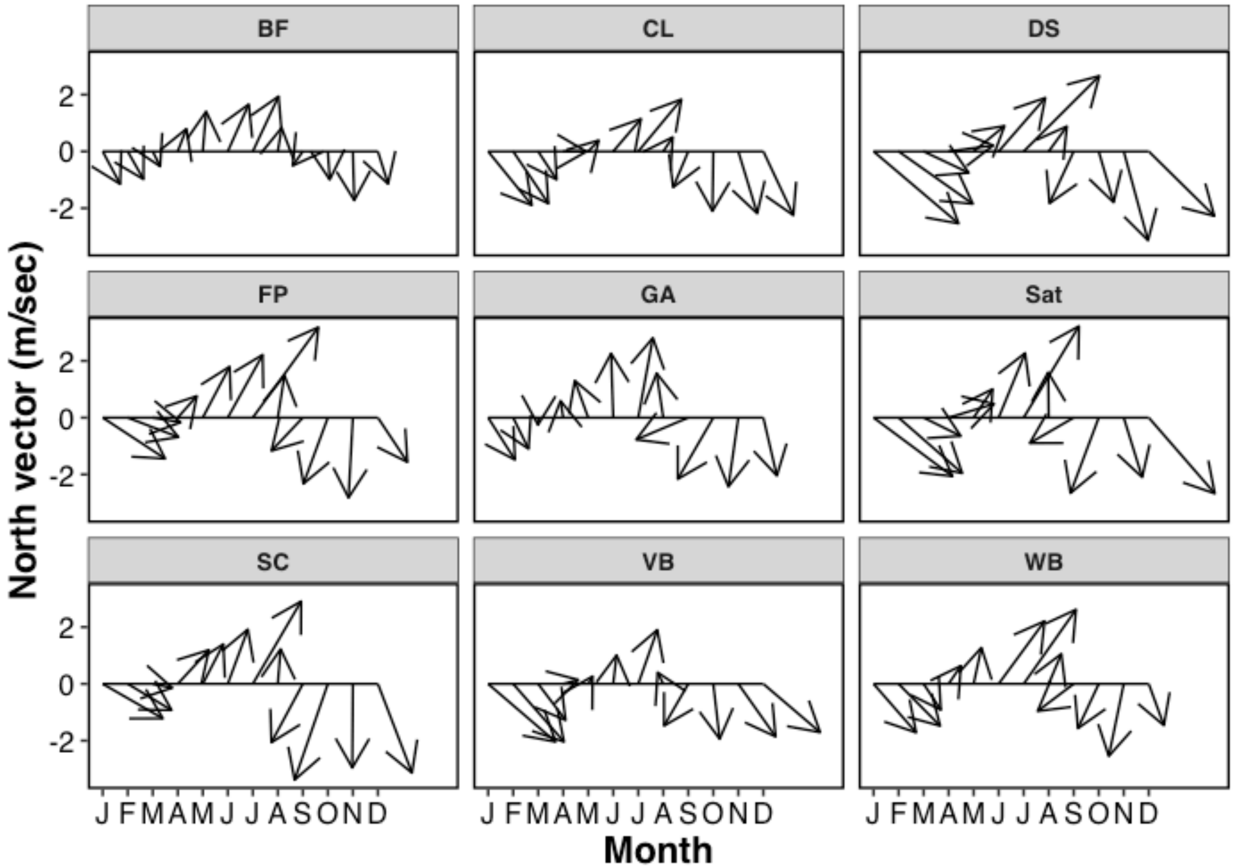

Fig. S1: Wind climatology from weather stations and satellite observations of the South Atlantic Bight (SAB). Vectors represent the average wind strength and direction for each month. During most months there is general consistency across the SAB in wind direction across the eight weather stations and satellite data (labeled as Sat) from the Blended Sea Winds database. Weather station and buoy observations were from Diamond Shoals, North Carolina (DS – 41025; 2003 – 2017), Frying Pan Shoals, North Carolina (FPS – 41013; 2003 – 2017), Edisto, South Carolina (SC – 41004; 1978 – 2017), Wrightsville Beach, North Carolina (WB – 41037; 2005 – 2017), Grays Reef, Georgia (GA – 41008; 1988 – 2017), Beaufort Inlet, North Carolina (BF – BFTN7; 2005 – 2017), Cape Lookout, North Carolina (CL – CLKN7; 1986 – 2017), and Virginia Beach, Virginia (VB – 44014; 1990 – 2017).

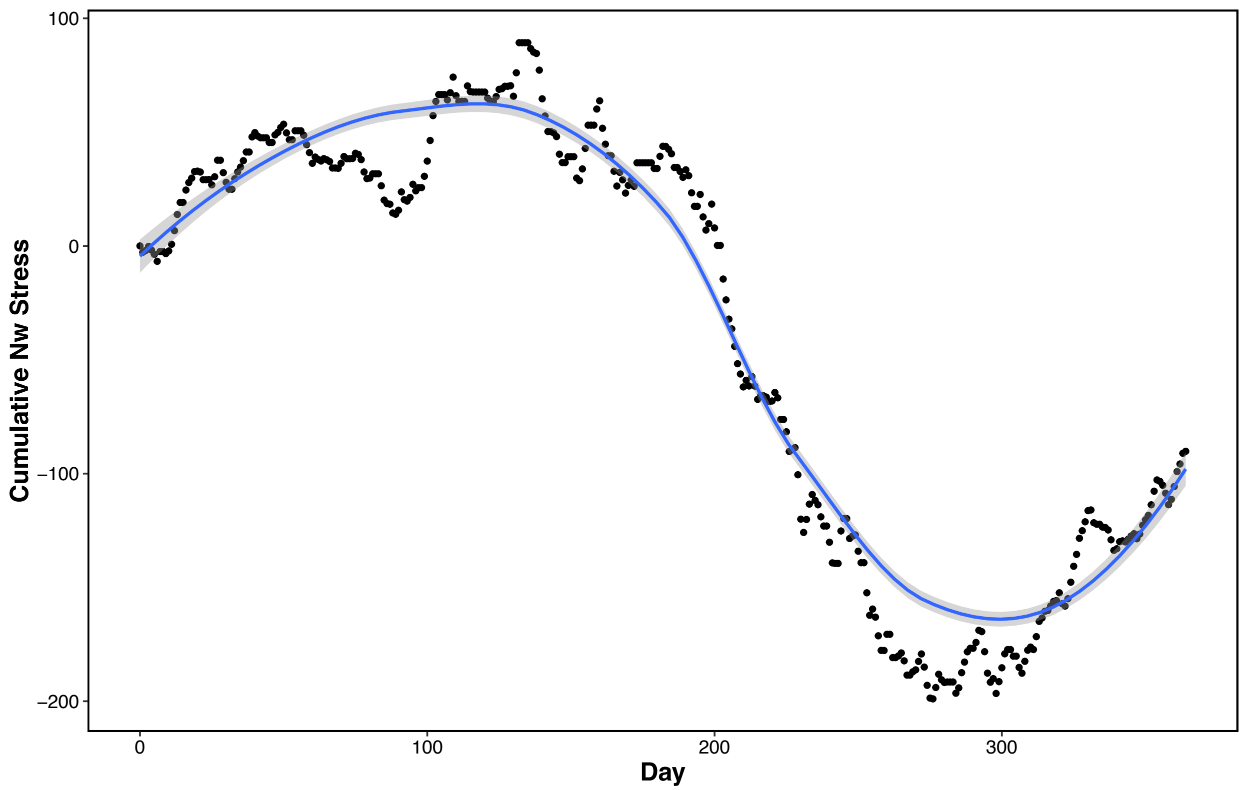

Fig. S2: Cumulative wind stress to northwest observed in Onslow Bay during the fall/winter of 1990 and spring of 1991. The black dots are the observed winds stress. The blue line show a loess smoothed average of the points plotted (span = 0.75, degrees = 2). The grey shading shows ± 1 standard error around the loess curve. The maximum cumulative wind stress to the northwest was used to determine the phenology of wind shift to the southwest. Similar graphs were produced for each year of this study to determine the timing of wind shift phenology.

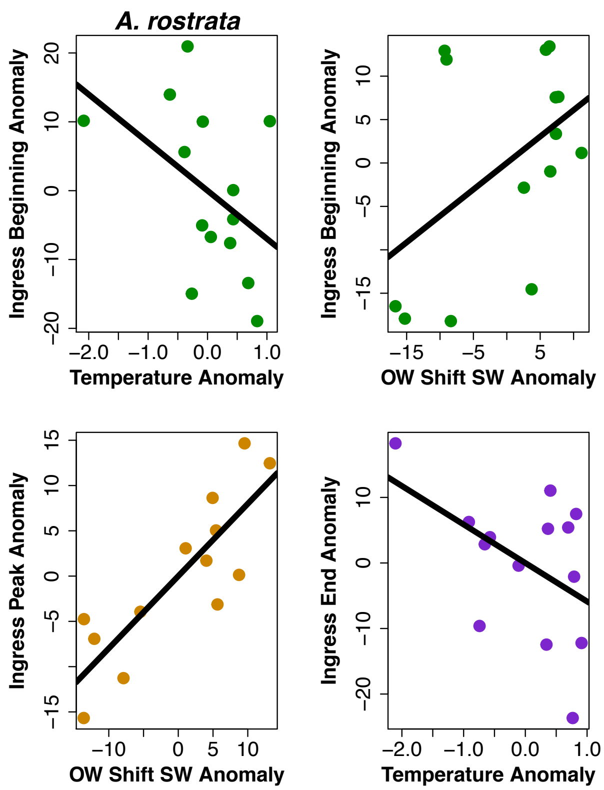

Fig. S3: Partial regression plots of environmental metrics included in species' best models of ingress. Green, orange, purple, and blue points represent models of beginning, peak, end, and duration of ingress, respectively. Positive (negative) slopes indicate factors that delay (advance) larval fish ingress. Each point represents the species' phenology in given year. See Table S5 for the specifications of each model. Abbreviations: OW – offshore winds; SW – southwest; SE – southeast; NAO – North Atlantic Oscillation; AMO – Atlantic Multidecadal Oscillation

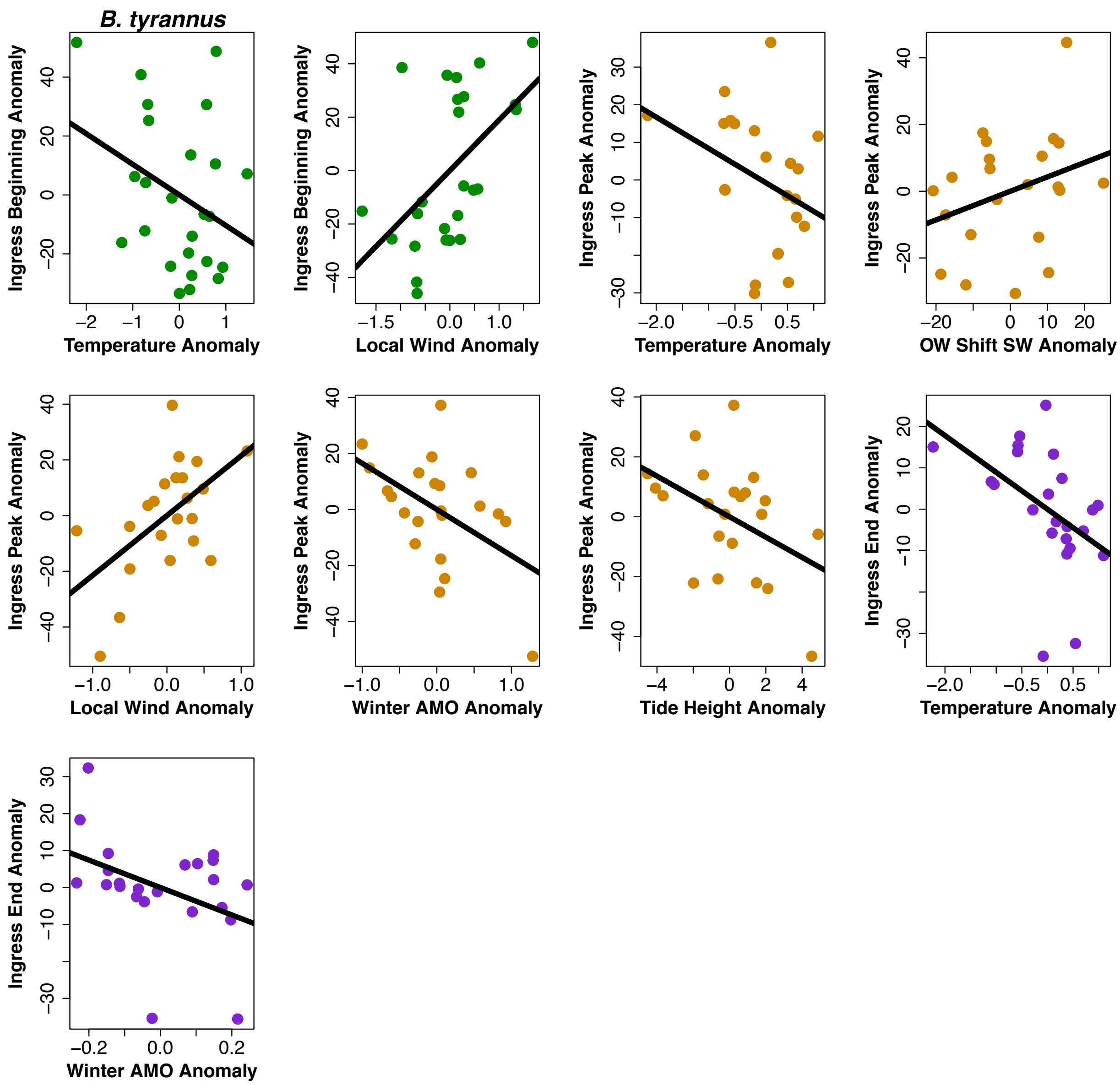

Fig. S3 (cont.): Partial regression plots of environmental metrics included in species' best models of ingress.

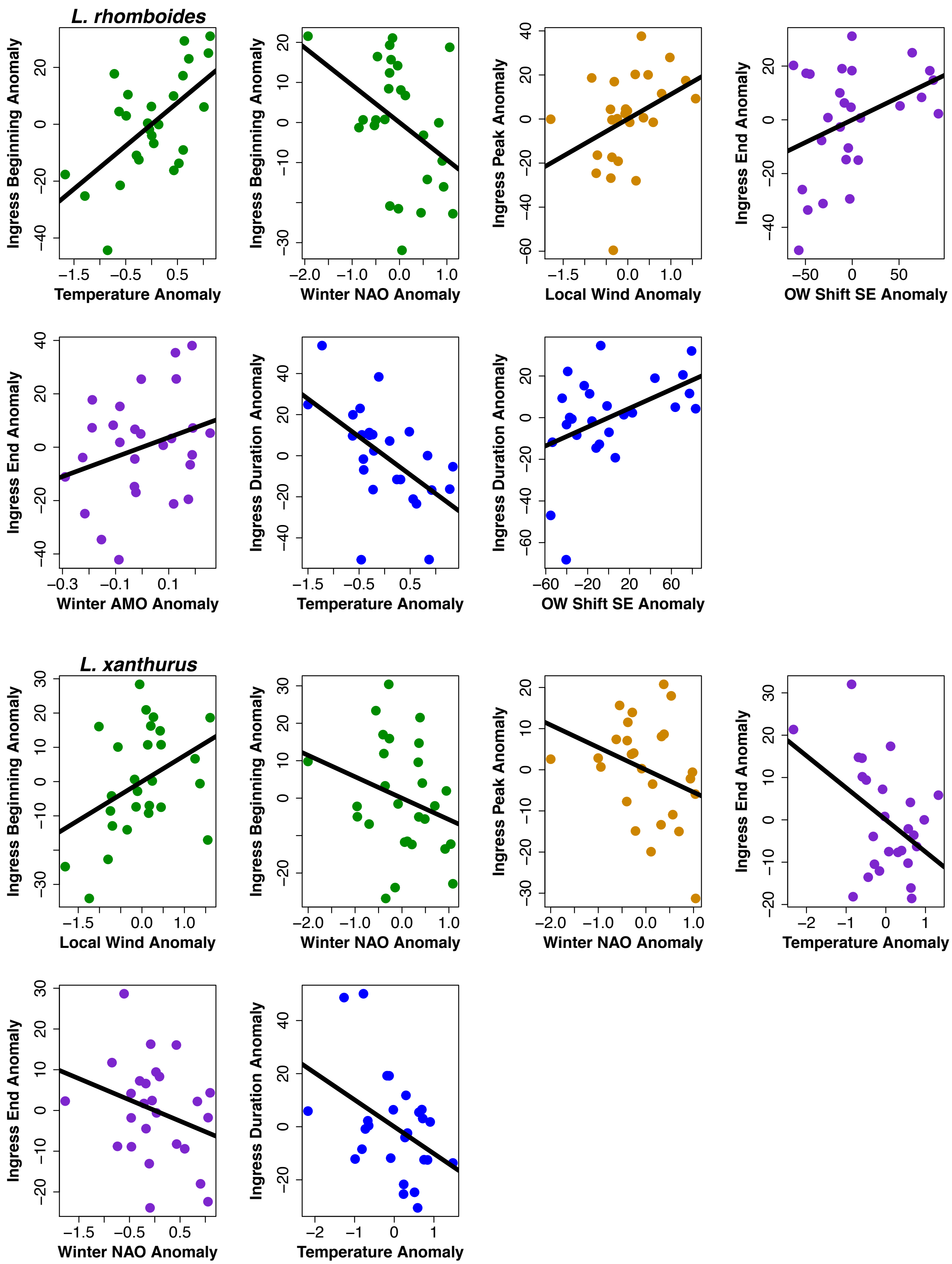

Fig. S3 (cont.): Partial regression plots of environmental metrics included in species' best models of ingress.

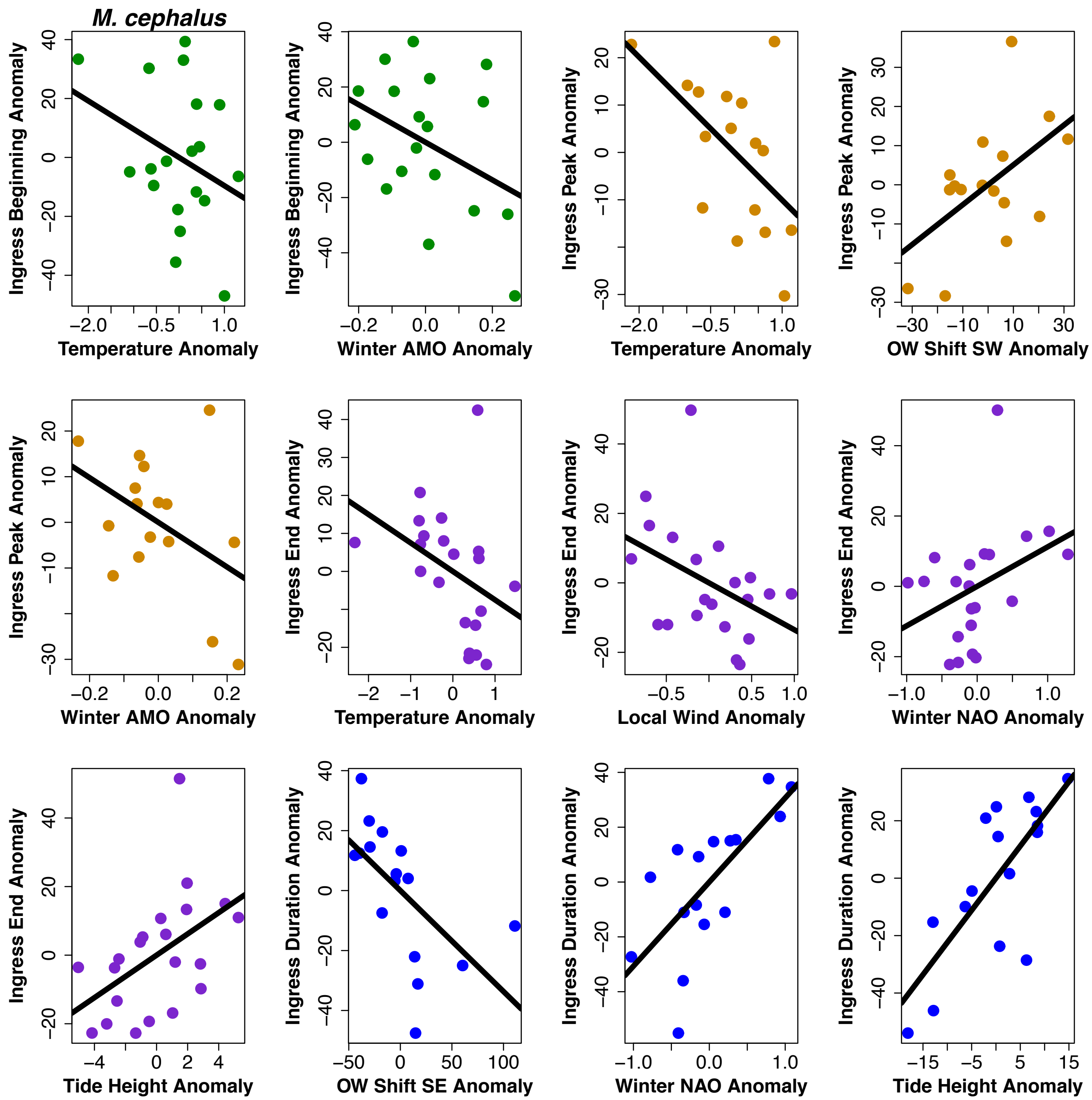

Fig. S3 (cont.): Partial regression plots of environmental metrics included in species' best models of ingress.

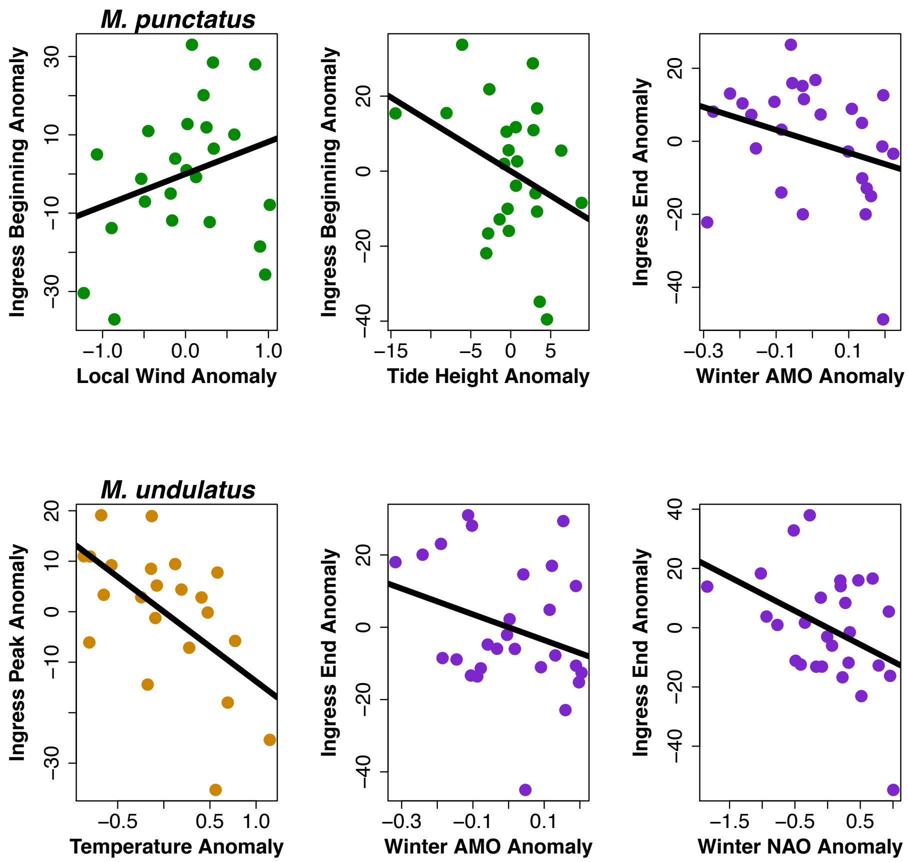

Fig. S3 (cont.): Partial regression plots of environmental metrics included in species' best models of ingress.

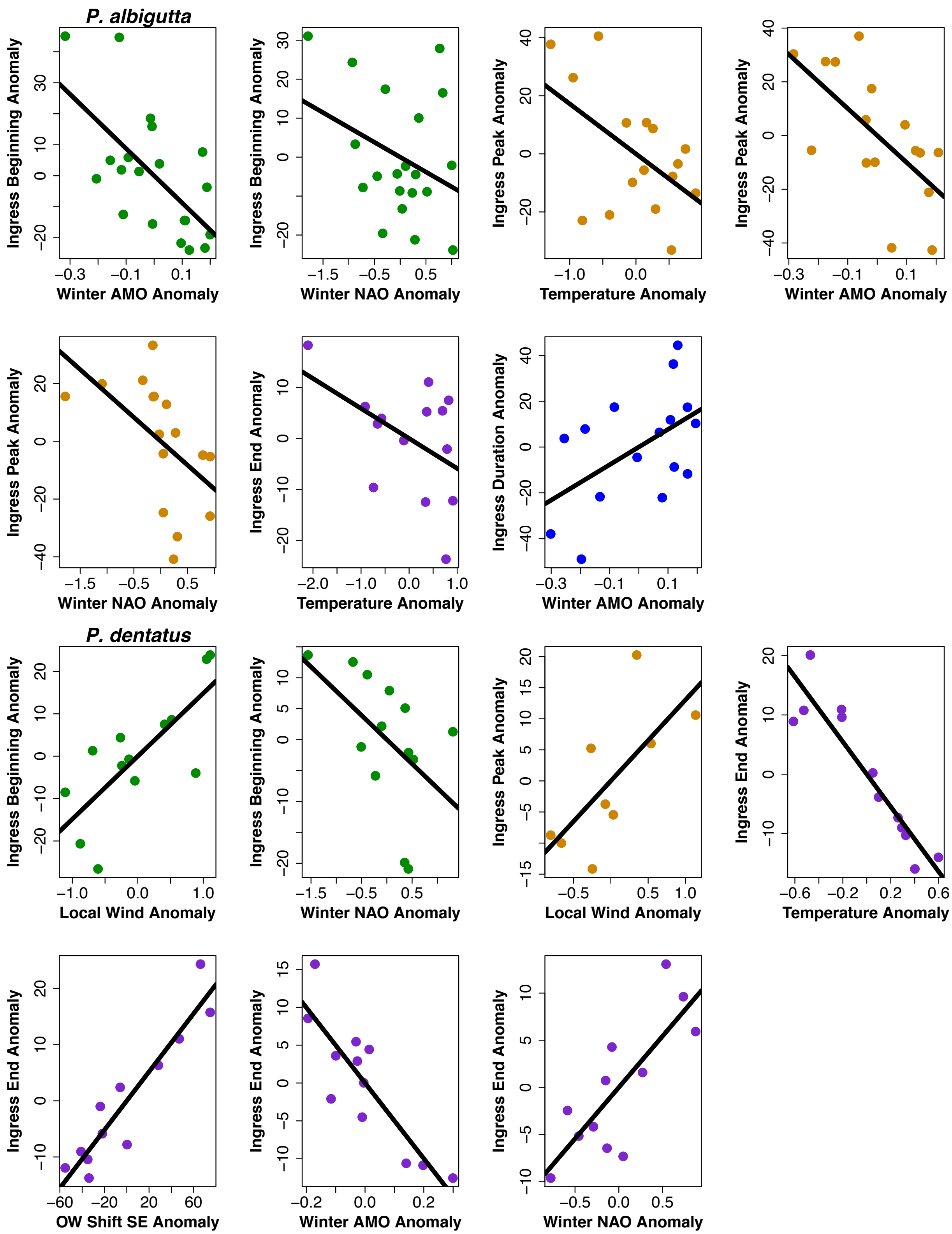

Fig. S3 (cont.): Partial regression plots of environmental metrics included in species' best models of ingress.

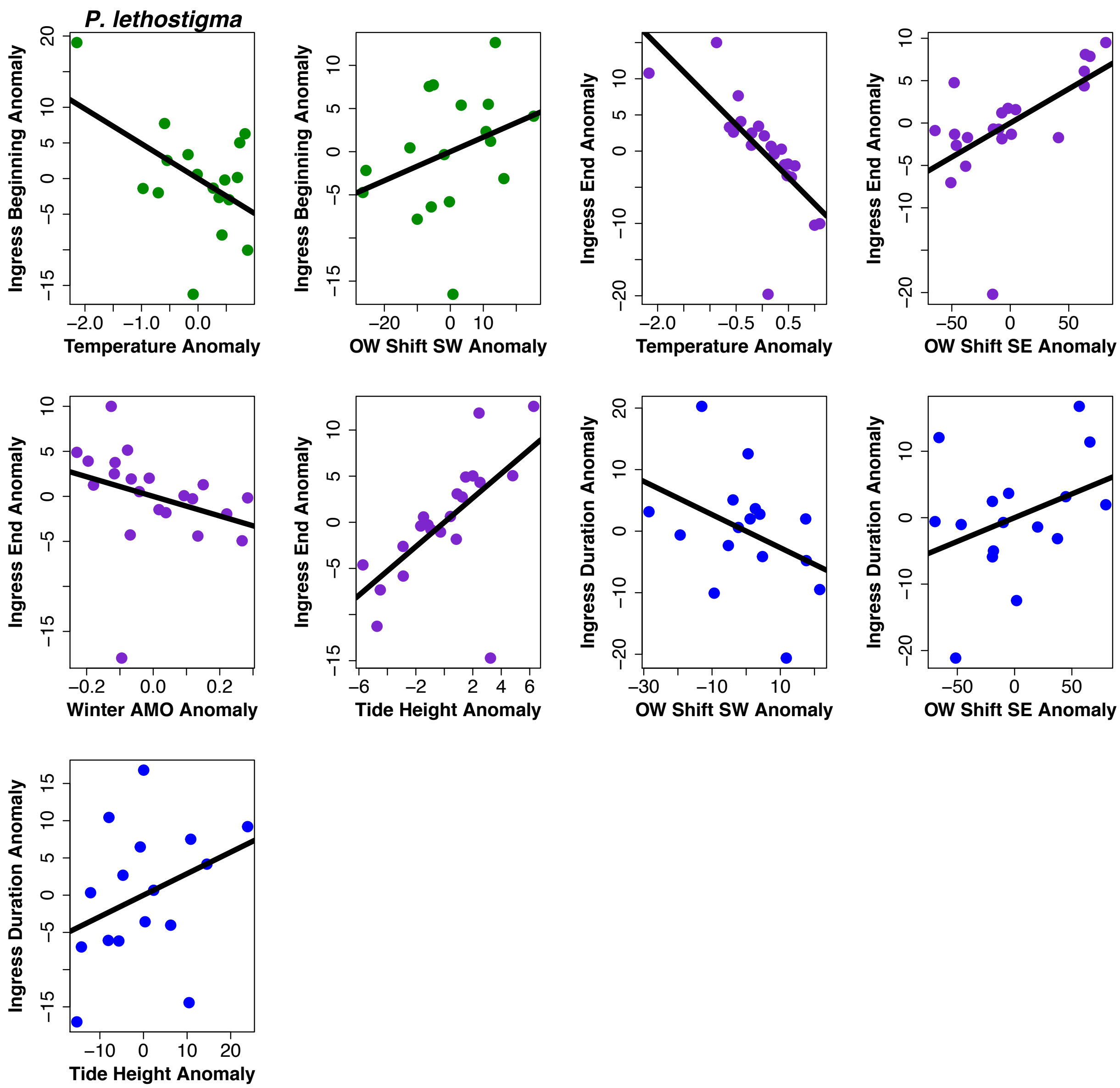

Fig. S3 (cont.): Partial regression plots of environmental metrics included in species' best models of ingress.

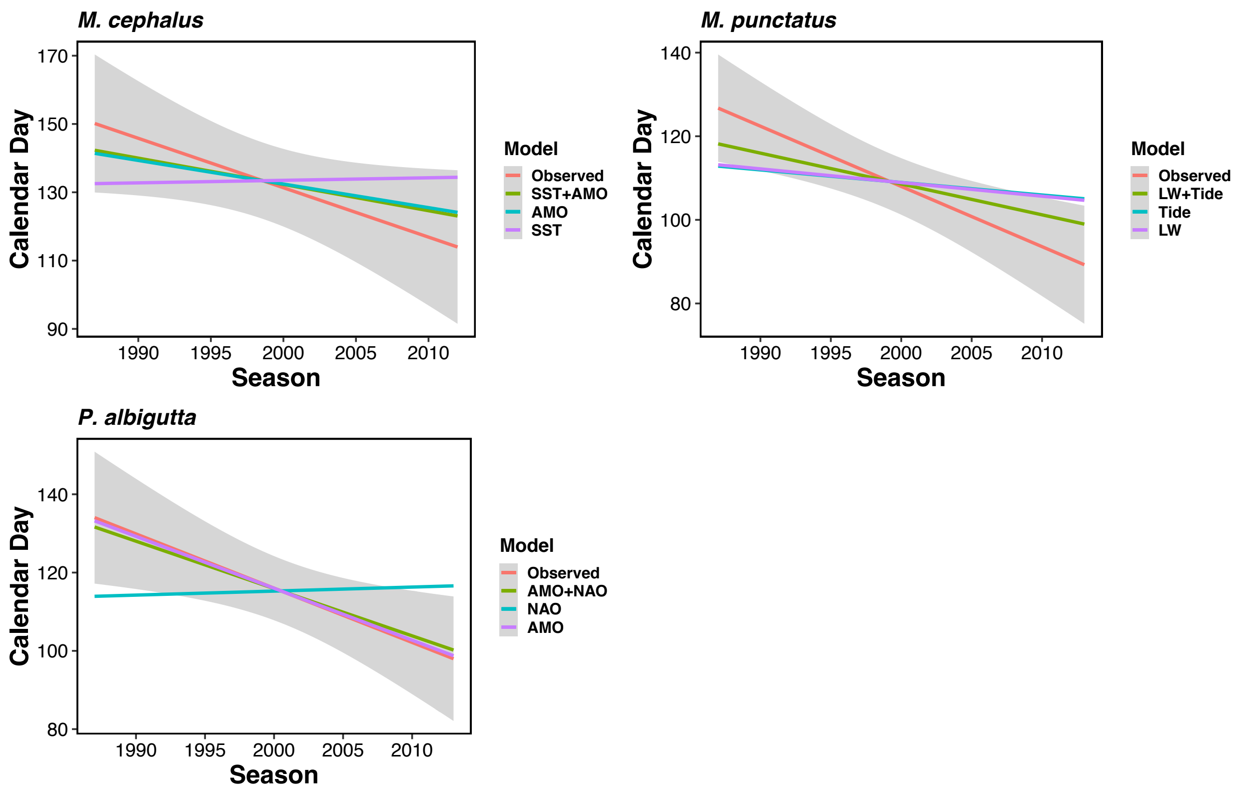

Fig. S4: Temporal trends in the beginning of larval fish ingress based on observations and predictions of multiple regression models for *M. cephalus*, *M. punctatus*, and *P. albigutta*. Orange lines indicate the observed trend in species' beginning of ingress ± 1 standard error (grey shading). Other colored lines correspond to the linear models used to predict species ingress. Comparisons between these models and the observed trend indicated which environmental variables best explained long-term changes in larval fish phenology.

Table S1: Phenology metrics removed for each species and the reason for their removal in a given year. See *Methods* for further explanation of the criteria for metric removal.

Species	Year	Metrics	Reason
Anguilla rostrata	1991	All	Sample size
	1996	All	Sample size
	1997	All	Sample size
	1999	All	Sample size
	2000	All	Sample size
	2001	All	Sample size
	2004	All	Sample size
	2005	Peak, end, and duration	Metric within two weeks of season's end
	2006	All	Sample size
	2009	Beginning, peak, and duration	Metric within two weeks of season's start
	2011	All	Sample size
Brevoortia tyrannus	1991	Peak, end, and duration	Metric within two weeks of season's end
	1996	Peak, end, and duration	Metric within two weeks of season's end
	2003	Peak, end, and duration	Metric within two weeks of season's end
	2004	Peak, end, and duration	Metric within two weeks of season's end
	2007	Beginning, peak, and duration	Metric within two weeks of season's start
Lagodon rhomboides	1990	Beginning, peak, and duration	Metric within two weeks of season's start
Leiostomus xanthurus	2007	Peak, end, and duration	Metric within two weeks of season's end
Mugil cephalus	1992	Beginning, peak, and duration	Metric within two weeks of season's start
	1993	Peak, end, and duration	Metric within two weeks of season's end
	1994	Peak, end, and duration	Metric within two weeks of season's end
	1998	All	Sample size
	1999	Beginning, peak, and duration	Metric within two weeks of season's start
	2000	All	Sample size
	2004	Beginning, peak, and duration	Metric within two weeks of season's start
	2005	Peak, end, and duration	Metric within two weeks of season's end

Species	Year	Metrics	Reason
	2010	All	Sample size
Mugil cephalus	2011	Beginning, peak, and duration	Metric within two weeks of season's start
	2013	Beginning, peak, and duration	Metric within two weeks of season's start
Micropogonias undulatus	1990	Beginning, peak, and duration	Metric within two weeks of season's start
	1994	Beginning, peak, and duration	Metric within two weeks of season's start
	1995	Beginning, peak, and duration	Metric within two weeks of season's start
	2011	Beginning, peak, and duration	Metric within two weeks of season's start
	2012	Beginning, peak, and duration	Metric within two weeks of season's start
Myrophis punctatus	1997	Beginning, peak, and duration	Metric within two weeks of season's start
	2011	Beginning, peak, and duration	Metric within two weeks of season's start
	2012	Beginning, peak, and duration	Metric within two weeks of season's start
Paralichthys albigutta	1990	Beginning, peak, and duration	Metric within two weeks of season's start
	1994	Beginning, peak, and duration	Metric within two weeks of season's start
	1996	Peak, end, and duration	Metric within two weeks of season's end
	1997	Peak, end, and duration	Metric within two weeks of season's end
	1999	Beginning, peak, and duration	Metric within two weeks of season's start
	2000	Peak, end, and duration	Metric within two weeks of season's end
	2001	Peak, end, and duration	Metric within two weeks of season's end
	2009	Beginning, peak, and duration	Metric within two weeks of season's start
	2012	Beginning, peak, and duration	Metric within two weeks of season's start
Paralichthys dentatus	1988	All	Sample size
	1990	All	Sample size
	1991	All	Sample size
	1994	Beginning, peak, and duration	Metric within two weeks of season's start

Species	Year	Metrics	Reason
Paralichthys dentatus	1995	All	Sample size
	1997	Beginning, peak, and duration	Metric within two weeks of season's start
	1998	Peak, end, and duration	Metric within two weeks of season's end
	2000	All	Sample size
	2001	All	Sample size
	2004	Peak, end, and duration	Metric within two weeks of season's end
	2006	All	Sample size
	2008	All	Sample size
	2010	Peak, end, and duration	Metric within two weeks of season's end
	2011	Peak, end, and duration	Metric within two weeks of season's end
	2012	All	Sample size
	2013	Beginning, peak, and duration	Metric within two weeks of season's start
Paralichthys lethostigma	1990	Beginning, peak, and duration	Metric within two weeks of season's start
	1991	All	Sample size
	1995	Peak, end, and duration	Metric within two weeks of season's end
	1997	Beginning, peak, and duration	Metric within two weeks of season's start
	1999	All	Sample size
	2002	Beginning, peak, and duration	Metric within two weeks of season's start
	2006	Beginning, peak, and duration	Metric within two weeks of season's start
	2007	Beginning, peak, and duration	Metric within two weeks of season's start
	2011	All	Sample size
	2012	All	Sample size

Table S2a: Taxonomy and basic life history of species studied. Start, peak, and end months refer to the time ranges over which data on SST, local wind strength, and cumulative high tide height were used when modeling the environment's effect on each species' ingress phenology. "?" indicates an unknown aspect of a species' life history. Species are ordered by taxonomic relation.

	Family	**Start months**	**Peak months**	**End months**	**Age at maturity (years)**	**Spawning strategy**	**Eggs**
Anguilla rostrata	Anguillidae	Jan – Feb	Mar – Apr	Apr – May	5 – 19[a]	?	?
Myrophis punctatus	Ophichthidae	Dec – Jan	Jan – Feb	Mar – Apr	?	?	?
Brevoortia tyrannus	Clupeidae	Jan – Feb	Mar – Apr	Apr – May	2 – 3[b]	Batch[a]	Pelagic[a]
Mugil cephalus	Mugilidae	Jan – Feb	Feb – Mar	Mar – Apr	1 – 3[a]	Isochronal[d]	Pelagic[a]
Lagodon rhomboides	Sparidae	Dec – Jan	Feb – Mar	Mar – Apr	1 – 2[c]	?	Pelagic[a]
Leiostomus xanthurus	Sciaenidae	Jan – Feb	Feb – Mar	Mar – Apr	2 – 3[a]	Batch[a]	Pelagic[a]
Micropogonias undulatus	Sciaenidae	Nov – Dec	Jan – Feb	Mar – Apr	1 – 2[e]	Batch[e]	?
Paralichthys albigutta	Paralichthyidae	Dec – Jan	Feb – Mar	Apr – May	?	?	?
Paralichthys dentatus	Paralichthyidae	Jan – Feb	Feb – Mar	Mar – Apr	2[f]	Batch[a]	Pelagic[a]
Paralichthys lethostigma	Paralichthyidae	Jan – Feb	Feb – Mar	Mar – Apr	1 – 3[g]	?	?

[a]Able and Fahay 2010, [b]Lewis et al. 1987, [c]Darcy 1985, [d]Render et al. 1995, [e]Barbieri et al. 1994, [f]Morse 1981, [g]Midway and Scharf 2012

Table S2b: Species life history characteristics. Approximate area and time where species spawn, the migration they take to spawning grounds, and the age (size) of species' larvae upon ingress. For species ubiquitous across the Atlantic, information refers to spawning in/near the South Atlantic Bight (SAB) or studies specific to Beaufort Inlet. Age (size) at ingress is given in either a range or mean. "?" indicates an unknown aspect of a species' life history.

	Spawning area	Spawning time	Spawning migration	Age (size) at ingress
Anguilla rostrata	Sargasso Sea[a]	Feb – Apr[a]	2 – 3 months from rivers to Sargasso Sea[a]	175.4 days (55.9 mm)[a]
Myrophis punctatus	Largely unknown: SAB*, off Florida, or in Bahamas[a]	Fall[a]	Presumed to move offshore (adults usually found in estuaries)[a]	53 - 110 days (60 - 75 mm)[d]
Brevoortia tyrannus	MAB** and SAB*, mainly inner-shelf[a]	Oct – Apr[a]	From northern MAB** to SAB*, spawning en route[a]	25 – 100 days (10 - 20 mm)[b]
Mugil cephalus	MAB** and SAB*, mid- and outer-shelf and into Gulf Stream[a]	Oct – Feb[a]	Move offshore[a]	? (18 - 25 mm)[a]
Lagodon rhomboides	SAB* shelf, smallest larvae mainly on inner-shelf but some farther offshore[a]	Oct – Mar; later to south[a]	Move offshore[a]	? (10 - 15 mm)[a]
Leisotomus xanthurus	North Carolina outer-shelf near Gulf Stream front[a]	Winter – early spring[a]	Move offshore[a]	82 days (17.2 mm)[c]
Micropogonias undulatus	MAB** and SAB* shelf, likely inner- to mid-shelf based on capture[a]	Fall – early winter[a]	Move offshore, some may move south from MAB**[a]	30 - 60 days (8 - 20 mm)[e]
Paralichthys albigutta	Largely unknown: Offshore[f]	Fall – winter; later moving south[f]	?	?
Paralichthys dentatus	MAB** and SAB* shelf, moving offshore as migration progresses[a]	Oct – Mar[g]	Move offshore to deeper water, spawning en route[a]	? (8 – 15 mm)[a]
Paralichthys lethostigma	Outer-shelf, south of resident estuary[h]	Fall – winter[h]	Move offshore and southward during winter[h]	~30 days[i] ?

[a]Able and Fahay 2010, [b]Rice et al. 1999, [c]Flores-Coto and Warlen 1993, [d]Able et al. 2011, [e]Warlen 1980, [f]Stokes 1977, [g]Wenner et al. 1990, [h]Craig et al. 2015, [i]Taylor et al. 2010; *South Atlantic Bight; **Middle Atlantic Bight

Table S2c: Species' transport and known relationships to environmental variables. Hypothesized larval transport mechanisms/directions and environmental factors that have been hypothesized to affect spawning or larval transport phenology. "?" indicates an unknown aspect of a species' life history.

	Larval transport	**Suggested environmental impacts**
Anguilla rostrata	Use Gulf Stream to travel north from Sargasso Sea[a]	Increased temperature and precipitation in and around rivers and estuaries from which adults migrate are correlated with earlier spawning migrations[b]. Higher abundance of ingressing glass eels when precipitation is above average[c].
Myrophis punctatus	Use Gulf Stream to travel north from spawning grounds[h]	Water temperature in the estuary correlated with delays in first and last occurrence at Beaufort Inlet[h].
Brevoortia tyrannus	North to south along inner-shelf[d]	Temperature influences time and rate of north to south spawning migration. Reported to move coincident with the position of the 10°C isotherm and spawn most intensely at 15 – 18°C[a].
Mugil cephalus	Wind-driven drift facilitates shoreward movement[a]	Falling temperatures are involved in finalizing gonadal development. 21°C is optimal temperature for quick development in captive fish, with warmer temperatures slowing development and cooler temperatures leading to incomplete development[g].
Lagodon rhomboides	?	Temperature contributes to depth at which fish spawn after moving offshore[e]. Similarity among Sparids in low latitudes spawning in the coldest month of the year[f].
Leiostomus xanthurus	?	?
Micropogonias undulatus	?	?
Paralichthys albigutta	?	Warming temperatures relate to phenology of shoreward adult migration post-spawning[i].
Paralichthys dentatus	?	Cooling temperatures influence phenology of offshore spawning migration[a].
Paralichthys lethostigma	?	?

[a]Able and Fahay 2010, [b] Verreault et al. 2012, [c] Sullivan et al. 2006, [d]Simpson et al. 2017, [e]Darcy 1985, [f]Sheaves 2006, [g]Kuo et al. 1974, [h]Able et al. 2011, [i]Stokes 1977

Table S3: Results from linear models of species' temporal changes in larval ingress phenology. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

	Species	Trend (days $year^{-1}$) +/- S.E.	R^2	*p*	d.f.
Beginning of ingress	*A. rostrata*	-0.01 +/- 0.51	4.8×10^{-5}	0.981	12
	B. tyrannus	-1.09 +/- 0.74	0.087	0.151	23
	L. rhomboides	-0.15 +/- 0.48	0.004	0.760	24
	L. xanthurus	-0.21 +/- 0.40	0.011	0.604	25
	M. undulatus	-0.91 +/- 0.45	0.173	0.054*	20
	M. cephalus	-1.45 +/- 0.69	0.206	0.051*	17
	M. punctatus	-1.44 +/- 0.43	0.335	0.003***	22
	P. albigutta	-1.39 +/- 0.52	0.284	0.016**	18
	P. dentatus	-0.42 +/- 0.53	0.055	0.441	11
	P. lethostigma	-0.28 +/- 0.25	0.082	0.265	15
Peak ingress	*A. rostrata*	-0.03 +/- 0.54	2.5×10^{-4}	0.959	11
	B. tyrannus	-1.24 +/- 0.53	0.214	0.030**	20
	L. rhomboides	-0.29 +/- 0.54	0.012	0.601	24
	L. xanthurus	-0.36 +/- 0.31	0.054	0.254	24
	M. undulatus	0.41 +/- 0.39	0.053	0.305	20
	M. cephalus	-0.43 +/- 0.59	0.036	0.481	14
	M. punctatus	-0.93 +/- 0.51	0.134	0.079*	22
	P. albigutta	-0.16 +/- 0.86	0.003	0.854	14
	P. dentatus	-0.30 +/- 0.54	0.043	0.591	7
	P. lethostigma	-0.09 +/- 0.23	0.011	0.705	14
End of ingress	*A. rostrata*	0.11 +/- 0.40	0.006	0.786	12
	B. tyrannus	-0.63 +/- 0.37	0.119	0.108	21
	L. rhomboides	-0.29 +/- 0.52	0.013	0.578	25
	L. xanthurus	-0.03 +/- 0.37	2.8×10^{-4}	0.935	24
	M. undulatus	-0.72 +/- 0.46	0.089	0.130	25
	M. cephalus	0.89 +/- 0.49	0.148	0.085*	19
	M. punctatus	-0.66 +/- 0.39	0.105	0.099*	25
	P. albigutta	0.20 +/- 0.36	0.016	0.583	19
	P. dentatus	-0.25 +/- 0.54	0.022	0.649	10
	P. lethostigma	0.25 +/- 0.26	0.047	0.346	19
Ingress duration	*A. rostrata*	0.11 +/- 0.61	0.003	0.861	11
	B. tyrannus	0.42 +/- 0.63	0.022	0.506	20
	L. rhomboides	-0.38 +/- 0.63	0.015	0.552	24
	L. xanthurus	0.12 +/- 0.50	0.003	0.807	24
	M. undulatus	0.43 +/- 0.65	0.021	0.516	20
	M. cephalus	2.80 +/- 0.75	0.497	0.002***	14
	M. punctatus	0.94 +/- 0.55	0.118	0.100*	22
	P. albigutta	1.68 +/- 0.64	0.330	0.020**	14
	P. dentatus	0.50 +/- 0.72	0.063	0.515	7
	P. lethostigma	0.59 +/- 0.34	0.177	0.105	14

Table S4: Principal component analysis (PCA) of environmental variables. The standard deviation and percent of variation explained (% Var) by each principal component (PC) are shown. The correlation between the original variables and each PC are also shown. Correlations with an absolute value greater than or equal to 0.4 are bolded and highlighted to emphasize the variables primarily associated with each PC. The names of environmental variables are abbreviated as is explained in Table 2. Additional abbreviations: SST: sea surface temperature; OWSW: phenology of offshore winds to the southwest; STDEV: standard deviation

		PC1	PC2	PC3	PC4	PC5	PC6	PC7
Beginning on ingress	**STDEV**	1.5150	1.4746	0.8919	0.8487	0.7415	0.5042	0.4580
	% Var	32.80	31.06	11.37	10.29	7.85	3.63	3.00
	SST	**-0.400**	0.221	-0.287	**0.688**	**-0.453**	0.146	0.096
	OWSW	-0.325	-0.308	**0.663**	-0.205	**-0.551**	0.108	0.047
	OWSE	-0.228	**0.568**	0.164	-0.221	0.108	-0.239	**0.693**
	AMO	**-0.487**	-0.087	0.384	0.379	**0.590**	-0.246	-0.235
	NAO	**0.536**	0.102	0.313	0.374	-0.263	**-0.627**	-0.038
	LW	-0.230	**0.555**	-0.051	-0.335	-0.209	-0.204	**-0.663**
	Tide	0.324	**0.455**	**0.450**	0.200	0.139	**0.644**	-0.109
Peak ingress	**STDEV**	1.5000	1.3900	0.9540	0.9140	0.7520	0.5691	0.4280
	% Var	32.14	27.60	13.00	11.93	8.08	4.63	2.62
	SST	**-0.403**	0.137	**0.586**	-0.320	**-0.573**	0.202	-0.054
	OWSW	-0.323	-0.262	**-0.717**	-0.136	**-0.495**	0.050	0.214
	OWSE	-0.255	**0.615**	-0.028	-0.035	0.154	-0.283	**0.672**
	AMO	**-0.481**	-0.145	-0.064	**-0.556**	**0.461**	-0.337	-0.329
	NAO	**0.537**	0.108	-0.020	-0.364	-0.385	**-0.640**	-0.096
	LW	-0.241	**0.553**	-0.246	0.399	-0.165	-0.138	**-0.608**
	Tide	0.300	**0.443**	-0.275	**-0.526**	0.121	**0.578**	-0.114
End of ingress	**STDEV**	1.4987	1.3444	0.9311	0.9010	0.7534	0.6597	0.5149
	% Var	32.09	25.82	12.38	11.60	8.11	6.22	3.79
	SST	**-0.400**	0.218	-0.315	**0.574**	**-0.584**	0.099	-0.112
	OWSW	-0.332	-0.320	**0.656**	-0.220	**-0.461**	-0.226	-0.212
	OWSE	-0.249	**0.573**	-0.031	-0.095	0.229	**-0.707**	-0.217
	AMO	**-0.484**	-0.096	0.351	**0.457**	**0.476**	0.034	**0.443**
	NAO	**0.539**	0.116	0.221	0.289	-0.333	**-0.415**	**0.530**
	LW	-0.222	**0.549**	0.125	**-0.480**	-0.210	0.368	**0.472**
	Tide	0.307	**0.445**	**0.530**	0.299	0.110	0.360	**-0.443**
Ingress duration	**STDEV**	1.5201	1.4048	0.9728	0.8541	0.7402	0.5539	0.4307
	% Var	33.01	28.19	13.52	10.42	7.83	4.38	2.65
	SST	-0.393	0.216	0.250	**-0.717**	**0.444**	-0.153	-0.023
	OWSW	-0.302	-0.393	0.245	**0.537**	**0.620**	-0.112	0.089
	OWSE	-0.235	**0.581**	0.168	0.354	0.003	0.152	**-0.656**
	AMO	**-0.458**	-0.147	**0.541**	-0.004	**-0.491**	**0.408**	0.263
	NAO	**0.543**	0.079	0.289	-0.082	0.384	**0.676**	0.063
	LW	-0.236	**0.564**	-0.353	0.207	0.139	0.160	**0.644**
	Tide	0.371	0.339	**0.591**	0.148	-0.102	**-0.541**	0.272

Table S5: Results of the best fitting linear models of species' larval ingress phenology as a response of the environment. Models were selected by reverse-stepwise AIC comparisons. The overall model fit is shown alongside the effect sizes and significance levels of the environmental factors included in each model. *P* values refer to significance of univariate relationship between environmental variables and phenology. Species abbreviations are: A. ros = *Anguilla rostrata*, B. tyr = *Brevoortia tyrannus*, L. rho = *Lagodon rhomboides*, L. xan = *Leiostomus xanthurus*, M. und = *Micropogonias undulatus*, M. cep = *Mugil cephalus*, M. pun = *Myrophis punctatus*, P. alb = *Paralichthys albigutta*, P. den = *Paralichthys dentatus*, P. let = *Paralichthys lethostigma*.

Phase	Model	R^2	ΔAIC null	d.f.	Terms*	Trend +/- S.E.	*p*
Beginning of ingress	A. ros ~ SST + OWSW + NAO	0.362	0.3	10	SST	-6.99 +/- 4.35	0.140
					OWSW	0.61 +/- 0.36	0.117
					NAO	-6.31 +/- 4.62	0.203
	B. tyr ~ SST + LW	0.328	5.9	22	SST	-10.39 +/- 6.26	0.111
					LW	18.94 +/- 6.53	0.008
	L. rho ~ SST + NAO	0.384	8.6	23	SST	15.17 +/- 4.18	0.001
					NAO	-9.33 +/- 4.38	0.044
	L. xan ~ LW + NAO	0.202	2.1	24	LW	7.56 +/- 3.54	0.043
					NAO	-5.72 +/- 4.16	0.181
	M. und ~ 1	0	0	21			
	M. cep ~ SST + AMO	0.196	0.1	16	SST	-9.59 +/- 6.98	0.189
					AMO	-68.12 +/- 39.04	0.100
	M. pun ~ LW + Tide	0.162	0.3	21	LW	8.23 +/- 6.01	0.185
					Tide	-1.31 +/- 0.79	0.111
	P. alb ~ AMO + NAO	0.421	6.9	17	AMO	-87.65 +/- 25.21	0.003
					NAO	-7.62 +/- 5.16	0.158
	P. den ~ LW + NAO	0.577	7.2	10	LW	14.85 +/- 4.04	0.004
					NAO	-7.84 +/- 4.23	0.094
	P. let ~ SST + OWSW	0.328	2.8	14	SST	-4.89 +/- 2.25	0.047
					OWSW	0.17 +/- 0.13	0.205
Peak ingress	A. ros ~ SST + OWSW + LW + Tide	0.873	18.8	8	SST	-9.68 +/- 2.11	0.002
					OWSW	0.80 +/- 0.18	0.002
					LW	10.65 +/- 2.75	0.005
					Tide	1.35 +/- 0.53	0.035
	B. tyr ~ SST + OWSW + LW + NAO + Tide	0.439	2.7	16	SST	-8.36 +/- 5.68	0.160
					OWSW	0.43 +/- 0.32	0.204
					LW	21.47 +/- 8.12	0.018
					NAO	-16.46 +/- 7.41	0.041
					Tide	-3.39 +/- 1.74	0.067
	L. rho ~ LW	0.146	2.1	24	LW	11.22 +/- 5.53	0.054
	L. xan ~ NAO	0.100	0.7	24	NAO	-5.44 +/- 3.34	0.116
	M. und ~ SST	0.341	7.2	20	SST	-13.81 +/- 4.29	0.004
	M. cep ~ SST + OWSW + AMO	0.487	4.7	12	SST	-10.07 +/- 4.40	0.041
					OWSW	0.51 +/- 0.23	0.046
					AMO	-48.94 +/- 29.19	0.120
	M.pun ~ 1	0	1	23			

	Model	R^2	ΔAIC null	df	Terms*	Trend +/- S.E.	*p*
Peak cont.	P. alb ~ SST + AMO + NAO	0.554	6.9	12	SST	-17.22 +/- 8.16	0.056
					AMO	-100.50 +/- 34.70	0.013
					NAO	-16.55 +/- 7.68	0.052
	P. den ~ LW	0.494	4.1	7	LW	13.03 +/- 4.98	0.035
	P. let ~ 1	0	1	15			
End of ingress	A. ros ~ SST	0.221	1.5	12	SST	-5.88 +/- 3.18	0.090
	B. tyr ~ SST + AMO	0.265	3.1	20	SST	-8.90 +/- 3.80	0.030
					AMO	-37.09 +/- 18.98	0.065
	L. rho ~ OWSE + AMO	0.185	1.5	24	OWSE	0.17 +/- 0.08	0.054
					AMO	36.69 +/- 24.98	0.155
	L. xan ~ SST + NAO	0.336	6.7	23	SST	-7.57 +/- 3.18	0.026
					NAO	-5.21 +/- 3.61	0.162
	M. und ~ AMO + NAO	0.182	1.4	24	AMO	-35.71 +/- 24.03	0.150
					NAO	-11.39 +/- 5.29	0.042
	M. cep ~ SST + LW + NAO + Tide	0.380	2.0	16	SST	-7.50 +/- 4.63	0.125
					LW	-13.50 +/- 7.55	0.093
					NAO	11.23 +/- 7.10	0.133
					Tide	3.10 +/- 1.39	0.041
	M. pun ~ AMO	0.0894	0.5	25	AMO	-31.2 +/- 19.9	0.130
	P. alb ~ SST	0.279	4.9	19	SST	-9.86 +/- 3.63	0.014
	P. den ~ SST + OWSE + AMO + NAO	0.903	20.0	7	SST	-27.38 +/- 4.10	<0.001
					OWSE	0.26 +/- 0.04	<0.001
					AMO	-49.85 +/- 11.06	0.003
					NAO	10.88 +/- 3.15	0.012
	P. let ~ SST + OWSE + AMO + Tide	0.688	16.4	16	SST	-7.30 +/- 1.80	<0.001
					OWSE	0.08 +/- 0.03	0.013
					AMO	-10.89 +/- 8.57	0.222
					Tide	1.32 +/- 0.42	0.006
Ingress duration	A. ros ~ 1	0	0	12			
	B. tyr ~ 1	0	0	21			
	L. rho ~ SST + OWSE	0.352	7.3	23	SST	-18.46 +/- 5.73	0.004
					OWSE	0.23 +/- 0.09	0.023
	L. xan ~ SST	0.181	3.2	24	SST	-10.14 +/- 4.40	0.030
	M. und ~ 1	0	0	21			
	M. cep ~ OWSE + NAO + Tide	0.700	13.3	12	OWSE	-0.34 +/- 0.13	0.023
					NAO	30.68 +/- 8.84	0.005
					Tide	2.24 +/- 0.57	0.002
	M. pun ~ 1	0	0	23			
	P. alb ~ AMO	0.268	3.0	14	AMO	77.34 +/- 34.19	0.040
	P. den ~ 1	0	0	8			
	P. let ~ OWSW + OWSE + Tide	0.469	4.1	12	OWSW	-0.27 +/- 0.18	0.165
					OWSE	0.07 +/- 0.05	0.200
					Tide	0.29 +/- 0.22	0.222

*AMO units: days AMO^{-1}; LW = strength of southward winds local to the inlet, units: days $(m\ s^{-1})^{-1}$; NAO units: day NAO^{-1}; OWSE = phenology of offshore winds to the southeast, units: days $(wind\ day)^{-1}$; OWSW = phenology of offshore winds to the southwest, units: days $(wind\ day)^{-1}$; SST units: days $°C^{-1}$; Tide units: days m^{-1}

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