

Parameter	Model	Estimate	SD	Lower	Upper
$\beta_A$	Average Maximum Likelihood	-0.012	0.021	-0.052	0.029
$\beta_A$	Full Maximum Likelihood	-0.027	0.024	-0.073	0.020
$\beta_A$	Full Bayesian	-0.026	0.024	-0.072	0.020
$\beta_D$	Average Maximum Likelihood	-0.464	0.064	-0.589	-0.339
$\beta_D$	Full Maximum Likelihood	-0.464	0.064	-0.588	-0.339
$\beta_D$	Full Bayesian	-0.470	0.067	-0.604	-0.339
$\beta_L$	Average Maximum Likelihood	-0.304	0.043	-0.389	-0.219
$\beta_L$	Full Maximum Likelihood	-0.305	0.043	-0.389	-0.220
$\beta_L$	Full Bayesian	-0.306	0.044	-0.393	-0.222
$\beta_P$	Average Maximum Likelihood	0.056	0.044	-0.031	0.142
$\beta_P$	Full Maximum Likelihood	0.073	0.035	0.005	0.142
$\beta_P$	Full Bayesian	0.074	0.039	-0.007	0.146
$\beta_0$	Average Maximum Likelihood	1.351	0.179	1.000	1.702
$\beta_0$	Full Maximum Likelihood	1.352	0.178	1.002	1.702
$\beta_0$	Full Bayesian	1.370	0.185	1.019	1.731
$\log(\sigma_G)$	Average Maximum Likelihood	-3.006	0.310	-3.614	-2.398
$\log(\sigma_G)$	Full Maximum Likelihood	-3.030	0.314	-3.645	-2.414
$\log(\sigma_G)$	Full Bayesian	-2.906	0.354	-3.564	-2.172
$\log(\sigma_\eta)$	Average Maximum Likelihood	-0.489	0.175	-0.833	-0.146
$\log(\sigma_\eta)$	Full Maximum Likelihood	-0.487	0.175	-0.829	-0.145
$\log(\sigma_\eta)$	Full Bayesian	-0.474	0.178	-0.809	-0.117
$\log(\sigma_Y)$	Average Maximum Likelihood	-1.692	0.156	-1.997	-1.386
$\log(\sigma_Y)$	Full Maximum Likelihood	-1.708	0.152	-2.005	-1.410
$\log(\sigma_Y)$	Full Bayesian	-1.662	0.160	-1.969	-1.335

**Table S4.** The parameter estimates for the final population models with lower and upper 95% confidence/credible intervals. The estimates are for a lek distance of 3.2 km, areal disturbance due to well pads of one year and Pacific Decadal Oscillation index lag of one year. Model parameters are described in Table 1.