Correction to the US Hawaii Longline Striped Marlin Catch from Years 2010–2017

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This working paper was submitted to the ISC Billfish Working Group Workshop, 9-11 March 2021 held by webinar.

Abstract

An error was found in the 2019 striped marlin stock assessment catch data. The US Hawaii longline catch from 2010 to 2017 used in the 2019 stock assessment included the entire North Pacific rather than just the western and central North Pacific area west of 150°W that is the WCNPO striped marlin stock area. This document aims to explain how the working group estimated the catch for the US Hawaii longline fleet and provides the corrected catch from 2010 to 2017.

Development of the Hawaii Longline Catch Data

At the January 2019 ISC Billfish Working Group Data Preparatory meeting, the working group (WG) agreed to the following treatment of the US Hawaii longline data. The WG noted that Walsh et al. (2007) estimated that discards accounted for about 11% of the striped marlin catch by weight, and that species misidentification of striped marlin (typically recorded as blue marlin) accounted for 18% of the catch weight in catch from 1987 to 2003. The WG agreed to use the same catch data from the 2011 assessment for the 2019 benchmark assessment, the last assessment for which corrected quarterly catch for 1975 to 2009 was provided. The WG then agreed to correct the 2010-2017 catch provided by USA from the CAT II data to account for the underestimated catch (ISC BILLWG Report 2019). The WG agreed to calculate the average difference between the logbook catch and corrected catch from 1987 to 2009 and adjust the catch from 2010 to 2017 by this amount. The WG calculated that the corrected catch was on average 10.4% higher than the logbook catch. As a result, the total striped marlin logbook catch provided by USA by Ito (2019) was increased by 10.4%.

Correcting the US Hawaii Longline Catch during 2010-2017

In preparing the catch data for the 2019 benchmark assessment, the correction from 2010 to 2017 was applied to the total North Pacific catch (see Total Catch in Table 1) rather than only the WCNPO catch west of 150°W. That is, the correction was applied to both the WCNPO and the eastern North Pacific Ocean (east of 150°W) catch biomasses. This resulted in the US Hawaii longline catch used in the assessment to be overestimated by about 17%. Therefore, the correction to the input catch should be made to adjust this catch. In addition, some catch has no location data associated with it.

This catch was divided between the >150W catch and <150W catch based on the proportion of catch reported in each area (% catch in Table 1 indicates the percent of the total catch >150W), and then the WCNPO only catch would be increased by 10.4% to account for discards and misidentification (Table 2). Overall, the corrected catch is about 13% lower using the WCNPO only catch (Figure 1). The corrected WCNPO only catch from 1975 to 2017 by quarter has been provided for inclusion in any revision for the 2019 stock assessment (Table 3).

References

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Walsh WA, Bigelow KA, and Ito RY. 2007. Corrected catch histories and logbook accuracy for billfishes (Istiophoridae) in the Hawaii-based longline fishery. NOAA Technical Memorandum NMFS-PIFSC-13, 49p.

Tables and Figures

Table 1. Comparison of US Hawaii longline catches (mt) of striped marlin in the Western central (>150W) and Eastern (<150W) North Pacific Ocean during 2010-2017. Total catch is the US Hawaii longline catch for the entire North Pacific Ocean (lto 2019). Catches with unknown location in the North Pacific Ocean are listed under "No Location Data" and the percentage of the total catch in the WCNPO is listed under "% Catch," noting that the stock boundary of the WCNPO stock is 150°W. No location data >150W is the amount of the no location data added to the Logbook catch >150W to produce the total catch >150W. Catches to the west of 150W are assigned to USA in the WCPFC and also to dual permitted (Hawaii and American Samoa) vessels.

Year	Total Catch	Logbook Catch >150W	Logbook Catch <150W	No Location Data	% Catch	No location Data >150W	Total Catch >150W	WCPFC logbook Catch >150W	Dual permit Catch >150W
2010	167.3	139.9	26.5	0.9	84	0.8	140.7	127.7	13.0
2011	364.7	333.5	29.5	1.7	91	1.6	335.1	267.1	68.0
2012	282.4	265.4	16	1	94	0.9	266.3	212.3	54.0
2013	399.1	329.1	66	4	82	3.3	332.4	267.4	65.0
2014	425.7	356.9	65.6	3.2	84	2.7	359.6	345.6	14.0
2015	489.9	411.1	76.6	2.2	84	1.8	412.9	375.9	37.0
2016	389.8	327.4	59.4	2.9	84	2.4	329.8	282.0	47.8
2017	410.9	334.1	71.8	5	81	4.1	338.2	288.4	49.8

Table 2. Comparison of new catch biomass (mt) west of 150°W, the additional 10.4% catch, the new WCNPO catch, and the catch in the original assessment. >150W is the uncorrected logbook catch west of 150°W, 10.4% of the catch is the additional catch that would be added to the catch to adjust for misidentification and discards, WCNPO only catch is the corrected catch with the additional 10.4%, North Pacific Catch is the catch used in the 2019 benchmark assessment including the 10.4% of additional catch, Total difference is the difference in biomass between the WCNPO only catch and the North Pacific catch, % difference is the percent difference between the WCNPO catch and the North Pacific catch.

Year	>150W	10.4% of catch	WCNPO Only Catch	North Pacific Catch	Total Difference	% Difference
2010	140.7	14.6	155.3	183.7	28.4	15%
2011	335.1	34.8	369.9	401.5	31.6	8%
2012	266.3	27.7	294.0	310.2	16.2	5%
2013	332.4	34.6	367.0	438.9	71.9	16%
2014	359.6	37.4	397.0	468.6	71.6	15%
2015	412.9	42.9	455.9	539	83.1	15%
2016	329.8	34.3	364.1	424.6	60.5	14%
2017	338.2	35.2	373.3	452.1	78.8	17%

Table 3. Corrected WCNPO striped marlin catch (mt) by quarter (HW_LL Corrected) for any revision of the 2019 benchmark assessment of WCNPO striped marlin.

Year	Qtr	HW_LL Corrected	Year	Qtr	HW_LL Corrected	Year	Qtr	HW_LL Corrected
1975	1	24.16	1989	1	174.73	2003	1	288.2
1975	2	10.96	1989	2	257.26	2003	2	113.04
1975	3	42.81	1989	3	17.48	2003	3	55.83
1975	4	15.3	1989	4	137.37	2003	4	302.19
1976	1	15.79	1990	1	114.52	2004	1	185.2
1976	2	23.15	1990	2	205.75	2004	2	89.2
1976	3	43.29	1990	3	35.38	2004	3	47.96
1976	4	27.16	1990	4	128.04	2004	4	137.61
1977	1	7.61	1991	1	103.13	2005	1	317.68
1977	2	16.03	1991	2	239.63	2005	2	240.16
1977	3	4.69	1991	3	61.87	2005	3	68.24
1977	4	18.35	1991	4	145.23	2005	4	106.95
1978	1	21.98	1992	1	134.29	2006	1	154.91
1978	2	21.98	1992	2	181.45	2006	2	163.96
1978	3	7.33	1992	3	69.77	2006	3	138.26
1978	4	21.98	1992	4	159.91	2006	4	247.35
1979	1	29.63	1993	1	104.66	2007	1	139.9
1979	2	29.63	1993	2	202.79	2007	2	109.97
1979	3	9.88	1993	3	55.31	2007	3	53.8
1979	4	29.63	1993	4	169.76	2007	4	44.62
1980	1	39.51	1994	1	108.55	2008	1	83.45
1980	2	39.51	1994	2	142.44	2008	2	211.98
1980	3	13.17	1994	3	32.39	2008	3	58.8
1980	4	39.51	1994	4	79.91	2008	4	122.5
1981	1	47.15	1995	1	105.31	2009	1	92.13
1981	2	47.15	1995	2	201.13	2009	2	114.32
1981	3	15.72	1995	3	96.49	2009	3	66.45
1981	4	47.15	1995	4	335.31	2009	4	79.21
1982	1	55.76	1996	1	156.35	2010	1	38.8
1982	2	55.76	1996	2	167.4	2010	2	38.8

Year	Qtr	HW_LL Corrected	Year	Qtr	HW_LL Corrected	Year	Qtr	HW_LL Corrected
1982	3	18.59	1996	3	63.66	2010	3	38.8
1982	4	55.76	1996	4	127.65	2010	4	38.8
1983	1	64.99	1997	1	95.81	2011	1	92.5
1983	2	64.99	1997	2	246.58	2011	2	92.5
1983	3	21.67	1997	3	32.14	2011	3	92.5
1983	4	64.99	1997	4	93.48	2011	4	92.5
1984	1	74.23	1998	1	79.29	2012	1	73.5
1984	2	74.23	1998	2	116.14	2012	2	73.5
1984	3	24.75	1998	3	64.26	2012	3	73.5
1984	4	74.23	1998	4	239.29	2012	4	73.5
1985	1	82.2	1999	1	118.54	2013	1	91.7
1985	2	82.2	1999	2	133.86	2013	2	91.7
1985	3	27.4	1999	3	69.65	2013	3	91.7
1985	4	82.2	1999	4	129.03	2013	4	91.7
1986	1	91.12	2000	1	69.81	2014	1	99.2
1986	2	91.12	2000	2	90.55	2014	2	99.2
1986	3	30.37	2000	3	21.5	2014	3	99.2
1986	4	91.12	2000	4	51.28	2014	4	99.2
1987	1	35.64	2001	1	71.89	2015	1	114.0
1987	2	85.84	2001	2	95.43	2015	2	114.0
1987	3	15.17	2001	3	31.1	2015	3	114.0
1987	4	140.03	2001	4	217.03	2015	4	114.0
1988	1	130.27	2002	1	72.47	2016	1	91.0
1988	2	177.15	2002	2	56.36	2016	2	91.0
1988	3	8.53	2002	3	13.85	2016	3	91.0
1988	4	166.62	2002	4	89.34	2016	4	91.0
						2017	1	93.3
						2017	2	93.3
						2017	3	93.3
						2017	4	93.3

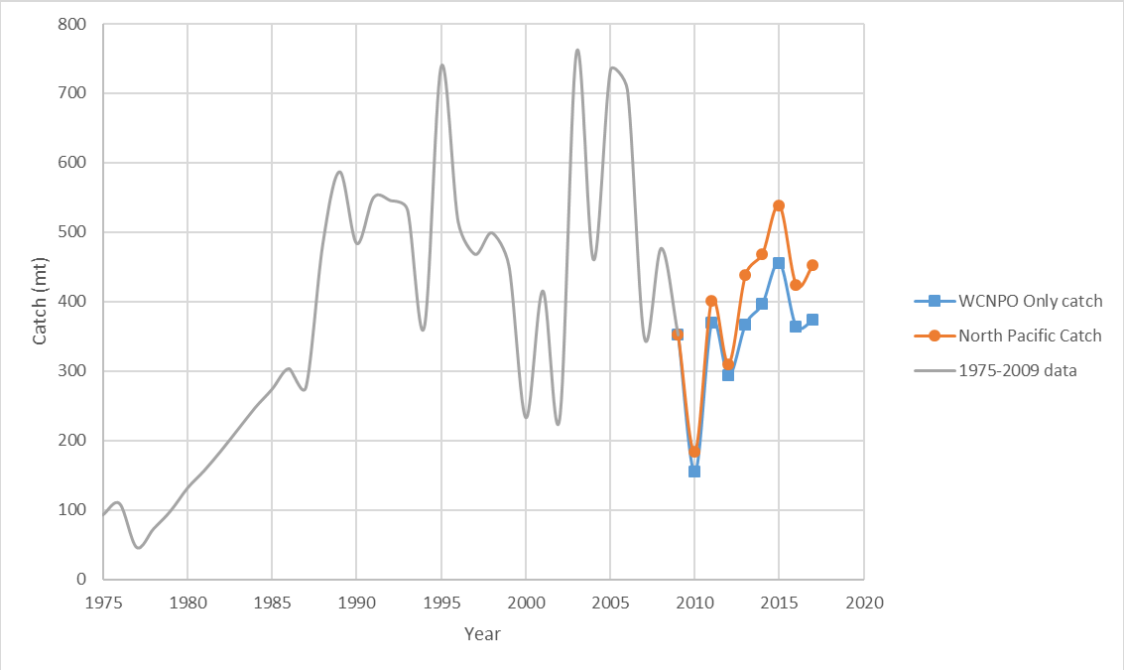

Figure 1. Time series of catch for the US Hawaii longline fleet included in the 2019 striped marlin assessment. Grey line indicates the 1975–2009 corrected catch from previous assessments, orange circles indicate the North Pacific catch included in the 2019 assessment, and blue squares indicate the corrected WCNPO catch to be used in any revision of the 2019 benchmark assessment.