

# Comparison of Observed and Model-Predicted Catch

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Comparison between observed and predicted catch for different RFMOs and different models. Note that the following figures only include data from testing datasets (a subset of the full dataset). There were several models that were run, but we include here the most comprehensive base models for different combinations of spatial resolution, catch units, and effort units. Additional models that are *not* included in the figures below are comprehensive tests that include or remove features such as: sea surface height, species ex-vessel price by year, shark ex-vessel price by year, coefficient of variation of environmental predictors (sea surface temperature, sea surface height, chlorophyll-a), log transformation of the response variable.

The chosen models were based on the best performing models in terms of  $R^2$  using all combinations of models run (including the comprehensive tests mentioned above). The hyperparameters of the best performing models were tuned and their results from the testing dataset were included in the figures below as “Tuned Model”.

Percent difference was calculated as:

$$difference = (\frac{predicted - observed}{observed} + 1) * 100$$

In the above equation, predicted refers to the model-predicted catch and observed refers to the observer-reported catch.

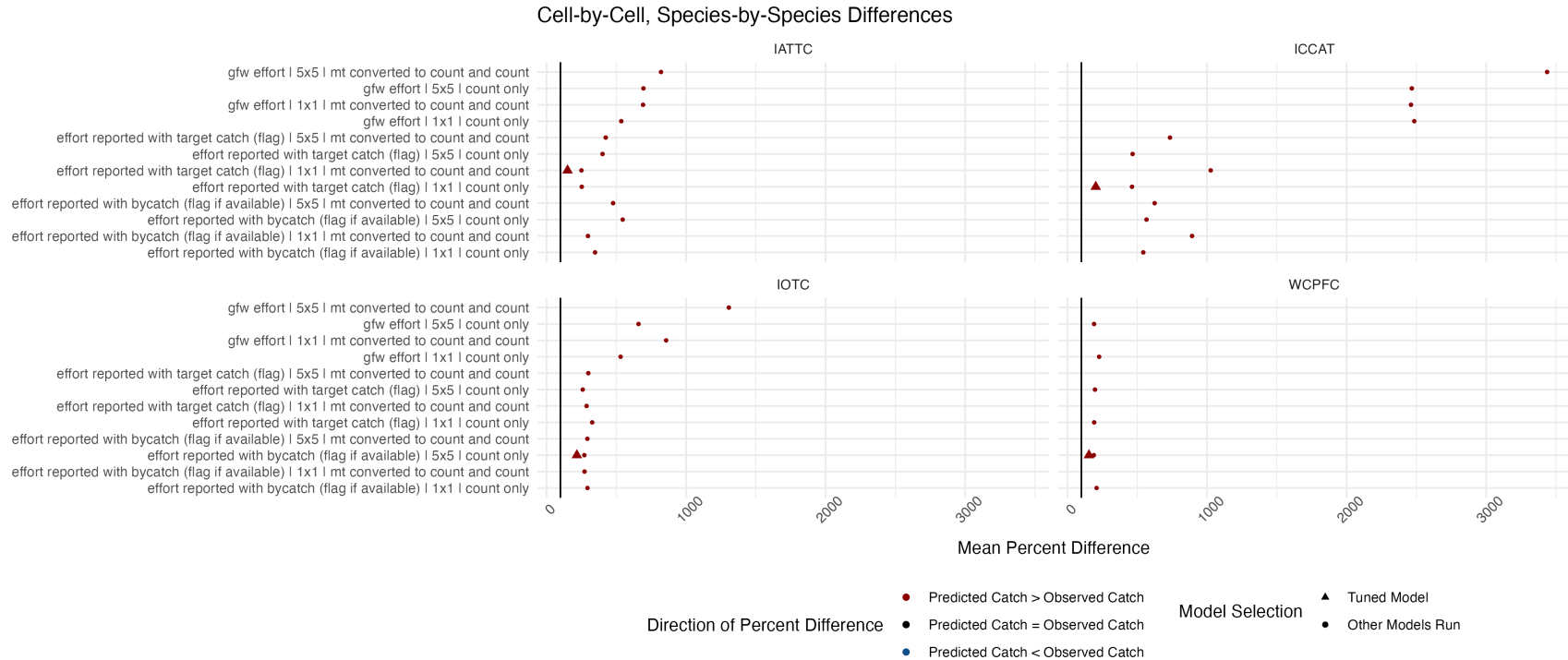
The final percent difference estimates are based on a scale so that:

- If predicted catch > observed catch, % difference > 100
- If predicted catch = observed catch, % difference = 100
- If predicted catch < observed catch, % difference < 100

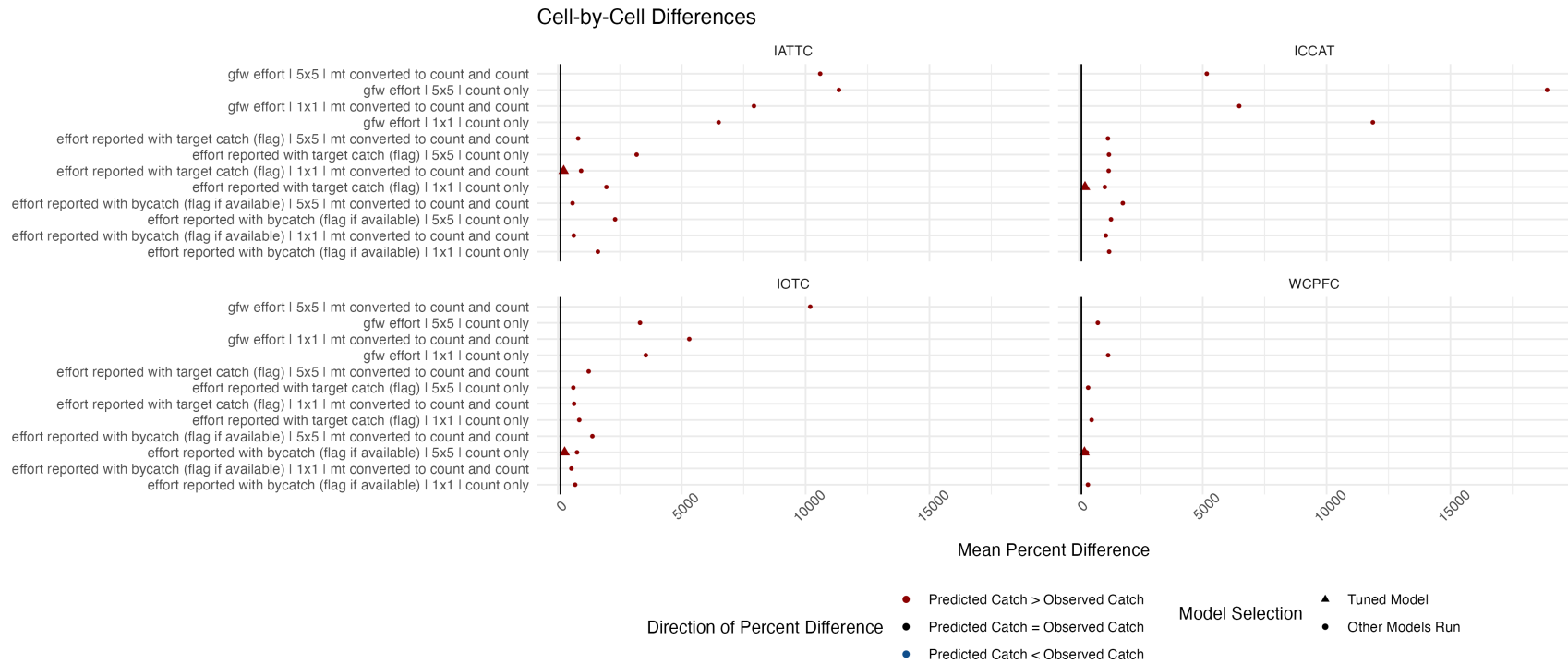
We calculated percent difference for the following scenarios:

- Mean percent difference by model at a cell-by-cell and species-by-species scale
- Mean percent difference by model at a cell-by-cell scale (summed estimates for all species)
- Percent difference by model (summed estimates for all cells and all species)

## Mean Percent Difference at a Cell-by-Cell and Species-by-Species Scale



# Mean Percent Difference at a Cell-by-Cell Scale



# Mean Percent Difference

