The data description of input data used for **the sensitivity analyses** of the stock assessment of chub mackerel *Scomber japonicus* in the northwestern Pacific Ocean

Agenda Item 5.2

NPFC 2024 TWG CMSA09 WP02

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Data unavailability

Year (calendar)	Quarter	Member	Unavailable data
2015	**Q2-Q4**	**China**	**Catch at length ALK**
2016-2017	Q2-Q4	China	ALK
2014-2015	Q2-Q4	Russia	Catch at length ALK
2022-2023	Q1-Q4	Russia	Catch at length ALK

- In TWG CMSA08, methodologies to supplement unavailable data were discussed and agreed
- Other two methods and one additional scenario for Chinese CAA in CY2015 is used for the sensitivity runs

Catch-at-age

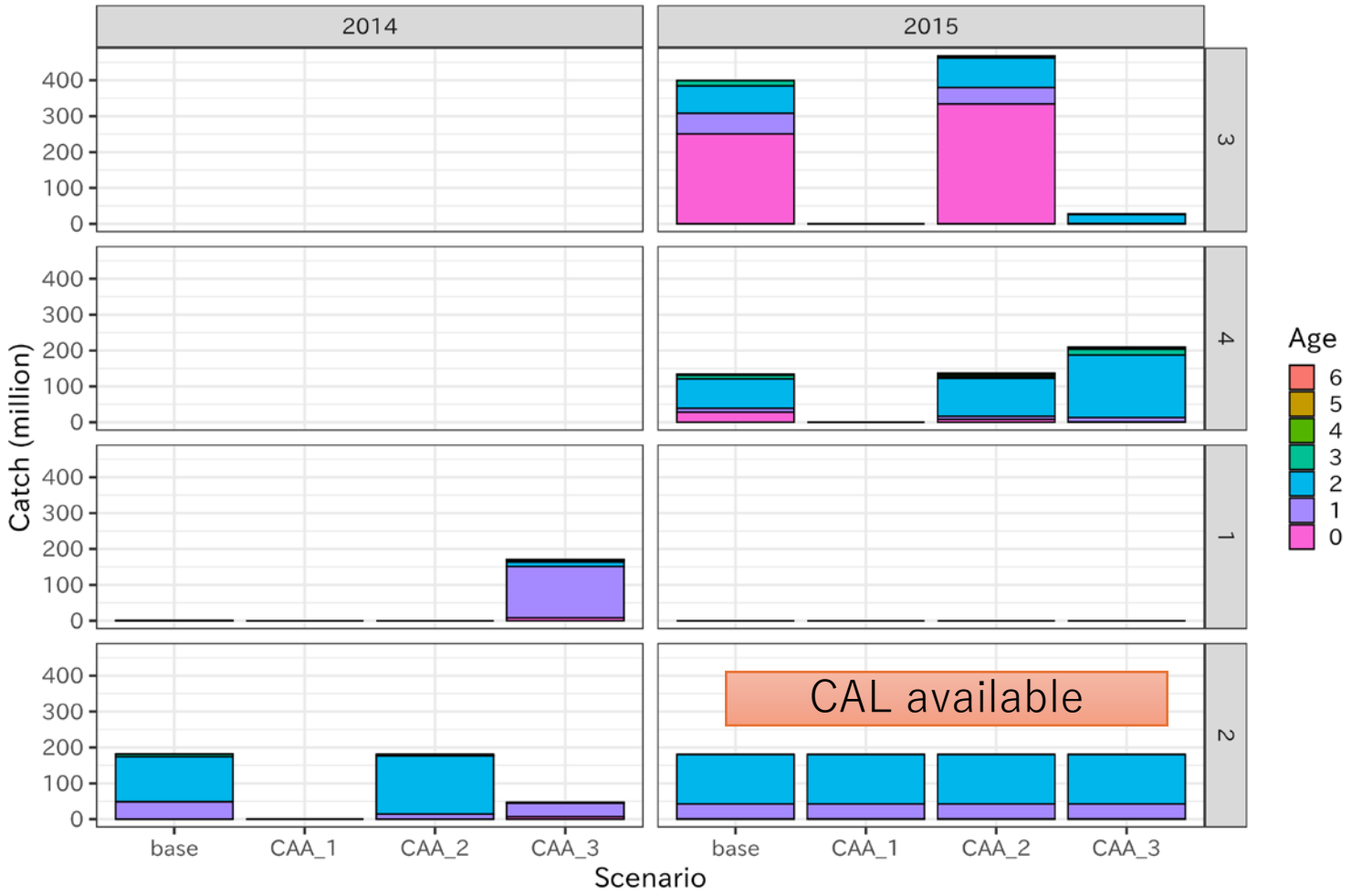
Scenario	Description
CAA_1	Remove Chinese catch-at-age for CY2015
CAA_2	Calculate Chinese catch-at-age for CY2015 using Chinese catch-at-length for CY2016
CAA_3	Calculate Chinese catch-at-age for CY2015 using catch-at-length from Eastern Japan for CY2015

- Three scenarios are used for the sensitivity runs
- Russian catch-at-age in CY2015 remains the same as the base case (Use mean 2016-2018 catch-at-length and eastern Japanese ALK)

Chinese catch-at-age for sensitivity runs

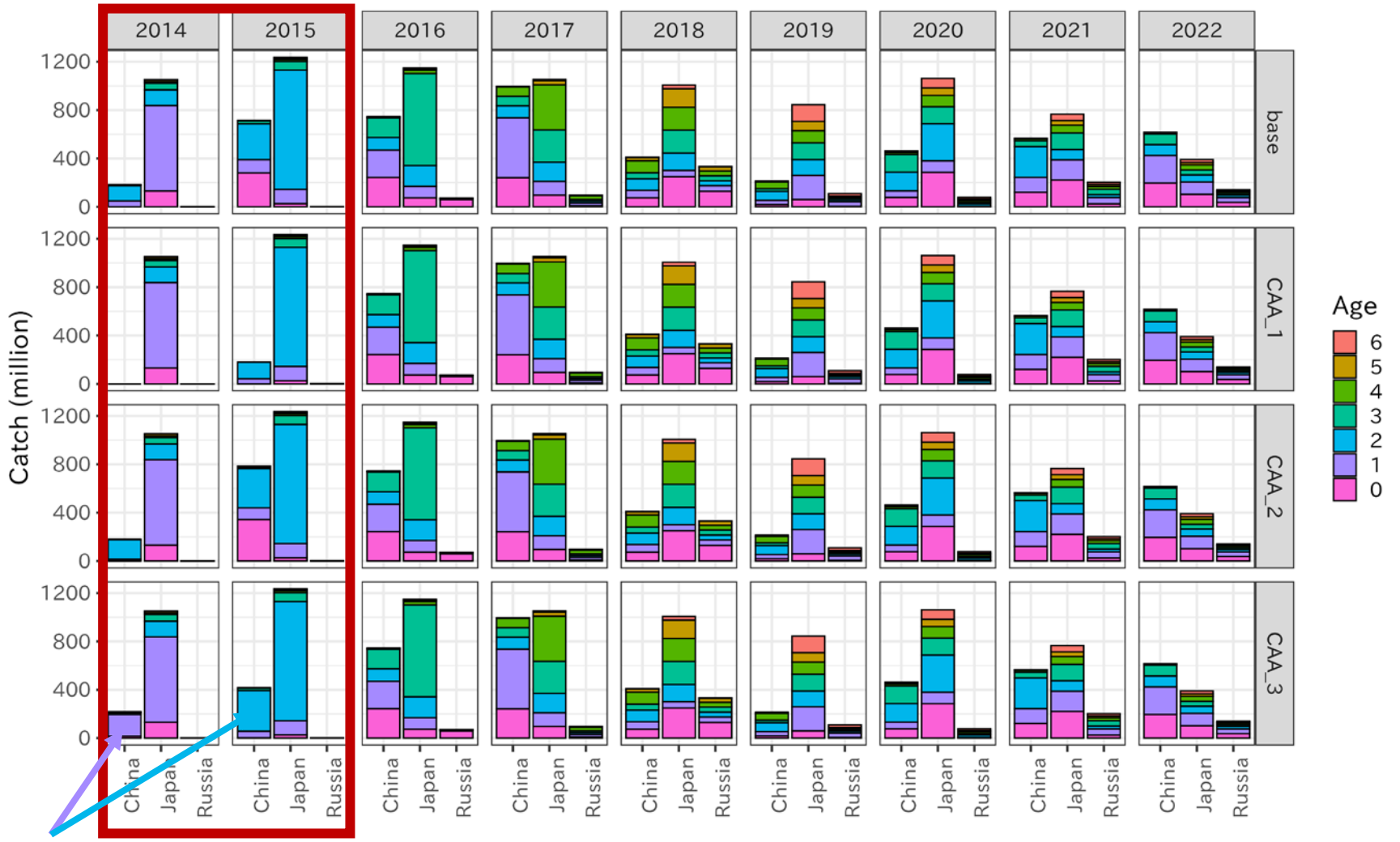
- CAA_1 : No Chinese catch
- CAA_2: Assume 2016 CAL
- CAA_3: Assume Japanese CAL

- Different pattern of catch between CAA_2 and CAA_3
- CAA_3 assumes catch in Q1 and Q4 – same as Japan



Catch in FY2014-2015 for China

- CAA_1 assumes very little catch compared to the base case
- CAA_2 assumes more catch than the base case
- CAA_3 assumes less catch than the base case but assumes more catch of 2013 year-class



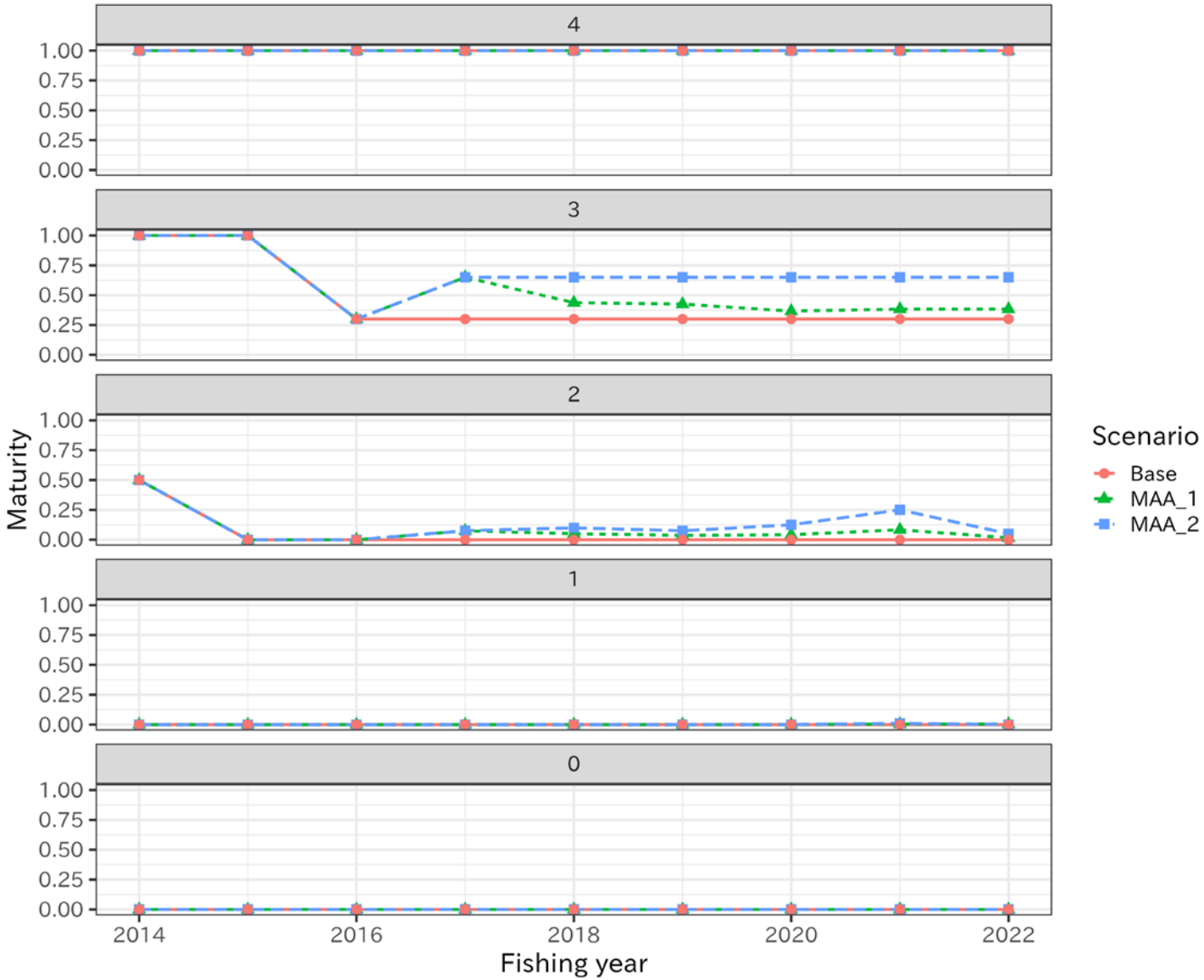
Maturity at age

Scenario	Description
Base	Use Japanese maturity at age
MAA_1	Mean of Japanese and annual mean of Chinese maturity at age
MAA_2	Mean of Japanese and seasonal mean of Chinese maturity at age

- Two maturity at age data are used for sensitivity runs
- Both uses the mean of Chinese and Japanese maturity at age
  - Annual mean : Mean of MAA from Q3 to the following Q2
  - Seasonal mean : Mean of MAA from Q1 and Q2 (spawning season)

Maturity at age

- Since Chinese MAA is estimated to be higher, MAA_1 and MAA_2 scenarios assume higher MAA for age 1, 2, and 3
- MAA for age 0 and 4+ are the same as the **base case**
- **MAA_1** assumes moderate increase in MAA
- **MAA_2** assumes greater increase in MAA in age-3



Overall interpretation of scenarios

Scenario	Description	Interpretation compared to the base case
CAA_1	Remove Chinese catch-at-age for CY2015	Little Chinese catch in FY2015
CAA_2	Calculate Chinese catch-at-age for CY2015 using Chinese catch-at-length for CY2016	Slightly more Chinese catch with similar age composition
CAA_3	Calculate Chinese catch-at-age for CY2015 using catch-at-length from Eastern Japan for CY2015	Less Chinese catch, with different age composition (age-1 rather than age-2 in FY2014, age-2 rather than age-0 in FY2015)
MAA_1	Mean of Japanese and annual mean of Chinese maturity at age	Slightly earlier maturation
MAA_2	Mean of Japanese and seasonal mean of Chinese maturity at age	Moderately earlier maturation with 2x maturity at age-3