A multi-model candidate management procedure for Atlantic bluefin tuna.

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We developed a class of model-based management procedures for Atlantic bluefin tuna based on multi-model inference. The basis of the procedures were five assessessment models tuned to five operating models from the reference OM grid, matching productivity and biomass for the recent historical period from 1965 - 2016. In each management interval, these five assessment models were fit to the approved management indices, producing projections of East and West stock biomass, stock mixing, and biological reference points. These estimates were used in harvest control rules, and the five TACs were averaged to produce harvest advice for the East and West area. Multiple MPs were then defined based on varying precautionary TAC caps, maximum target harvest rates, and HCR control points. We found that MPs with lower caps, lower maximum harvest rates and control points avoided overfishing on the reference grid more often. We also found that the subset of OMs that our AMs were tuned to capture the uncertainty of the whole reference OM grid well, evidenced by commensurate performance of our MPs on OMs both inside and outside the tuning subset.