



CCSBT-CC/2310/13

**Secretariat's analyses for Japan's Market Proposal related items
(including updated analysis for verification of reported catch by Members with CDS data and
CDS Tag Survey data obtained from Japanese market)
(CC Agenda item 8.2.2)**

1. Background

The CC 17 Workplan specified that the Secretariat should repeat the analysis for verification of reported catch by Members with CDS data and CDS Tag Survey data obtained from the Japanese market (Tag Survey analysis) in 2023.

Subsequently, as agreed at the EC 29 in 2022, Japan submitted its new Market Proposal (CCSBT-SFM/2307/06) to the 6th meeting of the Strategy and Fisheries Management Working Group (SFMWG 6) held in Tokyo, Japan, in July 2023. In this proposal, it was suggested that the Secretariat would address the following items by the CC 18 and EC 30:

- (i) **Item 1.1-C):** Imports (Fresh and Frozen) by each Member (Correspondence Approach #2), using CDS and trade statistics;
- (ii) **Item 1.1-F):** Comparison between weight data of individual SBTs, using CDS and Tag Survey. It should be noted that this work has been done by the Secretariat (see CCSBT-CC/2210/13, for example); and
- (iii) **Item 4):** Review of necessity to improve the handling specifications of CDS tag (the Secretariat analyses how much the readability of CDS tags by each Member has improved since EC 28, with the information accumulated through CDS Tag Survey).

2. Analyses for Japan's Market Proposal related items

- (i) **Item 1.1-C): Imports (Fresh and Frozen) by each Member (Correspondence Approach #2), using CDS and trade statistics**

Following Japan's Market Proposal, the Secretariat conducted an analysis of Japan's SBT imports (Fresh and Frozen) from other CCSBT Members as suggested by the external expert as "Correspondence Approach #2" in paper CCSBT-CC/2210/19.

Details of this analysis is shown at **Appendix 1**.

Between CDS data and Japan's trade statistics, significant discrepancies exist in the recorded quantities of Fresh and Frozen SBT entering Japan as imports from Australia. These discrepancies appear to be mainly due to large amounts of Australian frozen products being recorded as fresh under CDS but not under Japan's trade statistics, and these discrepancies persist in the 2022 data. With the exception of the Australian discrepancies, recent records between CDS and JMOF appears to be closer.

(ii) Item 1.1-F): Comparison between weight data of individual SBTs, using CDS and CDS Tag Survey

The Secretariat conducted this item following the CC 17 Workplan. Details of this analysis is shown at **Appendix 2**.

In summary, based on the verification of reported catch by Members with CDS data and CDS Tag Survey data obtained from Japanese market, it could be qualitatively stated that the catches reported by Members through the CTF are reasonably accurate.

(iii) Item 4: Review of necessity to improve the handling specifications for CDS tags

Following the Japan's Market Proposal, the Secretariat conducted analyses how much the readability of CDS tags by each Member has improved using information accumulated through CDS Tag Survey.

Details of this analysis is shown at **Appendix 3**.

Overall, the readability of tags has improved since the start of the CDS in 2010 and has kept high readability in recent years. In particular, since the instructions for attaching the centralised tags were revised in October 2021, most Members' tag readability has improved by almost 100% in the most recent year.

3. Action Required

CC18 is invited to:

- Note the information presented in this paper; and
- Taking into account that the Secretariat's resources are limited:
 - Recommend whether the analysis for verification of reported catches by Members with CDS data and CDS Tag Survey data obtained from the Japanese market should be repeated again and included in CC's 2024 Workplan; and
 - Make a recommendation to the EC regarding the utility of continuing the additional new analyses provided in section 2 of this paper.

Prepared by the Secretariat

**Analysis for Japan’s SBT Imports (Fresh and Frozen) from other CCSBT Members using
CDS data and Japan’s trade statistics
(Japan’s Market Proposal item 1.1-C))**

1. Background

Japan submitted its new Market Proposal to the 6th meeting of the Strategy and Fisheries Management Working Group (SFMWG6) held in Tokyo, Japan, in July 2023. In this proposal, it was suggested that the Secretariat analyses Japan’s SBT imports (Fresh and Frozen) from other CCSBT Members as suggested by the external expert as “Correspondence Approach #2” in paper [CCSBT-CC/2210/19](#). This analysis is the proposed Item 1.1-C) of Japan’s Market Proposal.

2. Data used for this analysis

The Secretariat used the following datasets to conduct this trial analysis:

- 1) CDS data on Japan’s SBT import from other CCSBT Members recorded in CMF and CTF (2010-2022 calendar year); and
- 2) Japan’s official SBT trade statistics (2010-2022 calendar year), which are publicly available from [the Trade Statistics of Japan](#) (operated by the Ministry of Finance of Japan (JMOF)).

3. Comparison of Japan’s SBT import figures from two data sources

The Secretariat conducted a comparison of Japan’s SBT import figures from CDS and Japan’s trade statistics (JMOF).

A comparison of Fresh SBT imported by Japan is shown in **Table 1-1** and **Figure 1-1** below.

Table 1-1: Quantity of Fresh SBT entering Japan as an Import from CDS and Japan’s trade statistics (JMOF) (unit: t)

	AU		ID		KR		NZ		TW		ZA	
	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF
2010	3,927.79	1,638.14	200.22	154.79	-	-	248.82	249.47	-	-	12.35	11.48
2011	4,018.27	755.88	241.79	154.90	-	-	300.61	295.25	-	-	10.45	7.59
2012	4,878.44	848.29	230.13	167.82	-	-	456.55	449.33	-	-	11.27	9.43
2013	6,136.26	1,107.28	255.74	215.25	0.01	-	469.62	471.39	0.83	-	3.59	2.36
2014	6,489.03	685.37	293.62	265.52	1.43	-	496.75	495.75	-	-	6.56	1.12
2015	6,335.56	883.72	245.82	232.84	2.72	-	542.20	540.87	-	-	9.71	7.39
2016	6,644.08	1,112.77	201.00	189.98	-	-	776.02	773.55	-	-	12.95	11.57
2017	5,797.52	1,027.36	74.83	70.71	-	-	762.85	761.97	-	-	35.80	32.73
2018	5,882.07	917.20	54.02	50.58	-	1,018.65	825.50	824.86	-	604.80	63.53	61.76
2019	6,107.69	702.93	25.81	22.33	0.54	-	794.42	657.95	-	0.86	31.05	32.27
2020	5,159.01	496.86	24.13	20.59	-	-	653.93	653.11	-	-	20.40	19.82
2021	4,887.73	293.95	39.31	36.02	-	-	558.23	557.78	-	-	7.12	6.94
2022	6,001.05	358.00	30.68	28.54	-	-	548.35	547.79	-	-	8.64	8.52

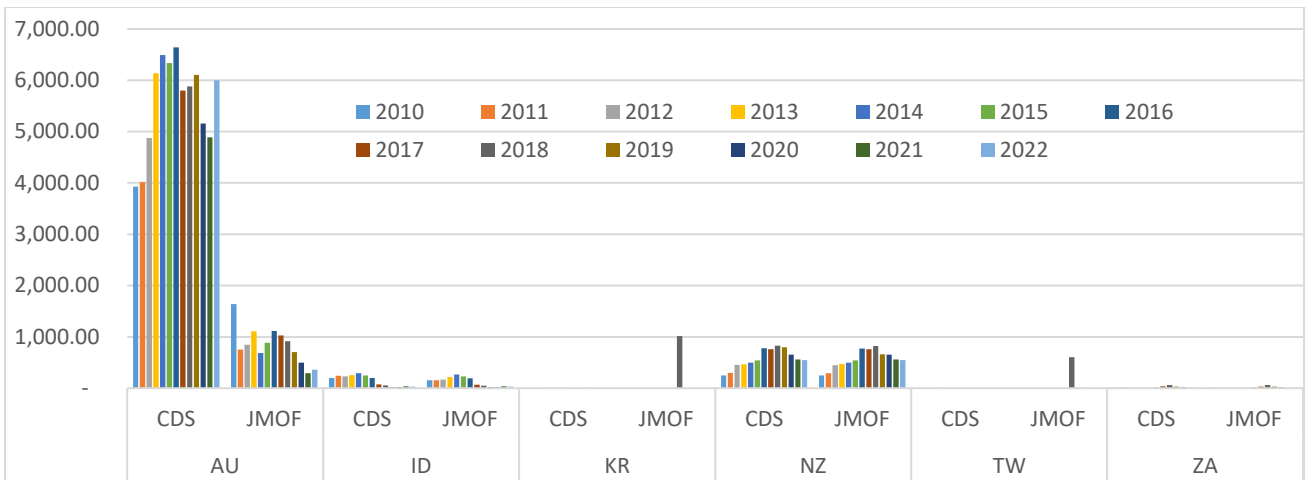


Figure 1-1: Visual comparison of Fresh SBT quantities entering Japan as an Import by Member and by Year

A Comparison for Frozen SBT imported by Japan is shown in **Table 1-2** and **Figure 1-2** below.

Table 1-2: Quantity of Frozen SBT entering Japan as an Import from CDS and Japan’s trade statistics (JMOF) (unit: t)

Year	AU		ID		KR		NZ		TW		ZA	
	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF
2010	2,568.68	4,885.36	66.98	70.82	857.27	829.66	225.40	-	934.86	983.56	0.06	-
2011	3,121.86	6,323.17	145.25	175.95	563.03	456.98	172.80	-	463.20	458.75	14.02	-
2012	2,340.46	6,080.85	184.15	176.31	965.67	846.02	208.15	-	315.99	310.02	20.43	-
2013	1,776.82	6,769.10	214.91	210.74	774.49	1,000.27	163.73	-	609.27	611.76	17.46	-
2014	2,567.60	8,206.94	299.25	295.39	1,097.74	1,102.93	195.59	-	508.17	390.00	2.53	-
2015	2,315.50	7,620.77	148.68	117.33	936.07	799.93	223.42	-	895.50	1,022.47	4.68	-
2016	2,505.06	7,895.10	3.85	6.79	883.66	1,012.92	0.05	-	730.42	622.12	12.23	-
2017	1,848.82	6,576.28	0.05	-	885.40	950.94	0.70	-	823.62	942.43	18.09	-
2018	3,124.65	8,110.56	0.15	1.19	776.09	-	-	-	649.56	-	11.87	-
2019	2,877.95	8,269.11	-	-	1,087.25	789.36	-	-	989.42	963.66	39.96	-
2020	3,047.28	7,770.26	-	-	1,081.17	1,128.77	-	-	768.36	804.54	-	-
2021	2,669.71	7,133.69	-	-	1,084.92	1,034.94	-	-	1,049.43	1,044.87	2.41	-
2022	1,351.96	6,864.93	-	-	1,027.88	1,353.64	-	-	947.75	1,033.99	-	-

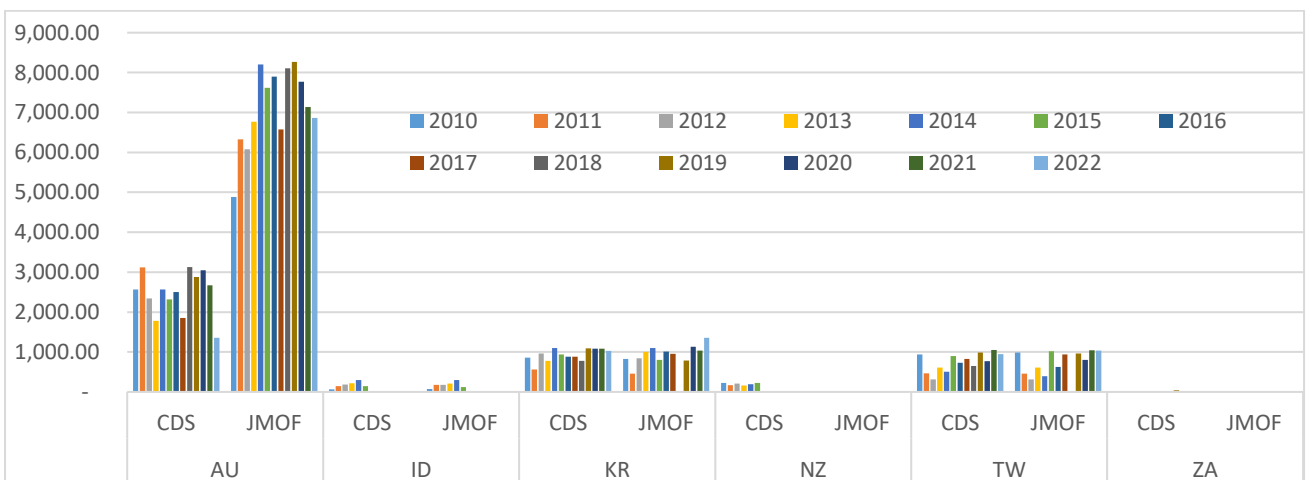


Figure 1-2: Visual comparison of Frozen SBT quantities entering Japan as an Import by Member and by Year

A Comparison for Fresh + Frozen SBT imported by Japan is shown in **Table 1-3** and **Figure 1-3** below.

Table 1-3: Quantity of Fresh + Frozen SBT entering Japan as an Import from CDS and Japan’s trade statistics (JMOF) (unit: t)

Year	AU		ID		KR		NZ		TW		ZA	
	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF	CDS	JMOF
2010	6,496.47	6,523.50	267.20	225.61	857.27	829.66	474.22	249.47	934.86	983.56	12.41	11.48
2011	7,140.13	7,079.05	387.04	330.85	563.03	456.98	473.41	295.25	463.20	458.75	24.46	7.59
2012	7,218.90	6,929.14	414.28	344.13	965.67	846.02	664.69	449.33	315.99	310.02	31.71	9.43
2013	7,913.08	7,876.38	470.65	425.99	774.50	1,000.27	633.35	471.39	610.11	611.76	21.05	2.36
2014	9,056.63	8,892.31	592.86	560.91	1,099.17	1,102.93	692.34	495.75	508.17	390.00	9.09	1.12
2015	8,651.06	8,504.49	394.50	350.17	938.79	799.93	765.62	540.87	895.50	1,022.47	14.39	7.39
2016	9,149.14	9,007.87	204.85	196.78	883.66	1,012.92	776.06	773.55	730.42	622.12	25.18	11.57
2017	7,646.34	7,603.64	74.88	70.71	885.40	950.94	763.54	761.97	823.62	942.43	53.88	32.73
2018	9,006.72	9,027.76	54.17	51.76	776.09	1,018.65	825.50	824.86	649.56	604.80	75.40	61.76
2019	8,985.64	8,972.03	25.81	22.33	1,087.79	789.36	794.42	657.95	989.42	964.52	71.01	32.27
2020	8,206.28	8,267.12	24.13	20.59	1,081.17	1,128.77	653.93	653.11	768.36	804.54	20.40	19.82
2021	7,557.44	7,427.64	39.31	36.02	1,084.92	1,034.94	558.23	557.78	1,049.43	1,044.87	9.54	6.94
2022	7,353.01	7,222.94	30.68	28.54	1,027.88	1,353.64	548.35	547.79	947.75	1,033.99	8.64	8.52

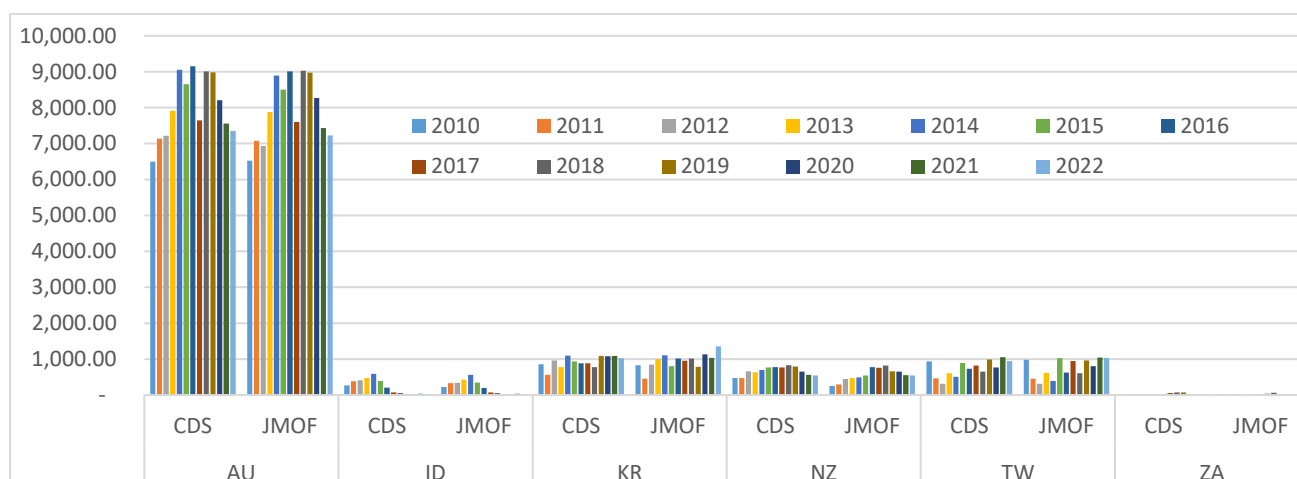


Figure 1-3: Visual comparison of Fresh + Frozen SBT quantities entering Japan as an Import by Member and by Year

In theory, CDS figures and JMOF figures should be the same or similar for both Fresh and Frozen.

However, there are large discrepancies in the recorded quantities of both Fresh and Frozen SBT entering Japan as imports. These discrepancies appear to be mainly due to large amounts of Australian frozen products being recorded as fresh under CDS but not under Japan’s trade statistics.

This discrepancy was noted in paper [CCSBT-CC/2210/19](#) (used data from 2010 to 2020), and it also reported that it appeared that substantial quantities of frozen SBT have been inadvertently reported as fresh on CDS forms. In this report, 2021 and 2022 data are added to the analysis by [CCSBT-CC/2210/19](#), but it seems the miscoding of fresh and frozen by Australian industries has continued into 2022.

It seems that, for 2018, there is miscoding in JMOF for Frozen SBT from Korea and Taiwan.

Except for Australia’s case, recent records between CDS and JMOF appear to be closer.

**Updated analysis for verification of reported catch by Members with CDS data and CDS Tag Survey data obtained from Japanese market
(Japan's Market Proposal item 1.1-F))**

1. Background

In 2022, the Secretariat submitted to CC 17 a paper (CCSBT-CC/2210/13) on updated analysis for verification of reported catch by Members with CDS data and Tag Survey data obtained from the Japanese market. CC 17 agreed that the information from this analysis is suitable to assist with the verification of reported catches and that the Secretariat should repeat this analysis in 2023.

In addition, Japan suggested that in its Market Proposal discussed at the SFMWG6 meeting in July 2023, the Secretariat should continue this analysis as a part of the proposed annual verification with CDS data and different data sets for improvement of monitoring of SBT (CCSBT-SFM/2307/06).

In this document, the Secretariat repeated the trial analysis conducted in 2022, utilising the latest Market Survey Data (including data up to mid-2023) provided by Japan and CTF data held by the Secretariat.

The Secretariat expresses its appreciation to Japan, particularly Dr. Tomoyuki Itoh, for providing the latest Market Survey data from the Toyosu and Yaizu markets for this analysis.

2. Data used for this trial analysis

The Secretariat used the following datasets to conduct this trial analysis.

1) *Individual SBT data from CCSBT CDS Catch Tagging Forms (2010-2023¹)*

These data are collected from Members and maintained by the Secretariat through the Catch Documentation Scheme (CDS) from 2010 to date.

This dataset includes CDS tag number, product type, product weight and fork length of each fish, fishing information, origin of fish (Member, wild/farming) etc².

The numbers of CDS tags recorded on CTFs by Members are shown in Table 2-1 below.

¹ Due to the different timing for reporting/data submission between CDS and the Tag Survey, the 2023 data currently shown in this paper should be considered preliminary and indicative.

² Details are available in Appendix 1 of the [Resolution on the Implementation of a CCSBT Catch Documentation Scheme](#).

Table 2-1. Number of CDS tags (= number of SBT) recorded on CTFs by Member and year (2010 – mid 2023).

	AU	ID	JP	KR	NZ	TW	ZA	Total
2010	185,538	4,990	38,558	14,898	8,473	33,028	557	287,138
2011	213,830	11,936	63,282	13,291	8,811	15,156	687	328,047
2012	288,855	9,165	51,205	15,743	13,537	17,451	972	397,998
2013	278,440	18,187	49,459	19,540	11,922	33,553	478	412,827
2014	266,731	11,573	58,814	15,835	13,800	26,659	461	395,088
2015	301,638	5,944	85,182	22,000	14,973	33,004	645	463,386
2016	324,200	6,362	80,348	19,112	19,763	30,392	620	480,797
2017	275,531	9,617	85,019	18,352	19,255	32,845	1,210	441,829
2018	341,346	10,946	106,627	20,310	19,919	35,495	2,294	536,937
2019	360,174	12,834	112,021	21,116	16,548	34,615	2,539	559,847
2020	344,072	13,578	91,667	17,931	15,517	29,512	1,311	513,588
2021	342,756	12,463	112,343	20,456	14,070	37,783	1,268	541,139
2022	412,505	11,207	102,716	19,255	18,221	36,183	1,748	601,835
2023	223	5,771	-	-	3,984	-	-	9,978
Total	3,935,839	144,573	1,037,241	237,839	198,793	395,676	14,790	5,970,434

2) Japan’s market CDS Tag Survey data (2010 – mid 2023)

Tag Survey data is obtained through Japan’s market CDS Tag Survey in the major Japanese wholesale markets and through the CCSBT-funded Toyosu Market Survey (hereinafter “Market Survey”)³.

This dataset includes the date of survey, CDS tag number, marketplace, fishing vessel ID (call sign), product weight of fish, name of the whole seller, and origin of fish (Member, wild or farming), etc.

The number of fish observed/recorded by the Market Survey by Member is shown in Table 2-2 below. Observed SBT from New Zealand and Australia has noticeably increased (84.4 % and 54.7 % respectively) since 2022. The surveyor reported a particular increase in fresh SBT observed in this survey since around May this year.

Table 2-2. Number of SBT observed/recorded by the Market Survey by Member, and increased number/percentage of observed SBT since the previous study in 2022.

	AU	ID	JP	KR	NZ	TW	ZA	Total
Number of observed SBT in Market Survey (2010-2023)	2,173 (1405)	893 (893)	81,850 (74281)	15,706 (14839)	2,716 (1473)	15,839 (15099)	135 (124)	119,879 (108681)
Increased No. of observed SBT since 2022	768	-	7,569	867	1,243	740	11	11,198
increased %	54.7%	0.0%	10.2%	5.8%	84.4%	4.9%	8.9%	10.3%

Note: Within the table above, brackets show figures for 2010 – 2022 (i.e. figures indicated in CCSBT-CC/2210/13).

³ Japan has voluntarily conducted SBT CDS Tag Survey twice a month at Toyosu market (as well as at Tsukiji and Yaizu market since 2007). Japan’s Toyosu market Tag Survey has been replaced by the CCSBT-funded survey since April 2023, while Japan continues its Tag Survey in Yaizu market.

It should be noted that the data recorded in the Market Survey described above contained many missing or incomplete data. The main reason was that there were unreadable CDS tags for some reason, such as the tag being embedded in frozen SBT meat, partially damaged, detached, or a recording error by the surveyor.

3. Updated Analysis

The Secretariat conducted analyses using the datasets described in Section 2 above.

1) Data preparation for trial analysis

To integrate the two datasets described in Section 2, the Secretariat imported the Market Survey data provided by Japan into the CDS database and matched the data by CDS tag numbers common to both the Market Survey dataset and the CTF dataset.

The number of SBT individuals with matching CDS tag numbers between the Market Survey data and the CTF data is shown in Table 2-3 below.

Table 2-3. Number of matches of CDS tag numbers between the Market Survey data and CTF data.

Member/ CNM	Number of observed SBT in Market Survey (2010-2022) (A)	Number of observed tags		Rate		
		"Readable" tag numbers (B)	Number of "matched" tag numbers (C)	"Readable" rate against all records (B/A)	CTF - Matching rate against all records (C/A)	CTF - Matching rate against "readable" tag (C/B)
AU	2,173	1,659	1,583	76.35%	72.85%	95.42%
ID	893	729	642	81.63%	71.89%	88.07%
JP	81,850	70,785	69,911	86.48%	85.41%	98.77%
KR	15,706	10,485	10,291	66.76%	65.52%	98.15%
NZ	2,716	2,539	2,264	93.48%	83.36%	89.17%
PH	567	376	367	66.31%	64.73%	97.61%
TW	15,839	11,769	10,977	74.30%	69.30%	93.27%
ZA	135	98	81	72.59%	60.00%	82.65%
Total/ Average	119,879	98,440	96,116	82.12%	80.18%	97.64%

CDS tag numbers were readable in 82.12% (or 98,440 individuals) of SBT observed through the Market Survey (a total of 110,879 individuals). The percentage of readable tag numbers ranged between Members from 65.68% to 93.55%.

The proportion of readable tag numbers showed a high rate in general (83.12% throughout the survey). However, Australia, Korea, Taiwan and South Africa have a relatively low rate amongst Members, at around 70 % of the total. As the guidelines for attaching CDS tags were revised in 2021, the readability of the tag number is expected to improve in the future.

The matching rate between readable tag numbers from the Market Survey and CTF data was very high in general, overall at 97.64% and ranging from 82.65% to 98.77% by Member. Indonesia (88.07%) and South Africa (82.65%) showed a relatively low matching rate among Members. If the data record/entry error rate that occurred in the Market Survey was the same, this percentage may reflect Members' error rate for CTF.

The Secretariat created a new data set by extracting data for this analysis from the data set integrated by matching CDS tag numbers as described above. The extracted data for this trial analysis are as follows:

- CDS tag numbers of matched SBT individuals
- Survey year in which SBT individuals were observed in Japanese market
- Product weights of SBT individuals observed/recorded in Japanese market
- Product type of individuals as recorded in the CDS
- Product weights of individuals as recorded in the CDS
- CCSBT Statistical Area in which SBT individuals were caught as recorded in the CDS

The Secretariat calculated the difference between the product weights obtained from the two sources and then calculated the mean and standard deviation of the proportion of the difference between them for each stratum (Member, year, product type and CCSBT Statistical Area).

2) Coverage and representativeness of Japan's Market Survey data against all SBT individuals

The Number of SBT individuals matched between Market Survey data and CTF data by Member and year is shown in Table 2-4.

Table 2-4: Number of individuals matched between Market Survey data and CTF data by Member and year. Figures in the cells indicate the number of individuals.

	AU	ID	JP	KR	NZ	TW	ZA	Total
2010*	-	10	967	164	-	591	-	1,748
2011*	-	90	2,386	631	89	904	-	4,157
2012*	-	211	3,064	688	40	311	9	4,462
2013*	5	147	2,443	1,210	19	401	3	4,297
2014*	8	150	3,874	1,163	54	1,292	-	6,627
2015*	89	34	5,228	924	141	1,253	-	7,669
2016*	-	-	6,473	1,237	27	1,092	-	8,829
2017*	-	-	6,834	1,231	5	768	-	8,838
2018*	-	-	7,634	1,159	-	1,195	-	9,988
2019*	227	-	8,175	372	361	1,159	20	10,314
2020*	282	-	7,129	275	317	518	40	8,561
2021*	728	-	7,559	428	564	853	-	10,132
2022*	244	-	7,049	605	646	546	9	9,099
2023*	-	-	1,096	204	1	94	-	1,395
Total	1,583	642	69,911	10,291	2,264	10,977	81	96,116

* Year code in Table 2-4 above is based on the date of Market Survey. Given the time lag between landing/importing and wholesale market auction, and also considering the fact that fishing season is varied between Members, the results of the calculations above should be recognised as indicative, as some matching counts may be inherently more correct to be categorised in different years. The same caution should be applied to all tables and figures below in this document.

Table 2-4 shows a very large variation in the number of matches between Members each year.

The number of matched SBT individuals (Table 2-4 above) was compared to the total number of CDS tags registered in the CTF by Member and year (Table 2-1 above) to check the representativeness of Market Survey data. The calculated coverage of the Market Survey data against all CTF data is shown in Table 2-5 below.

Table 2-5. Coverage (percentage) of Number of matches to Market Survey data against the total number of CDS tag numbers registered with the CTF, by Member and year

	AU	ID	JP	KR	NZ	TW	ZA	Total
2010	0.00%	0.20%	2.51%	1.10%	0.00%	1.79%	0.00%	0.61%
2011	0.00%	0.75%	3.77%	4.75%	1.01%	5.96%	0.00%	1.27%
2012	0.00%	2.30%	5.98%	4.37%	0.30%	1.78%	0.93%	1.12%
2013	0.00%	0.81%	4.94%	6.19%	0.16%	1.20%	0.63%	1.04%
2014	0.00%	1.30%	6.59%	7.34%	0.39%	4.85%	0.00%	1.68%
2015	0.03%	0.57%	6.14%	4.20%	0.94%	3.80%	0.00%	1.65%
2016	0.00%	0.00%	8.06%	6.47%	0.14%	3.59%	0.00%	1.84%
2017	0.00%	0.00%	8.04%	6.71%	0.03%	2.34%	0.00%	2.00%
2018	0.00%	0.00%	7.16%	5.71%	0.00%	3.37%	0.00%	1.86%
2019	0.06%	0.00%	7.30%	1.76%	2.18%	3.35%	0.79%	1.84%
2020	0.08%	0.00%	7.78%	1.53%	2.04%	1.76%	3.05%	1.67%
2021	0.21%	0.00%	6.73%	2.09%	4.01%	2.26%	0.00%	1.87%
2022	0.06%	0.00%	6.86%	3.14%	3.55%	1.51%	0.51%	1.51%
2023	0.00%	0.00%	-	-	0.03%	-	-	13.98%
Total	0.04%	0.44%	6.74%	4.33%	1.14%	2.77%	0.55%	1.61%

Based on Table 2-5 above, the overall coverage from 2010 to date is 1.61%. On a Member-by-Member basis, there has been a wide variation between Members in recent years, ranging from 0% to around 7%. For Japan, Korea and Taiwan (far-sea longline Members), the coverage since 2010 to date is relatively high (6.74%, 4.33% and 2.77%, respectively).

For Japan’s SBT, the coverage for 2022 (the most recent year the fishing season ended) was 6.86%, and the arithmetic mean coverage for the period 2010 - mid-2022 was 6.74%, which is quite high considering that the Market Survey has been conducted only twice a month.

Korea (3.14%) and New Zealand (3.55%) had coverage of 3% or more in 2022, while the coverage for other Members was much lower.

Given the coverage indicated above, the Compliance Committee should consider carefully whether the data obtained from the Market Survey is representative enough to be used in assessing the accuracy and identifying compliance trends in the CDS of all Members’ stakeholders (mainly fishers and farming operators).

3) *Verification of reported catch by Members with CDS data and CDS Tag Survey data obtained from Japanese market*

The weight of SBT recorded in the Market Survey and the CTF are both net weights, and these weight data are directly comparable as there are unlikely to be any changes in product type between landing or export/import and auction.

As described in Section 4-1) above, the difference between the product weights of each individual SBT between the two data sets (Market Survey product weight minus CTF product weight) was calculated for each SBT individual, and then the mean and standard deviation of the proportion of difference were calculated by Member. If this proportion is “zero”, it means the weight from the Market Survey and the weight from CTF are the same, and consequently, the Member’s reported weights were accurate. If this proportion is a negative figure, it indicates that the weight of the fish measured on the vessel or at the farm was higher than the weight measured

in the market during the auction. For some Members, this may suggest that fishers on board may have weighed SBT “conservatively”, potentially to ensure that they do not exceed their quotas (e.g. if the measurement is 49.5kg, record as 50kg to CTF considering unstable weighing on board).

However, in the datasets used, very large discrepancies between the two weights data were observed for a considerable number of individuals.

A bubble plot showing the relationship between Market Survey weight and CTF weight by Member is provided in **Attachment A** to provide a visual representation of the variation in the data. For all plots in **Attachment A**, the vertical axis is the CTF weight of each SBT individual, and the horizontal axis is the Market Survey weight. Each bubble represents the count of records within a 5kg bin (i.e. the higher the count, the larger the bubble). In general, the Market Survey weight data and CTF weight data matched well (most bubbles are on/close to a 1:1 line) for all Members; however, Members with larger sample sizes tend to have more outliers.

In addition, to indicate the scale of extreme records, the maximum weight discrepancies (in both positive and negative directions) between the two data sets by Member are shown in Table 2-6 below.

Table 2-6. Maximum discrepancy between Market Survey weight data and CTF weight data (positive and negative directions) by Member.

	AU		ID		JP		KR		NZ		TW		ZA		All	
	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus
2010	-	-	4.00%	-63.19%	86.40%	-334.78%	55.79%	-175.00%	-	-	68.18%	-163.16%	-	-	86.40%	-334.78%
2011	-	-	71.88%	-93.99%	77.96%	-298.34%	61.45%	-181.55%	74.14%	-160.87%	70.49%	-148.12%	-	-	77.96%	-298.34%
2012	-	-	81.09%	-76.10%	78.21%	-614.29%	81.65%	-180.30%	29.69%	-93.01%	74.81%	-172.73%	4.37%	-0.88%	81.65%	-614.29%
2013	-0.79%	-1.38%	62.72%	-1189.47%	72.55%	-900.00%	84.00%	-1229.41%	4.41%	-0.72%	69.51%	-128.57%	2.52%	1.35%	84.00%	-1229.41%
2014	-1.22%	-6.44%	69.61%	-46.55%	71.18%	-892.54%	71.43%	-900.00%	68.86%	-164.57%	76.50%	-148.68%	-	-	76.50%	-900.00%
2015	58.51%	-181.69%	5.11%	-8.59%	67.14%	-207.45%	58.50%	-891.60%	65.78%	-120.59%	76.74%	-197.62%	-	-	76.74%	-891.60%
2016	-	-	-	-	74.22%	-234.53%	63.16%	-117.39%	53.24%	-22.45%	85.04%	-537.50%	-	-	85.04%	-537.50%
2017	-	-	-	-	80.85%	-900.00%	65.65%	-220.69%	5.03%	-3.86%	75.66%	-169.46%	-	-	80.85%	-900.00%
2018	-	-	-	-	73.68%	-909.35%	65.96%	-909.71%	0.00%	0.00%	72.22%	-116.31%	-	-	73.68%	-909.71%
2019	48.81%	-115.28%	-	-	78.93%	-762.07%	66.41%	-754.37%	74.95%	-56.25%	72.48%	-174.51%	32.69%	-23.46%	78.93%	-762.07%
2020	60.21%	-116.05%	-	-	81.41%	-380.39%	61.18%	-95.18%	70.17%	-54.49%	53.72%	-46.63%	25.45%	-28.81%	81.41%	-380.39%
2021	56.52%	-25.55%	-	-	83.31%	-288.24%	75.29%	-310.57%	55.78%	-77.30%	68.52%	-594.44%	-	-	83.31%	-594.44%
2022	68.54%	-132.24%	-	-	70.04%	-281.88%	80.20%	-216.92%	73.79%	-122.50%	77.27%	-348.28%	16.88%	-12.11%	80.20%	-348.28%
2023	-	-	-	-	62.11%	-146.58%	76.48%	-144.76%	32.93%	32.93%	67.60%	-254.43%	-	-	76.48%	-254.43%
All	68.54%	-181.69%	81.09%	-1189.47%	86.40%	-909.35%	84.00%	-1229.41%	74.95%	-164.57%	85.04%	-594.44%	32.69%	-28.81%	86.40%	-1229.41%

As shown in Table 2-6 above, with positive deviations of up to 86.4% and negative deviations of up to minus 1,229.41%, it is clear that this data set contains extreme outliers.

Besides, in order to indicate the distribution of the proportion of differences between the two weights data across all Members and years, a histogram is provided in Figure 2-1 below. In this histogram, the horizontal axis shows the proportion of the difference between the weight data (interval 0.025 (2.5%)), and the vertical axis shows the number of SBT individuals.

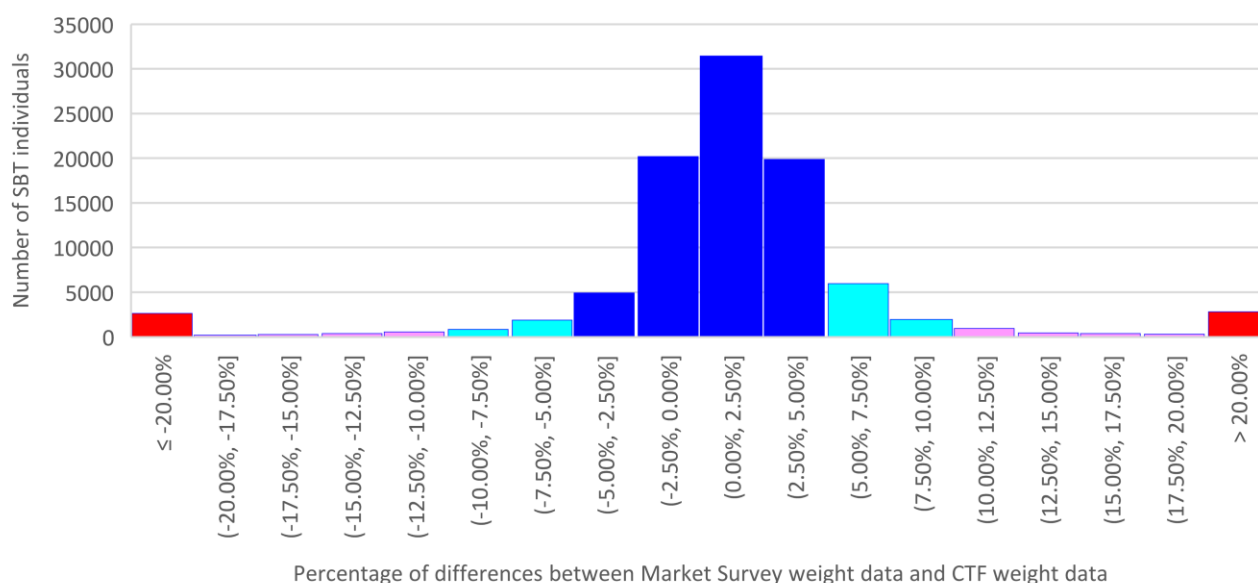


Figure 2-1: Histogram of the percentage of difference between the Market Survey weight data and CTF weight data. The horizontal axis shows the difference between the weight data (2.5% of interval) and the vertical axis shows the number of SBT individuals. The proportion of differences between the two weights data within $\pm 5\%$ are shown in blue, between $\pm 5\text{-}10\%$ in light blue, between $\pm 10\text{-}20\%$ in pink and above $\pm 20\%$ in red.

With regard to the difference between the weight weighed on board and the weight at landing in the CDS, taking into account the fact that Japan, Korea and Taiwan allow a range of $\pm 5\%$ between the weight weighed on board (the weight recorded in the CTF data) and landing weight as “error due to weighing on board”, the SBT individuals with $\pm 5\%$ shown in blue in Figure 2-1 above can be considered as both the Market Survey data and the CTF data are properly recorded (within acceptable level under current CDS operation), and many of individuals (79.60%) are included in this category.

On the other hand, the number of SBTs with a difference of more than “ $\pm 20\%$ ” between the two weights data is about 2,600 in the negative direction and about 2,800 in the positive direction, and such SBT individuals showed extreme figures, as shown in Table 2-6.

Such “extreme” records appear in both positive direction and negative directions (i.e. both “under-reported” and “over-reported” by fishers and/or farm operators). If fishers and/or farm operators were deliberately under-reporting to CTF not to exceed quotas, these extreme records should be unevenly distributed in the positive direction. Considering the relatively “even” distribution of records to both positive and negative directions, it would be appropriate to consider that a large part of such extreme records was un-intentional errors due to administrative problems (e.g. data entry errors by surveyors in Japan’s Market Survey, or data error in CTF database etc.) and may be appropriate to deem these extreme records as “outliers”.

In this regard, CC 16 commented that “Outliers above and below 20% could be removed, but there should also be a discussion around improving the data collection mechanisms”. Based on this recommendation, the Secretariat created a new dataset by excluding outliers above $\pm 20\%$ (red area in the Figure 2-1 histogram). The number of matches between the Market Survey data and the CTF data by member, excluding outliers, is shown in Table 2-7 below. Improving the data collection mechanisms need to be considered separately.

Table 2-7. Number of matchings between Market Survey data and CTF data – all matchings and matchings after excluding outliers by Member.

Member/ CNM	Number of observed tags		Rate
	Number of "matched" tag numbers (A)	Number of matchings after excluding "outliers" (B)	Number of matching within 20% weight difference (B/A)
AU	1,583	1,542	97.41%
ID	642	581	90.50%
JP	69,911	66,670	95.36%
KR	10,291	9,241	89.80%
NZ	2,264	2,159	95.36%
PH	367	363	98.91%
TW	10,977	10,029	91.36%
ZA	81	75	92.59%
total	96,116	90,660	94.32%

As indicated in Table 2-7 above, approximately 94% of matched SBTs fall within the $\pm 20\%$ weight difference range when outliers exceeding $\pm 20\%$ are excluded. Of these, approximately 84% of matched SBTs fall the $\pm 5\%$ weight difference range (Figure 2-1). Based on these figures, it can be qualitatively stated that the catches reported by Members are reasonably accurate (i.e. within the margin of error allowed by the current CDS operation).

4. Additional Analysis using the same dataset (excluded outliers)

Some data elements available from the Market Survey and CTF data may serve as indicators for the Commission and/or Members to target monitoring and guidance in terms of compliance with CDS requirements (i.e. which Members, which product types, and which Statistical Areas fishers and/or farm operators tend to over-report or under-report the weight of fish).

The Secretariat conducted the following analyses as the same as the 2022 study with the latest dataset:

- 1) Comparison of product weights between Japan's Market Survey data and CTF data – by Member
- 2) Comparison of product weights between Japan's Market Survey data and CTF data – by Product type
- 3) Comparison of product weights between Japan's Market Survey data and CTF data – by CCSBT Statistical Area

These analyses showed similar results as the 2022 study and, in conclusion, it seemed difficult to explore compliance trends from comparisons by Member, Product type or CCSBT Statistical Area perspective due to variation in the amount of available data and representativeness issues.

Detailed results can be provided if requested.

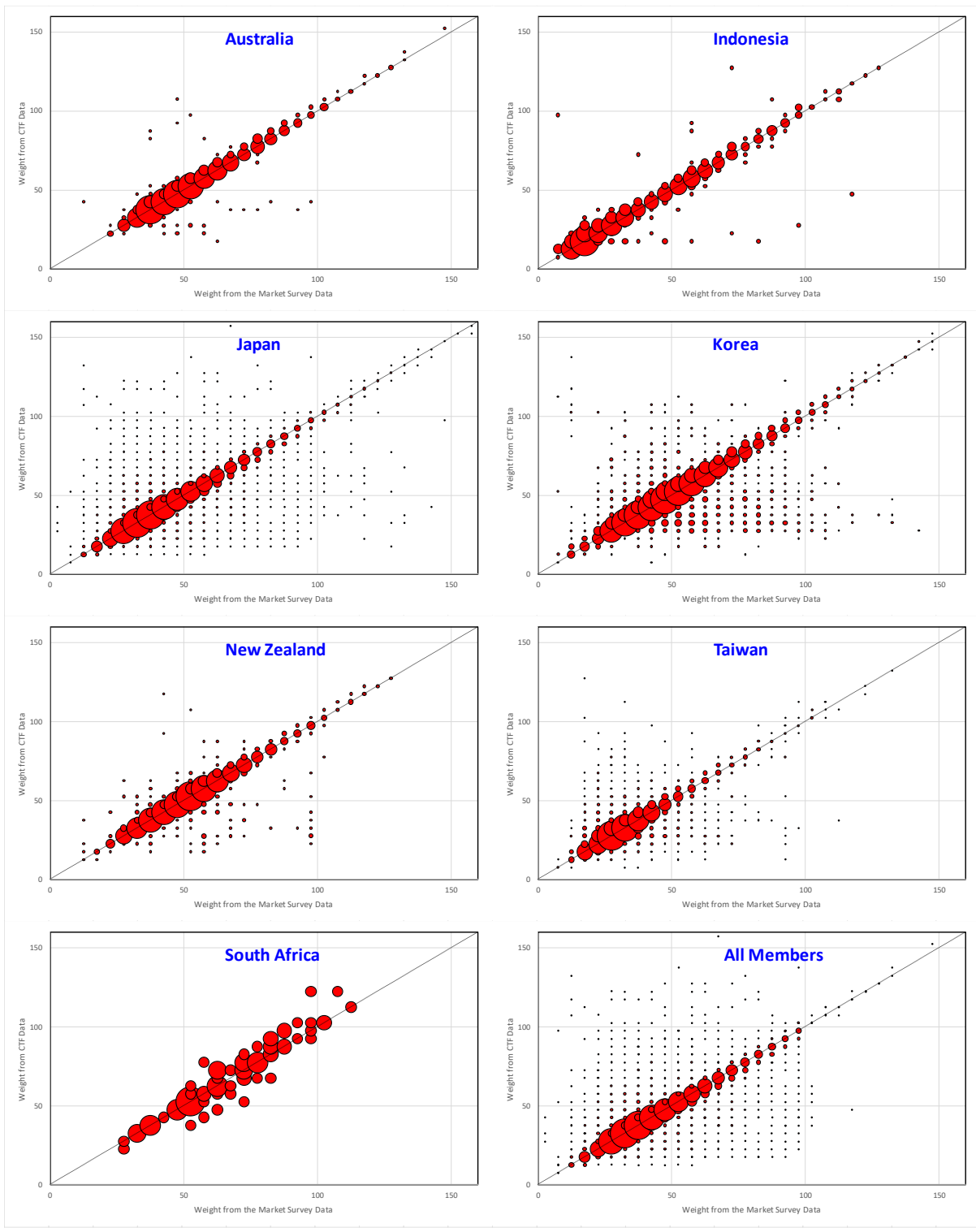
5. Conclusion

- (1) The results of the updated analysis carried out in this document and additional comments are summarised below.
 - The Market Survey data and the CTF data held by the Secretariat (2010 – mid-2023) were cross-verified. Overall, there was a high (97.64%) matching of readable tag numbers in the

market data against the CTF tag data. This suggests that the large weight discrepancies observed were not a result of incorrectly matched fish.

- The coverage of the Japanese Market Survey data relative to the total CTF data in 2022 (the most recent year in which the fishing season ended) was high for Japan at 6.74 %, New Zealand at 3.55%, and Korea at 3.14%, but very low for the other members.
- To improve the coverage (and hence the representativeness of Market Survey data), the simplest and surest way would be to increase the survey frequency. However, it is not straightforward to increase representativeness equally for all Members, considering the very low coverage for some Members and increasing off-market transactions.
- Verification of reported catch by Members with CDS data and CDS Tag Survey data obtained from the Japanese market was conducted. Following the recommendation by CC16, outliers (over $\pm 20\%$ weight difference) are excluded from the dataset for analysis. As a large part of matched records (approximately 84%) fall within the $\pm 5\%$ Weight Difference range, it could be qualitatively stated that the catches reported by Members through the CTF are reasonably accurate.

Attachment A



Comparison between weight data from the Market Survey (kg, horizontal axis) and from CTF data (kg, vertical axis). Each bubble in the bubble plot represents the number of records within 5kg bin (i.e. the higher the count, the larger the bubble). Black dotted line indicates 1:1. Note: the scale of bubble size is not the same between graphs as it is relative to total sample size for each Member.

**Analysis for the readability of CDS tags attached to SBT
based on CDS Tag Survey data obtained from Japanese market
(Japan's Market Proposal item 4)**

1. Background

Japan submitted its new Market Proposal to the 6th meeting of the Strategy and Fisheries Management Working Group (SFMWG6) held in Tokyo, Japan, in July 2023. In this proposal, it was suggested that the Secretariat analyses how much the readability of CDS tags by each Member has been improved since the following fishing season after the EC 28 in 2021, with the information accumulated through the CDS Tag Survey.

2. Data used for this analysis

The Secretariat used data obtained through Japan's market CDS Tag Survey in the major Japanese wholesale markets and through the CCSBT-funded Toyosu Market Survey (hereinafter "Market Survey")³. From this original data, the Secretariat created a new dataset, including the observed number of tags, the number of readable tags, and the percentage of readable tags against all observed tags, as shown in **Table 3-1**.

3. Tag readability since the commencement of CDS

Tag readability by year and by Member since 2010 (commencement of the CCSBT CDS) is shown in **Figure 3-1**.

Overall, the readability of tags has improved since the start of the CDS in 2010 and has kept high readability in recent years. In particular, since the instructions for attaching the centralised tags were revised in October 2021, most Members' tag readability has improved by almost 100% in the most recent year.

Some Members showed relatively low readability around 2018-2021. It is difficult to determine whether this was due to the poor quality of tags in those years, or the Tag Survey (only twice a month) accidentally captured SBT from a specific vessel(s) attaching tags in an inappropriate manner, or many tags were damaged during transshipment by chance, etc.

As 2023 data is preliminary and still scarce, it should be checked again next year to see if the current high readability (i.e. appropriate tag attachment) will be maintained.

Table 3-1. Number of observed CDS tags, readable tags and the percentage of readable tags against observed tags since the CCSBT CDS commenced in 2010.

	2010			2011			2012			2013			2014		
	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)
AU	-	-	-	15	15	100.00%	-	-	-	5	5	100.00%	10	8	80.00%
ID	13	10	76.92%	134	91	67.91%	302	235	77.81%	229	205	89.52%	168	154	91.67%
JP	2,119	1,070	50.50%	3,123	2,550	81.65%	3,652	3,166	86.69%	2,860	2,467	86.26%	4,714	3,965	84.11%
KR	790	170	21.52%	781	638	81.69%	813	690	84.87%	1,419	1,260	88.79%	1,415	1,174	82.97%
NZ	-	-	-	97	90	92.78%	40	40	100.00%	19	19	100.00%	59	55	93.22%
TW	1,215	789	64.94%	1,228	927	75.49%	410	317	77.32%	560	408	72.86%	1,799	1,323	73.54%
ZA	-	-	-	-	-	-	34	12	35.29%	6	5	83.33%	-	-	-
ALL	4,170	2,058	49.35%	5,449	4,368	80.16%	5,406	4,600	85.09%	5,177	4,439	85.74%	8,260	6,769	81.95%

	2015			2016			2017			2018			2019		
	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)
AU	98	89	90.82%	-	-	-	-	-	-	-	-	-	318	227	71.38%
ID	35	34	97.14%	-	-	-	-	-	-	-	-	-	-	-	-
JP	5,679	5,334	93.92%	6,794	6,491	95.54%	7,317	6,855	93.69%	8,062	7,670	95.14%	8,693	8,225	94.62%
KR	1,083	930	85.87%	1,388	1,241	89.41%	1,453	1,253	86.24%	1,579	1,193	75.55%	1,003	389	38.78%
NZ	161	145	90.06%	29	27	93.10%	5	5	100.00%	-	-	-	405	376	92.84%
TW	1,523	1,289	84.64%	1,424	1,102	77.39%	925	775	83.78%	1,663	1,230	73.96%	1,466	1,211	82.61%
ZA	-	-	-	-	-	-	-	-	-	-	-	-	26	23	88.46%
ALL	8,579	7,821	91.16%	9,635	8,861	91.97%	9,700	8,888	91.63%	11,304	10,093	89.29%	11,911	10,451	87.74%

	2020			2021			2022			2023		
	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)	Ovserved Records	Readable record	Readability (%)
AU	503	285	56.66%	816	732	89.71%	317	255	80.44%	43	43	100.00%
ID	-	-	-	-	-	-	-	-	-	-	-	-
JP	7,706	7,159	92.90%	8,136	7,590	93.29%	7,298	7,064	96.79%	1,184	1,179	99.58%
KR	728	291	39.97%	604	441	73.01%	747	610	81.66%	230	205	89.13%
NZ	362	329	90.88%	578	570	98.62%	744	666	89.52%	217	217	100.00%
TW	677	531	78.43%	1,070	881	82.34%	789	700	88.72%	230	224	97.39%
ZA	58	49	84.48%	-	-	-	11	9	81.82%	-	-	-
ALL	10,034	8,644	86.15%	11,204	10,214	91.16%	9,906	9,304	93.92%	1,904	1,868	98.11%

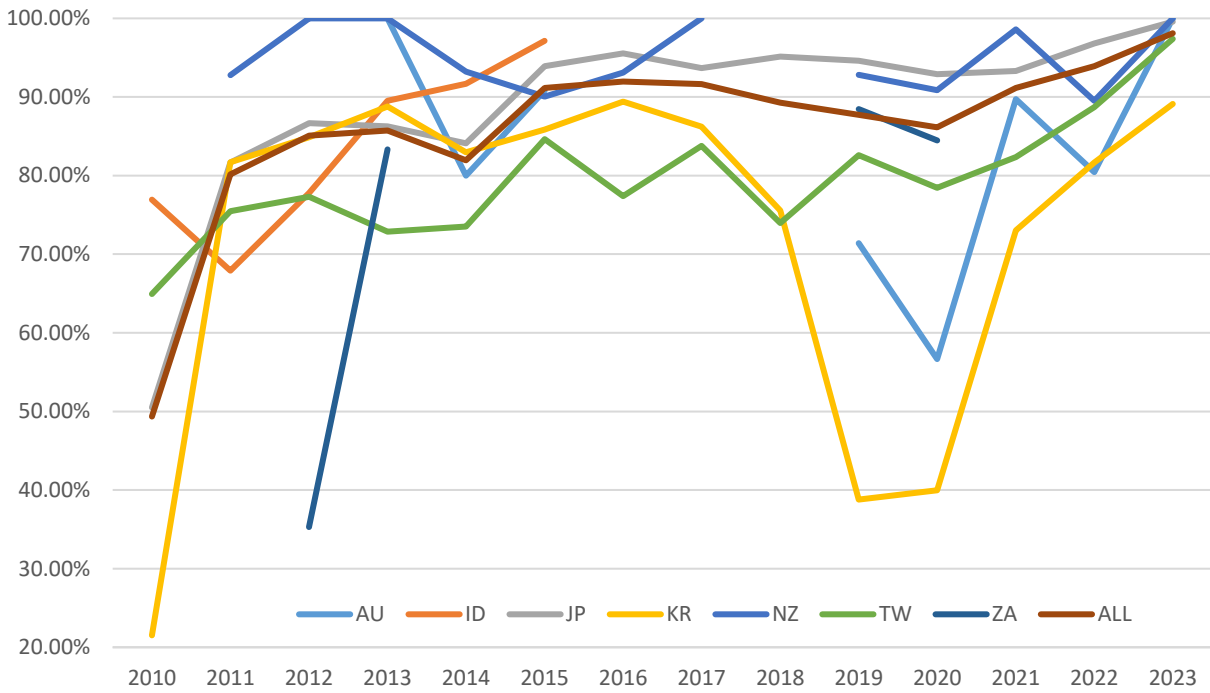


Figure 3-1. Tag readability by year and by Member since 2010 (commencement of the CCSBT CDS).