Agenda Item 4.1

Details on discrepancy of Japanese catch and its solution

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Japan Fisheries Research and Education Agency

Akihiro MANABE and Ryuji YUKAMI

Comparison between total catches

- Definition
  - Catch at age * Weight at age = **Calculated catch**
  - Annual footprint catch = **Footprint**

Quarterly calculated catch

$$C_{y,q} = \sum_{0 \leq t \leq 7} n_{t,y,q} w_{t,y,q}$$

Annual calculated catch

$$C_y = \sum_{1 \leq q \leq 4} c_{y,q}$$

n : Catch at age
w : weight at age
c : Catch yield
t : age
y : Year
q : quarter

Numbers

Minus difference = Footprint is greater

Fishing year	Calculated catch	Footprint	Difference	Ratio
2014	252287.5	282318	**-30030.5**	**1.119033**
2015	324129.4	329777	-5647.58	1.017424
2016	330056.4	330043	13.35156	0.99996
2017	332271.2	332271	0.190807	0.999999
2018	300772.7	300773	-0.30103	1.000001
2019	270739.5	266835	3904.55	0.985578
2020	278865	279005	-139.954	1.000502
2021	187088.1	187098	-9.86281	1.000053
2022	98511.32	98459	52.32252	0.999469
2023	74618.08	73350	1268.079	0.983006

- Calculated and footprint catch are not identical in some years
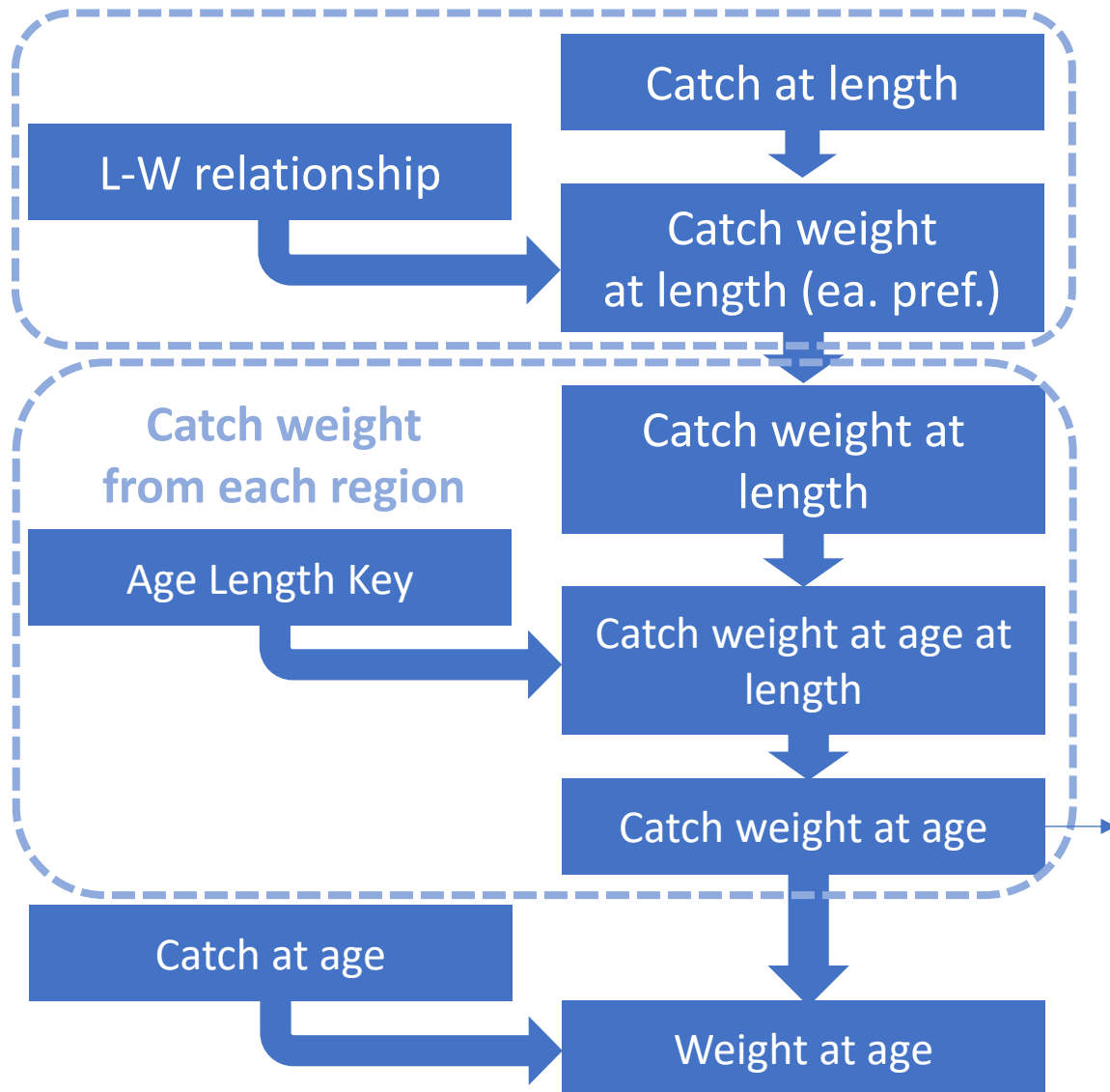- Few percent might be derived from rounding and processing

Difference

Fishing year	Difference
2014	**-30030.5**
2015	-5647.58
2016	13.35156
2017	0.190807
2018	-0.30103
2019	3904.55
2020	-139.954
2021	-9.86281
2022	52.32252
2023	1268.079

Comparison of Japanese calculated catch and footprint
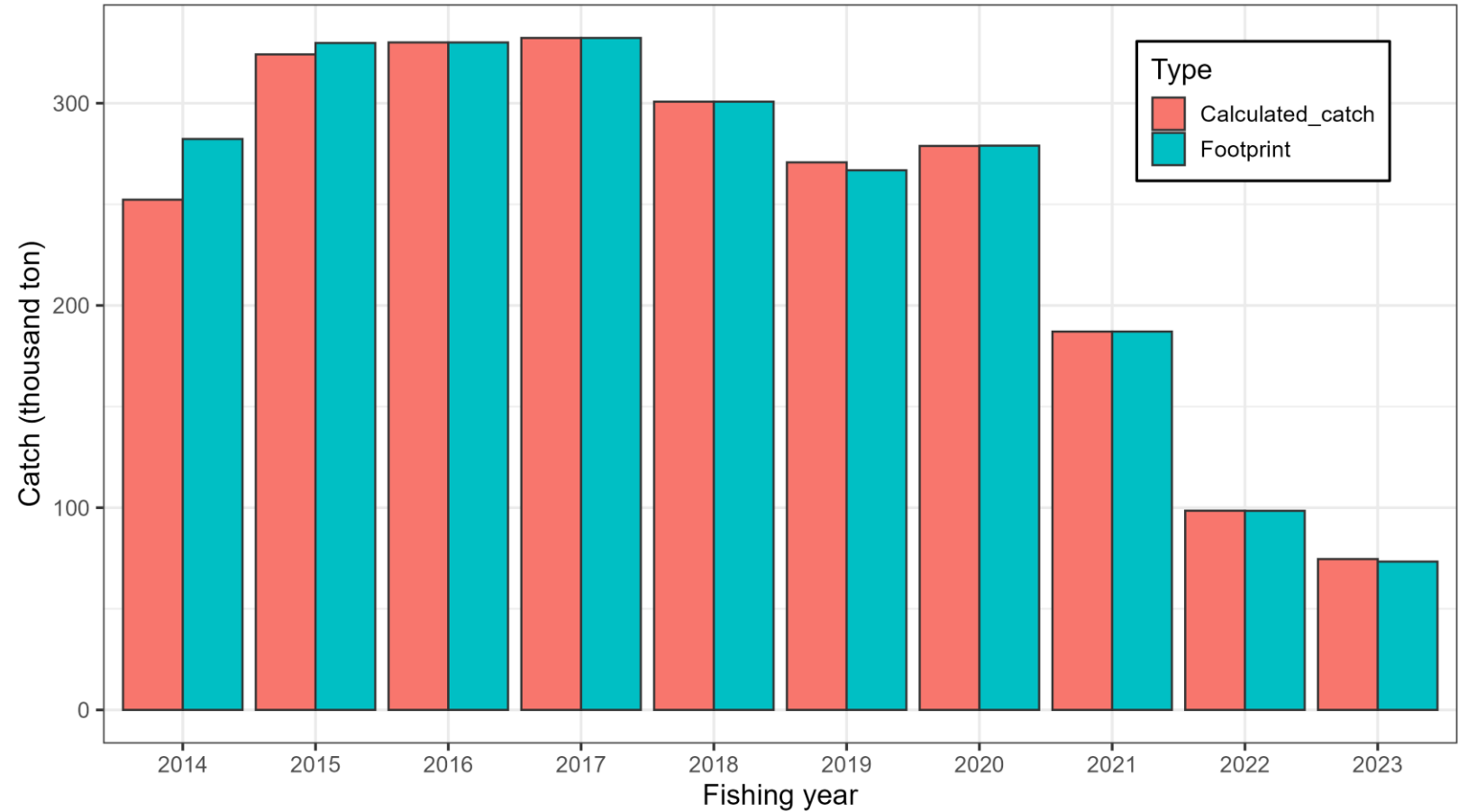
- Relatively large difference in FY2014
- Minor difference in FY2015 and FY2022

Calculation method

Catch at length

L-W relationship

Catch weight at length (ea. pref.)

Reported Catch (w)

Catch weight from each region

Catch weight at length

Age Length Key

Catch weight at age at length

Catch weight at age

Annual footprint

Catch at age

Weight at age

- Annual footprint is a sum of reported catch from each prefecture

- Calculated catch weight is derived from catch at length (sampling) and prefecture-specific L-W relationship (sampling).

- Slight discrepancy is caused by the difference in origin of data

Updated causes of discrepancy

CAUSE 1

- In CY2015, **preliminary catch yield value** was used to multiply length frequency to calculate catch number at length

- Annual footprint is updated as the official value, creating a discrepancy

SOLUTION 1

- Update catch yield value used to multiply length frequency

Updated causes of discrepancy

CAUSE 2

- In some prefecture, length weight relationship calculation did not correctly return the estimated weight at length in some FL (Excel glitch)

- Catch at length is calculated in certain FL bins, but catch weight was not calculated in certain FL bins.

- Caused imbalance in catch number and weight, causing strange values in weight at age
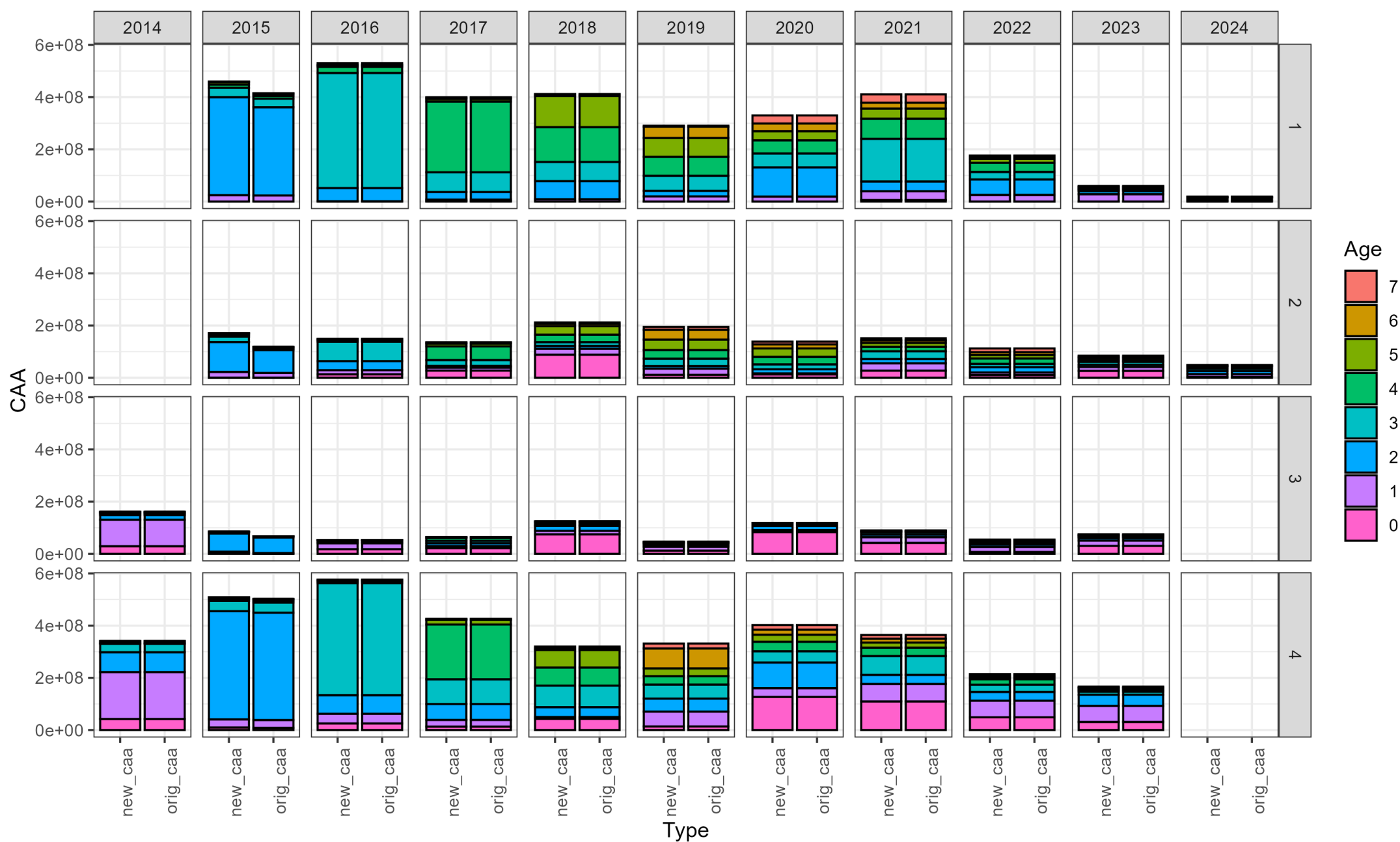
SOLUTION 2

- Recalculate L-W relationship and weight at age

Catch at age

- CAA is increased in CY2015 Q1, Q2 and some in Q3
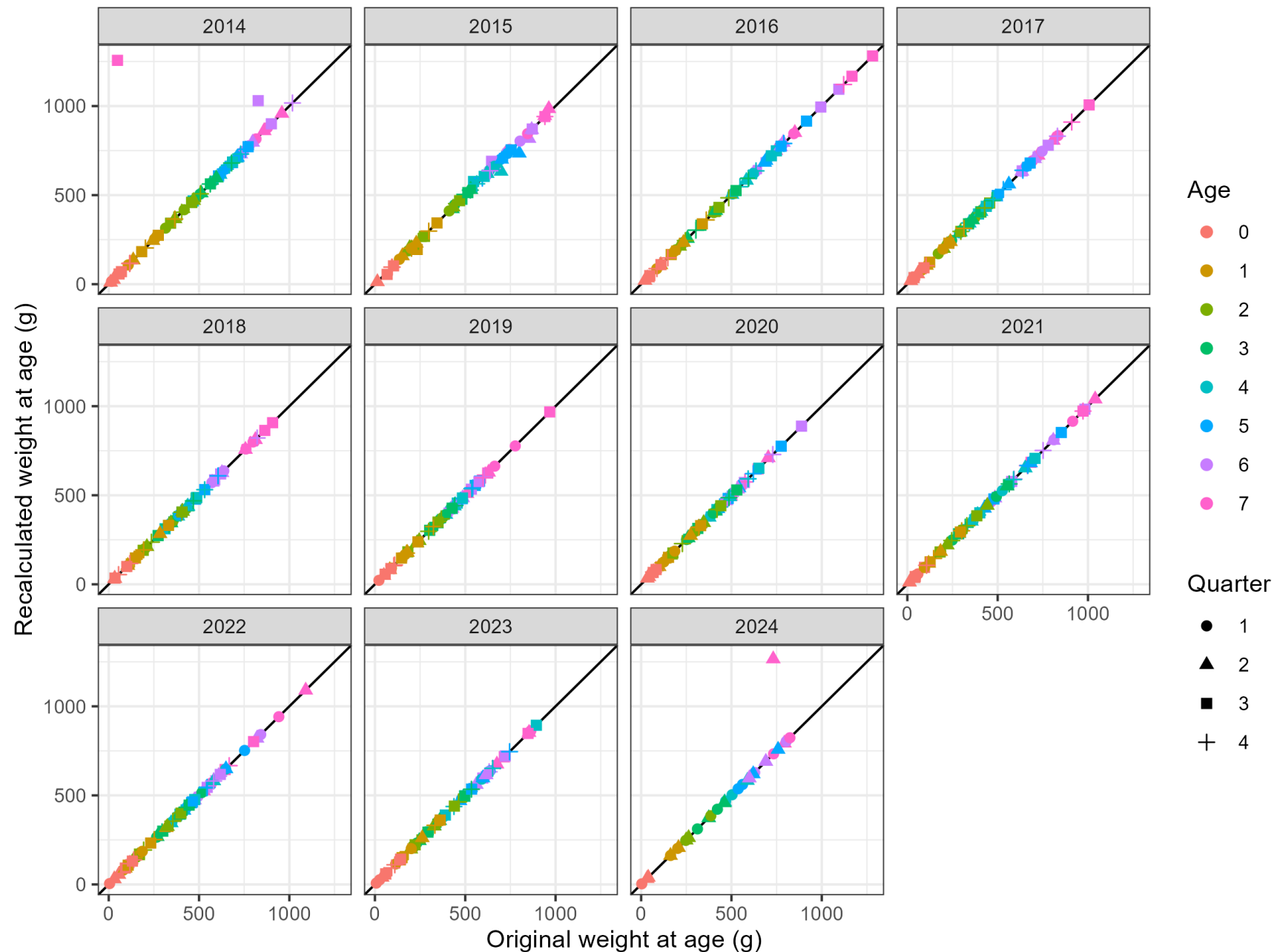- Others remain the same
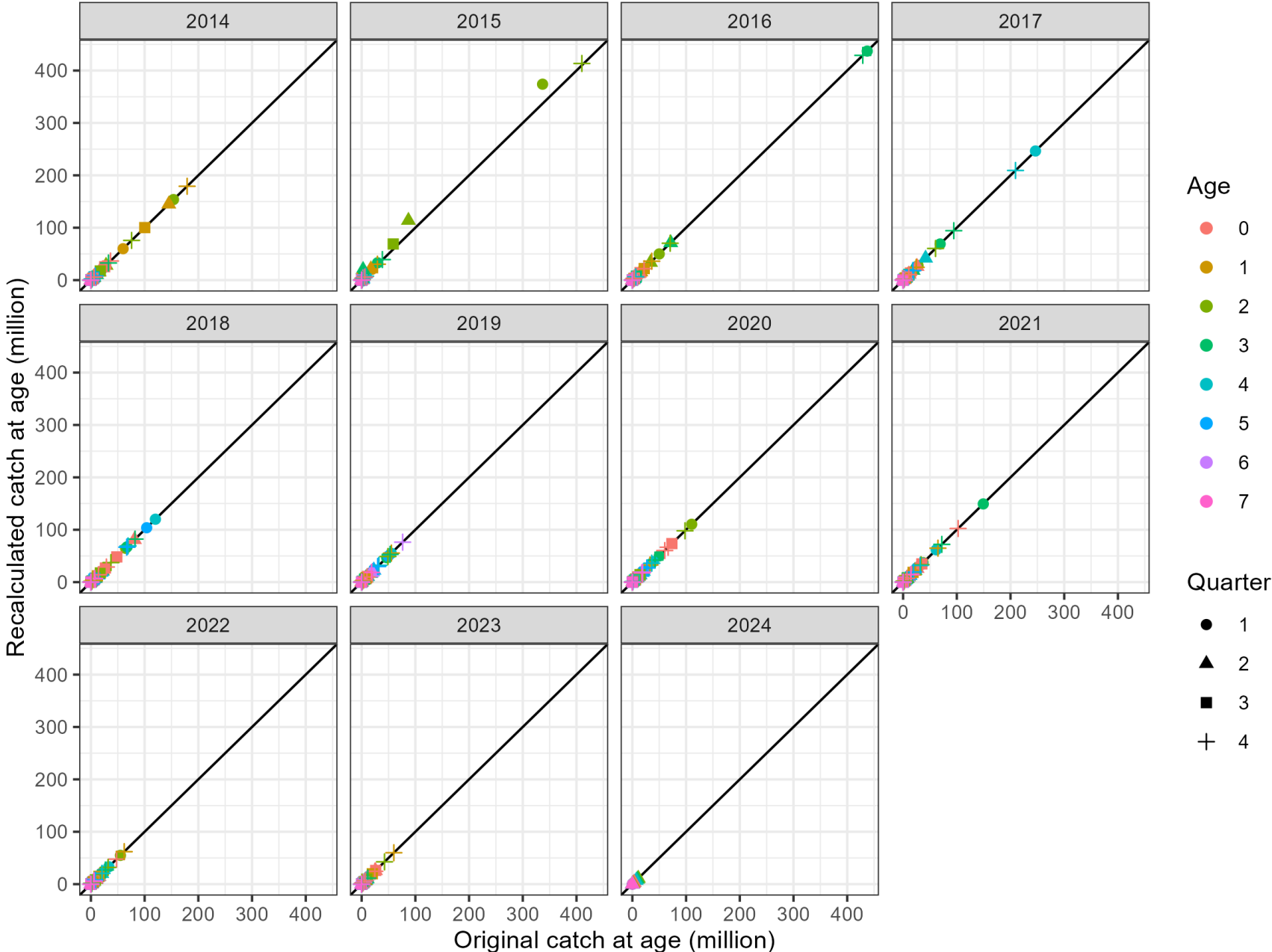
Catch at age

Weight at age

- Weight at age is updated as calculation process is updated

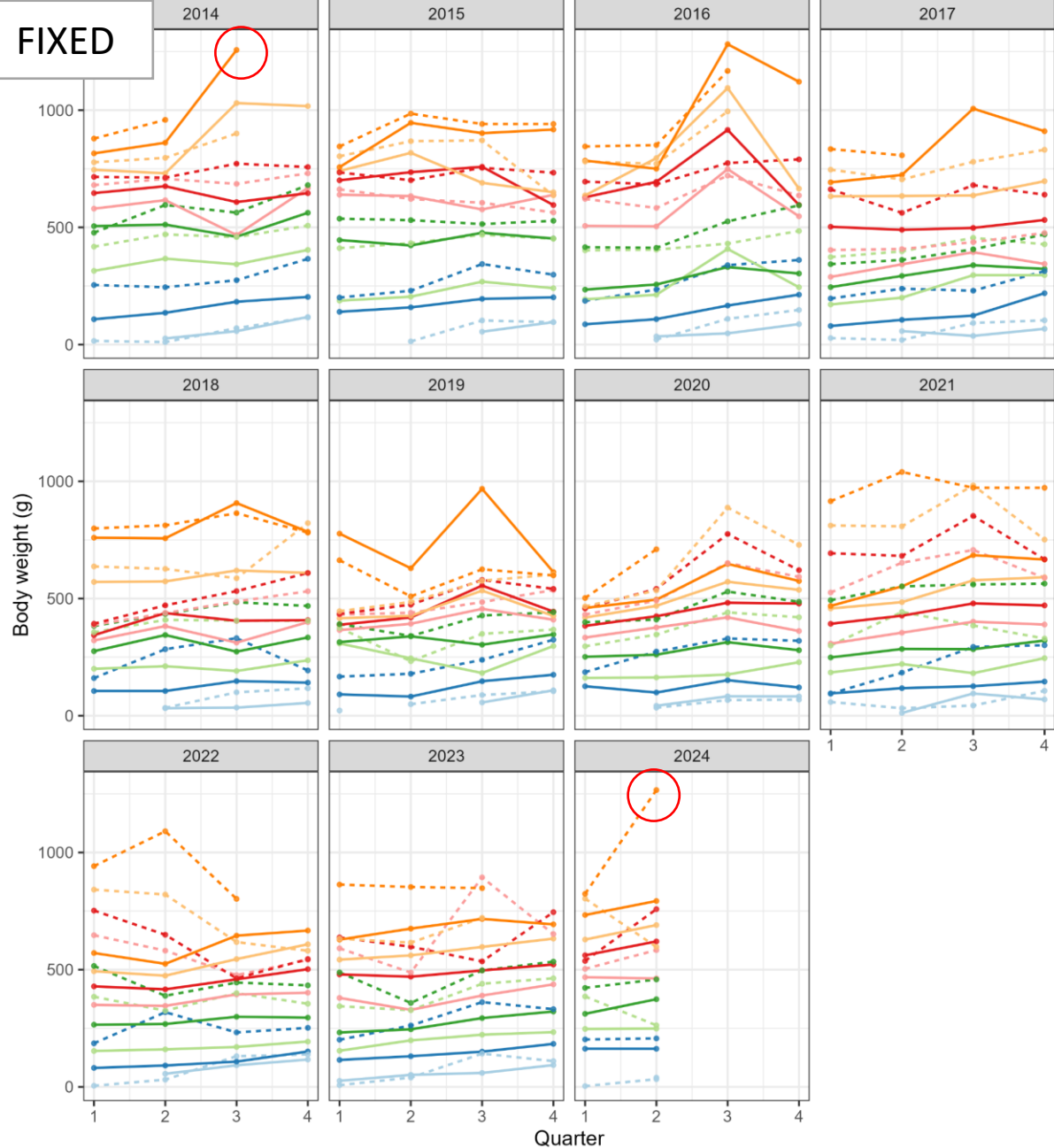- Significant increase in Age 7+ and 6+ in CY2014Q3,
- Age 7+ in CY2024Q2

Comparison of calculated catch and footprint

Fishing year	Calculated Catch	Footprint	Difference (Calc-Foot)	Ratio	%Diff	Original Calc Catch	Original Diff
2014	282317.8	282318	-0.2	1.000	0.0%	252287.5	**-30030.5**
2015	329779.3	329777	2.3	1.000	0.0%	324129.4	-5647.6
2016	330056.4	330043	13.4	1.000	0.0%	330056.4	13.4
2017	332271.2	332271	0.2	1.000	0.0%	332271.2	0.2
2018	300772.7	300773	-0.3	1.000	0.0%	300772.7	-0.3
2019	**270739.5**	**266835**	**3904.5**	**0.986**	**1.5%**	270739.5	3904.5
2020	278865	279005	-140.0	1.001	-0.1%	278865	-140.0
2021	187088.1	187098	-9.9	1.000	0.0%	187088.1	-9.9
2022	98511.32	98459	52.3	0.999	0.1%	98511.32	52.3
2023	**74618.08**	**73350**	**1268.1**	**0.983**	**1.7%**	74618.08	1268.1

Large discrepancies in FY2014 and FY2015 are solved. FY2019 and FY2023 remain under investigation

Comparison of calculated catch and footprint

Less than 2% discrepancies in FY2019 and FY2023 still remain but other differences are considered as minor (maybe negligible?)