

Table S3. Statistics of the TGAM used to describe the threshold in the zooplankton dynamics

Model selection (best model)						Test statistics for the best model				
Response	Threshold	r^2 (adj.)	P	GCV	n	Term	Sprat abundance	F	df	P
PC1 zooplankton	16.98	0.42	0.025	0.67	29	PC1 hydrology	< 16.98	5.91	1.70	0.008
						Sprat abundance	> 16.98	13.34	1.00	0.001

The threshold is selected minimizing the Generalized Cross Validation score (GCV) of the model after running it for 100 possible threshold values between the 0.1 lower and the 0.9 upper quantiles (best model). Test statistics for the best model are indicated. Threshold refers to the sprat abundance value (10^{10} individuals). In accordance to the piecewise regression analysis (Table S2) and the probability density distributions of the bootstrapped correlation coefficients (Table S4), our TGAM formulation incorporated the effect of hydro-climate variability on the zooplankton dynamic for low abundance of sprat, and the shift toward a sprat-regulated dynamic for high abundance of the planktivore predator, as follows:

$$PC1.zooplankton = \begin{cases} \alpha + s_1(PC1.hydrology) + \varepsilon & \text{if } Sprat \leq t \\ \alpha + s_2(Sprat) + \varepsilon & \text{if } Sprat > t \end{cases}$$

where t is the threshold in the sprat abundance at which the model switches between the two formulations, s_1 and s_2 are two smoothing functions, α is the intercept and ε is the random error. See Fig. S1 for detailed results.