

The stock assessment has been updated with revised catch and length composition data, alongside relative abundance indices derived from CPUE standardization using both a general linear model (GLM) and a spatial-temporal model (Vector Autoregressive Spatio-Temporal model, VAST). The results from all scenarios suggest that the stock of dolphinfish in the northwest Pacific Ocean may not be subject to overfishing nor in an overfished state.

The operating model (OM) was reviewed and updated to incorporate fisheries and population parameters based on the latest stock assessment results. Conditioning factors were also re-evaluated and discussed for their application in the management strategy evaluation (MSE) analysis. Historical trends in recruitment, spawning biomass, and fishing mortality, as well as spawning biomass relative to MSY levels, showed consistent values and patterns between the OM and the estimation model (EM).

In addition to a previously adopted model-based harvest control rule (HCR) focusing on catch control—designed by setting minimum (C_{min}) and maximum (C_{max}) catch levels corresponding to the spawning stock biomass at the target reference point (TRP) and limit reference point (LRP)—a fishing mortality or effort-based HCR is now being considered to address input control requirements. Three model-based HCRs are under examination: the constrained ramp, ramp, and F-step approaches. The constrained ramp HCR allows gradual changes in fishing mortality (F) with limits to avoid abrupt shifts, offering stability and flexibility. The ramp HCR establishes a simple linear relationship between stock biomass and F , reducing fishing pressure as biomass decreases while maintaining constant F above a defined threshold. The F-step HCR applies fixed intervals of F based on biomass ranges, providing simplicity but less flexibility in adjusting F to changes in stock biomass.

Analysis results indicate that future catch trends under all HCRs show a gradual upward trajectory, reaching a plateau after 10 years before slightly declining. Differences in catch trends among the various HCRs are minimal. Similarly, the trends in spawning stock biomass (SSB) and relative SSB are consistent across HCRs, achieving management objectives by maintaining fishing mortality below the MSY reference point and keeping SSB above the MSY level. However, given the introduction of several new HCRs, these results remain in the testing phase, requiring ongoing review, adjustment, and refinement to ensure accuracy and reliability.