Appendix G: CPUE standardization diagnostic

Reference

Bentley, N., T.H. Kendrick, P.J. Starr, and P.A. Breen. 2012. Influence plots and metrics: tools for better understanding fisheries catch-per-unit-effort standardizations. *ICES Journal of Marine Science* 69:84-88.
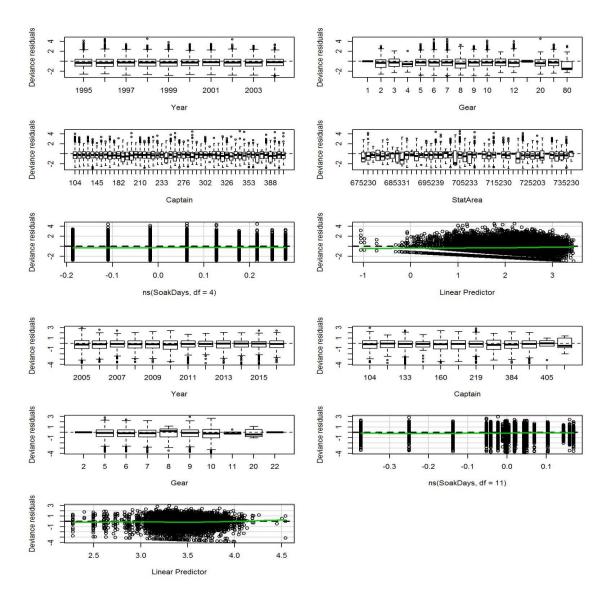

Figure G.1. Deviance residuals vs. explanatory and response variables of the best negative binomial fit model for legal male crab CPUE. Deviance residuals for factor variables are shown as box plots and only the linear part of the cubic splines are specified on the x-axis for soak time variable. Observer data from EAG for 1995/96–2004/05 (top) and 2005/06–2016/17 (bottom) periods were used. The solid green lines are the loess smoother through the plotted values.
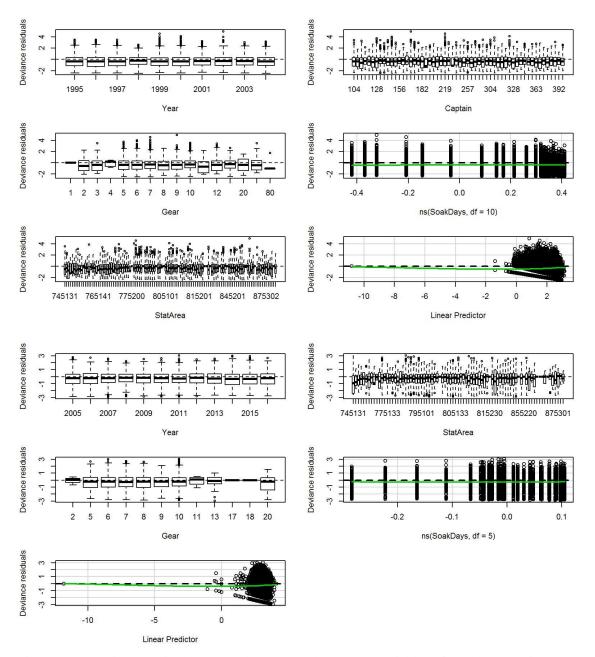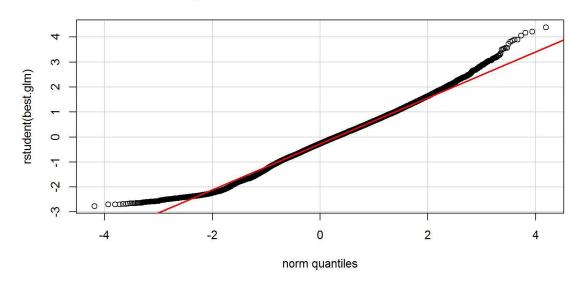
Figure G.2. Deviance residuals vs. explanatory and response variables of the best negative binomial fit model for legal male crab CPUE. Deviance residuals for factor variables are shown as box plots and only the linear part of the cubic splines are specified on the x-axis for soak time variable. Observer data from WAG for 1995/96–2004/05 (top) and 2005/06–2016/17 (bottom) periods were used. The solid green lines are the loess smoother through the plotted values.

Negative Binomial Fit, EAG 1995/96-2004/05
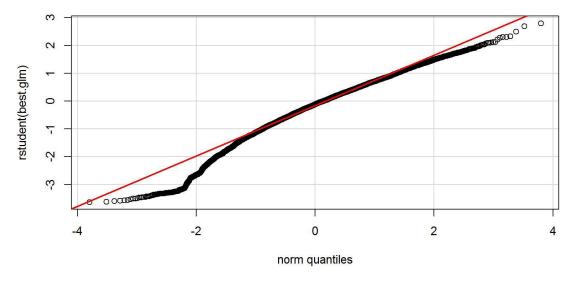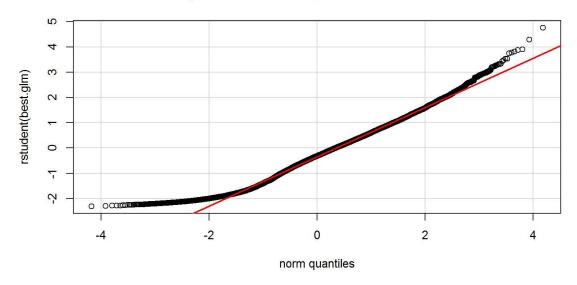

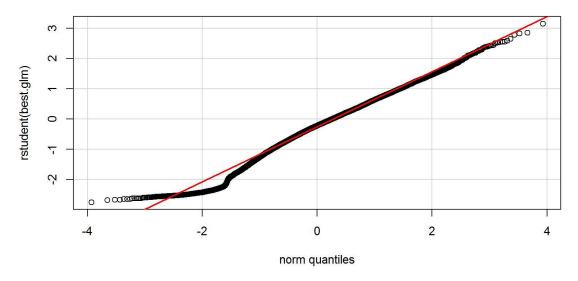## Negative Binomial Fit, EAG 2005/06-2016/17

Figure G.3. Studentized residual plots for negative binomial GLM fit to EAG golden king crab observer CPUE data for legal size male crab. Top panel is for 1995/96–2004/05 and bottom panel is for 2005/06–2016/17.

Negative Binomial Fit, WAG 1995/96-2004/05

Negative Binomial Fit, WAG 2005/06-2016/17

Figure G.4. Studentized residual plots for negative binomial GLM fit to WAG golden king crab observer CPUE data for legal size male crab. Top panel is for 1995/96–2004/05 and bottom panel is for 2005/06–2016/17.
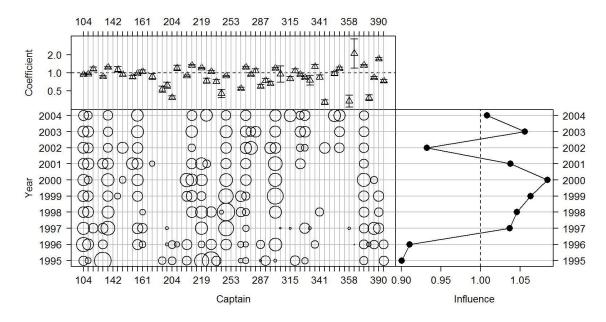
Figure G.5. CDI plot for Captain for the negative binomial fit to 1995/96–2004/05 data for EAG.
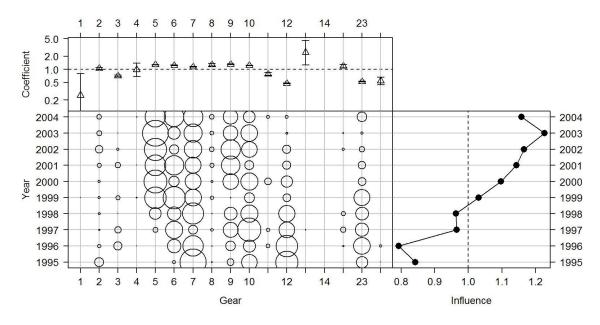

Figure G.6. CDI plot for Gear for the negative binomial fit to 1995/96–2004/05 data for EAG.
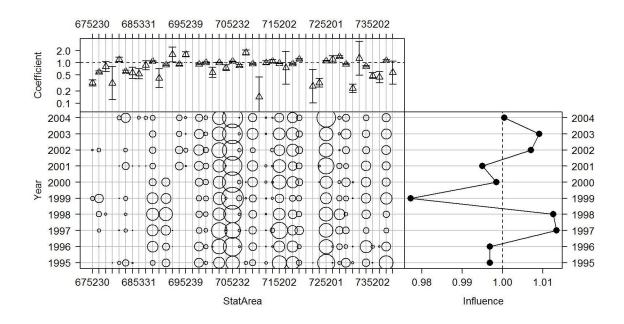
Figure G.7. CDI plot for Area for the negative binomial fit to 1995/96–2004/05 data for EAG.
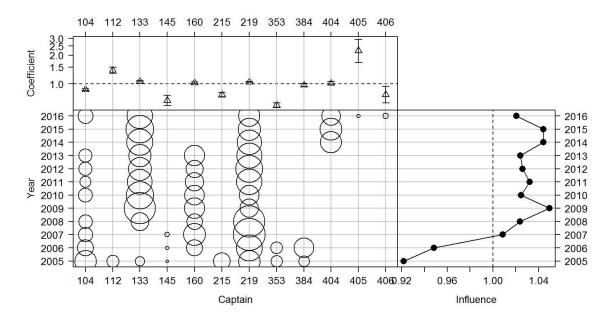

Figure G.8. CDI plot for Captain for the negative binomial fit to 2005/06–2016/17 data for EAG.
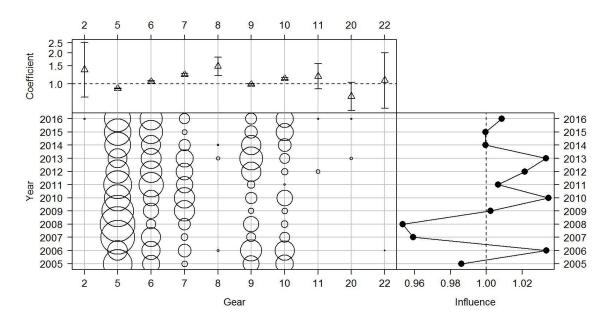
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Figure G.9. CDI plot for Gear for the negative binomial fit to 2005/06–2015/16 data for EAG.
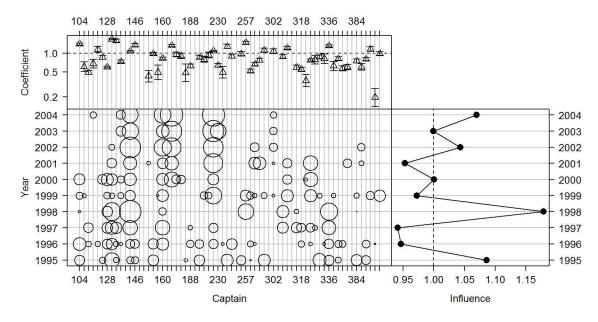

Figure G.10. CDI plot for Captain for the negative binomial fit to 1995/96–2004/05 data for WAG.
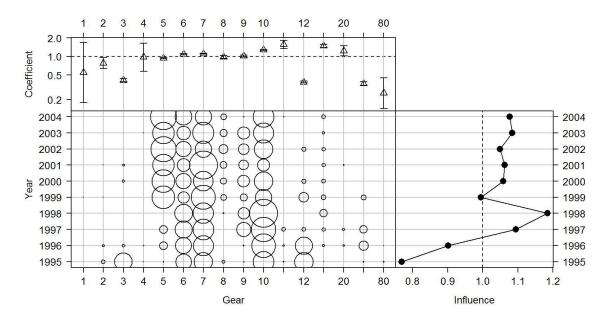
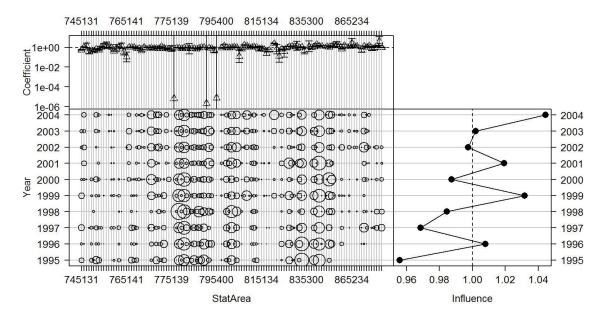Figure G.11. CDI plot for Gear for the negative binomial fit to 1995/96–2004/05 data for WAG.

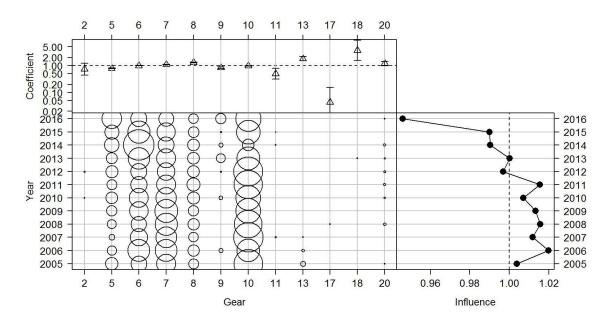Figure G.12. CDI plot for Area for the negative binomial fit to 1995/96–2004/05 data for WAG.

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Figure G.13. CDI plot for Gear for the negative binomial fit to 2005/06–2016/17 data for WAG
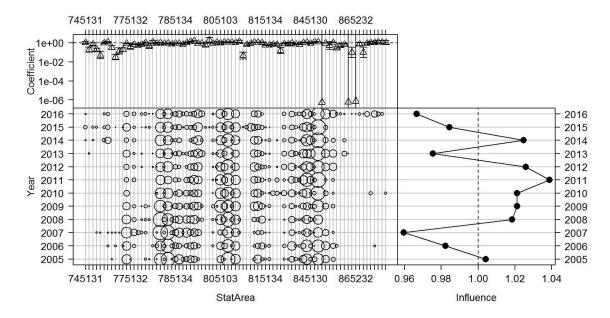

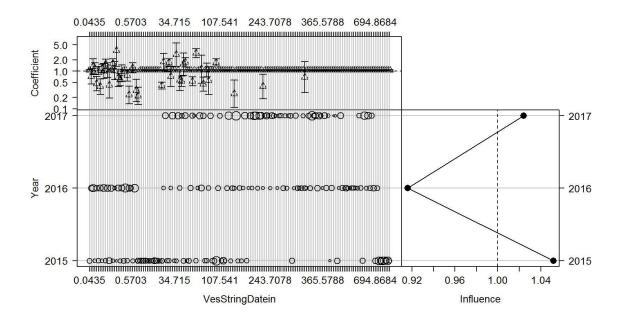Figure G.14. CDI plot for Area for the negative binomial fit to 2005/06–2016/17 data for WAG

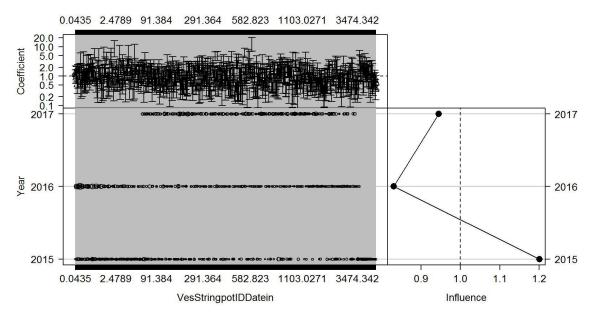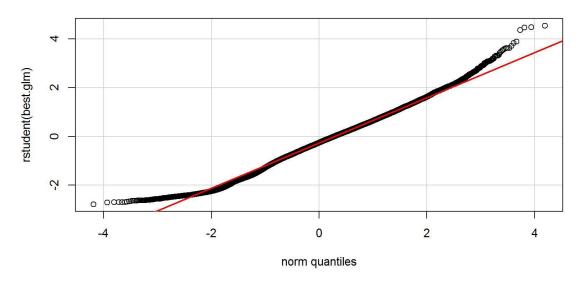Figure G.15. CDI plot for VesString for the negative binomial fit to 2015–2017 independent survey data for EAG

Figure G.16. CDI plot for VesStringPotID for the negative binomial fit to 2015–2017 independent survey data for EAG

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Negative Binomial Fit, EAG 1995/96-2004/05

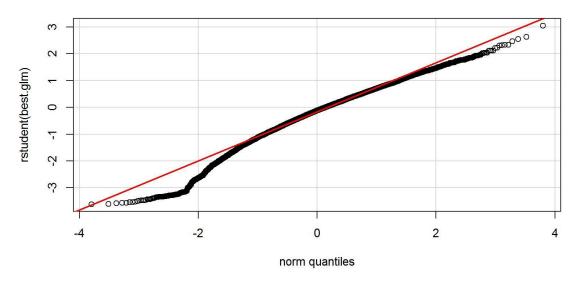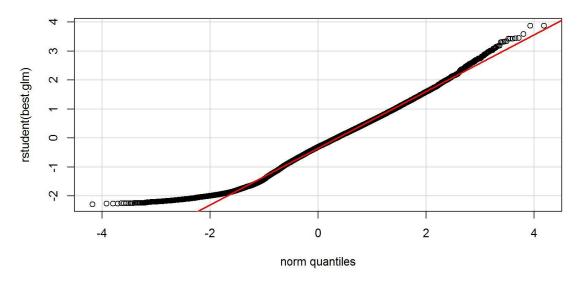**Negative Binomial Fit, EAG 2005/06-2016/17**

Figure G.17. Studentized residual plots for negative binomial GLM fit to EAG golden king crab observer CPUE data for legal size male crab. Top panel is for 1995/96–2004/05 and bottom panel is for 2005/06–2016/17. **Variables selected by AIC criteria**.

Negative Binomial Fit, WAG 1995/96-2004/05

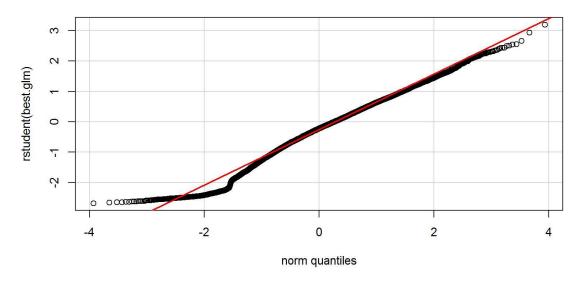**Negative Binomial Fit, WAG 2005/06-2016/17**

Figure G.18. Studentized residual plots for negative binomial GLM fit to WAG golden king crab observer CPUE data for legal size male crab. Top panel is for 1995/96–2004/05 and bottom panel is for 2005/06–2016/17. **Variables selected by AIC criteria**.
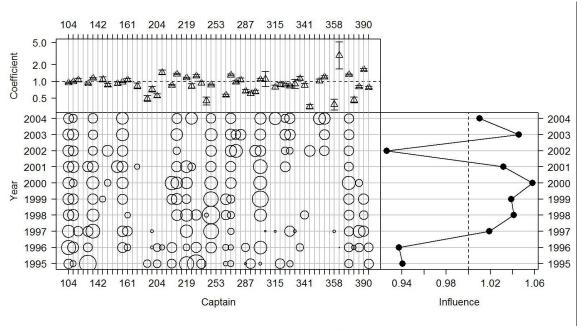
Figure G.19. CDI plot for Captain for the negative binomial fit to 1995/96–2004/05 data for EAG. **Variables selected by AIC criteria**.
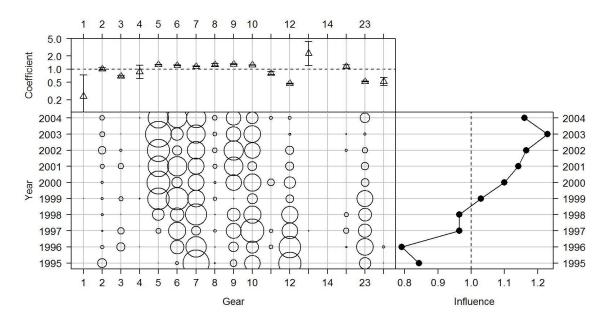

Figure G.20. CDI plot for Gear for the negative binomial fit to 1995/96–2004/05 data for EAG. **Variables selected by AIC criteria**.
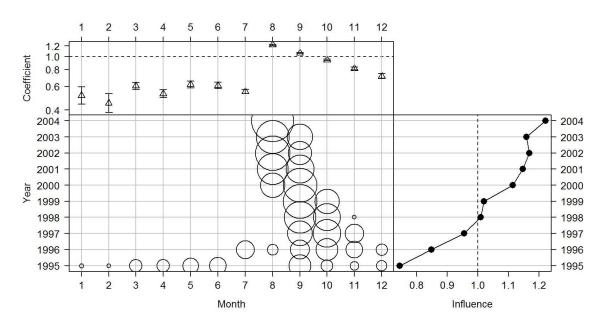
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Figure G.21. CDI plot for Month for the negative binomial fit to 1995/96–2004/05 data for EAG.
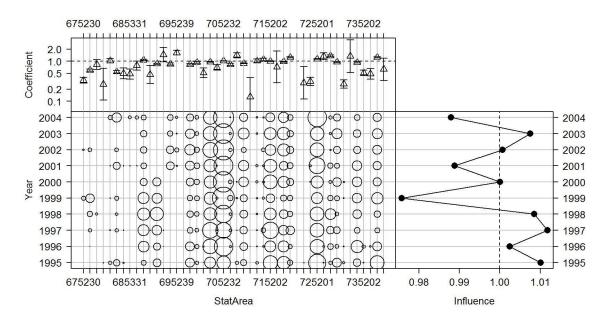**Variables selected by AIC criteria**.

Figure G.22. CDI plot for Area for the negative binomial fit to 1995/96–2004/05 data for EAG.
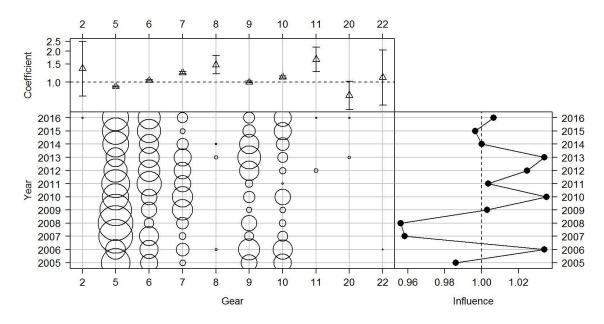**Variables selected by AIC criteria**.

Figure G.23. CDI plot for Gear for the negative binomial fit to 2005/06–2015/16 data for EAG. **Variables selected by AIC criteria**.
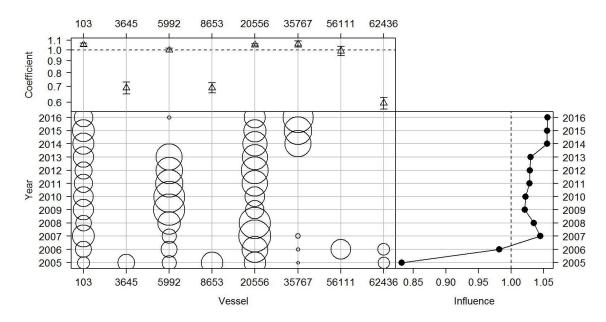

Figure G.24. CDI plot for Vessel for the negative binomial fit to 2005/06–2015/16 data for EAG. **Variables selected by AIC criteria**.
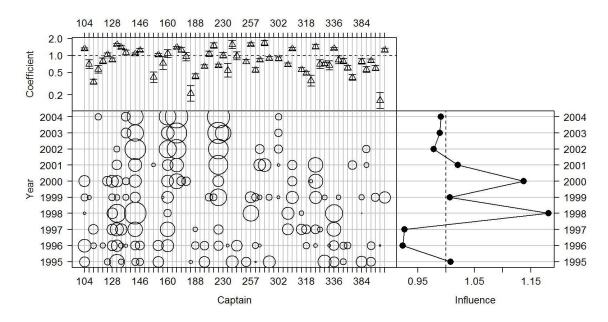
Figure G.25. CDI plot for Captain for the negative binomial fit to 1995/96–2004/05 data for WAG. **Variables selected by AIC criteria**.
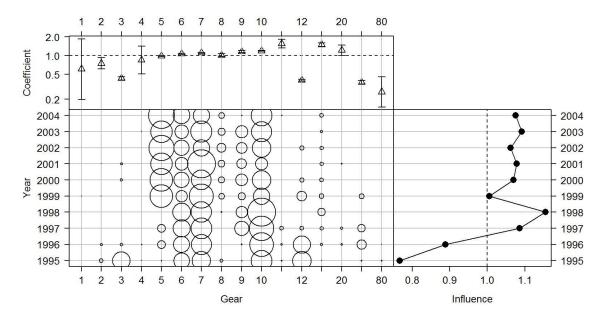

Figure G.26. CDI plot for Gear for the negative binomial fit to 1995/96–2004/05 data for WAG. **Variables selected by AIC criteria**.
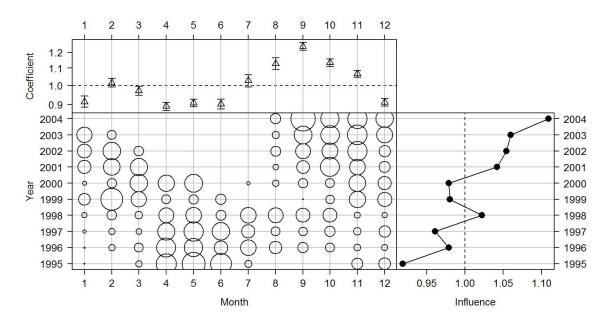
Figure G.27. CDI plot for Month for the negative binomial fit to 1995/96–2004/05 data for WAG. **Variables selected by AIC criteria**.
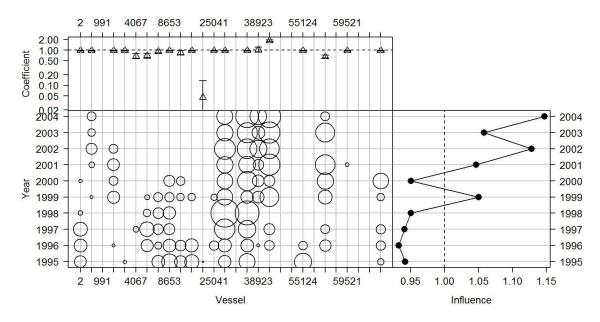

Figure G.28. CDI plot for Vessel for the negative binomial fit to 1995/96–2004/05 data for WAG. **Variables selected by AIC criteria**.
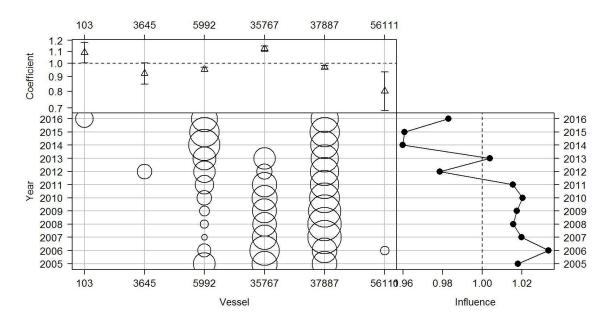
Figure G.29. CDI plot for Vessel for the negative binomial fit to 2005/06–2016/17 data for WAG. **Variables selected by AIC criteria**.
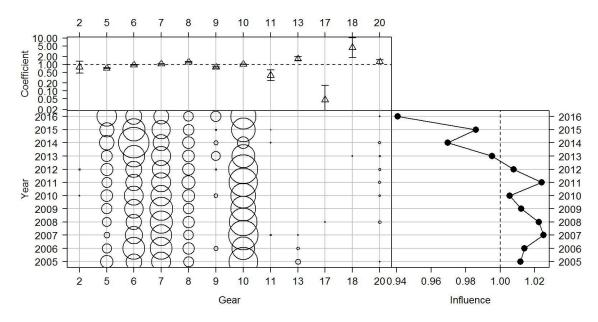

Figure G.30. CDI plot for Gear for the negative binomial fit to 2005/06–2016/17 data for WAG. **Variables selected by AIC criteria**.
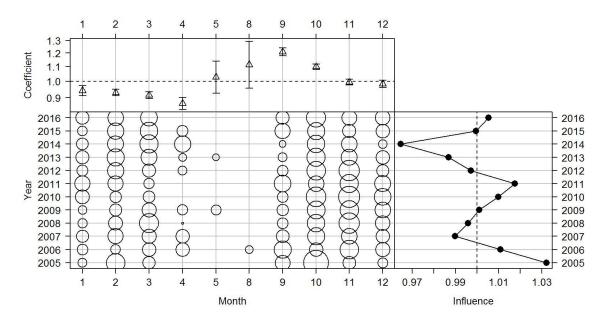
Figure G.31. CDI plot for Month for the negative binomial fit to 2005/06–2016/17 data for WAG.
Variables selected by AIC criteria.