 | 1 | 1109.8932 | 0.0320377 | 35.09239 | Bigeye | 0.7210288 | 0.7200817 | 1.294958 |
| 2012.50 | 1 | 1 | 1255.9718 | 0.0373554 | 46.22662 | Bigeye | 0.8159270 | 0.7200817 | 1.294958 |
| 2012.75 | 1 | 1 | 1412.5445 | 0.0489882 | 67.95907 | Bigeye | 0.9176426 | 0.7200817 | 1.294958 |
| 2013.00 | 1 | 1 | 1235.4848 | 0.0456666 | 55.46611 | Bigeye | 0.8026179 | 0.7200817 | 1.294958 |
| 2013.25 | 1 | 1 | 1036.3977 | 0.0384183 | 39.21315 | Bigeye | 0.6732833 | 0.7200817 | 1.294958 |
| 2013.50 | 1 | 1 | 1105.2677 | 0.0353549 | 38.52739 | Bigeye | 0.7180239 | 0.7200817 | 1.294958 |
| 2013.75 | 1 | 1 | 1407.5704 | 0.0470000 | 64.99307 | Bigeye | 0.9144113 | 0.7200817 | 1.294958 |
| 2014.00 | 1 | 1 | 1129.8278 | 0.0441899 | 49.08792 | Bigeye | 0.7339791 | 0.7200817 | 1.294958 |
| 2014.25 | 1 | 1 | 1200.2913 | 0.0529758 | 62.37644 | Bigeye | 0.7797549 | 0.7200817 | 1.294958 |
| 2014.50 | 1 | 1 | 1272.4267 | 0.0532562 | 66.45446 | Bigeye | 0.8266167 | 0.7200817 | 1.294958 |
| 2014.75 | 1 | 1 | 1693.0903 | 0.0844722 | 139.53034 | Bigeye | 1.0998958 | 0.7200817 | 1.294958 |
| 2015.00 | 1 | 1 | 1742.1465 | 0.0599388 | 102.25829 | Bigeye | 1.1317646 | 0.7200817 | 1.294958 |
| 2015.25 | 1 | 1 | 1823.1456 | 0.0571894 | 102.04372 | Bigeye | 1.1843847 | 0.7200817 | 1.294958 |
| 2015.50 | 1 | 1 | 1606.8772 | 0.0554854 | 87.31858 | Bigeye | 1.0438885 | 0.7200817 | 1.294958 |
| 2015.75 | 1 | 1 | 1829.8536 | 0.0718096 | 128.43246 | Bigeye | 1.1887425 | 0.7200817 | 1.294958 |
| 2016.00 | 1 | 1 | 1769.4003 | 0.0592151 | 102.52874 | Bigeye | 1.1494697 | 0.7200817 | 1.294958 |
| 2016.25 | 1 | 1 | 1631.4031 | 0.0542508 | 86.72307 | Bigeye | 1.0598215 | 0.7200817 | 1.294958 |
| 2016.50 | 1 | 1 | 1652.1938 | 0.0947973 | 152.30623 | Bigeye | 1.0733279 | 0.7200817 | 1.294958 |
| 2016.75 | 1 | 1 | 1612.3081 | 0.0776214 | 122.23460 | Bigeye | 1.0474166 | 0.7200817 | 1.294958 |
| 2017.00 | 1 | 1 | 1371.7361 | 0.0648275 | 87.00062 | Bigeye | 0.8911319 | 0.7200817 | 1.294958 |
| 2017.25 | 1 | 1 | 1564.9852 | 0.0600693 | 92.03498 | Bigeye | 1.0166739 | 0.7200817 | 1.294958 |
| 2017.50 | 1 | 1 | 1244.0731 | 0.0851533 | 103.14490 | Bigeye | 0.8081972 | 0.7200817 | 1.294958 |
| 2017.75 | 1 | 1 | 1103.2560 | 0.0786193 | 84.71149 | Bigeye | 0.7167170 | 0.7200817 | 1.294958 |
| 2018.00 | 1 | 1 | 770.4227 | 0.0500497 | 37.86438 | Bigeye | 0.5004959 | 0.7200817 | 1.294958 |
| 2018.25 | 1 | 1 | 1043.9622 | 0.0568742 | 58.13909 | Bigeye | 0.6781975 | 0.7200817 | 1.294958 |
| 2018.50 | 1 | 1 | 1286.5378 | 0.0684809 | 86.05598 | Bigeye | 0.8357839 | 0.7200817 | 1.294958 |
| 2018.75 | 1 | 1 | 1113.0643 | 0.0847898 | 92.03436 | Bigeye | 0.7230889 | 0.7200817 | 1.294958 |
| 2019.00 | 1 | 1 | 1168.9565 | 0.1103729 | 125.38366 | Bigeye | 0.7593986 | 0.7200817 | 1.294958 |
| 2019.25 | 1 | 1 | 1560.2851 | 0.0957391 | 145.20954 | Bigeye | 1.0136205 | 0.7200817 | 1.294958 |
| 2019.50 | 1 | 1 | 1994.9880 | 0.1153195 | 223.12300 | Bigeye | 1.2960201 | 0.7200817 | 1.294958 |
| 2019.75 | 1 | 1 | 1434.6056 | 0.0922302 | 128.77048 | Bigeye | 0.9319744 | 0.7200817 | 1.294958 |
| 2020.00 | 1 | 1 | 1395.7630 | 0.0809798 | 110.15260 | Bigeye | 0.9067407 | 0.7200817 | 1.294958 |
| 2020.25 | 1 | 1 | 1285.3679 | 0.0931501 | 116.31156 | Bigeye | 0.8350238 | 0.7200817 | 1.294958 |
| 2020.50 | 1 | 1 | 1790.8110 | 0.1023880 | 178.16726 | Bigeye | 1.1633789 | 0.7200817 | 1.294958 |

YFT LL index

| Year | Unit | Fleet | Estimate\_metric\_tons | SD\_log | SD\_mt | Species | CPUE | low | high |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2000.00 | 1 | 1 | 1187.3964 | 0.0397892 | 46.381607 | Yellowfin | 1.4735540 | 0.4060885 | 1.268502 |
| 2000.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2000.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2000.75 | 1 | 1 | 2340.9602 | 0.0304381 | 70.223947 | Yellowfin | 2.9051219 | 0.4060885 | 1.268502 |
| 2001.00 | 1 | 1 | 1481.3991 | 0.0370544 | 53.976891 | Yellowfin | 1.8384102 | 0.4060885 | 1.268502 |
| 2001.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2001.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2001.75 | 1 | 1 | 1029.7834 | 0.0315781 | 32.095867 | Yellowfin | 1.2779569 | 0.4060885 | 1.268502 |
| 2002.00 | 1 | 1 | 618.2577 | 0.0322671 | 19.659530 | Yellowfin | 0.7672552 | 0.4060885 | 1.268502 |
| 2002.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2002.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2002.75 | 1 | 1 | 686.5898 | 0.0369149 | 24.930950 | Yellowfin | 0.8520551 | 0.4060885 | 1.268502 |
| 2003.00 | 1 | 1 | 764.9074 | 0.0369634 | 27.807448 | Yellowfin | 0.9492469 | 0.4060885 | 1.268502 |
| 2003.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2003.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2003.75 | 1 | 1 | 703.0480 | 0.0390391 | 27.020090 | Yellowfin | 0.8724796 | 0.4060885 | 1.268502 |
| 2004.00 | 1 | 1 | 367.6986 | 0.0292620 | 10.614612 | Yellowfin | 0.4563125 | 0.4060885 | 1.268502 |
| 2004.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2004.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2004.75 | 1 | 1 | 1006.2910 | 0.0398687 | 39.384447 | Yellowfin | 1.2488030 | 0.4060885 | 1.268502 |
| 2005.00 | 1 | 1 | 447.8671 | 0.0483640 | 21.215025 | Yellowfin | 0.5558012 | 0.4060885 | 1.268502 |
| 2005.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2005.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2005.75 | 1 | 1 | 275.1983 | 0.0580878 | 15.556779 | Yellowfin | 0.3415199 | 0.4060885 | 1.268502 |
| 2006.00 | 1 | 1 | 244.1861 | 0.0506797 | 12.095765 | Yellowfin | 0.3030340 | 0.4060885 | 1.268502 |
| 2006.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2006.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2006.75 | 1 | 1 | 428.2742 | 0.0567245 | 23.732356 | Yellowfin | 0.5314865 | 0.4060885 | 1.268502 |
| 2007.00 | 1 | 1 | 387.6865 | 0.0520331 | 19.724868 | Yellowfin | 0.4811174 | 0.4060885 | 1.268502 |
| 2007.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2007.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2007.75 | 1 | 1 | 969.8576 | 0.1118936 | 103.875746 | Yellowfin | 1.2035893 | 0.4060885 | 1.268502 |
| 2008.00 | 1 | 1 | 420.7319 | 0.0692129 | 28.213888 | Yellowfin | 0.5221265 | 0.4060885 | 1.268502 |
| 2008.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2008.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2008.75 | 1 | 1 | 728.5267 | 0.0792127 | 55.953740 | Yellowfin | 0.9040987 | 0.4060885 | 1.268502 |
| 2009.00 | 1 | 1 | 654.4588 | 0.0459087 | 29.440264 | Yellowfin | 0.8121807 | 0.4060885 | 1.268502 |
| 2009.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2009.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2009.75 | 1 | 1 | 1086.3776 | 0.0696875 | 73.409107 | Yellowfin | 1.3481901 | 0.4060885 | 1.268502 |
| 2010.00 | 1 | 1 | 647.3696 | 0.0536308 | 33.891833 | Yellowfin | 0.8033830 | 0.4060885 | 1.268502 |
| 2010.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2010.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2010.75 | 1 | 1 | 337.9684 | 0.0745844 | 24.352114 | Yellowfin | 0.4194173 | 0.4060885 | 1.268502 |
| 2011.00 | 1 | 1 | 185.8088 | 0.0454408 | 8.254423 | Yellowfin | 0.2305880 | 0.4060885 | 1.268502 |
| 2011.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2011.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2011.75 | 1 | 1 | 482.1759 | 0.1044105 | 48.421296 | Yellowfin | 0.5983783 | 0.4060885 | 1.268502 |
| 2012.00 | 1 | 1 | 386.1100 | 0.0625765 | 23.467072 | Yellowfin | 0.4791609 | 0.4060885 | 1.268502 |
| 2012.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2012.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2012.75 | 1 | 1 | 391.9703 | 0.0782833 | 29.629174 | Yellowfin | 0.4864335 | 0.4060885 | 1.268502 |
| 2013.00 | 1 | 1 | 383.3856 | 0.0836389 | 30.893475 | Yellowfin | 0.4757799 | 0.4060885 | 1.268502 |
| 2013.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2013.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2013.75 | 1 | 1 | 327.2279 | 0.0863269 | 27.203590 | Yellowfin | 0.4060885 | 0.4060885 | 1.268502 |
| 2014.00 | 1 | 1 | 301.4284 | 0.0788870 | 22.914925 | Yellowfin | 0.3740714 | 0.4060885 | 1.268502 |
| 2014.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2014.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2014.75 | 1 | 1 | 403.7374 | 0.1632135 | 62.252808 | Yellowfin | 0.5010364 | 0.4060885 | 1.268502 |
| 2015.00 | 1 | 1 | 254.7436 | 0.0902091 | 22.050684 | Yellowfin | 0.3161358 | 0.4060885 | 1.268502 |
| 2015.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2015.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2015.75 | 1 | 1 | 443.5848 | 0.1367733 | 57.731497 | Yellowfin | 0.5504870 | 0.4060885 | 1.268502 |
| 2016.00 | 1 | 1 | 331.6104 | 0.0889587 | 28.390914 | Yellowfin | 0.4115272 | 0.4060885 | 1.268502 |
| 2016.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2016.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2016.75 | 1 | 1 | 383.8376 | 0.1727773 | 62.583470 | Yellowfin | 0.4763409 | 0.4060885 | 1.268502 |
| 2017.00 | 1 | 1 | 191.3110 | 0.1176447 | 21.426882 | Yellowfin | 0.2374162 | 0.4060885 | 1.268502 |
| 2017.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2017.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2017.75 | 1 | 1 | 232.7743 | 0.1430665 | 31.689934 | Yellowfin | 0.2888719 | 0.4060885 | 1.268502 |
| 2018.00 | 1 | 1 | 226.4415 | 0.0904328 | 19.672851 | Yellowfin | 0.2810130 | 0.4060885 | 1.268502 |
| 2018.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2018.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2018.75 | 1 | 1 | 652.5042 | 0.1236517 | 76.893532 | Yellowfin | 0.8097550 | 0.4060885 | 1.268502 |
| 2019.00 | 1 | 1 | 405.3660 | 0.1990116 | 75.654626 | Yellowfin | 0.5030575 | 0.4060885 | 1.268502 |
| 2019.25 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2019.50 | 1 | 1 | 1022.1647 | 0.2308525 | 208.979091 | Yellowfin | 1.2685021 | 0.4060885 | 1.268502 |
| 2019.75 | 1 | 1 | 1020.1715 | 0.1741894 | 166.901428 | Yellowfin | 1.2660286 | 0.4060885 | 1.268502 |
| 2020.00 | 1 | 1 | 564.5510 | 0.1409767 | 75.338997 | Yellowfin | 0.7006055 | 0.4060885 | 1.268502 |

BET LL length

|  | Year | Mean\_L | Species |
| --- | --- | --- | --- |
| 1 | 2000.00 | 0.9906847 | Bigeye |
| 2 | 2000.25 | 1.0094867 | Bigeye |
| 3 | 2000.50 | 0.9992609 | Bigeye |
| 4 | 2000.75 | 0.9778316 | Bigeye |
| 5 | 2001.00 | 1.0591739 | Bigeye |
| 6 | 2001.25 | 1.0021417 | Bigeye |
| 7 | 2001.50 | 0.9854585 | Bigeye |
| 8 | 2001.75 | 0.9816668 | Bigeye |
| 9 | 2002.00 | 1.0130124 | Bigeye |
| 10 | 2002.25 | 0.9981473 | Bigeye |
| 11 | 2002.50 | 0.9935093 | Bigeye |
| 12 | 2002.75 | 0.9810706 | Bigeye |
| 13 | 2003.00 | 1.0197661 | Bigeye |
| 14 | 2003.25 | 1.0100737 | Bigeye |
| 15 | 2003.50 | 0.9893900 | Bigeye |
| 16 | 2003.75 | 0.9904545 | Bigeye |
| 17 | 2004.00 | 1.0353515 | Bigeye |
| 18 | 2004.25 | 0.9582652 | Bigeye |
| 19 | 2004.50 | 0.8688951 | Bigeye |
| 20 | 2004.75 | 0.9304940 | Bigeye |
| 21 | 2005.00 | 0.9712335 | Bigeye |
| 22 | 2005.25 | 0.9433915 | Bigeye |
| 23 | 2005.50 | 0.9019973 | Bigeye |
| 24 | 2005.75 | 0.9680736 | Bigeye |
| 25 | 2006.00 | 0.9822063 | Bigeye |
| 26 | 2006.25 | 0.9827844 | Bigeye |
| 27 | 2006.50 | 0.9622429 | Bigeye |
| 28 | 2006.75 | 0.9571279 | Bigeye |
| 29 | 2007.00 | 1.0219701 | Bigeye |
| 30 | 2007.25 | 1.0200623 | Bigeye |
| 31 | 2007.50 | 0.9870301 | Bigeye |
| 32 | 2007.75 | 1.0113267 | Bigeye |
| 33 | 2008.00 | 1.0085311 | Bigeye |
| 34 | 2008.25 | 0.9742658 | Bigeye |
| 35 | 2008.50 | 0.9771076 | Bigeye |
| 36 | 2008.75 | 0.9892271 | Bigeye |
| 37 | 2009.00 | 0.9993221 | Bigeye |
| 38 | 2009.25 | 1.0561117 | Bigeye |
| 39 | 2009.50 | 1.0249077 | Bigeye |
| 40 | 2009.75 | 1.0144846 | Bigeye |
| 41 | 2010.00 | 1.0038104 | Bigeye |
| 42 | 2010.25 | 1.0212585 | Bigeye |
| 43 | 2010.50 | 1.0605010 | Bigeye |
| 45 | 2011.00 | 1.0903690 | Bigeye |
| 46 | 2011.25 | 0.9611937 | Bigeye |
| 47 | 2011.50 | 1.0711072 | Bigeye |
| 48 | 2011.75 | 1.0327004 | Bigeye |
| 49 | 2012.00 | 1.0817293 | Bigeye |
| 50 | 2012.25 | 1.0221223 | Bigeye |
| 51 | 2012.50 | 1.0039211 | Bigeye |
| 52 | 2012.75 | 1.0881133 | Bigeye |
| 53 | 2013.00 | 1.0413614 | Bigeye |
| 54 | 2013.25 | 1.0251469 | Bigeye |
| 55 | 2013.50 | 0.9864277 | Bigeye |
| 56 | 2013.75 | 1.0325151 | Bigeye |
| 57 | 2014.00 | 1.0674779 | Bigeye |
| 58 | 2014.25 | 1.0186750 | Bigeye |
| 59 | 2014.50 | 0.9855927 | Bigeye |
| 60 | 2014.75 | 1.0174784 | Bigeye |
| 61 | 2015.00 | 1.0092644 | Bigeye |
| 62 | 2015.25 | 0.9281305 | Bigeye |
| 63 | 2015.50 | 0.9522121 | Bigeye |
| 64 | 2015.75 | 0.9925372 | Bigeye |
| 65 | 2016.00 | 1.0678521 | Bigeye |
| 66 | 2016.25 | 1.0356803 | Bigeye |
| 67 | 2016.50 | 1.0241169 | Bigeye |
| 68 | 2016.75 | 1.0158904 | Bigeye |
| 69 | 2017.00 | 0.9745426 | Bigeye |
| 70 | 2017.25 | 1.0086017 | Bigeye |
| 71 | 2017.50 | 1.0077938 | Bigeye |
| 72 | 2017.75 | 1.0276678 | Bigeye |
| 73 | 2018.00 | 0.9915942 | Bigeye |
| 74 | 2018.25 | 1.0053592 | Bigeye |
| 75 | 2018.50 | 0.9517513 | Bigeye |
| 76 | 2018.75 | 1.0000269 | Bigeye |
| 77 | 2019.00 | 0.9904404 | Bigeye |
| 78 | 2019.25 | 0.9377414 | Bigeye |
| 79 | 2019.50 | 0.9197564 | Bigeye |

YFT LL length

|  | Year | Mean\_L | Species |
| --- | --- | --- | --- |
| 1 | 2000.00 | 0.9592913 | Yellowfin |
| 4 | 2000.75 | 0.9826674 | Yellowfin |
| 5 | 2001.00 | 1.0003368 | Yellowfin |
| 8 | 2001.75 | 1.0184369 | Yellowfin |
| 9 | 2002.00 | 0.9972236 | Yellowfin |
| 12 | 2002.75 | 1.0158346 | Yellowfin |
| 13 | 2003.00 | 0.9727690 | Yellowfin |
| 16 | 2003.75 | 0.9590710 | Yellowfin |
| 17 | 2004.00 | 0.9903567 | Yellowfin |
| 20 | 2004.75 | 0.9673005 | Yellowfin |
| 21 | 2005.00 | 0.9897024 | Yellowfin |
| 24 | 2005.75 | 0.9386873 | Yellowfin |
| 25 | 2006.00 | 0.9184070 | Yellowfin |
| 28 | 2006.75 | 0.9778861 | Yellowfin |
| 29 | 2007.00 | 1.0242507 | Yellowfin |
| 32 | 2007.75 | 0.9991126 | Yellowfin |
| 33 | 2008.00 | 1.0153240 | Yellowfin |
| 36 | 2008.75 | 0.9972871 | Yellowfin |
| 37 | 2009.00 | 1.0301783 | Yellowfin |
| 40 | 2009.75 | 0.9949728 | Yellowfin |
| 41 | 2010.00 | 0.9837142 | Yellowfin |
| 45 | 2011.00 | 1.0507877 | Yellowfin |
| 48 | 2011.75 | 1.0609626 | Yellowfin |
| 49 | 2012.00 | 1.0537094 | Yellowfin |
| 52 | 2012.75 | 1.0110360 | Yellowfin |
| 53 | 2013.00 | 1.0562041 | Yellowfin |
| 56 | 2013.75 | 1.0641686 | Yellowfin |
| 57 | 2014.00 | 1.0656071 | Yellowfin |
| 60 | 2014.75 | 1.0486090 | Yellowfin |
| 61 | 2015.00 | 1.0478049 | Yellowfin |
| 64 | 2015.75 | 0.9881070 | Yellowfin |
| 65 | 2016.00 | 0.9821420 | Yellowfin |
| 68 | 2016.75 | 1.0524421 | Yellowfin |
| 69 | 2017.00 | 0.9469978 | Yellowfin |
| 72 | 2017.75 | 1.0381365 | Yellowfin |
| 73 | 2018.00 | 0.9302279 | Yellowfin |
| 76 | 2018.75 | 0.9850962 | Yellowfin |
| 77 | 2019.00 | 0.8879059 | Yellowfin |
| 80 | 2019.75 | 0.9972452 | Yellowfin |