

Abrupt shifts in the Gironde fish community: an indicator of ecological changes in an estuarine ecosystem

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Marine Ecology Progress Series 549: 137–151 (2016)

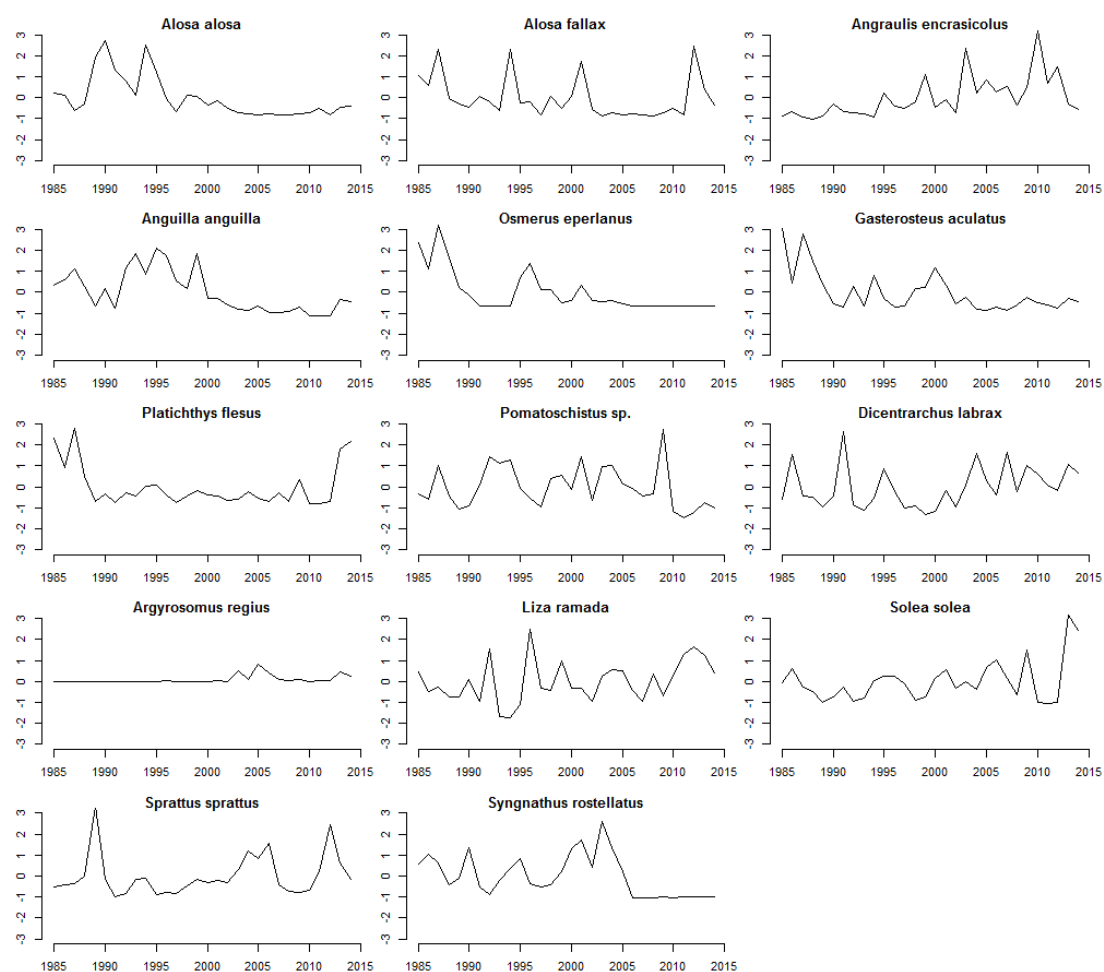


Figure S1: Plot of fish normed time series.

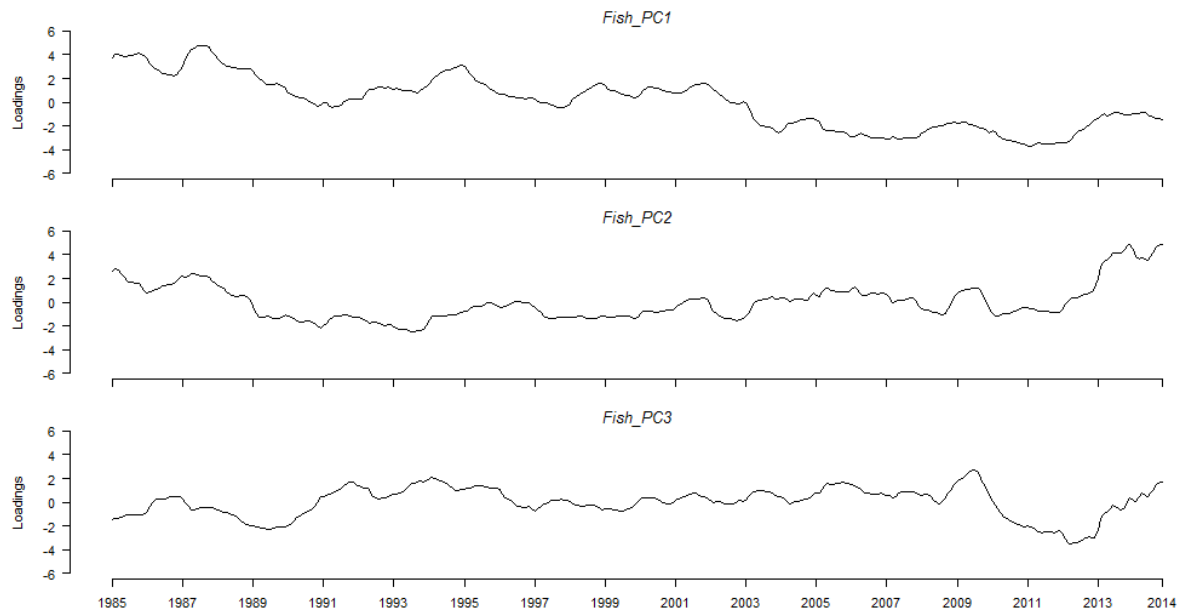


Figure S2: Plot of the three first principal components.

Table S1: Results of GLMM approach on each species.

Species	Sig.Var	Slope	Std.Error	tvalue	p-value	AIC
<i>A. alosa</i>	Flow : Period 1	-0.179	0.046	-3.901	0.000	109.12
	Flow : Period 2	-0.257	0.030	-8.462	0.000	
	Flow : Period 3	0.070	0.050	1.386	0.166	
	Period 1 : Twater	-0.195	0.042	-4.614	0.000	
	Period 2 : Twater	0.200	0.033	6.025	0.000	
	Period 3 : Twater	0.005	0.038	0.131	0.896	
<i>A. fallax</i>	Period 1	0.689	0.211	3.270	0.002	45.29
	Period 2	-0.667	0.232	-2.873	0.004	
	Period 3	-0.942	0.238	-3.966	0.000	
	Flow	-0.118	0.026	-4.474	0.000	
	SPM : Period 1	0.159	0.053	2.979	0.002	
	SPM : Period 2	-0.055	0.026	-2.133	0.032	
	SPM : Period 3	-0.175	0.025	-6.991	0.000	
	Period 1 : Precip	0.148	0.045	3.248	0.002	
	Period 2 : Precip	-0.002	0.030	-0.078	0.938	
	Period 3 : Precip	0.173	0.045	3.863	0.000	
<i>E. encrasicolus</i>	Salinity	0.098	0.009	10.449	0.000	-779.49
	ind_NHT	-0.091	0.028	-3.223	0.002	
	Period 2	0.041	0.075	0.549	0.584	
	Period 3	0.251	0.077	3.245	0.002	
	Tair	0.042	0.008	5.088	0.000	
	Twater	-0.033	0.007	-4.554	0.000	
	Period 1 : AMO	-0.069	0.077	-0.894	0.372	
	Period 2 : AMO	0.288	0.045	6.462	0.000	
	Period 3 : AMO	0.125	0.052	2.395	0.016	

Species	Sig.Var	Slope	Std.Error	tvalue	p-value	AIC
<i>A.anguilla</i>	Tair	-0.093	0.013	-7.191	0.000	-347.33
	Precip : Period 1	0.128	0.022	5.781	0.000	
	Precip : Period 2	-0.116	0.015	-7.498	0.000	
	Precip : Period 3	-0.011	0.026	-0.410	0.682	
<i>O.eperlanus</i>	Period 1	1.308	0.149	8.754	0.000	-472.55
	Period 2	-1.395	0.164	-8.514	0.000	
	Period 3	-1.668	0.166	-10.023	0.000	
	Precip	-0.067	0.014	-4.995	0.000	
	Flow : Period 1	0.149	0.020	7.593	0.000	
	Flow : Period 2	-0.063	0.016	-3.820	0.000	
	Flow : Period 3	0.019	0.022	0.845	0.398	
<i>G.aculeatus</i>	Period 1	-0.431	0.214	-2.018	0.044	-533.67
	Period 2	0.431	0.220	1.961	0.050	
	Period 3	0.130	0.221	0.589	0.556	
	Salinity : Period 1	-0.905	0.125	-7.258	0.000	
	Salinity : Period 2	-0.058	0.018	-3.216	0.002	
	Salinity : Period 3	-0.077	0.026	-2.913	0.004	
	Period 1 : Flow	-0.253	0.053	-4.732	0.000	
	Period 2 : Flow	0.047	0.012	3.810	0.000	
Period 3 : Flow	0.000	0.024	-0.015	0.988		
<i>P.flesus</i>	Twater : Period 1	-0.006	0.017	-0.346	0.730	-676.21
	Twater : Period 2	-0.010	0.013	-0.728	0.466	
	Twater : Period 3	0.074	0.020	3.658	0.000	
	Period 1 : Wind_F	-0.028	0.042	-0.673	0.500	
	Period 2 : Wind_F	-0.051	0.037	-1.359	0.174	
	Period 3 : Wind_F	-0.054	0.037	-1.454	0.146	
	Period 1 : SPM	0.201	0.024	8.472	0.000	
	Period 2 : SPM	0.024	0.010	2.410	0.016	
	Period 3 : SPM	-0.049	0.011	-4.461	0.000	
	Period 1 : Salinity	-0.302	0.037	-8.124	0.000	
	Period 2 : Salinity	-0.004	0.017	-0.221	0.824	
	Period 3 : Salinity	0.017	0.022	0.778	0.436	
<i>Pomatochistus sp.</i>	Tair	-0.165	0.019	-8.505	0.000	-136.77
	Period 1	-0.476	0.351	-1.354	0.176	
	Period 2	0.671	0.360	1.862	0.062	
	Period 3	0.292	0.362	0.806	0.420	
	SPM : Period 1	-0.003	0.046	-0.072	0.942	
	SPM : Period 2	0.095	0.024	3.950	0.000	
	SPM : Period 3	-0.121	0.023	-5.364	0.000	
	Period 1 : Precip	0.259	0.051	5.103	0.000	
	Period 2 : Precip	0.022	0.029	0.755	0.450	
	Period 3 : Precip	-0.125	0.050	-2.492	0.012	
	Period 1 : Salinity	-0.171	0.210	-0.812	0.418	
	Period 2 : Salinity	0.048	0.033	1.450	0.148	
	Period 3 : Salinity	-0.304	0.046	-6.565	0.000	
	Period 1 : Flow	-0.237	0.096	-2.465	0.014	
	Period 2 : Flow	0.072	0.029	2.500	0.012	
Period 3 : Flow	-0.213	0.054	-3.932	0.000		

Species	Sig.Var	Slope	Std.Error	tvalue	p-value	AIC
<i>D.labrax</i>	Period 1	1.885	0.440	4.280	0.000	-19.85
	Period 2	-2.194	0.451	-4.868	0.000	
	Period 3	-1.435	0.455	-3.152	0.002	
	SPM	0.075	0.019	3.990	0.000	
	Flow : Period 1	0.516	0.117	4.405	0.000	
	Flow : Period 2	-0.265	0.035	-7.594	0.000	
	Flow : Period 3	0.167	0.069	2.423	0.016	
	Period 1 : Precip	0.101	0.055	1.855	0.064	
	Period 2 : Precip	0.155	0.034	4.614	0.000	
	Period 3 : Precip	-0.181	0.061	-2.970	0.002	
	Period 1 : Salinity	1.305	0.261	4.997	0.000	
	Period 2 : Salinity	0.159	0.038	4.203	0.000	
	Period 3 : Salinity	-0.172	0.057	-3.038	0.002	
	Period 1 : AMO	-0.076	0.249	-0.304	0.762	
	Period 2 : AMO	0.623	0.132	4.711	0.000	
	Period 3 : AMO	-0.060	0.149	-0.406	0.684	
<i>A.regius</i>	Wind F	0.127	0.078	1.632	0.010	-227.07
<i>L.ramada</i>	Period 1	-0.696	0.300	-2.318	0.020	4.37
	Period 2	0.463	0.315	1.467	0.142	
	Period 3	0.891	0.321	2.776	0.006	
	Tair	-0.091	0.026	-3.466	0.000	
	Twater : Period 1	-0.174	0.050	-3.455	0.000	
	Twater : Period 2	0.023	0.039	0.587	0.558	
	Twater : Period 3	-0.087	0.036	-2.414	0.016	
	Period 1 : SPM	0.063	0.069	0.909	0.364	
	Period 2 : SPM	-0.215	0.030	-7.092	0.000	
	Period 3 : SPM	0.102	0.028	3.575	0.000	
	Period 1 : Salinity	-0.292	0.117	-2.489	0.012	
	Period 2 : Salinity	0.312	0.049	6.374	0.000	
	Period 3 : Salinity	-0.053	0.049	-1.081	0.280	
	Period 1 : AMO	0.005	0.255	0.020	0.984	
	Period 2 : AMO	-0.492	0.136	-3.605	0.000	
	Period 3 : AMO	0.259	0.147	1.765	0.078	
<i>S.solea</i>	nbn_NW	-0.085	0.049	-1.746	0.080	-550.03
	Twater : Period 1	0.066	0.015	4.404	0.000	
	Twater : Period 2	-0.009	0.012	-0.704	0.482	
	Twater : Period 3	0.165	0.028	5.928	0.000	
	Period 1 : Tair	-0.097	0.031	-3.162	0.002	
	Period 2 : Tair	0.035	0.016	2.215	0.026	
	Period 3 : Tair	-0.095	0.017	-5.669	0.000	
<i>S.sprattus</i>	Salinity	-0.055	0.029	-1.914	0.056	-76.89
	Flow : Period 1	-0.265	0.037	-7.118	0.000	
	Flow : Period 2	-0.090	0.024	-3.703	0.000	
	Flow : Period 3	-0.030	0.042	-0.726	0.468	

Species	Sig.Var	Slope	Std.Error	tvalue	p-value	AIC
<i>S. rostellatus</i>	Flow	-0.071	0.010	-7.303	0.000	-451.79
	Twater : Period 1	-0.148	0.017	-8.684	0.000	
	Twater : Period 2	0.018	0.014	1.281	0.200	
	Twater : Period 3	0.008	0.019	0.427	0.670	
	Period 1 : Tair	0.136	0.037	3.653	0.000	
	Period 2 : Tair	0.120	0.018	6.561	0.000	
	Period 3 : Tair	-0.057	0.019	-3.063	0.002	