NPFC 8th Scientific Committee Meeting
15-16, 18-19 December 2023
Nanaimo, British Columbia, Canada
Agenda Item 6.1.4

Summary of Progress on Blue Mackerel

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Future Tasks, Raised by the SC07 Meeting in the Last Year (2022)

The SC discussed future tasks for the SWG BM and agreed on the following: (NPFC-2022-SC07-Final Report)

(a) Update the species summary — Done (6.2.1)

(b) Discuss potential data sharing needs

(c) Share data, including unpublished data if possible

} Shared length-frequency data and length-weight relationships (6.1)

(d) Update Members' estimated catch and effort for BM

(e) Update Members' data on catch composition of BM and chub mackerel

(f) Review historical catch and estimate the proportion of BM and chub mackerel, if possible

} Done updating and will be reviewed (6.1.4)

(g) Review the feasibility of calculating the proportion of BM and chub mackerel catch by gear — Not yet

(h) Collect data on size and/or age composition of BM, if possible — Done for size composition (6. 1)

(i) Continue to explore options for distinguishing BM and chub mackerel catch — Done (6. 1.4)

(j) Evaluate environmental variables on recruitment, life history parameters, and fisheries population dynamics — Not yet

(k) Review the latest domestic BM stock assessment conducted by Japan — Will be done? (6.4)

Update Member's Catch and Effort

(1st Joint meeting on 19 June 2023)

Updated Annual Summary Footprint is available from [the NPFC website]

Catch in metric ton

Year	China				Japan				Russia						
	Total	Purse seine	Pelagic trawl		Total	Purse seine	Bottom trawl	Others	Total	Bottom trawl	Purse seine	Mid-water trawl		Other	
		CA	NW	CA		NW	CA	NW		NW	NW	NW	CA	NW	CA
2022	110,856	108,241	0	2,615	171,808	87,164	0	84,644	49,894	32	255	48,840	4	763	0
2021	108,266	95,621	0	12,645	302,434	214,347	1	88,086	87,388	361	525	83,806	1,188	1,502	7
2020	92,456	85,122	0	7,334	286,398	218,659	0	67,739	81,384	120	31	80,047	57	1,128	2
2019	64,446	53,210	0	11,236	334,058	256,442	0	77,616	86,592	1	127	85,396	507	560	0.5
2018	130,447	121,472	0	8,975	338,747	293,210	0	45,537	98,812	7	49	98,740	0	5	11
2017	155,574	145,529	0	10,045	346,057	308,544	48	37,465	53,792		369	53,115	247	37	25
2016	142,994	119,641	0	23,353	403,558	354,690	9	48,859	9,242	26	2	9,110	91	14	
2015	139,961	127,193	5,114	7,654	393,212	331,963	15	61,234	466			266	197	4	

- Note that these statistics are not separated between CM and BM
- The catches in Japan and Russia were greatly decreased from 2021 to 2022 (−43% for both)
- The catch in China was almost constant from 2021 to 2022 (+2%)

Update Member's Catch and Effort

(1st Joint meeting on 19 June 2023)

Updated Annual Summary Footprint is available from the NPFC website

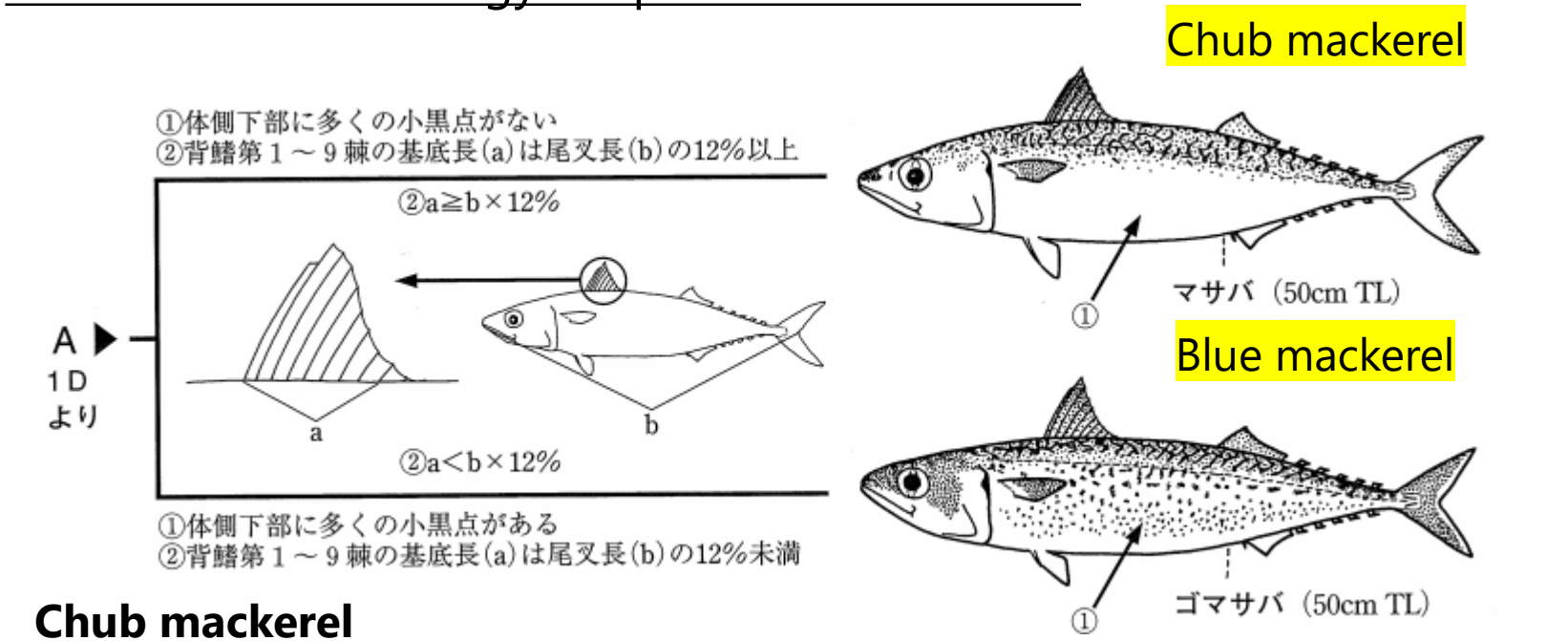
Number of vessels

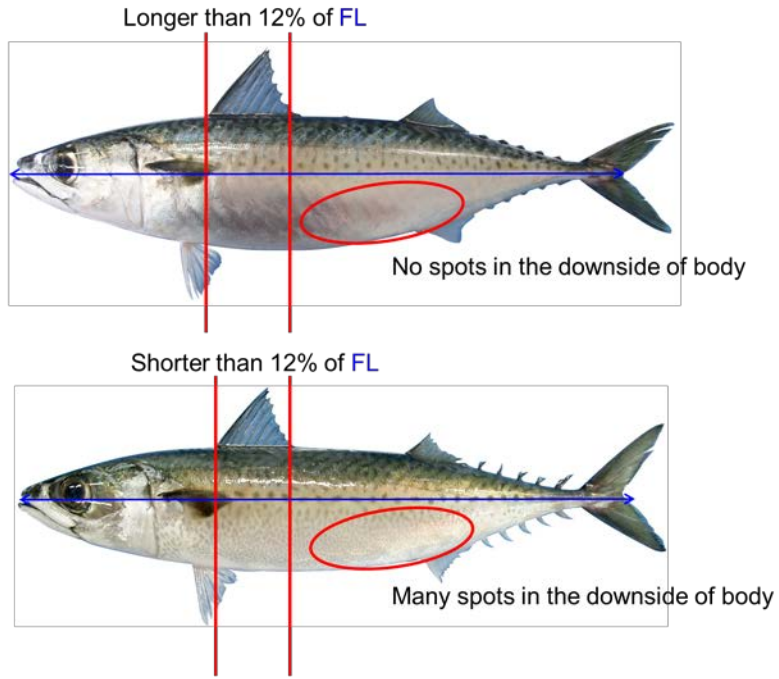
Year	China			Japan			Russia					
	Purse seine	Pelagic trawl		Purse seine	Bottom trawl	Others	Purse seine	Bottom trawl	Mid-water trawl		Other	
	CA	NW	CA	NW	CA	NW	NW	NW	NW	CA	NW	CA
2022	105	0	2	58	1		3	5	32	1	10	0
2021	105	0	3	57	1		4	19	52	3	8	1
2020	51	0	2	60	1		2	14	70	3	10	2
2019	29	0	3	58	3		2	1	57	1	2	2
2018	62	0	3	57	4		2	1	51	0	3	1
2017	75	0	3	57	2		2		29	1	6	2
2016	82	0	7	53	4		2	1	25	3	15	
2015	78	3	2	52	5				9	5	8	

The numbers of vessels were almost constant from 2021 to 2022 except for bottom trawl and mid-water trawl in Russia

Explore options for distinguishing BM and chub mackerel catch (1st Joint meeting on 19 June 2023)

Review of methodology of species identification





Chub mackerel

① No small black spots in the downside of body

② Basal length between first and ninth spines of dorsal fins (a) is equal to or longer than 12% of fork length (b)

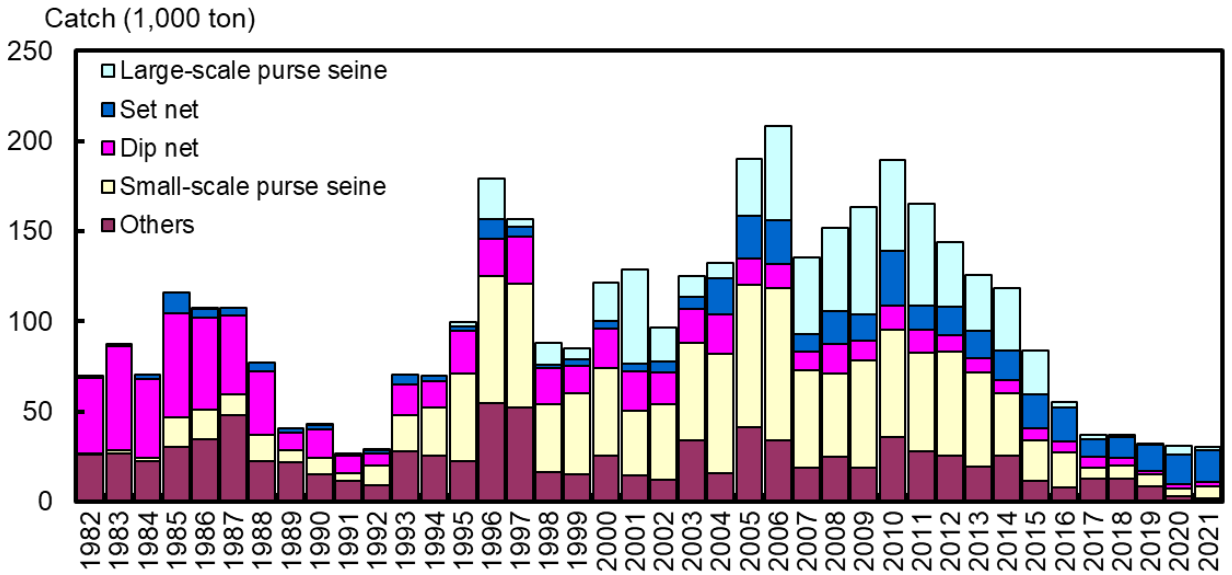
Blue mackerel

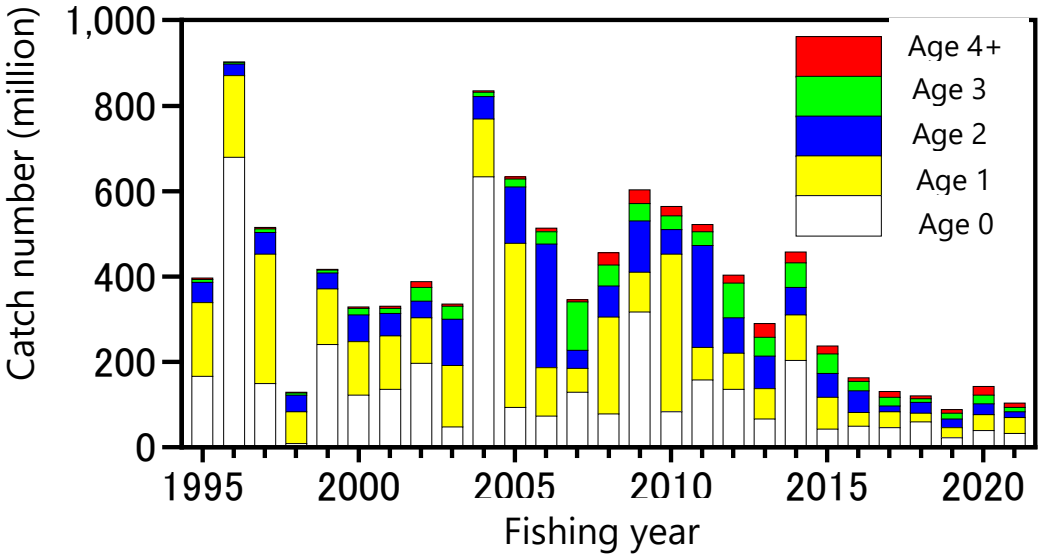
① Many small black spots in the downside of body

② Basal length between first and ninth spines of dorsal fins (a) is shorter than 12% of fork length (b)

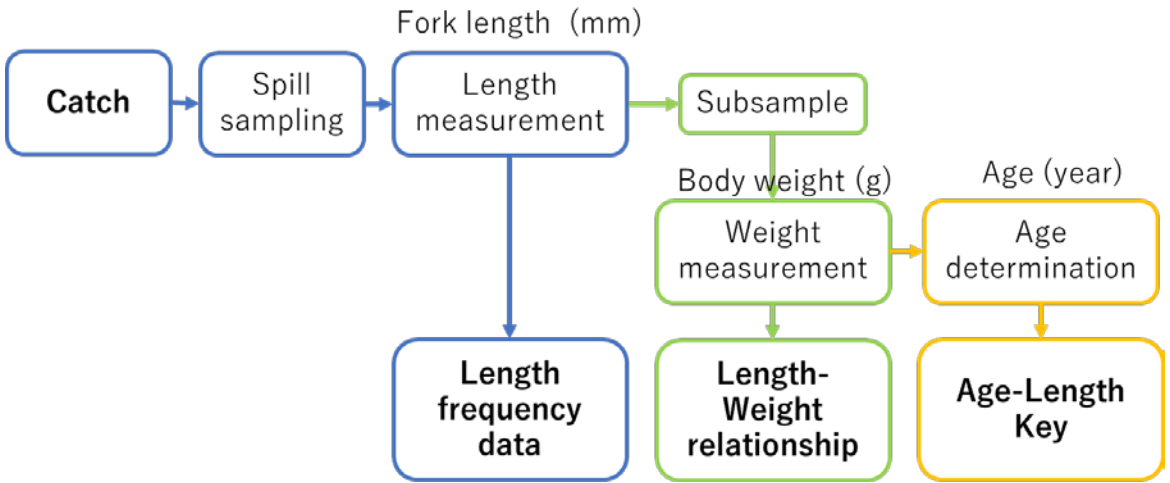
Collect data on size and/or age composition of BM
(1st Joint meeting on 19 June 2023)

Japanese stock assessment





(https://abchan.fra.go.jp/wpt/wp-content/uploads/2022/details_2022_07-Gomasaba-P.pdf)

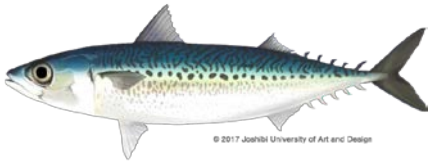


- Measurement data are collected by prefecture
- Data are treated by month and by fishing gear
- Age is estimated by scale reading

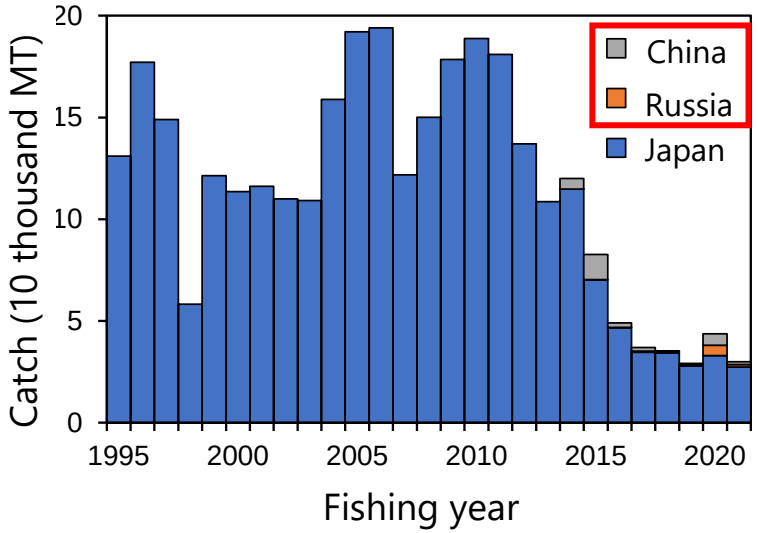
(Manabe et al. 2020, NPFC-2020-TWG CMSA03-WP02)

Latest Japanese stock assessment for BM
(1st Joint meeting on 19 June 2023)

- Tuned virtual population analysis (VPA) used

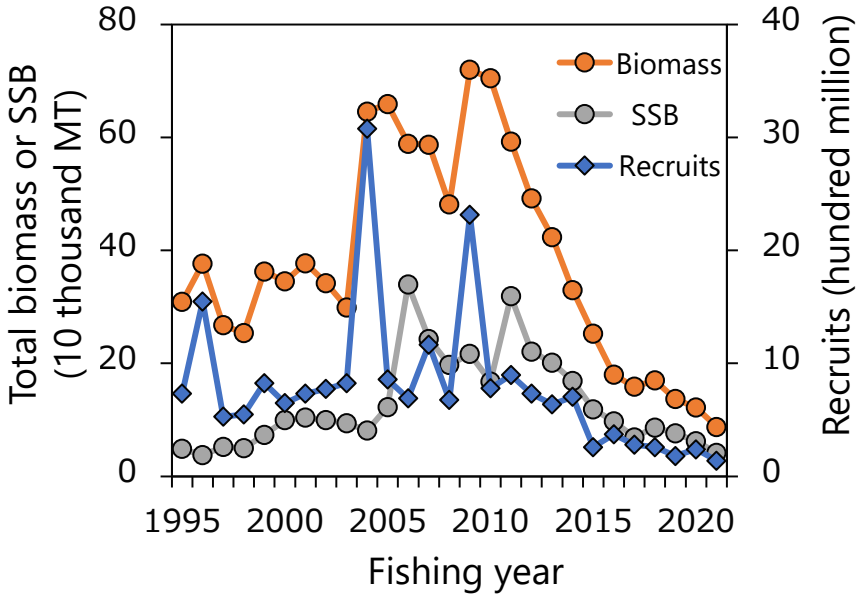


Time series of catch



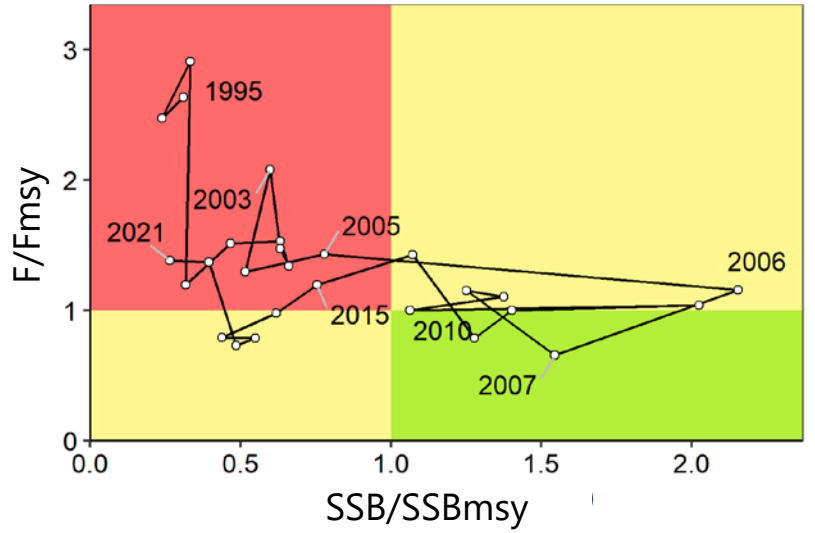
- Decreasing tendency since 2012

Time series of biomass, SSB, and recruits



- Biomass and SSB drastically decreased since 2012

Kobe plot



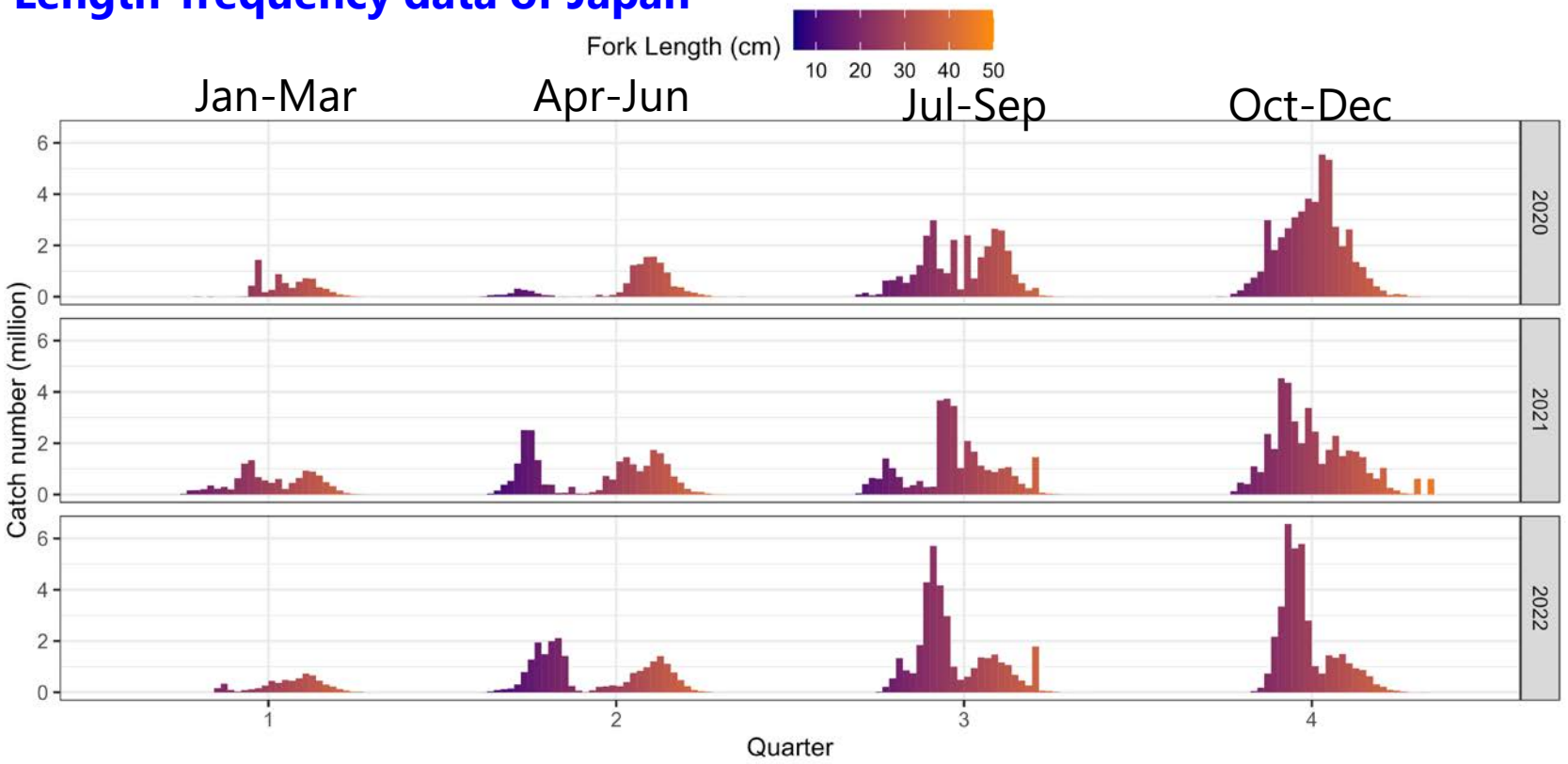
- SSB is lower than SSBmsy (overfished), and F is higher than Fmsy (overfishing) in the most recent 2 years (2020-2021)

The biggest uncertainty is the species and age composition in Chinese and Russian catch (currently assumed to be the same as a part of Japanese fishery)

⇒ Members agreed to share length frequency data and length-weight relationship data with Japan

Present Japanese length-frequency data of BM
(2nd Joint meeting on 8 August 2023)

Length-frequency data of Japan

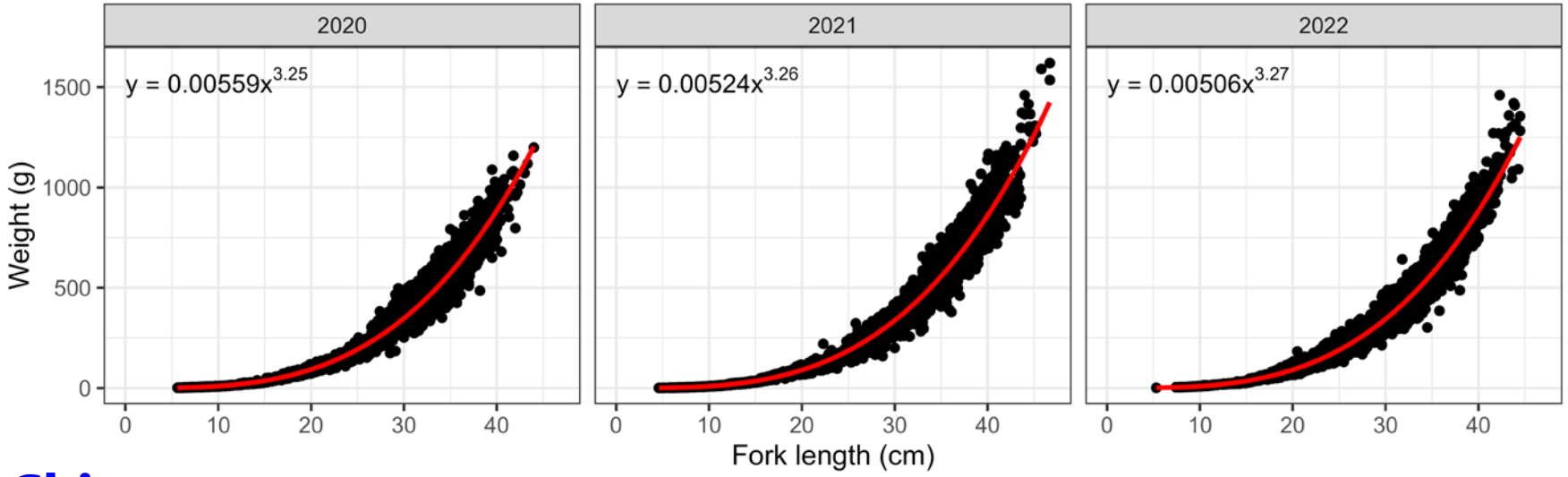


- Catch numbers were the highest fourth quarter
- Length frequencies were likely to distinguish between age 0 and older
- Would like to compare with China

Will be presenting the comparison of length-frequency data between China and Japan at the end of this Agenda Item (6.1)

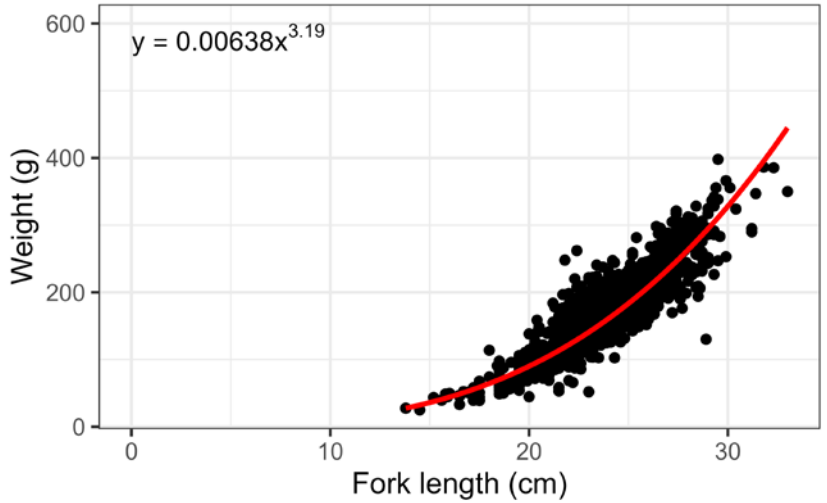
Discuss length-weight relationships of BM
(2nd Joint meeting on 8 August 2023)

Japan

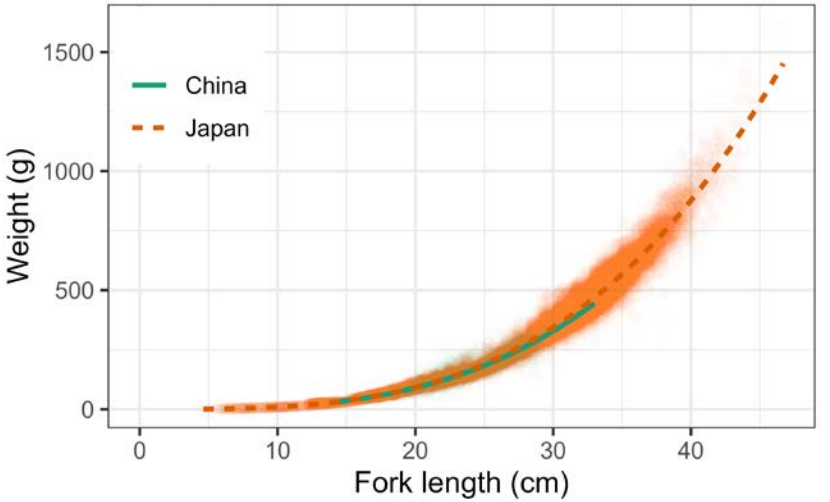


- Measured about 10,000 samples per year
- Slightly got thin from 2020 to 2021

China

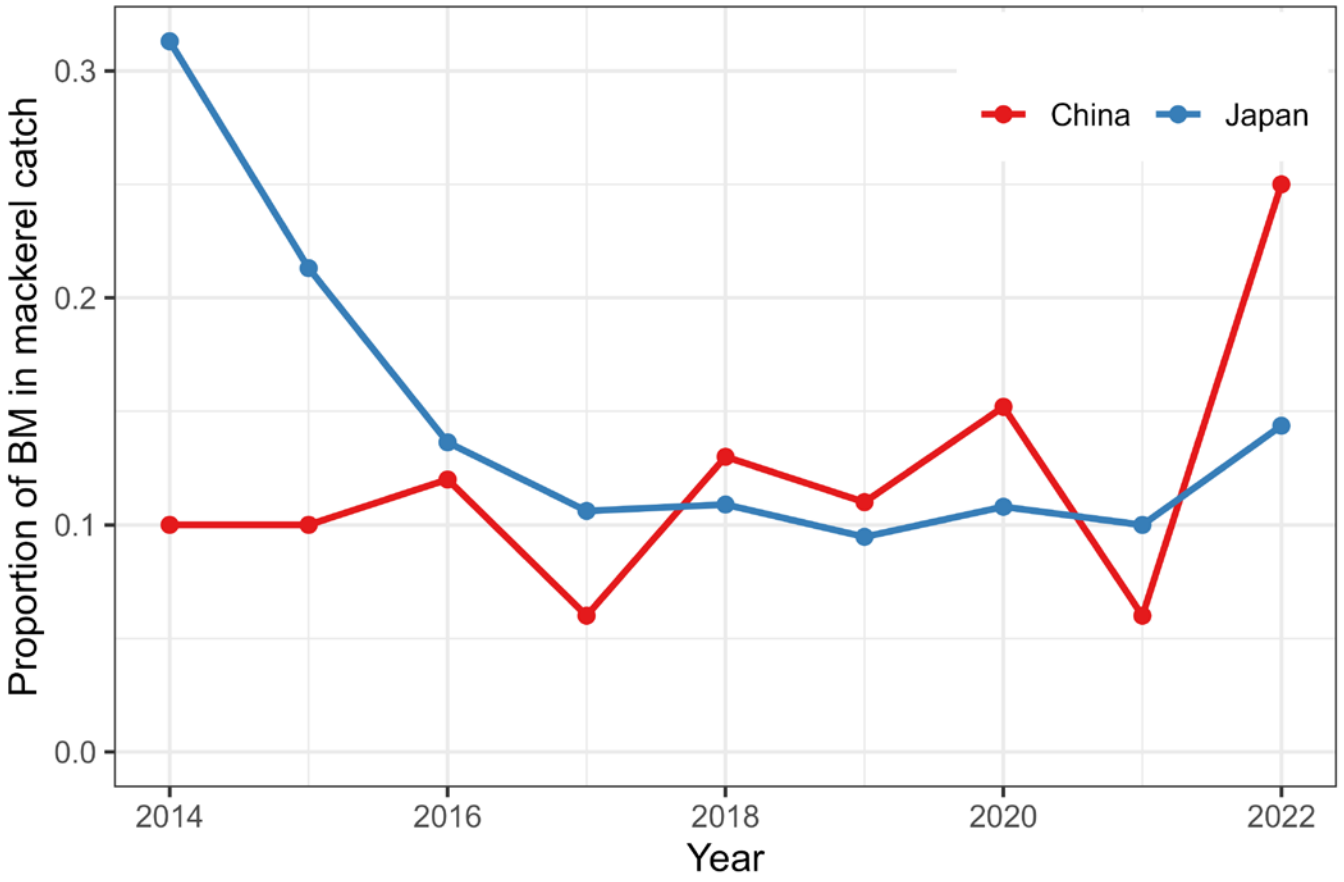


- Measured about 1,000 samples in total from 2017 to 2022
- Narrower ranges of size than in Japan (13.8～33.0 cm in FL)
- Although the parameters are slightly different, the shape of LW relationships are almost identical



Estimate the proportion of BM and chub mackerel

(Newly updating Japanese data for the SC08 meeting)



- The proportion of BM in the Chinese mackerel fishery had been kept at about 10% until 2021, but increased to 25.0% in 2022
- The proportion of BM in the Japanese mackerel fishery had also been kept at about 10% from 2017 to 2021, but slightly increases to 14.4% in 2022
- Both fisheries seem to show a similar pattern except for 2014-2015

Anticipated activities during the coming year

- Update the species summary
- Continue data sharing of length-weight relationships and size composition in catch in each Member
- Update the composition of BM and chub mackerel in each Member’s mackerel fishery
- Any others?