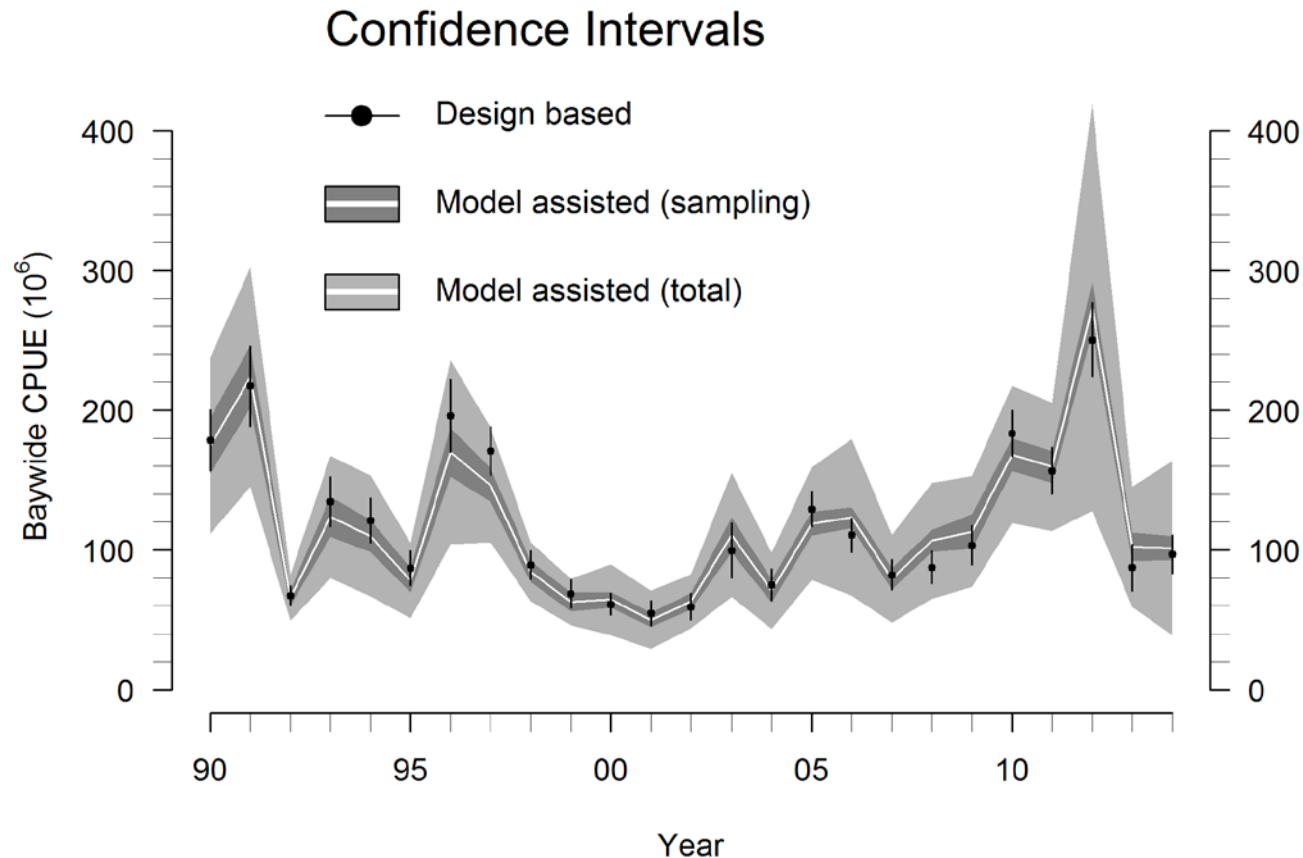# Ecosystem Factors Impacting Blue Crab Population Dynamics

Dong Liang

December 19

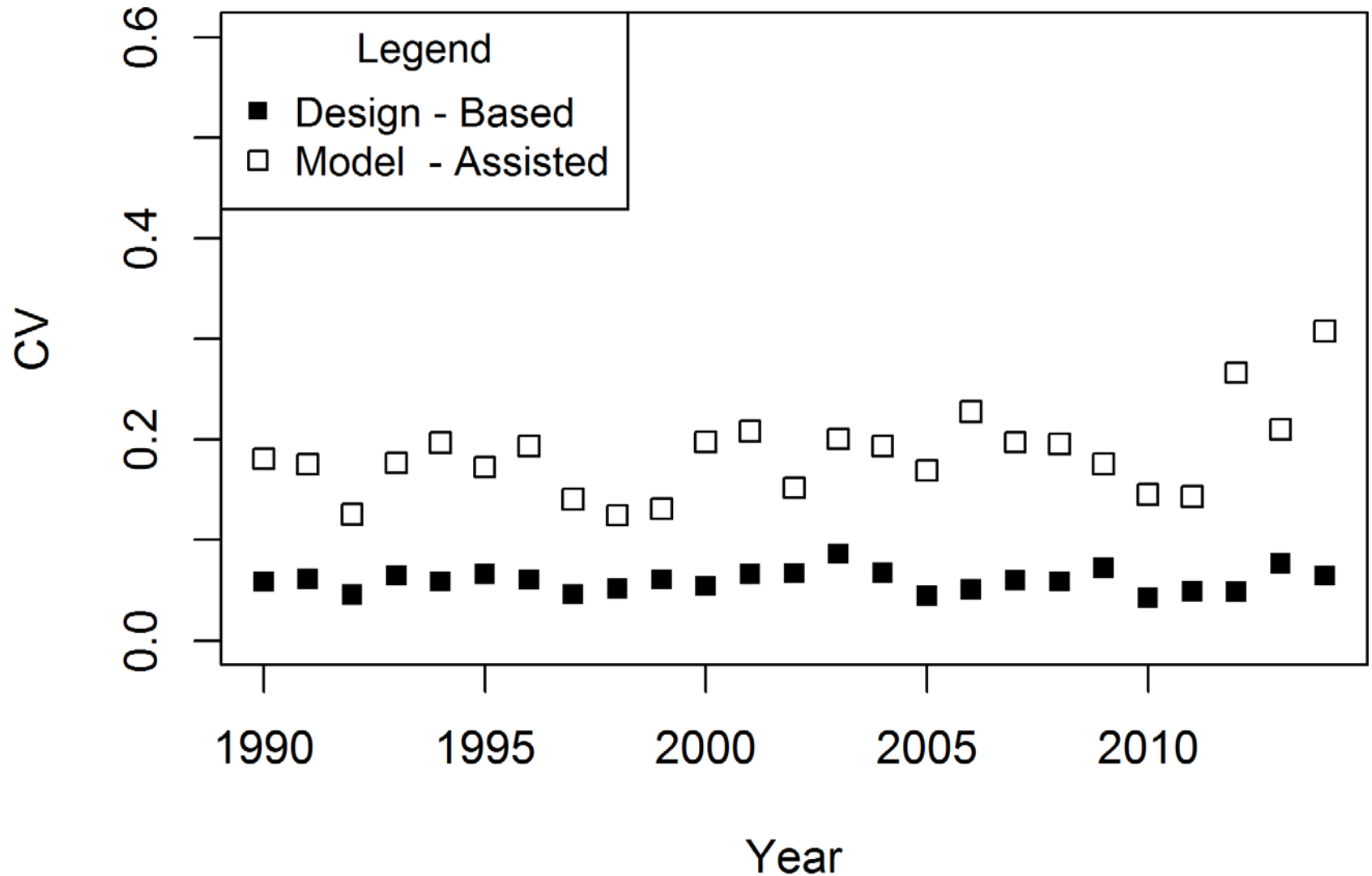# Bayesian Calibration of Blue Crab Abundance Indices

Jensen, O. P., & Miller, T. J. (2005). Transactions of the American Fisheries Society
Chen, J., Thompson, M. E., & Wu, C. (2004). Biometrics, 60(1), 116-123.
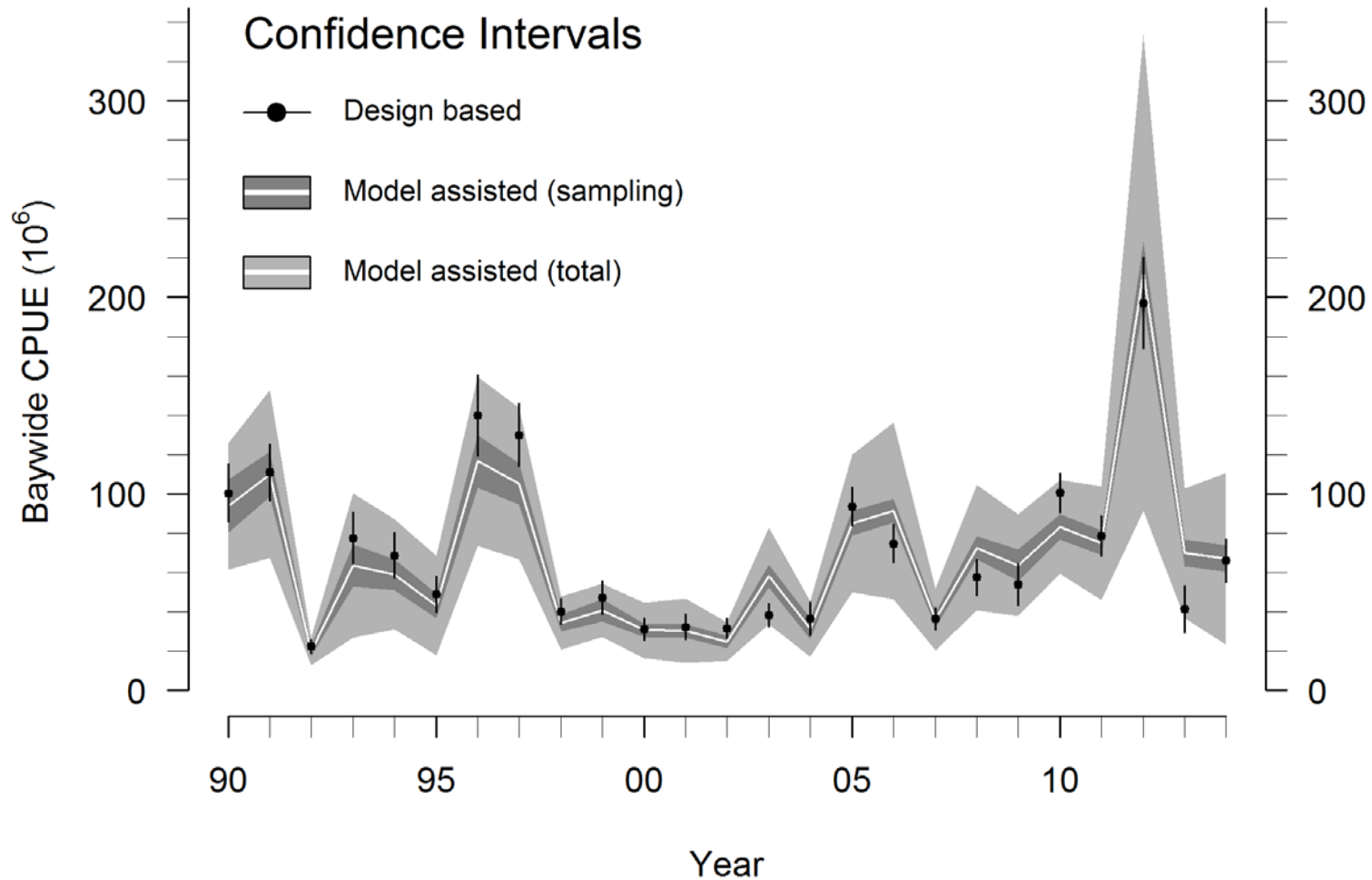Liang, D., Nesslage, G., Wilberg, M., & Miller, T. (2017), JABES
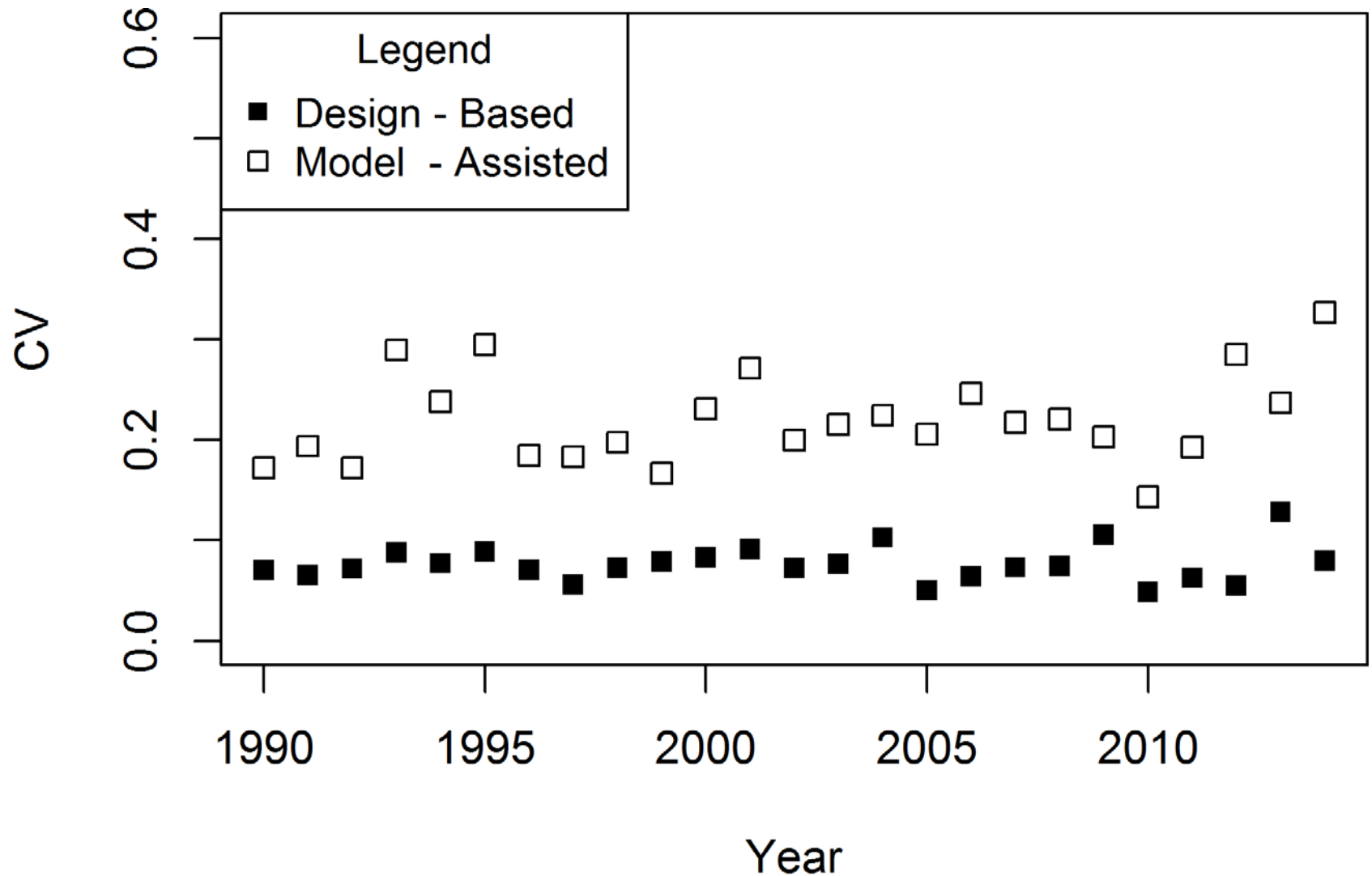
Coefficient of Variation

Deliverables

- Regional and baywide time series and uncertainties of age-0 and adult abundance
- Probability Network Models that identify rank pathways through which ecosystem factors affect abundance of age-0 crabs.

Age-0 Indices Time Series

Age-0 Coefficient of Variation

Age-1 Indices Time Series

Age-1 Coefficient of Variation

Age-1 Female Indices Time Series

Age-1 Female Coefficient of Variation

'15

Age-1 Male Indices Time Series

Age-1 Male Coefficient of Variation

'15

Deliverables

- Regional and baywide time series and uncertainties of age-0 and adult abundance

- Probability Network Models that identify rank pathways through which ecosystem factors affect abundance of age-0 crabs.
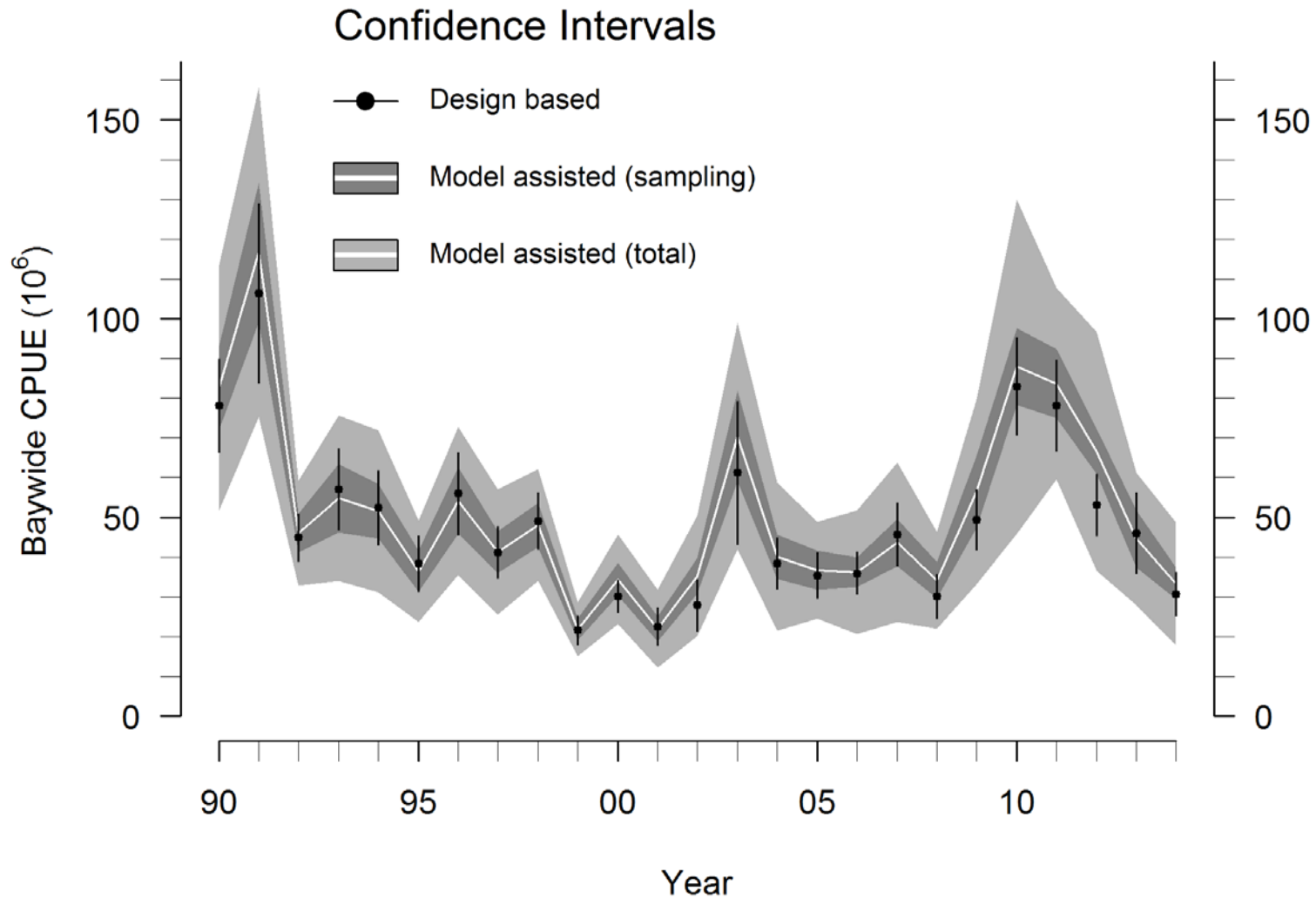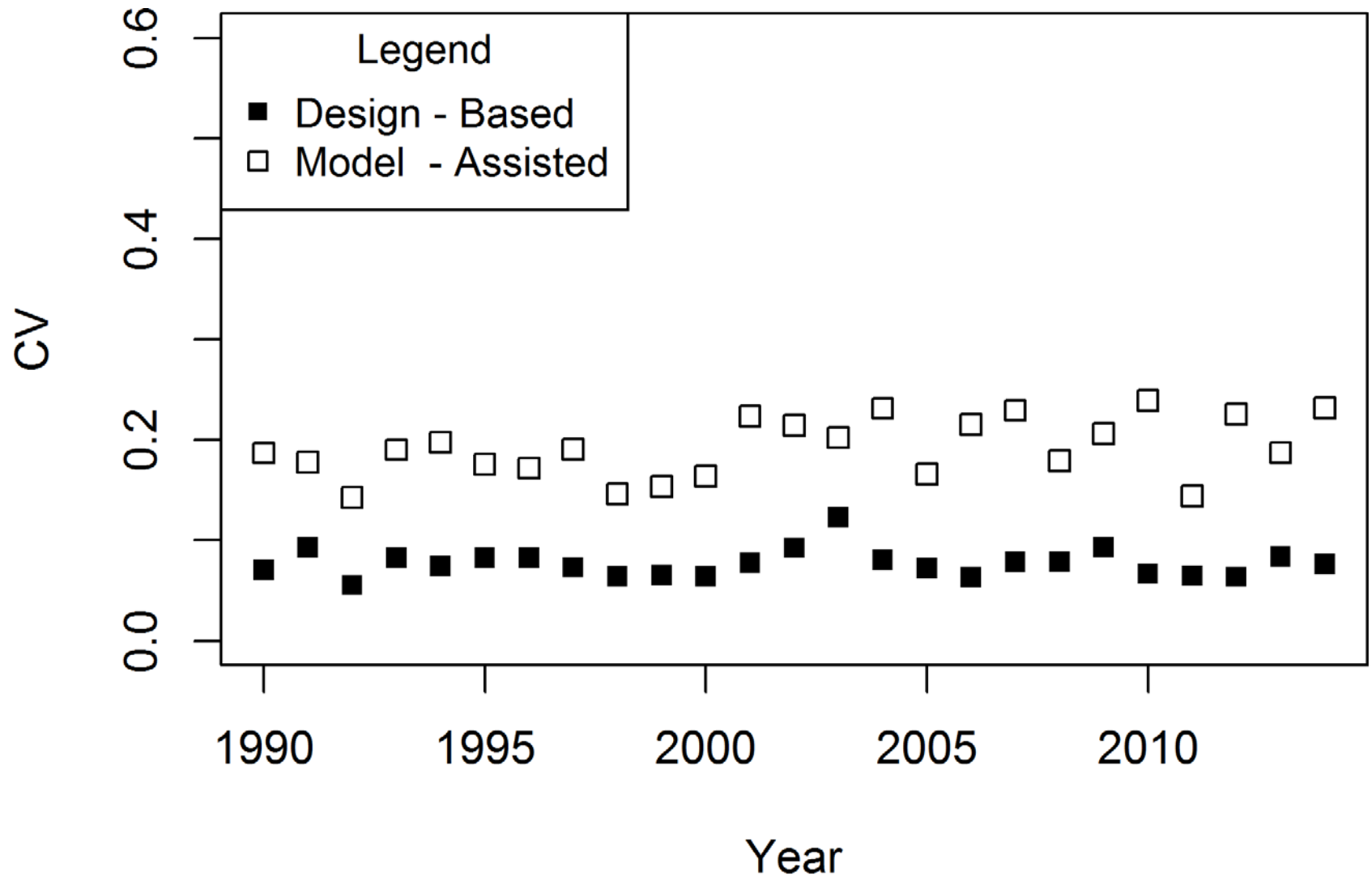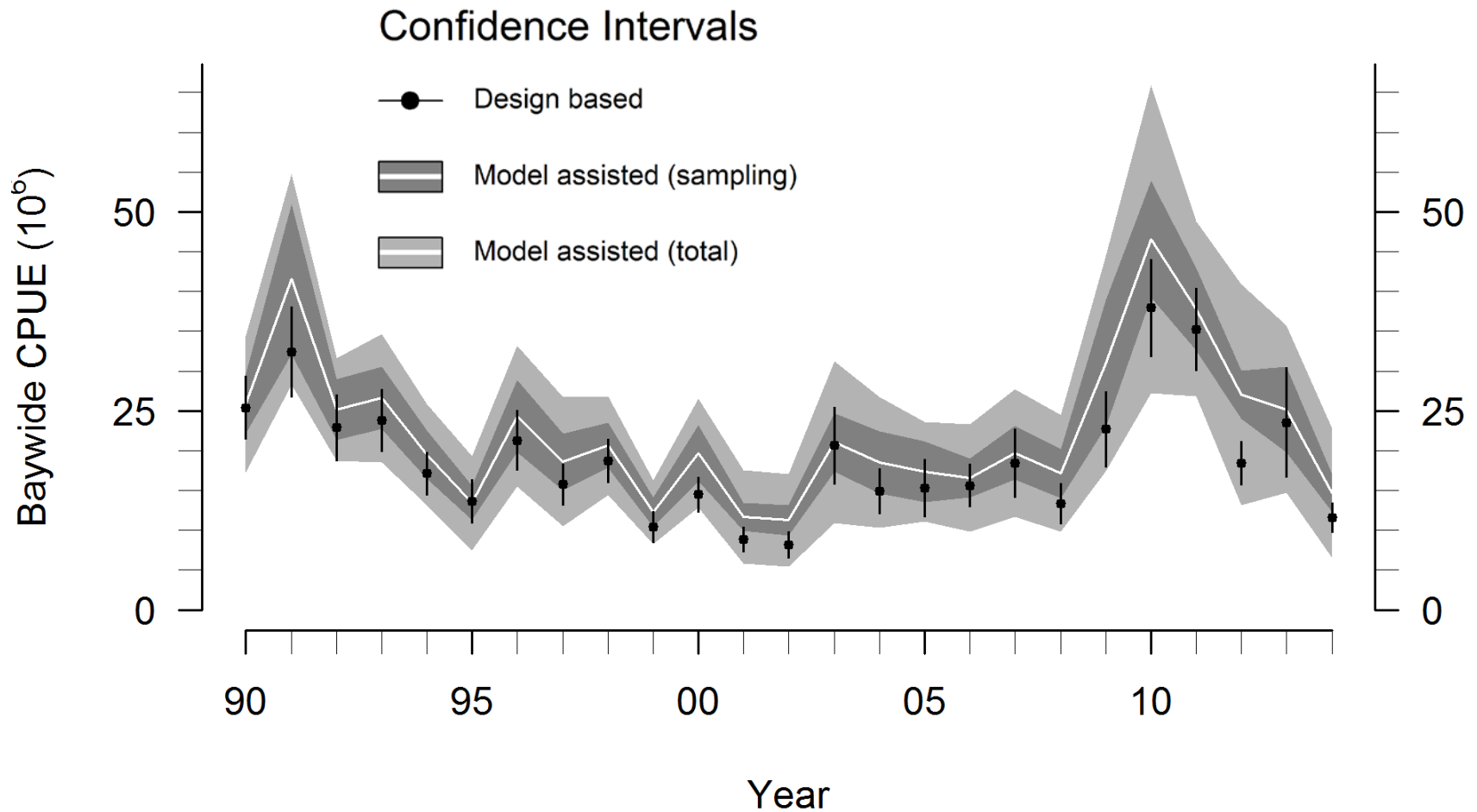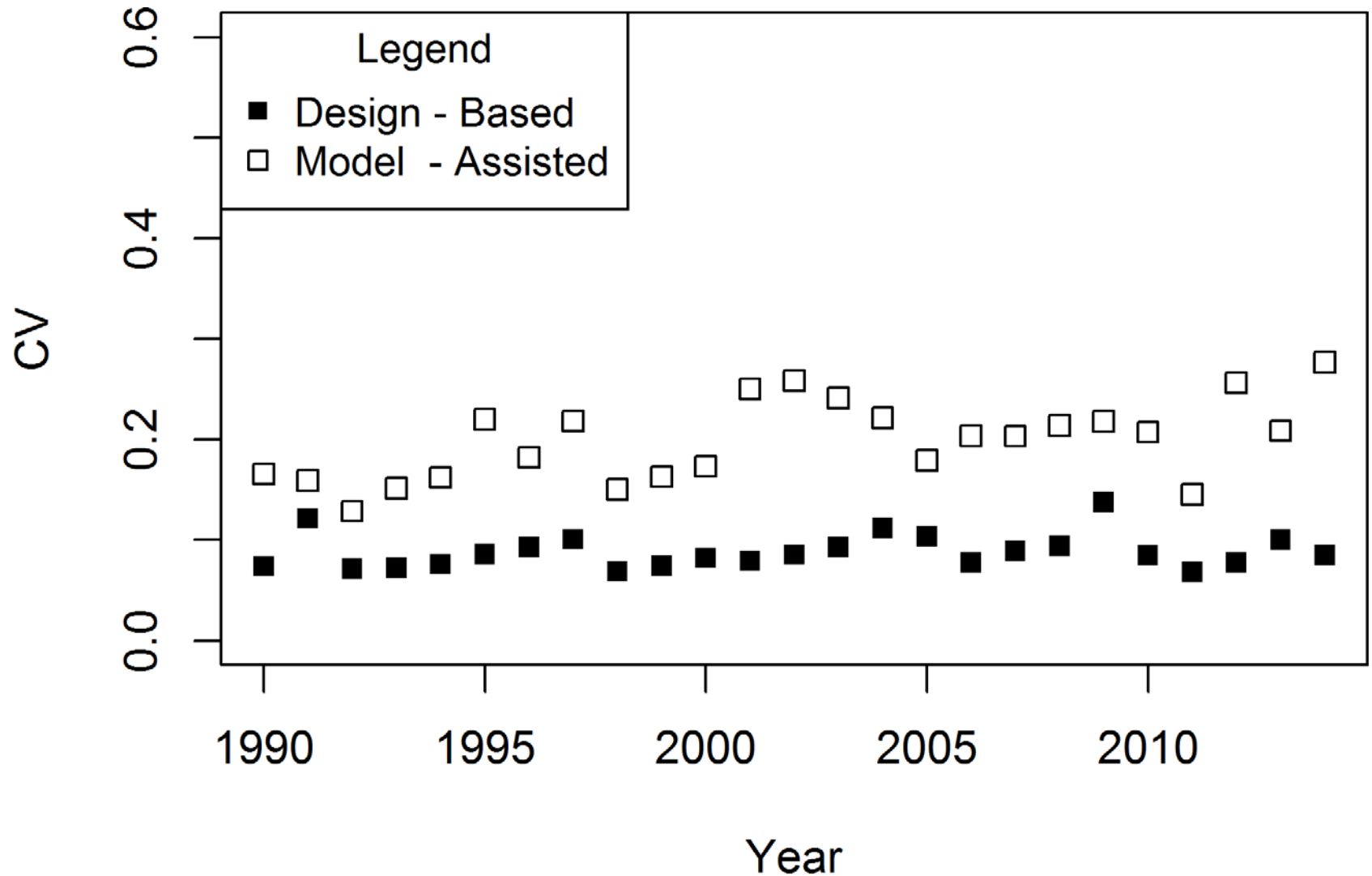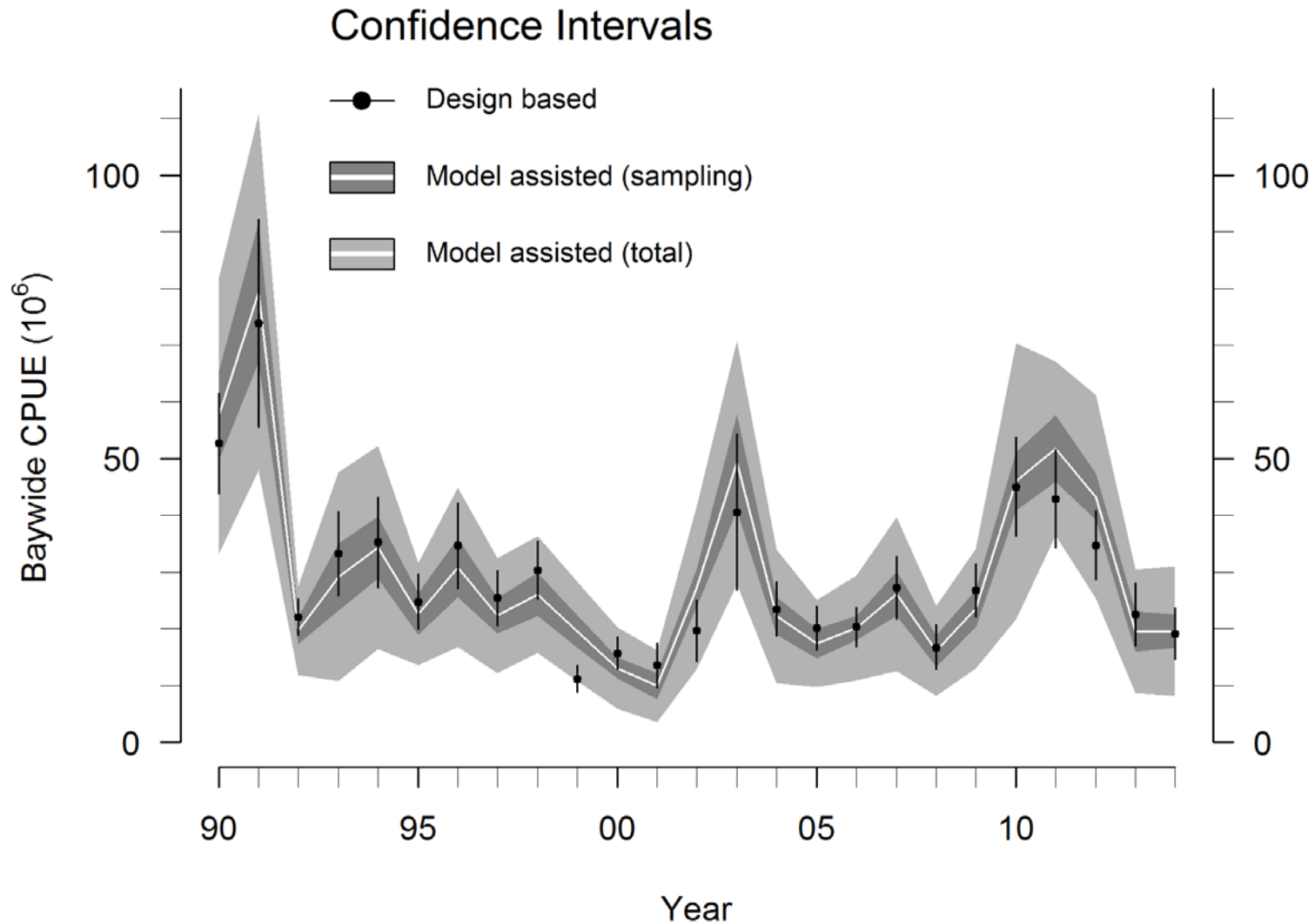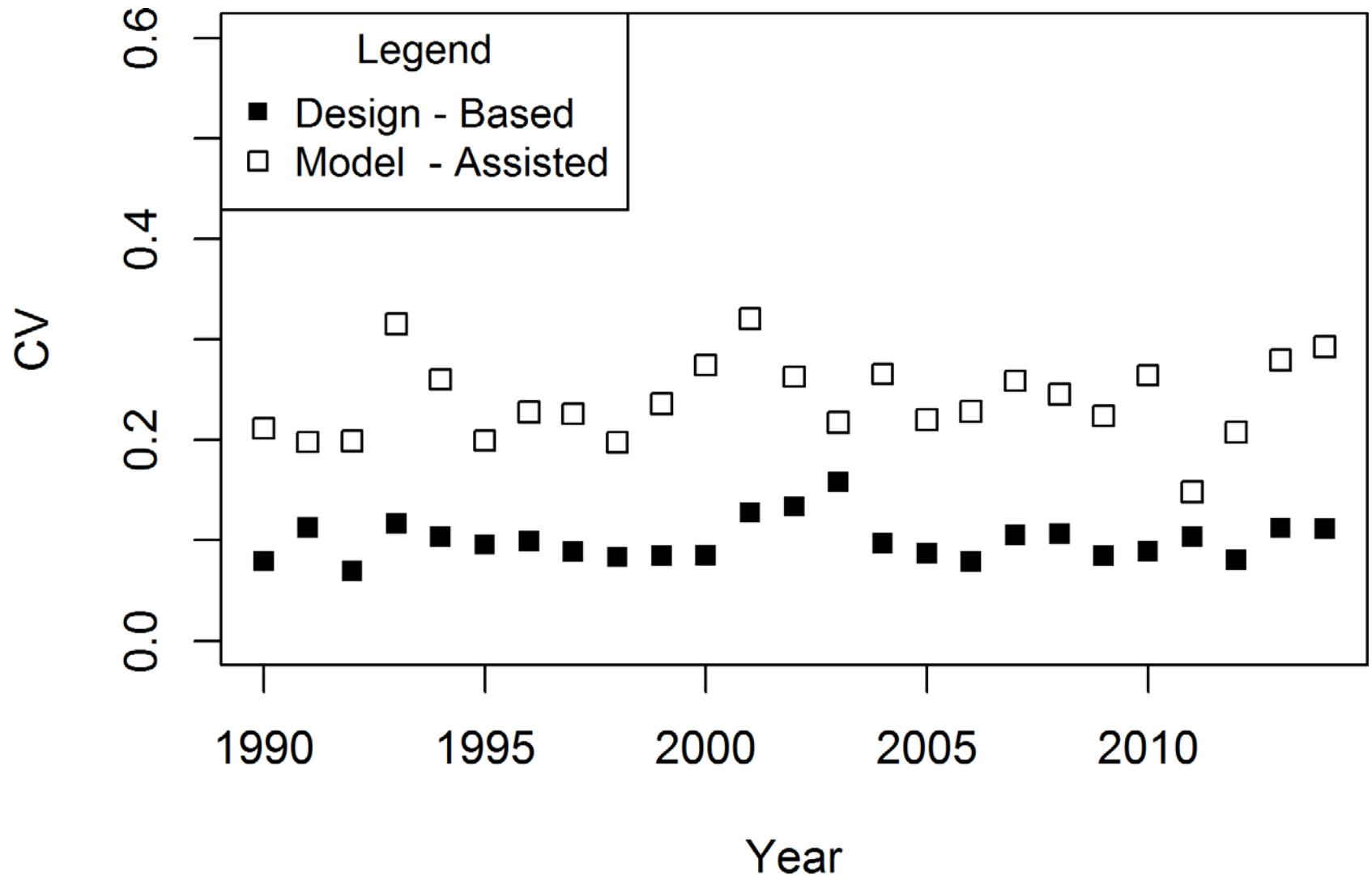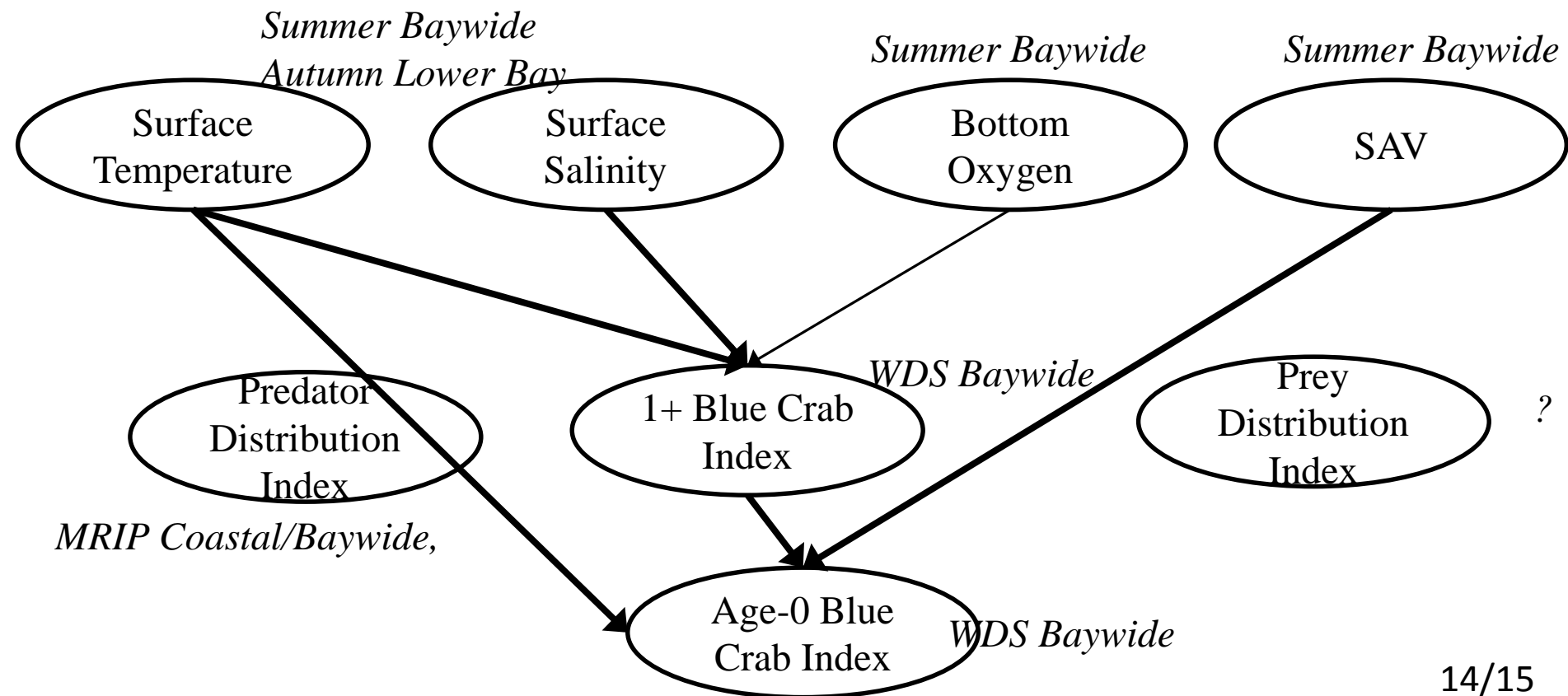
NAO   *Monthly Coastal*

Autumn NW days   Wind Forcing   River   *Monthly Susquehanna*
Norfolk VA   Index   Discharge

Summer Baywide
Autumn Lower Bay

Surface   Surface   Bottom   SAV   *Summer Baywide*
Temperature   Salinity   Oxygen

Summer Baywide *Summer Baywide*

Predator   1+ Blue Crab   *WDS Baywide*   Prey   *?*
Distribution   Index   Distribution
Index   Index

MRIP Coastal/Baywide,

Age-0 Blue   *WDS Baywide*
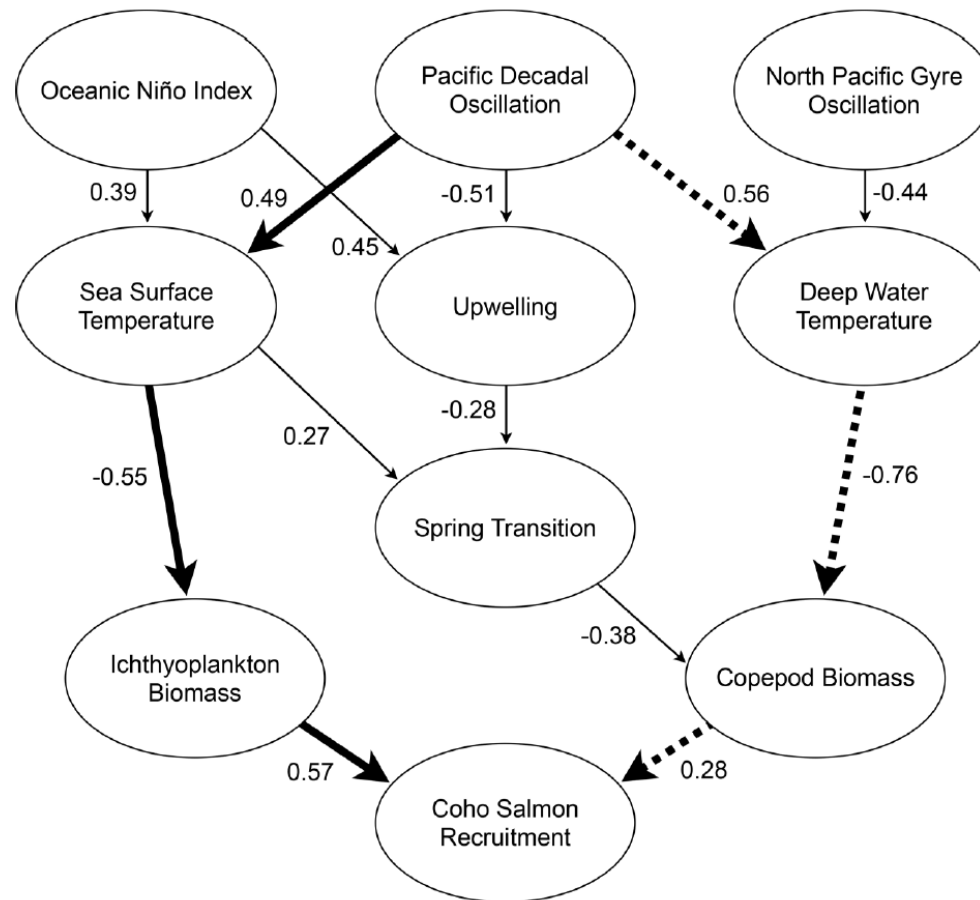Crab Index

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Example of Probabilistic Network

Figure 4. Malick et al. (2015). Can. J. Fish. Aquat. Sci. 72: 1552-1564 (2015)