

# Index Fit Report

## North Atlantic Swordfish MSE

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## Contents

|  |          |
|--|----------|
| <b>Introduction</b>                      | <b>1</b> |
| <b>Indices and Fits</b>                  | <b>1</b> |
| Fleet & Survey Indices . . . . .         | 1        |
| Combined Index . . . . .                 | 9        |
| <b>Summary of Statistical Properties</b> | <b>9</b> |
| Fleet & Survey Indices . . . . .         | 9        |
| Combined Index . . . . .                 | 13       |

## Introduction

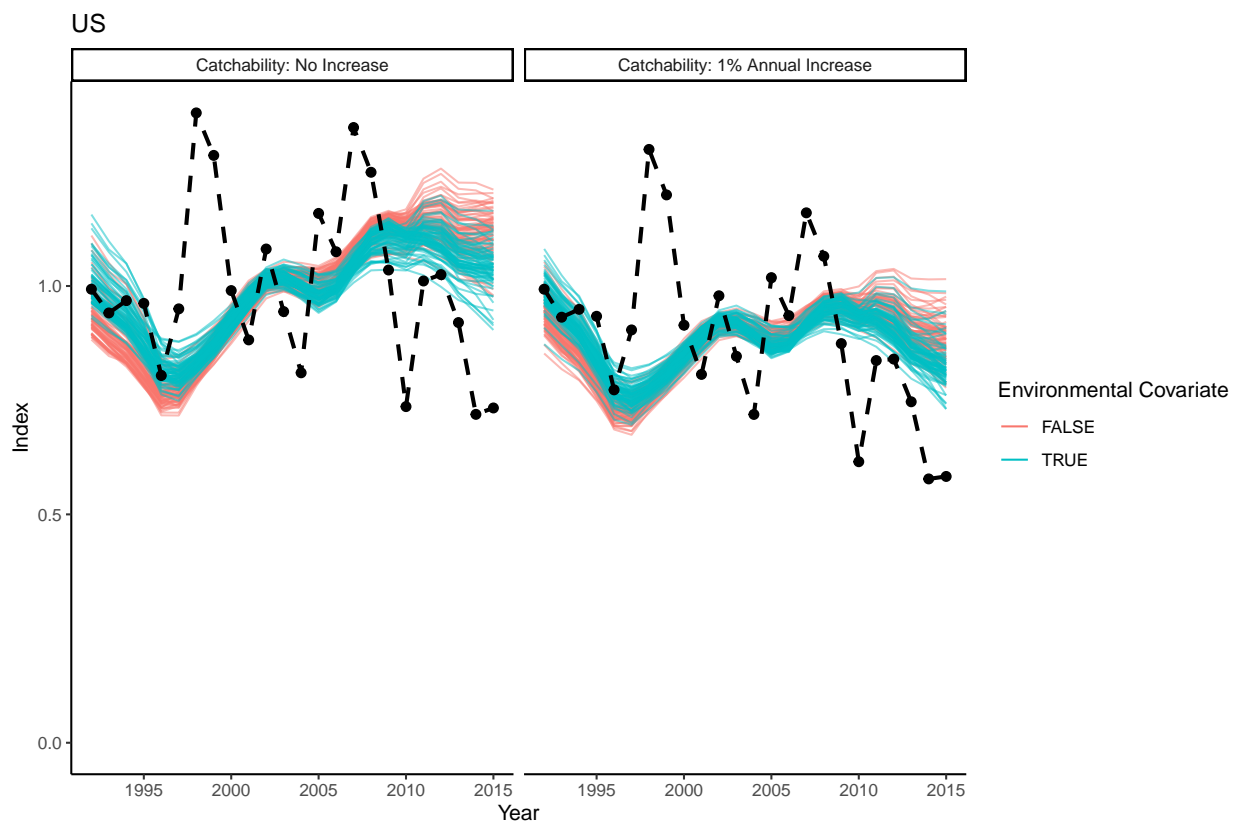
This report summarizes the fits across the 288 OM's from the uncertainty grid to the fleet & survey 14 indices from the North Atlantic swordfish.

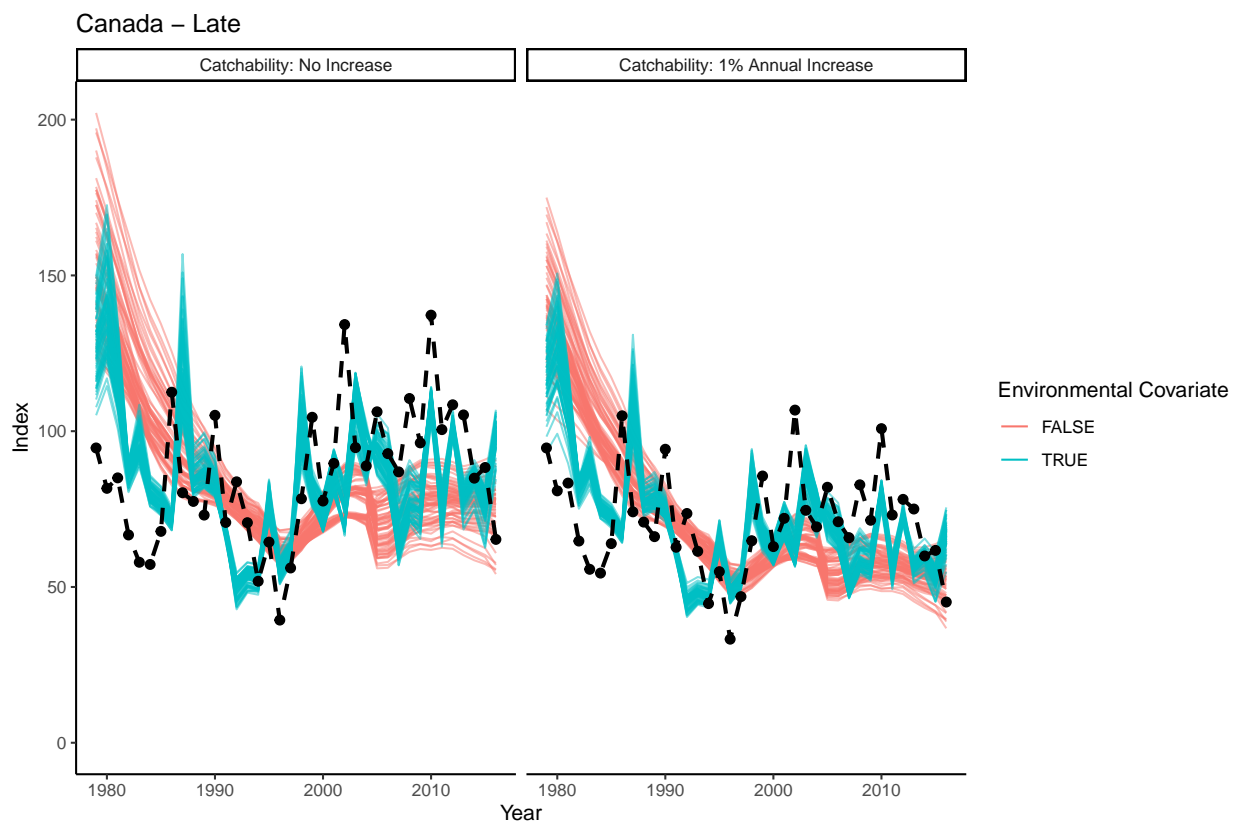
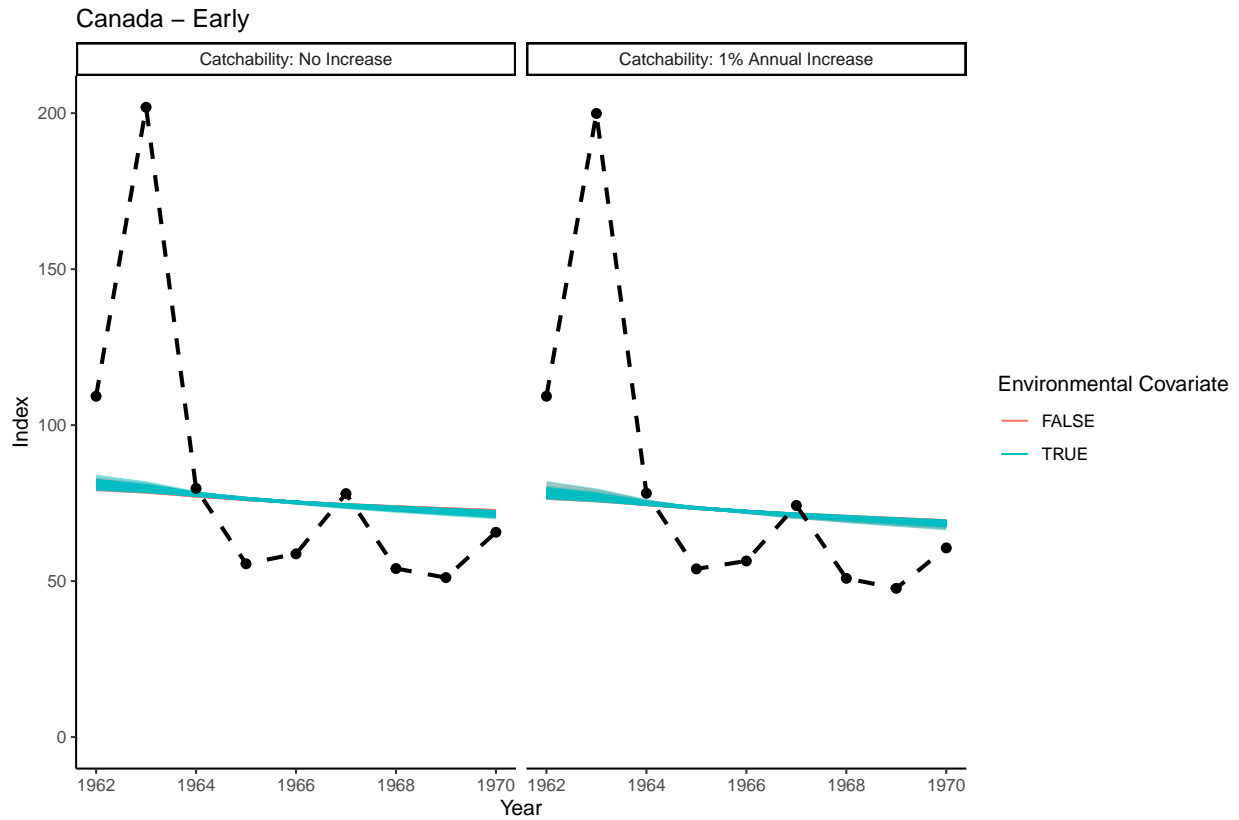
It also shows plots of the combined index (see SCRS/2017/137) against the predicted total biomass from each of the OM's.

## Indices and Fits

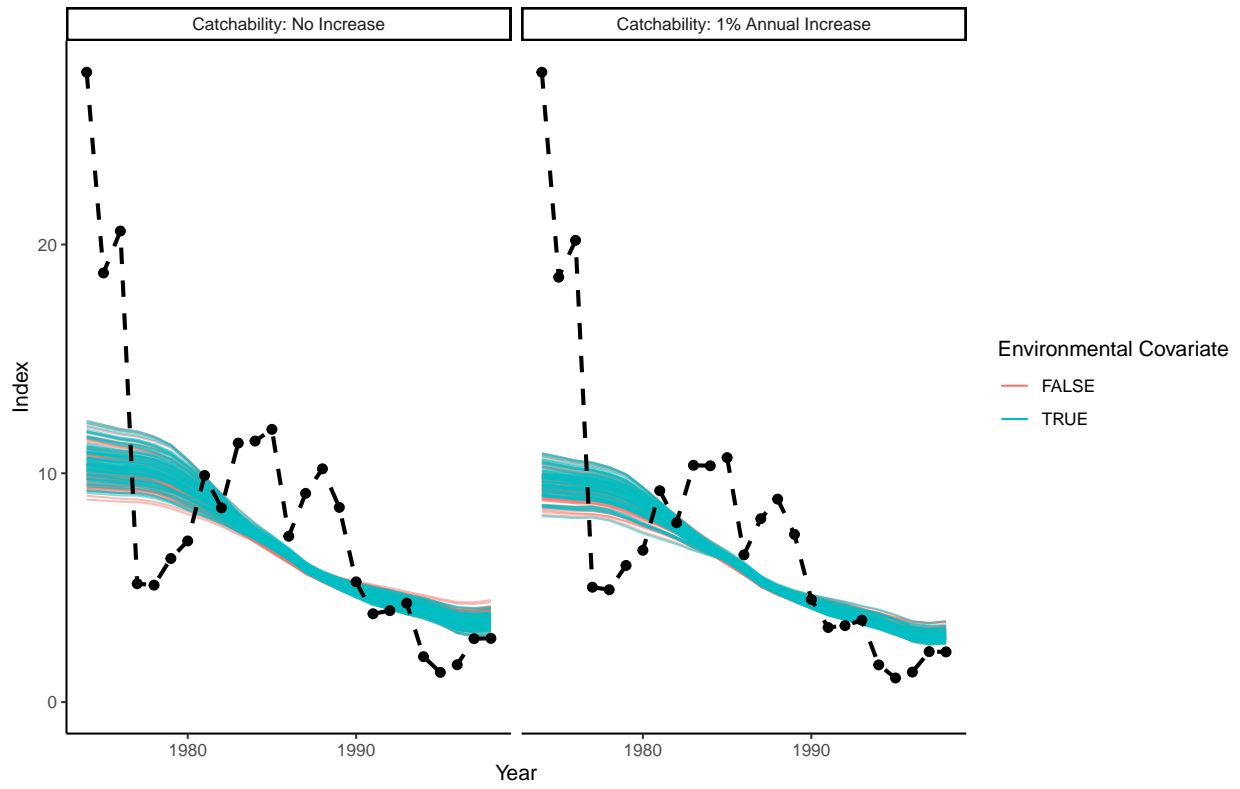
### Fleet & Survey Indices

The following plots show the observed index (black solid dots - left panel) and the observed index adjusted for an assumed 1% annual increase in catchability (black solid dots - right panel) for the 14 fleet and survey indices, with the model fits from each OM shown as colored lines (red = no environmental covariate, blue = an environmental covariate).

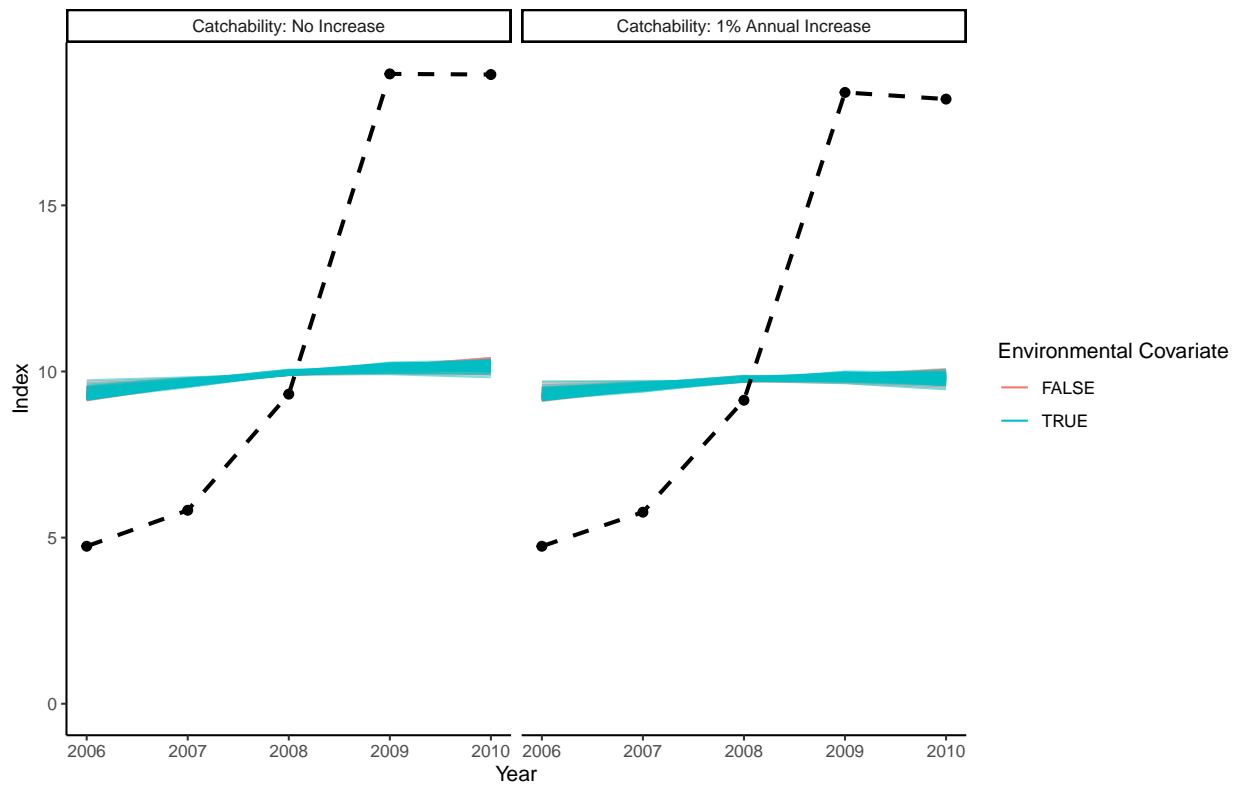




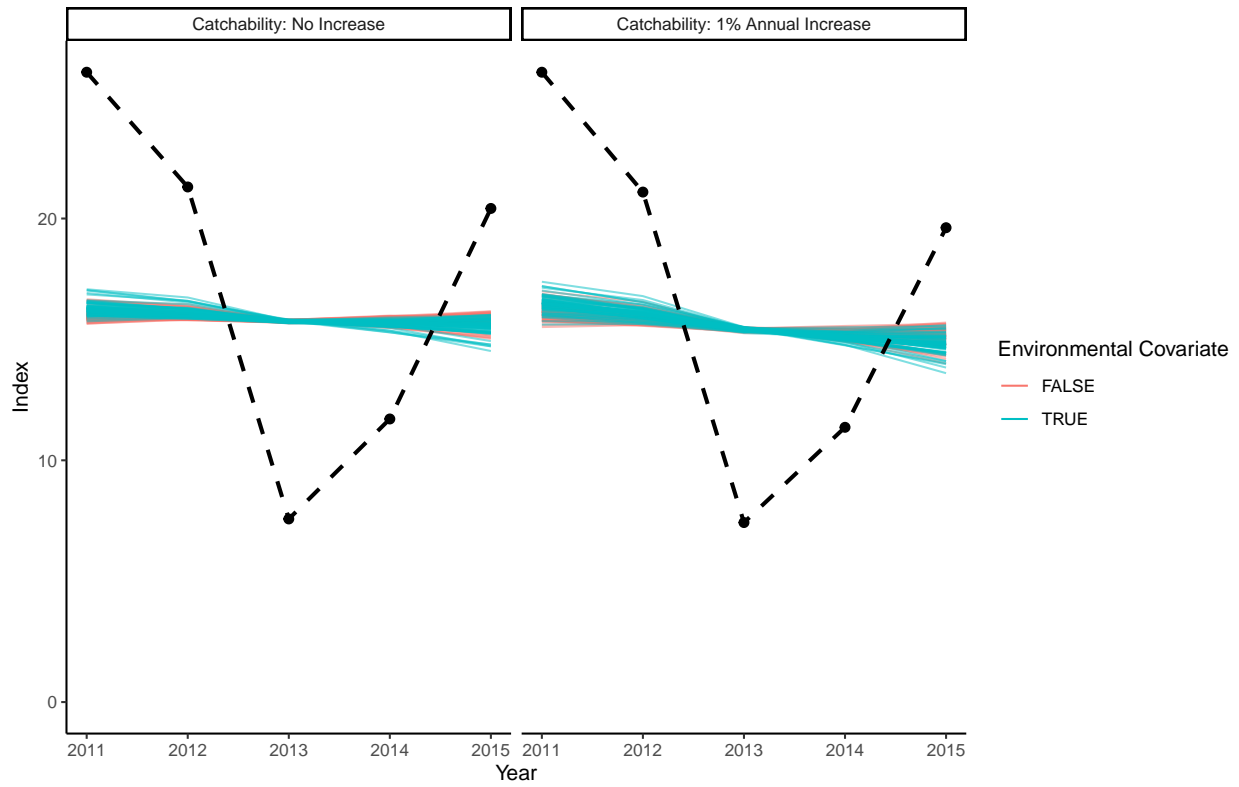
### Japan – Early



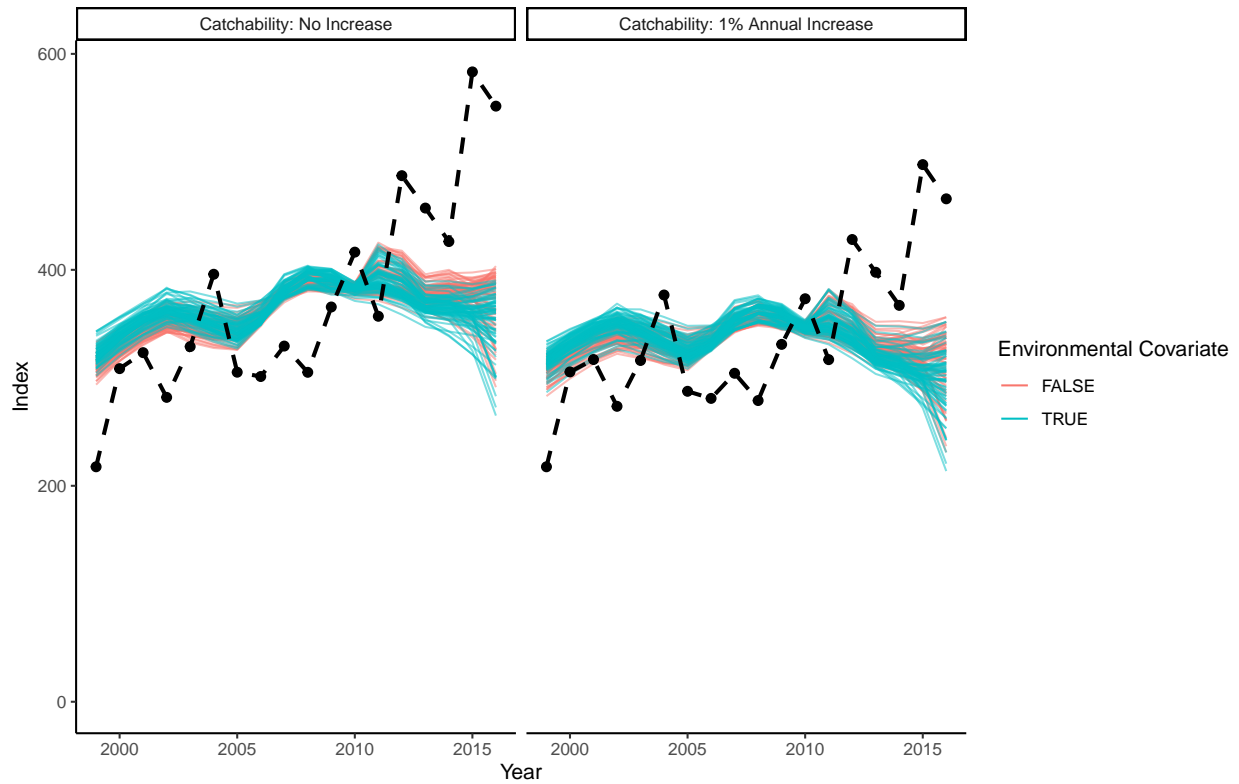
### Japan – Mid

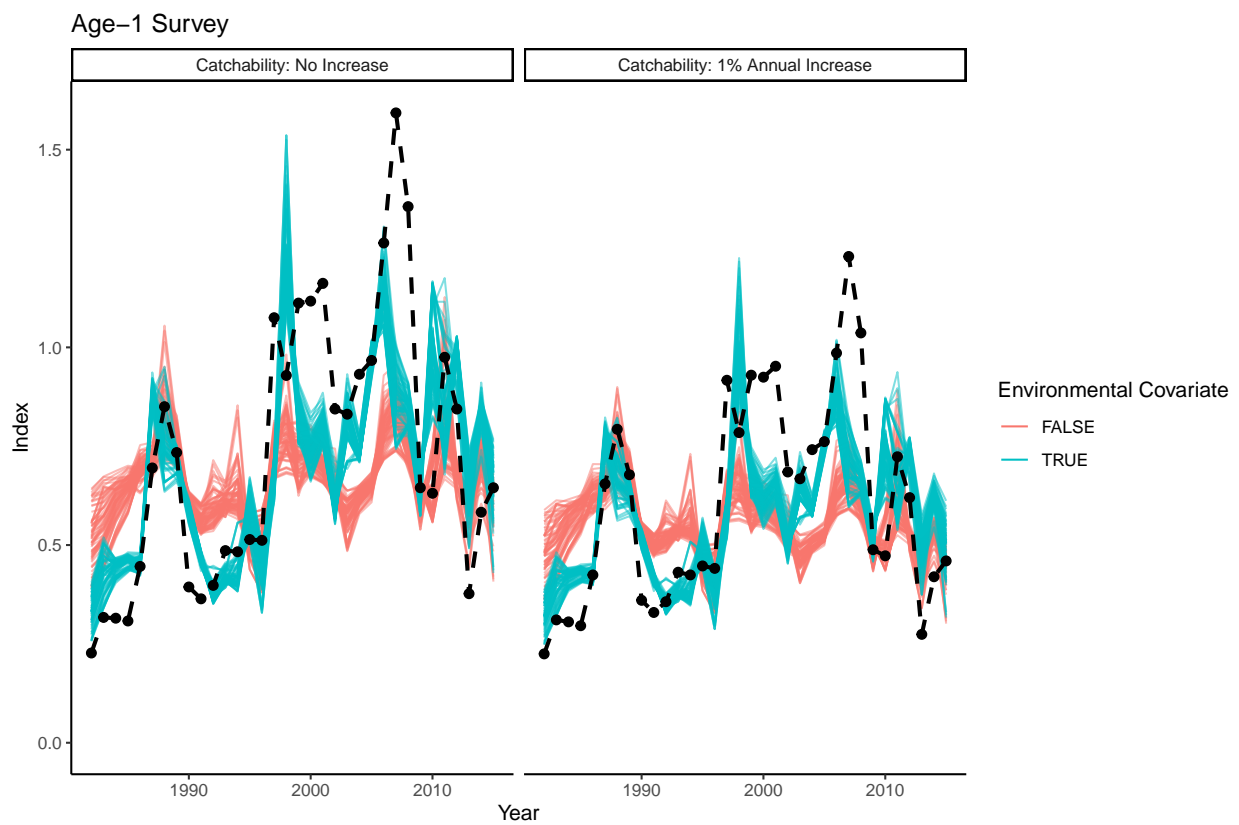
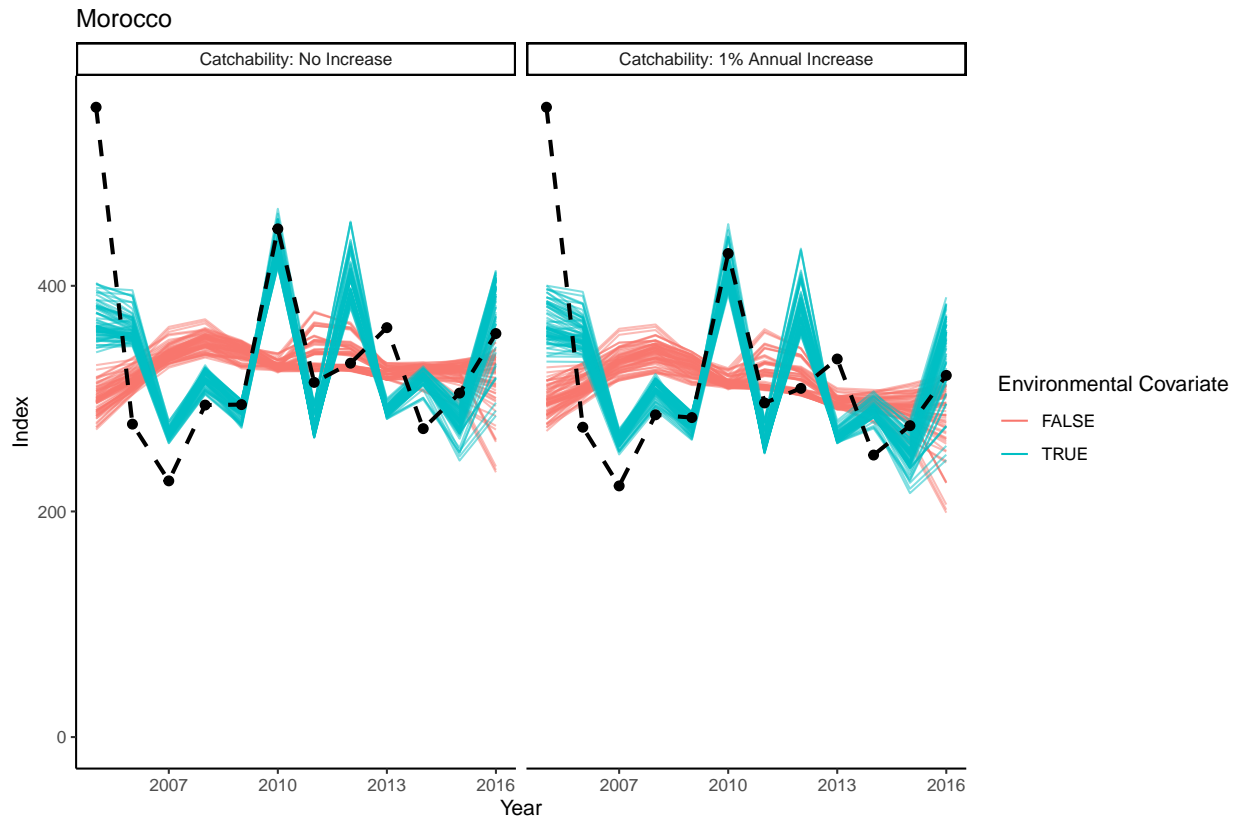


### Japan – Late

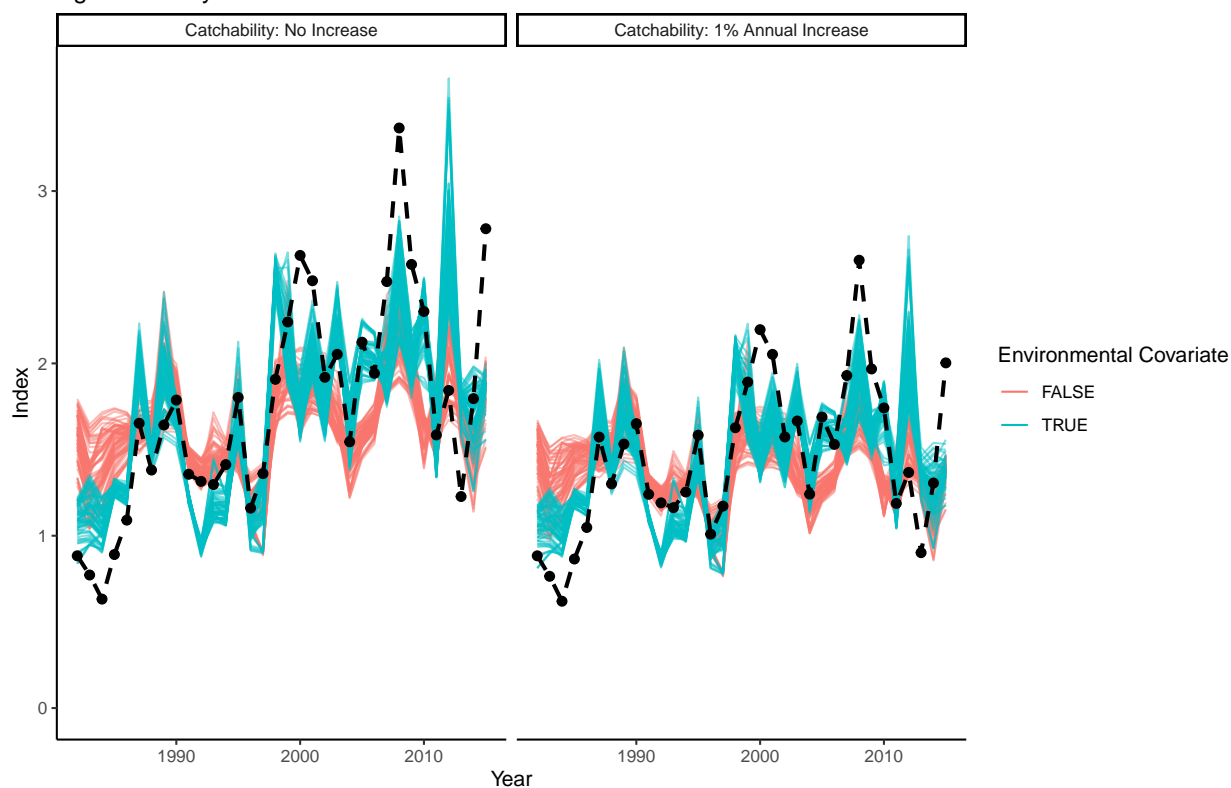


### Portugal

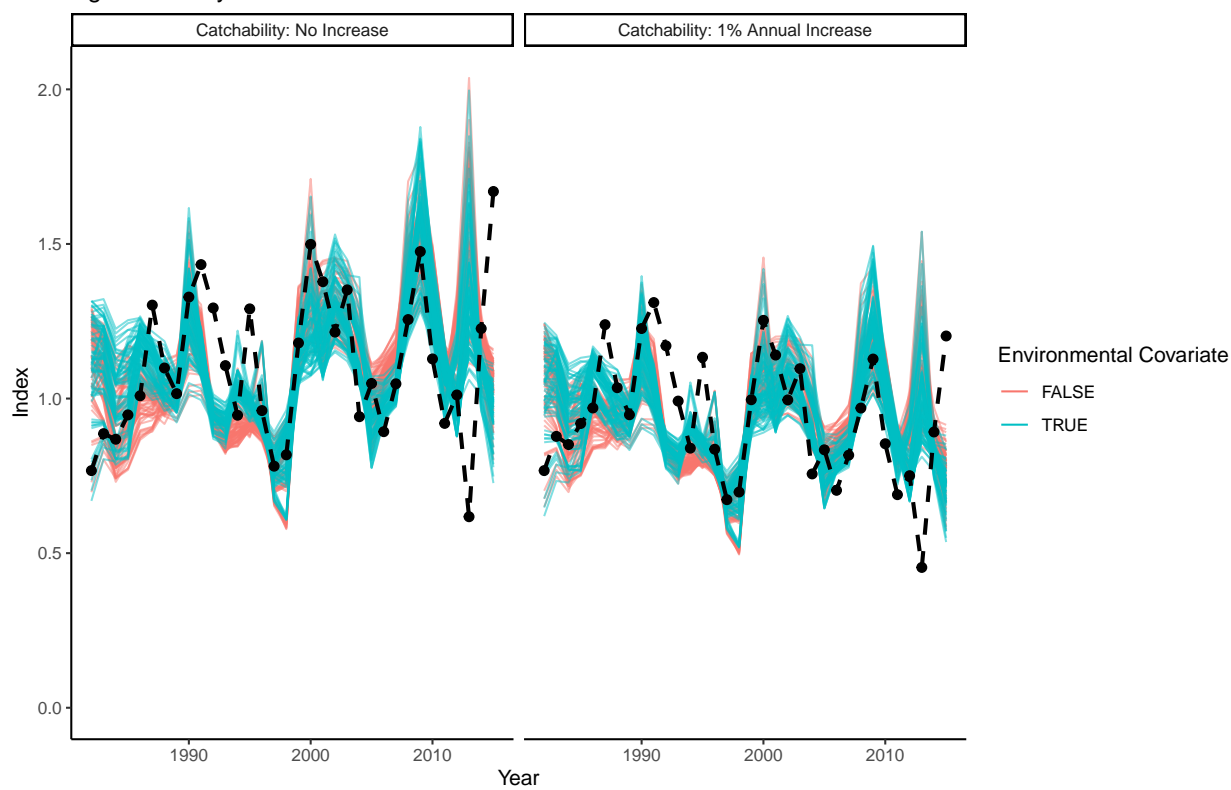




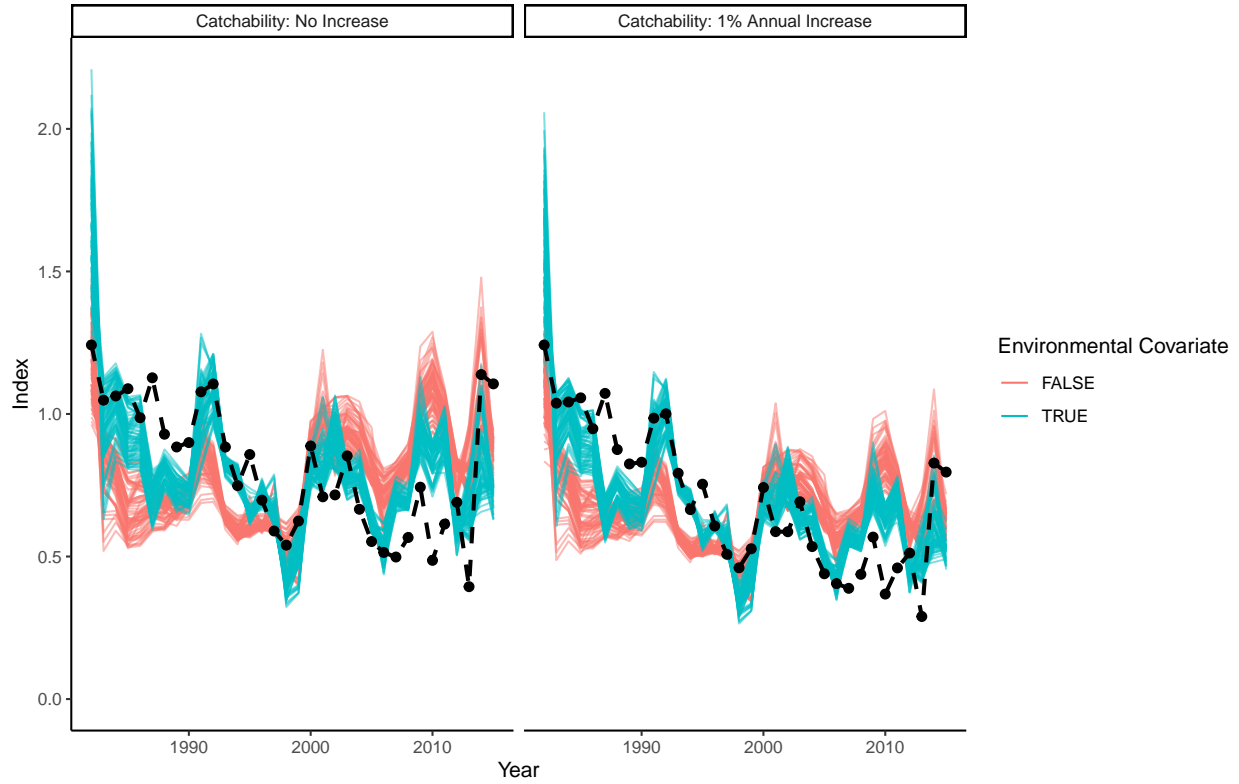
### Age-2 Survey



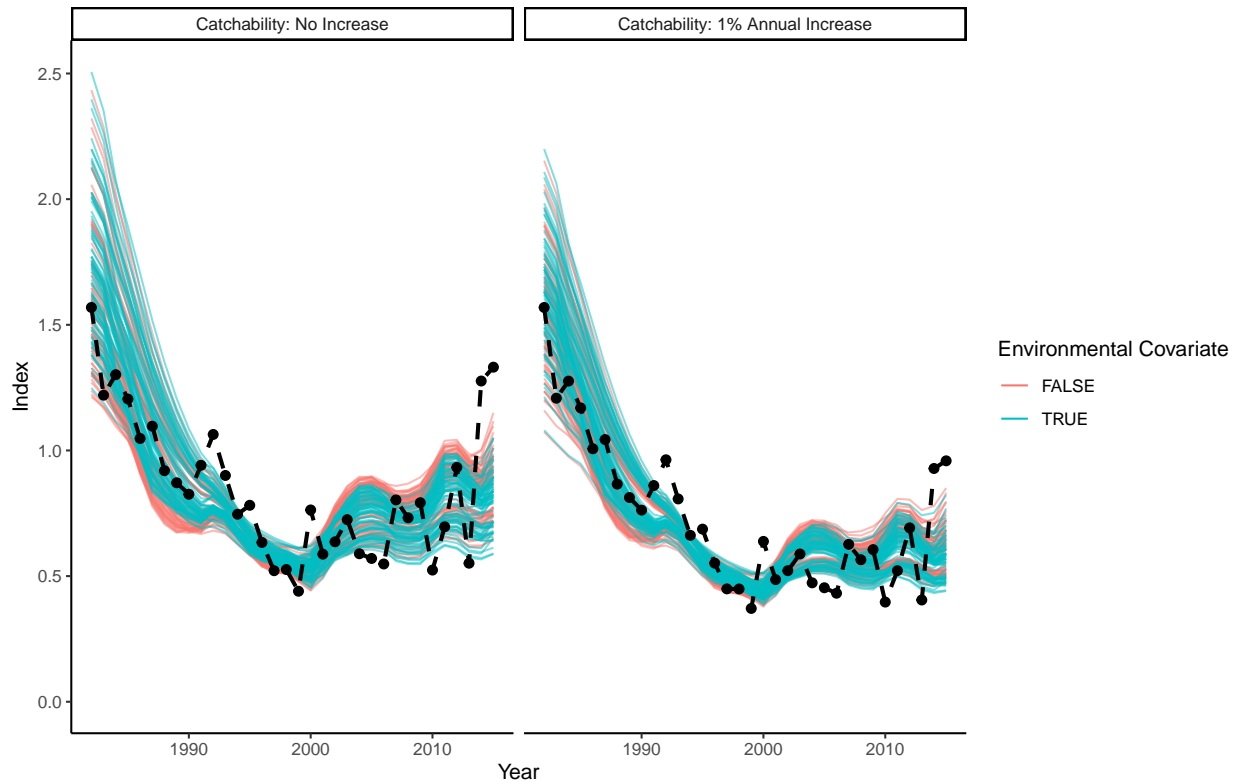
### Age-3 Survey



### Age-4 Survey



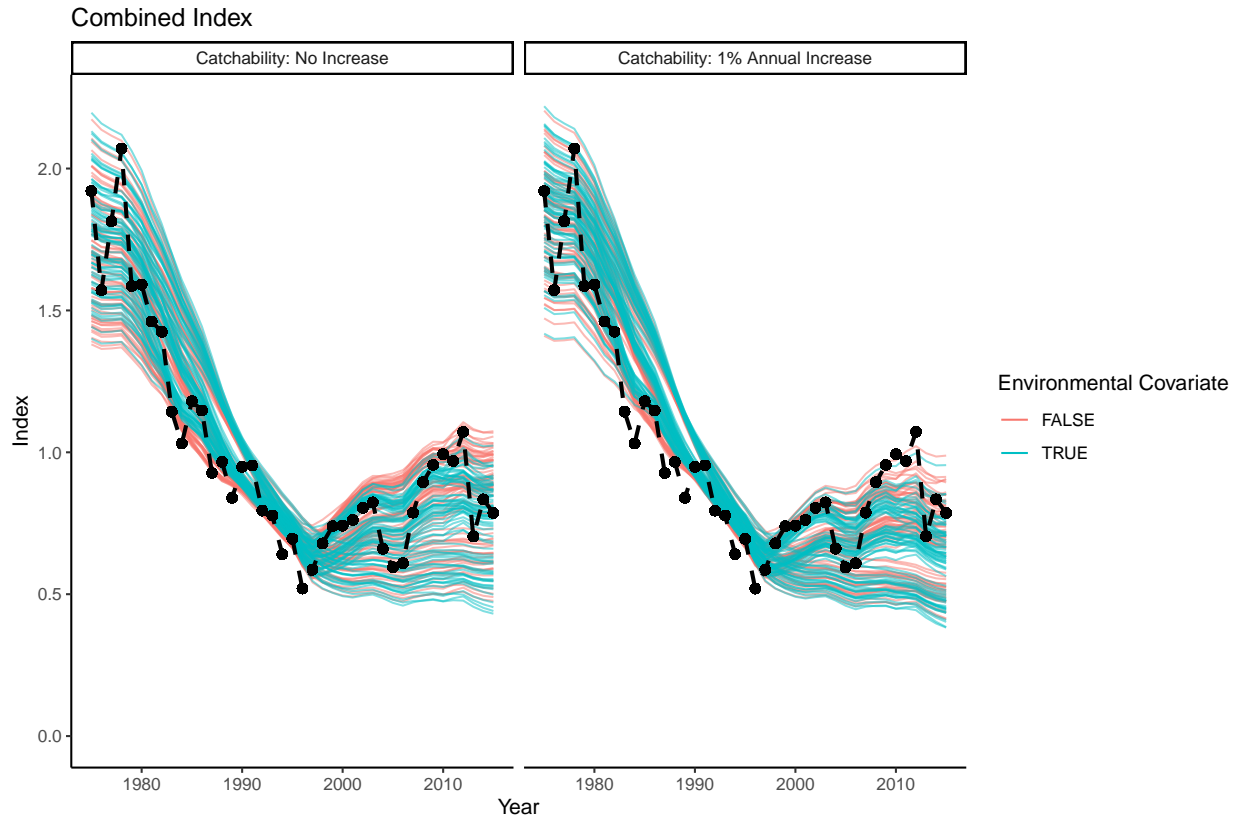
### Age-5+ Survey





## Combined Index

The following plot show the combined index (black solid dots) with the standardized predicted total biomass from each OM shown as colored lines (red = no environmental covariate, blue = an environmental covariate). The OMs that were fitted to fleet & survey indices assuming a 1% annual increase in catchability are shown in the right panel.

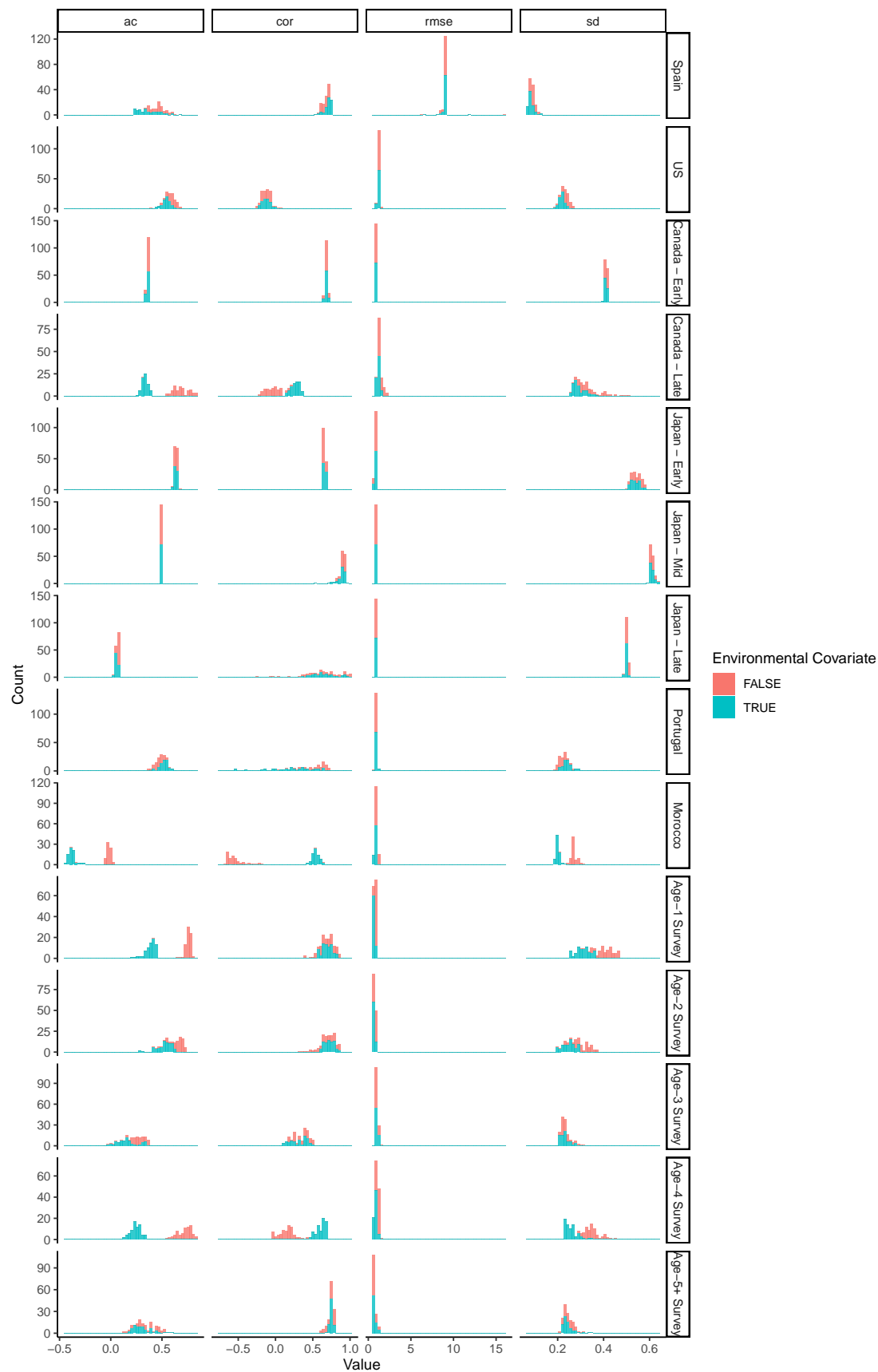


## Summary of Statistical Properties

### Fleet & Survey Indices

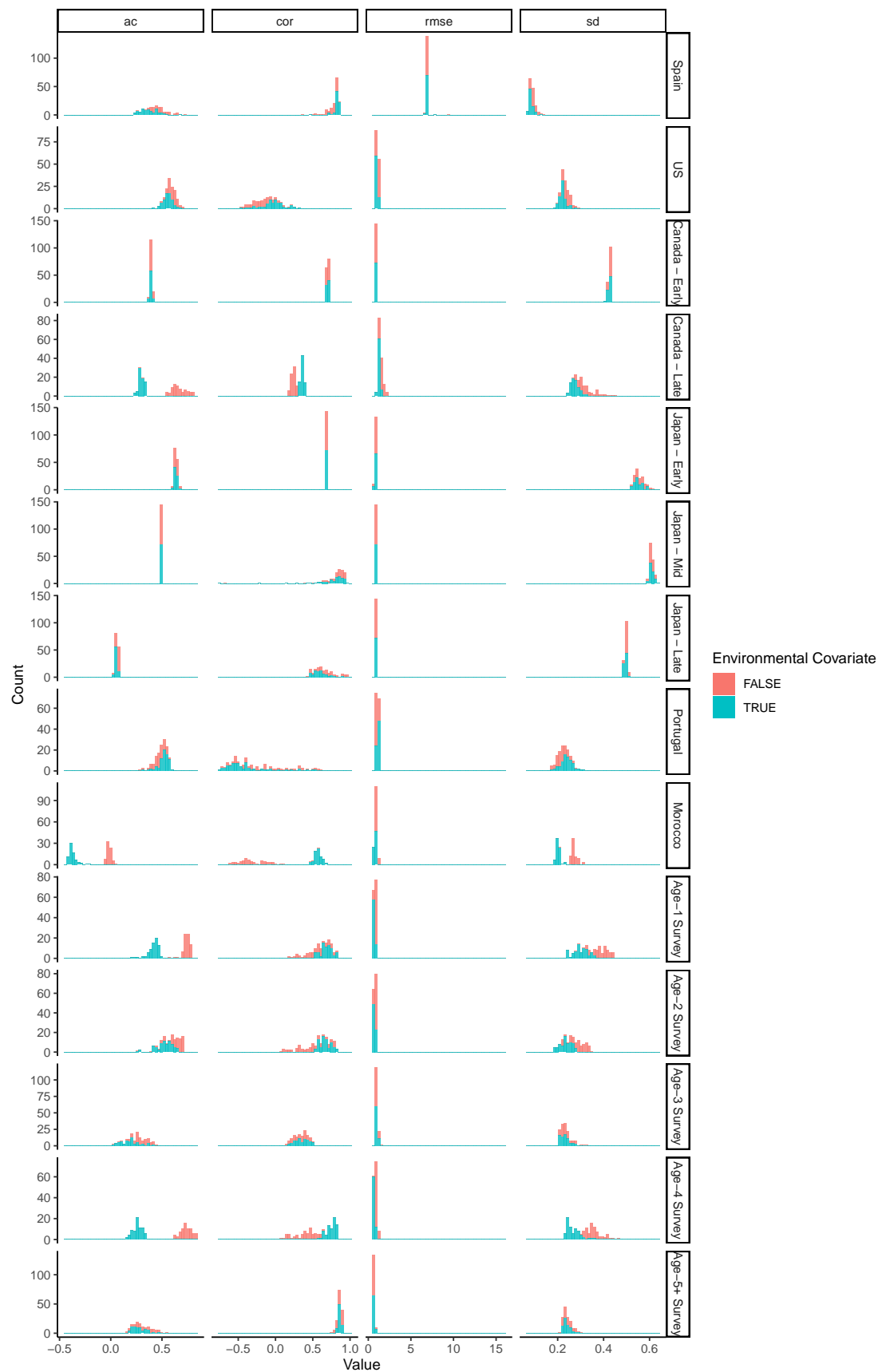
#### No Increase in Catchability

Histograms of the statistical properties of the log-deviations from the fits to the 14 indices, including auto-correlation (ac), correlation (cor), root-mean-square-error (rmse), and standard deviation (sd), for the 144 OMs using the observed indices.



### **1% Annual Increase in Catchability**

Histograms of the statistical properties of the log-deviations from the fits to the 14 fleet & survey indices, including auto-correlation (ac), correlation (cor), root-mean-square-error (rmse), and standard deviation (sd), for the 144 OMs using the observed indices adjusted for an assumed 1% annual increase in catchability.



## Combined Index

Histograms of the statistical properties of the log-deviations from combined index and the predicted total biomass, including auto-correlation (ac), correlation (cor), root-mean-square-error (rmse), and standard deviation (sd). The bottom row shows the 144 OMs that were fitted to the observed indices that were adjusted for an assumed 1% annual increase in catchability.

