Stock status indicators for tropical tunas in the eastern Pacific Ocean

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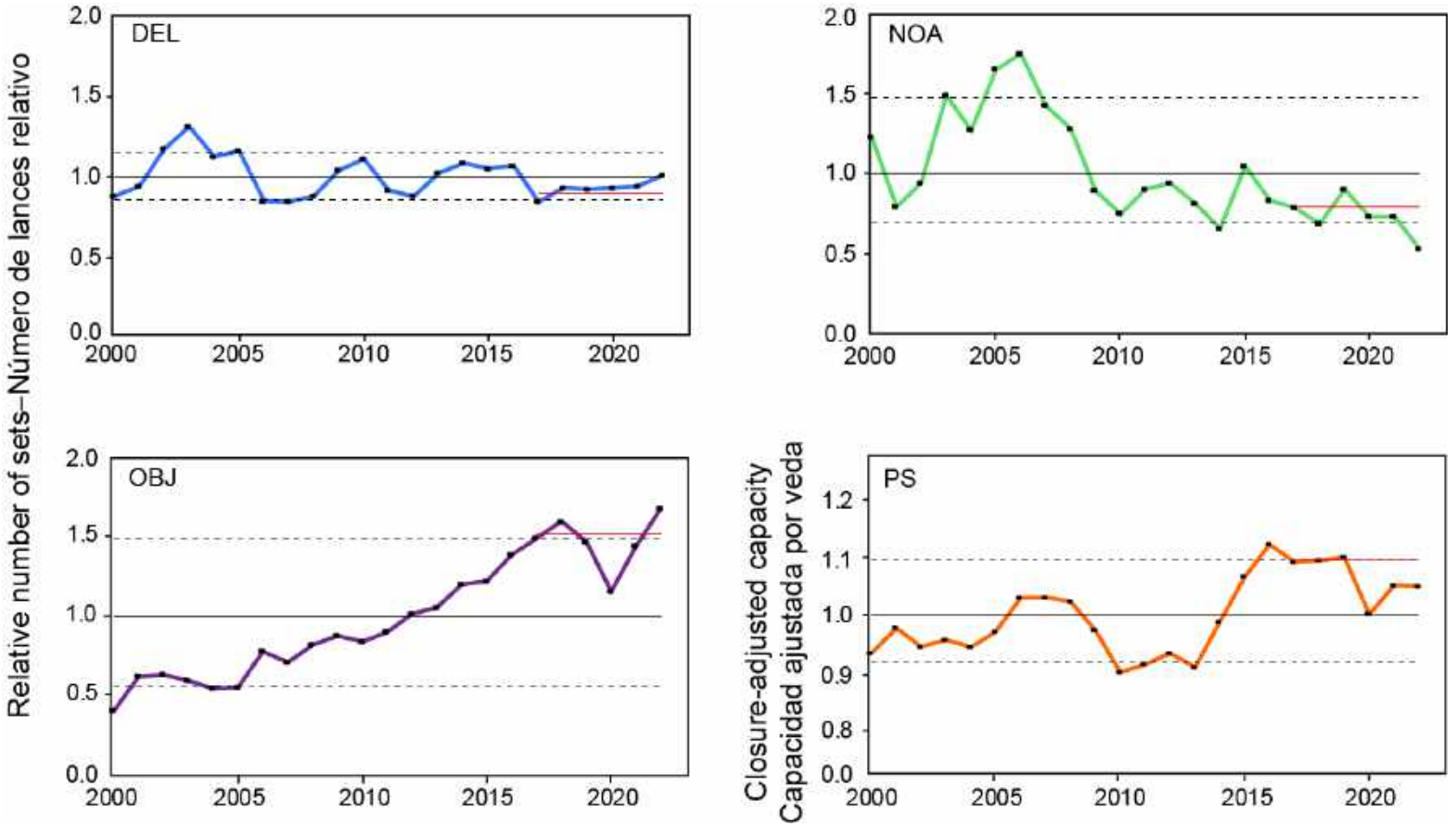
Introduction

- Data: purse-seine and longline
- Species: bigeye, yellowfin, and skipjack
- Stock Status Indicators:
  - Catch, effort, CPUE, and average length
  - Begin in 2000
    - First year of purse-seine species composition sampling
    - After the major offshore expansion of the floating-object fishery

Purse-seine: number of sets by set type



Black dashed lines: 10% and 90% percentiles

Red solid lines: *status quo* (average in 2017-2019) level

- Closure-adjusted capacities have been below the *status quo* level since 2020
- The number of floating-object sets was below the *status quo* level in 2020 and 2021 due to COVID, but it reached the highest level in 2022

Purse-seine: catch in weight by species and set type

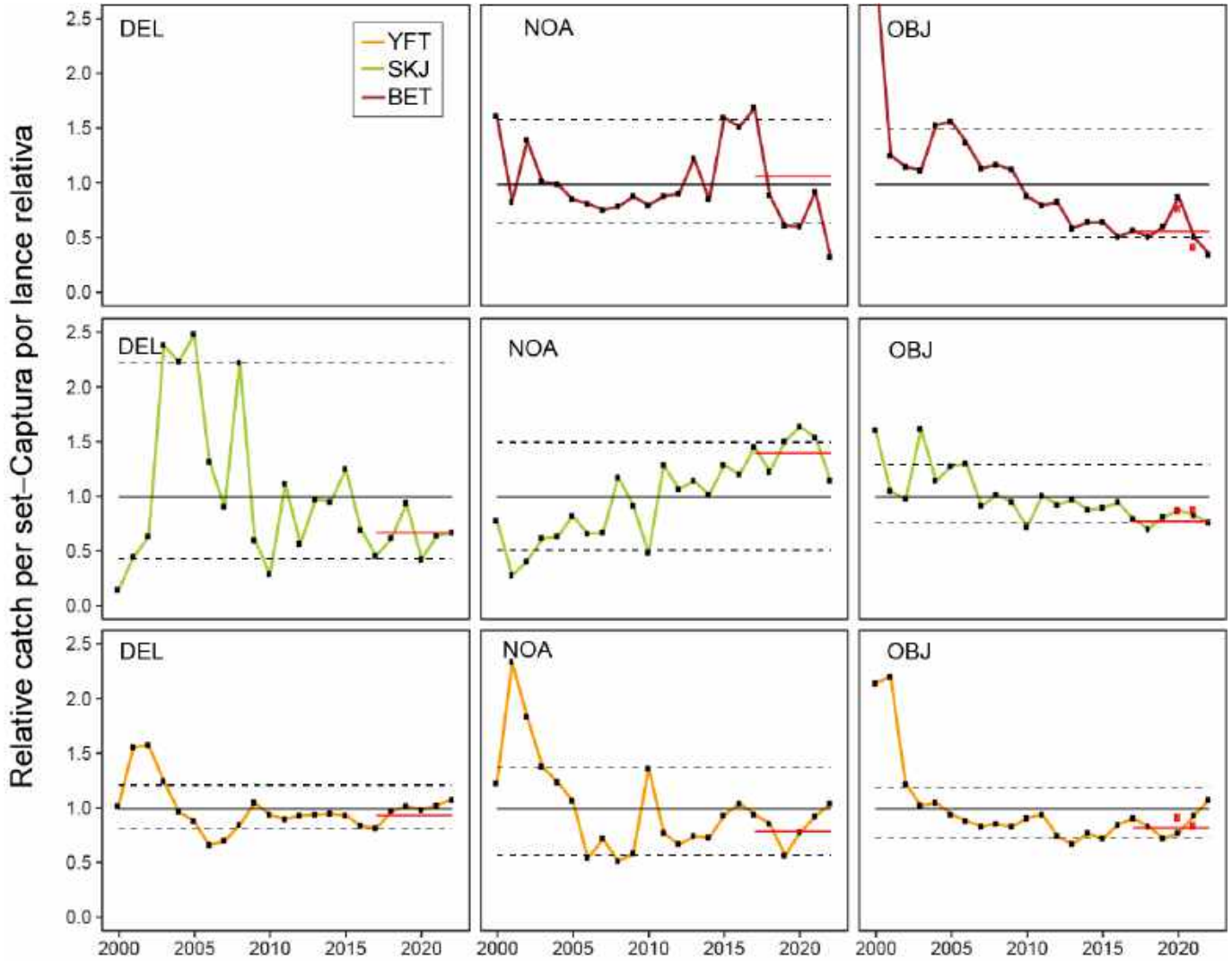
Red solid lines: *status quo* (average in 2017-2019) level

Red dots: bias-adjusted floating-object catches in 2020 and 2021 based on SAC-14 INF-D

For the floating-object fishery:

- Yellowfin: catches in 2020 and 2021 were below the *status quo* level, and that in 2022 reached the highest level
- Skipjack: the catch in 2020 was below the *status quo* level, and those in 2021 and 2022 were slightly above the *status quo* level
- Bigeye: the catch in 2020 was slightly above the *status quo* level, and those in 2021 and 2022 were at the lowest level since 2000

Purse-seine: catch per set by species and set type



Red solid lines: *status quo* (average in 2017-2019) level

Red dots: bias-adjusted floating-object catches in 2020 and 2021 based on SAC-14 INF-D

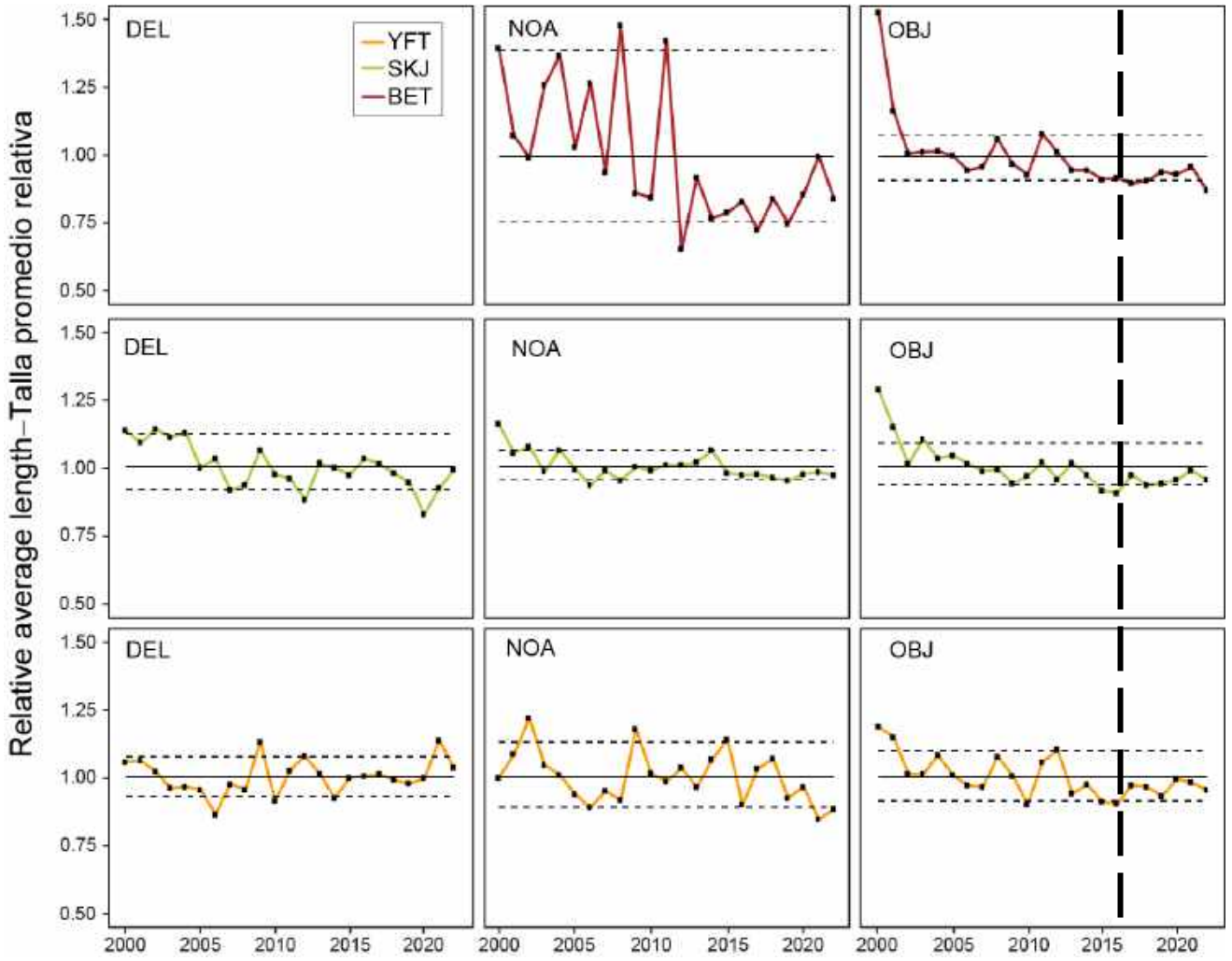
Yellowfin in OBJ: catch per set did not have an obvious trend since 2010; the values in 2020-2022 were above the *status quo* level

Skipjack in OBJ: catch per set decreased slowly since 2010; the values in 2020-2022 were at or above the *status quo* level

Skipjack in NOA: catch per set continued to increase since 2000

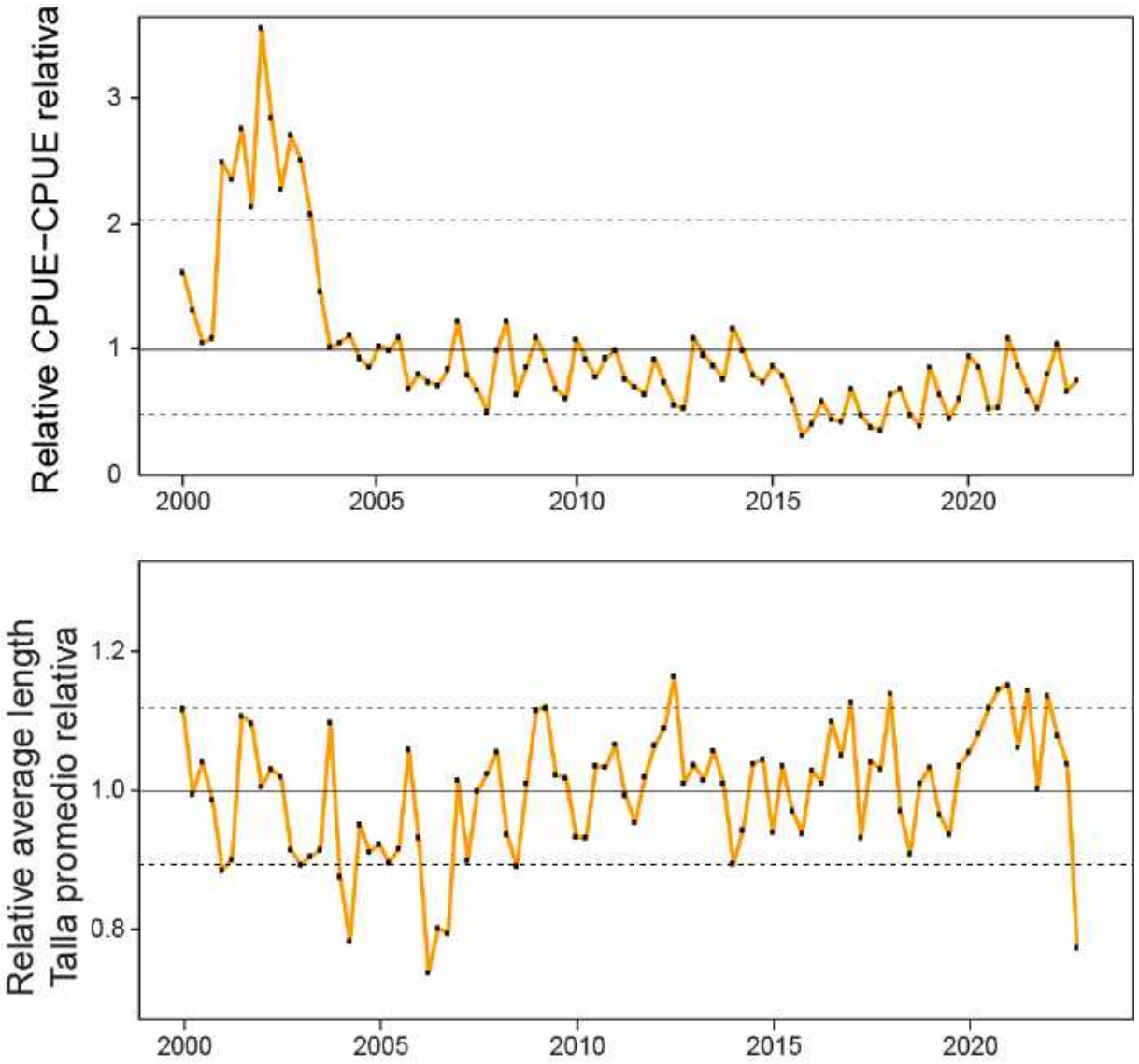
Bigeye in OBJ: catch per set did not have an obvious trend since 2010; the values in 2020 and 2021-2022 were above and below the *status quo* level, respectively

Purse-seine: average length by species and set type



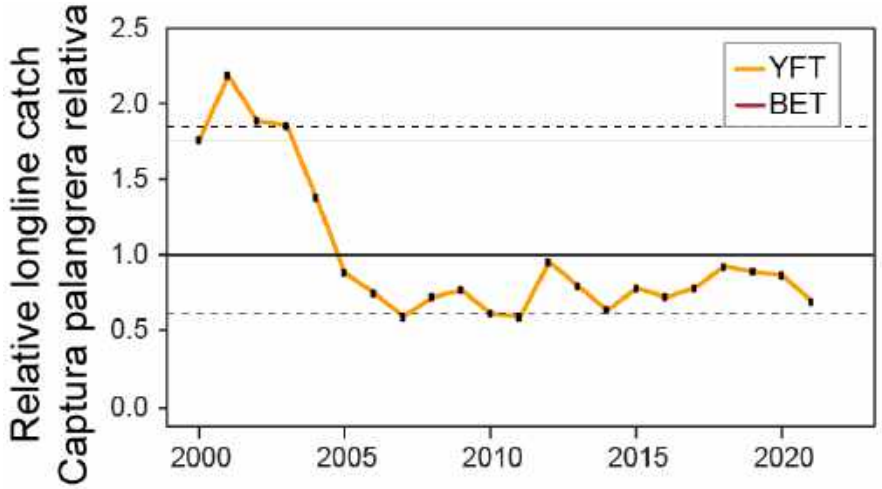
- The average length of all three tropical tunas in floating-object sets declined between 2000 and 2015 and remained relatively stable thereafter
- The average length of bigeye in floating-object sets was at the lowest level in 2022

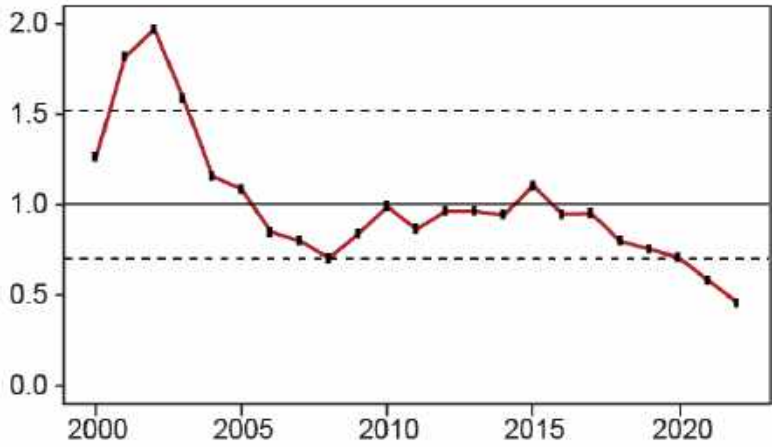
Standardized DEL CPUE and average length for yellowfin

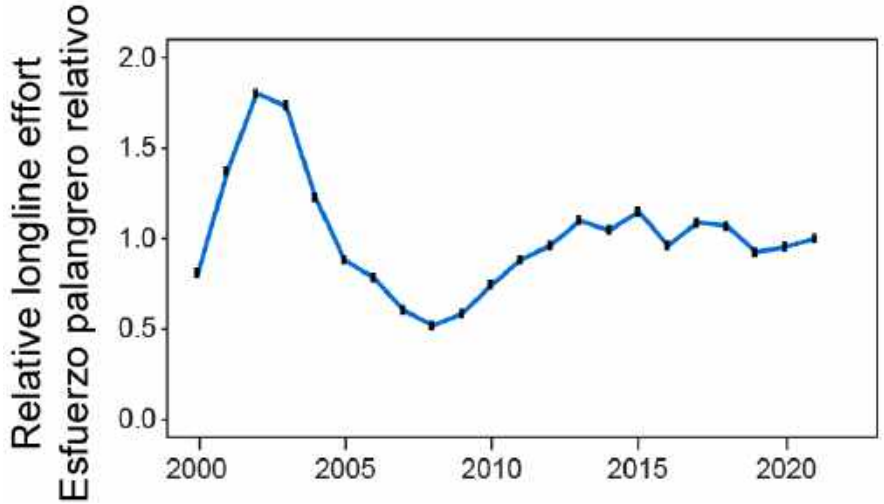


- The index of relative abundance for yellowfin in the dolphin-associated purse-seine fishery shows an increasing trend since 2015
- The average length of yellowfin in dolphin sets was relatively stable since 2010 without an obvious trend

Longline: catch and effort



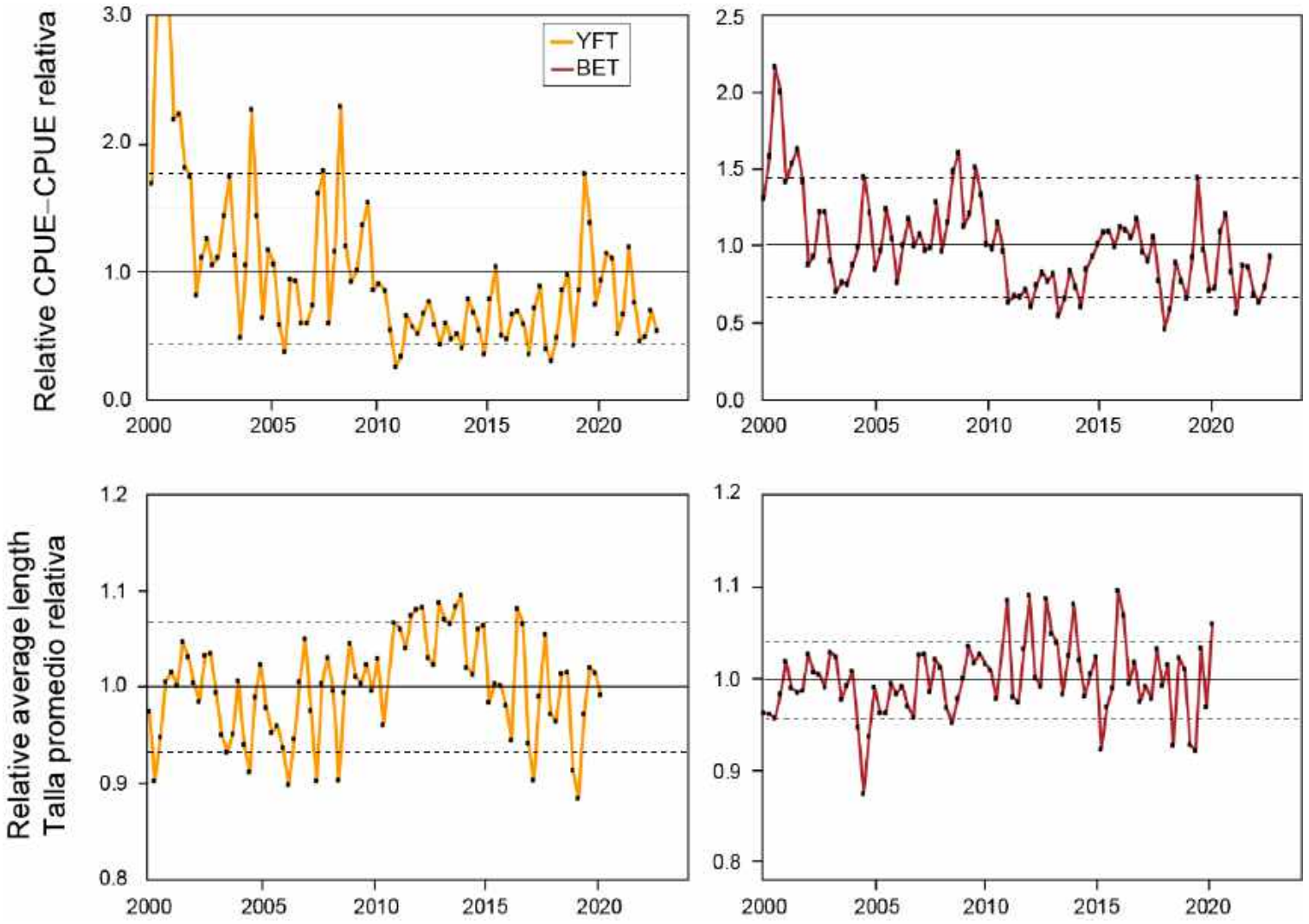




In the last decade (2013-2022):

- Longline effort remained stable
- No obvious trend in yellowfin catch
- Negative trend in bigeye catch, which reached the lowest level in 2021 and again in 2022

Longline: standardized CPUE and average length



- Yellowfin CPUE has decreased since 2020 when the last benchmark assessment was conducted (opposite trend is found in dolphin sets)
- Bigeye CPUE has also decreased since 2020 but to a less extent
- No length composition data were submitted by Japan since 2020 due to the negative impact of COVID on data collection and analysis

Questions