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SCIENTIFIC ADVISORY COMMITTEE

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**YELLOWFIN AND SKIPJACK TUNA TRENDS RELATIVE TO ENSO EVENTS: AN
UPDATE**

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SUMMARY

As a request from the Scientific Advisory Committee (SAC) (SAC-14-16) in response to the recent relatively high catches of yellowfin tuna in 2022 and skipjack tuna in 2023 in the purse-seine floating-object (OBJ) fishery, the IATTC staff investigated the potential causes of these fluctuations, including environmental factors. This resulted in [SAC-15 INF-L](#), which indicated that there is likely a complex lag effect of the El Nino Southern Oscillation (ENSO) events (measured via the Oceanic Nino Index, ONI) on catch (i.e., CPUE) of both species. With the continued increase in catch of skipjack in 2024, the staff updated the time series plots comparing ONI and CPUE of each species through 2024. Following the same methods in SAC-15 INF-L, monthly observed CPUE data from purse seine floating object sets (OBJ) for each species were decomposed into three components: trend, seasonal, and random with the seasonal and random components removed. For the sake of brevity and simplicity in the interpretation, only the CPUE trend time series for small yellowfin tuna and all skipjack tuna were plotted with ONI time series data (Figs. 1a & b). After small yellowfin tuna CPUE trend peaked in middle of 2022 in the middle of a La Nina event, CPUE dropped steadily for about a year as the ENSO phase shifted towards neutral. As ENSO shifted into an El Nino phase in mid 2023, peaking in December 2023, dropping back into a neutral phase by the mid 2024, small yellowfin tuna CPUE trend increased and leveled off by mid 2024 (Fig. 1a). Note that, as a result of the decomposing analysis, CPUE trended data stops at June 2024. From early 2023 through the end of trended time series, skipjack CPUE trend has steadily increased. Visually, it appears the recent increasing trend has lagged behind ONI by at least six months (Fig. 1b). The staff believes continued monitoring of these patterns would be beneficial and that they could potentially be used to help better understand catch fluctuations of the past and the future based on ENSO values.

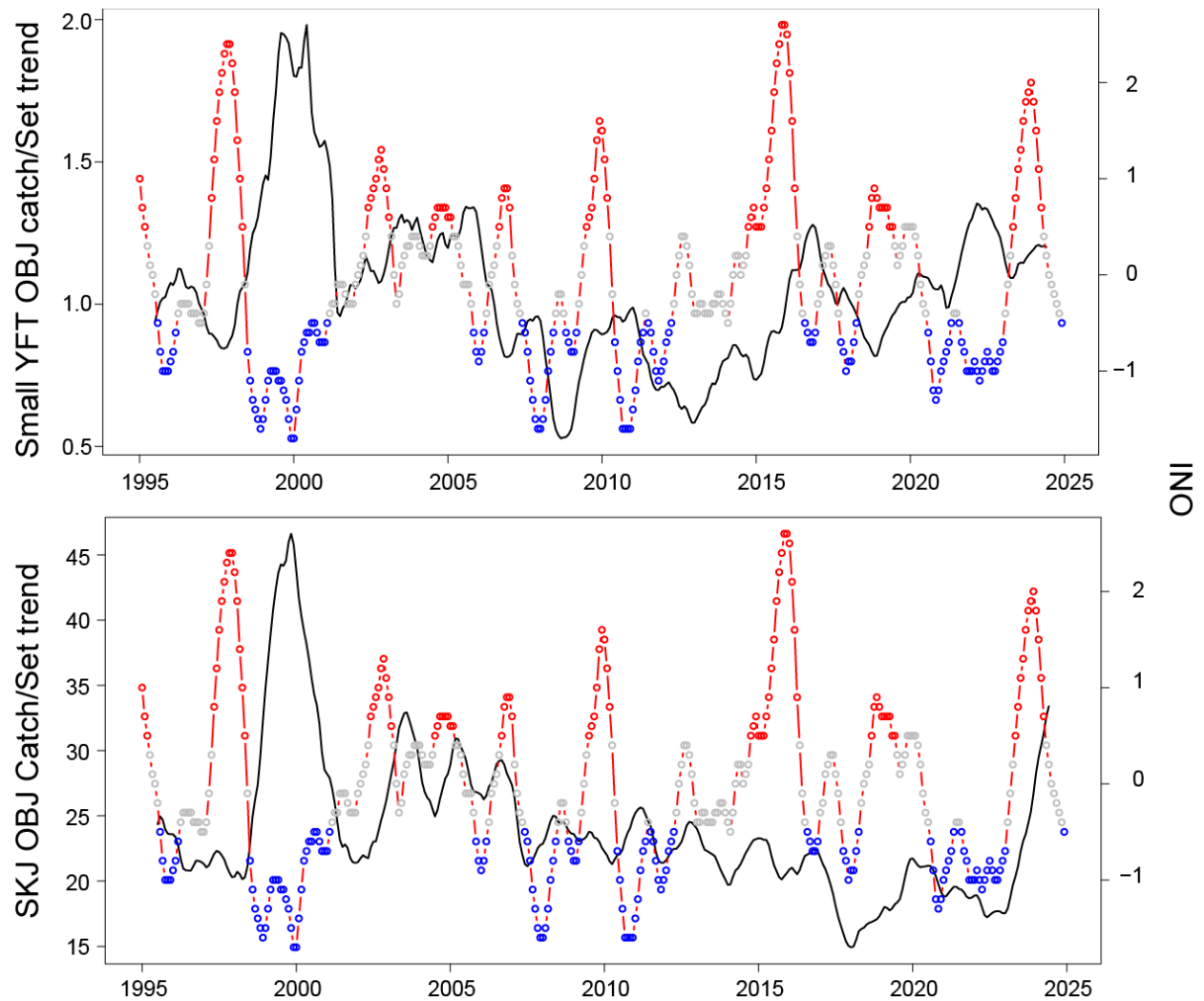


FIGURE 1. Small yellowfin tuna (a) and skipjack tuna (b) CPUE trend data overlaid with ONI. The colors of the points of ONI correspond to the El Niño (red), La Niña (blue), or Neutral (grey) phase.

FIGURA 1. Datos de tendencia de la CPUE del atún aleta amarilla pequeño (a) y del atún barrilete (b) superpuestos con el índice ONI. Los colores de los puntos del ONI corresponden a las fases de El Niño (rojo), La Niña (azul) o neutras (gris).