Table 3: Covariate Model Selection

Table 1: Table 1. Top covariates for the monsoon (Jul-Sep) and post-monsoon (Oct-Mar) catch (S_t and N_t) models. The models are nested; the number indicates the level of nestedness. Models at levels 2 and higher are shown with the component that is added to the base level model (M0 or M1) at top. The full set of covariate models tested are given in Appendix B. The fitted versus observed catches from the covariate models are shown in Figure 1.

Model	Residual df	MASE	Adj. R2	F	p value	AIC
Jul-Sep catch models with covariates						
V_t = Jun-Sep SST current season						
W_t = Jun-Sep UPW current season						
Z_t = 2.5-year average SST						
1-M0. $ln(S_t) = \alpha + s(ln(N_{t-1})) + \epsilon_t$	28.6	0.761	24			109.52
2a. $ln(S_t) = M0 + s(V_t)$	25.9	0.683	41	3.84	0.025	103.43
2b. $ln(S_t) = M0 + \beta W_t$	27.6	0.706	33	4.96	0.034	106.32
2c. $ln(S_t) = M1 + s(Z_t)$	23.7	0.641	47	5.43	0.01	101.65
Oct-Mar catch models with covariates						
V_t = Mar-May SST current season						
W_t = Jun-Sep upwelling current season						
Z_t = 2.5-year average SST						
1-M1. $ln(N_t) = \alpha + s(ln(N_{t-1})) + s(ln(S_{t-2})) + \epsilon_t$	24.8	0.45	57			79.53
2a. $ln(N_t) = M1 + s(V_t)$	22	0.413	63	2.53	0.089	76.01
2b. $ln(N_t) = M1 + \beta W_t$	23.8	0.46	62	4.91	0.037	76
$\Rightarrow$ 2c. $ln(N_t) = M1 + s(Z_t)$	22.7	0.36	67	4.98	0.016	71.88