

Supplement 1Table S1. Median regional concentration (ind. L⁻¹) of copepod nauplii, total copepod and zooplankton in 1996-1999.

Bay region	Copepod nauplii	Total copepods	Zooplankton
Upper	42.7	60.5	135.8
Mid	23.0	29.2	58.5
Lower	27.9	34.8	72.9

Table S2. Yearly survey and regional larval bay anchovy feeding incidences in Chesapeake Bay from 1995-1999. No larvae were collected in the upper bay in 1996.

Bay region	Year					Pooled
	1995	1996	1997	1998	1999	
Upper	0.43	–	0.25	0.22	0.31	0.27
Mid	0.10	0.06	0.21	0.12	0.10	0.13
Lower	0.20	0.09	0.09	0.30	0.13	0.17
Bay-wide	0.16	0.09	0.16	0.23	0.17	0.17

Table S3. Yearly survey and regional mean numbers of prey per gut for larval bay anchovy in Chesapeake Bay from 1995-1999. No larvae were collected in the upper bay in 1996.

Bay region	Year					Pooled
	1995	1996	1997	1998	1999	
Upper	1.33	–	1.40	1.50	1.11	1.3
SE	0.33	–	0.24	0.22	0.08	0.1
Mid	1.10	1.00	1.38	1.30	1.11	1.3
SE	0.10	0	0.19	0.15	0.11	0.1
Lower	1.60	1.56	1.00	1.60	1.54	1.5
SE	0.18	0.34	0	0.19	0.24	0.1
Bay-wide	1.42	1.50	1.29	1.54	1.22	1.4
SE	0.12	0.31	0.12	0.13	0.08	0.1

Supplement 2: Variability of links across cruises

2.1 BA eggs abundance

To evaluate the stability of the environmental links estimated in the final GAM models presented in the main text (Table 4), these same models were also fitted by adding an interaction, the cruise year to each factor (salinity, dissolved oxygen, temperature). Because cruises were conducted in different months in the five years, this interaction cannot be interpreted as a “year” effect, and is not intended as such. Since only a single cruise was conducted in each year, then “year” (categorical variable) can be considered a cruise number. The aim of this additional analysis was to evaluate the stability of the environmental links estimated in the final models across individual cruises.

Adding the interaction with year to all terms in the final model of egg abundance increased the adjusted R-square from 0.116 to 0.247. The salinity effect was relatively stable across years although a somewhat different pattern was observed in 1995 and 1996. Egg abundance tended to increase with salinity; in 1997–99 peak abundances occurred a salinities of 20–25. For DO, we observed decreasing BA abundance at higher DO levels in 1995 and 1999, but a different pattern in 1996–1998. The most inconsistent pattern was observed for BA egg abundance and temperature in which a sharp decrease was observed in 1997 and increase in 1998. Finally and most importantly, although some inconsistency in patterns occurred and relationships were not always the stable among “years”, we did not locate major and regular deviations in “years” where sampling occurred in June/August.

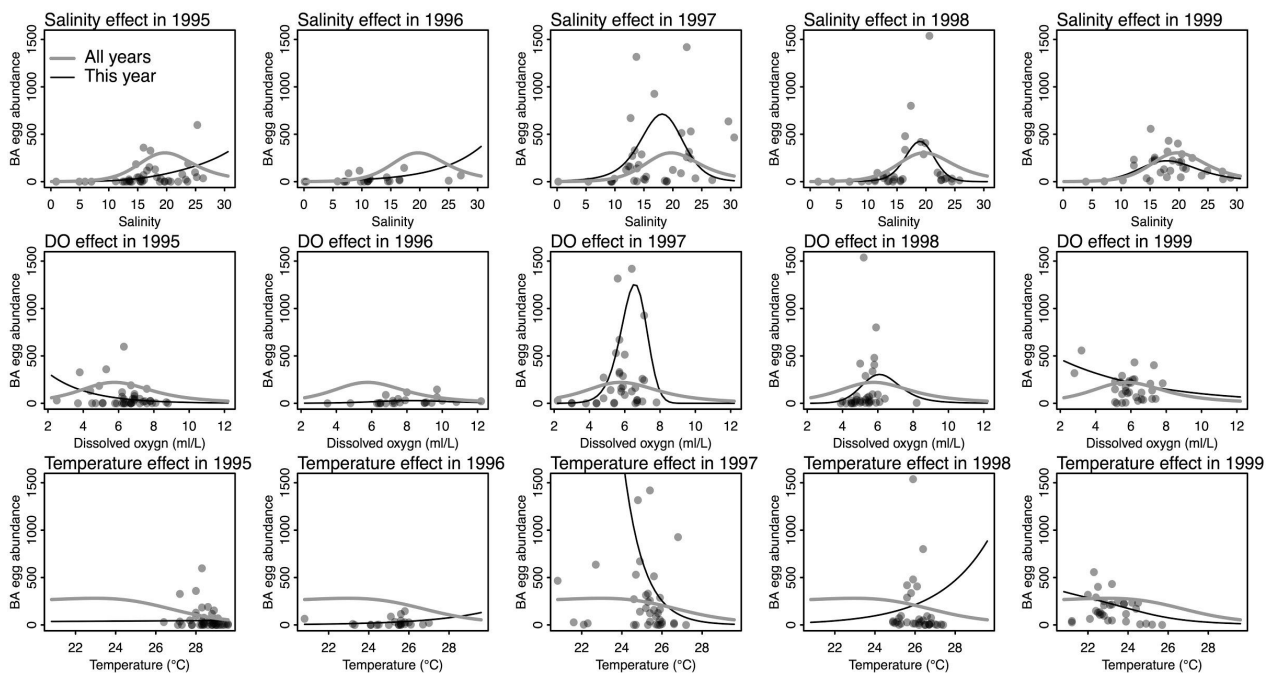


Figure S1. The cruise-specific links between BA egg abundance and salinity, dissolved oxygen and temperature. Grey line indicates the effect of the respective variable from the final model in main text (same lines that were presented in Figure 6), when interaction with year was not included. Black thin lines indicate the same link for each year, estimated with a model that includes the interaction with year. All curves are fitted by setting the other two variables to their mean values. In the single-year curves, these mean values are for the particular year.

Table S4. Significance of the smooth terms of BA egg abundance model including interaction with the year.

Significance of the GAM curves of BA eggs abundance (Figure S1)	p-value
Salinity : year 1995	< 0.0001
Salinity : year 1996	0.00117
Salinity : year 1997	0.00247
Salinity : year 1998	< 0.0001
Salinity : year 1999	0.00349
Dissolved oxygen (DO) : 1995	0.00514
Dissolved oxygen (DO) : 1996	0.08943
Dissolved oxygen (DO) : 1997	<0.0001
Dissolved oxygen (DO) : 1998	0.02025
Dissolved oxygen (DO) : 1999	0.42713
Temperature : 1995	0.83181
Temperature : 1996	0.07414
Temperature : 1997	0.01845
Temperature : 1998	0.50563
Temperature : 1999	0.06086

2.2 BA larvae abundance

Adding the “year” interaction term to the final GAM model for BA larvae abundance increased the adjusted R-square from 0.266 to 0.367. Except for 1999, similar patterns of increasing BA larvae abundance occurred for salinity values from 10–15 to 20–25. The DO pattern was similar for all years except 1999. The pattern for temperature was similar for all years except 1995 and 1998.

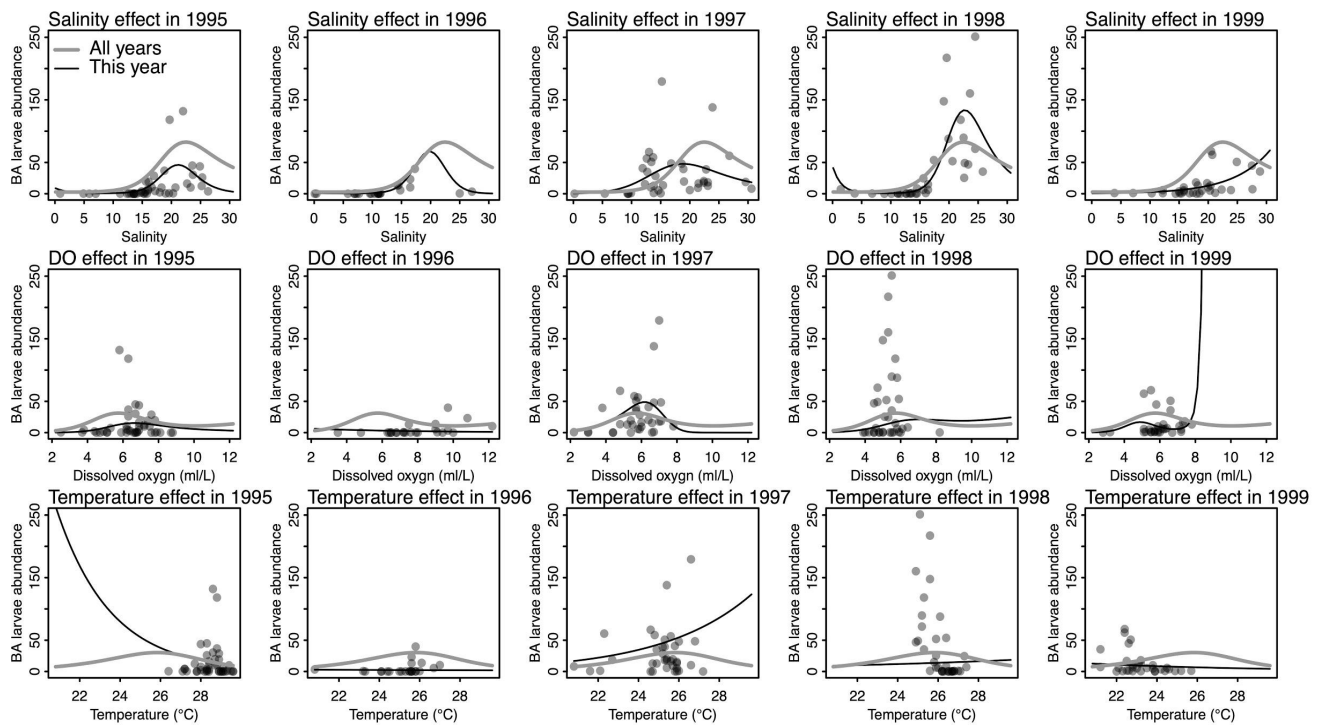


Figure S2. The cruise-specific links between BA larvae abundance and salinity, dissolved oxygen and temperature. Grey line indicates the effect of the respective variable from the final model in main text (same lines that were presented in Figure 6), when interaction with year was not included. Black thin lines indicate the same link for each year estimated with a model that includes the interaction with year. All curves are fitted by setting the other two variables to their mean values. In the single-year curves, these mean values are for the particular year.

Table S5. Significance of the smooth terms of BA larvae abundance model including interaction with the year.

Significance of the GAM curves of BA larvae abundance (Figure S2)	p-value
Salinity : year 1995	< 0.0001
Salinity : year 1996	< 0.0001
Salinity : year 1997	< 0.0001
Salinity : year 1998	< 0.0001
Salinity : year 1999	0.000493
Dissolved oxygen (DO) : 1995	< 0.0001
Dissolved oxygen (DO) : 1996	0.050973
Dissolved oxygen (DO) : 1997	0.002631
Dissolved oxygen (DO) : 1998	0.052872
Dissolved oxygen (DO) : 1999	0.021858
Temperature : 1995	0.000348
Temperature : 1996	0.859512
Temperature : 1997	0.421593
Temperature : 1998	0.850969
Temperature : 1999	0.543875