Fig. S1: Comparison of the average sea surface salinity values in the NW Iberia during the anchovy spawning (April-July) between 1999-2009 (top) and 2010-2020 (middle). The

difference between the 2010-2020 mean and the 1999-2009 mean is also presented (bottom). Blue (red) pixels indicate decreases (increases) in salinity.
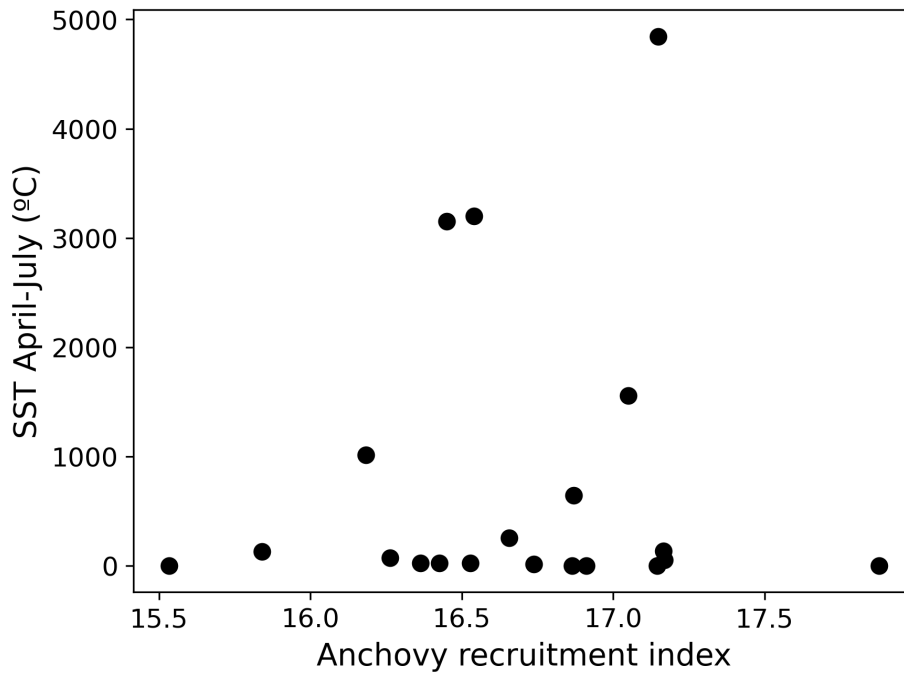

Fig. S2: Relationship between the mean sea surface temperature (SST; ºC) during the spawning season (April-July) and the anchovy recruitment index in NW Iberia.
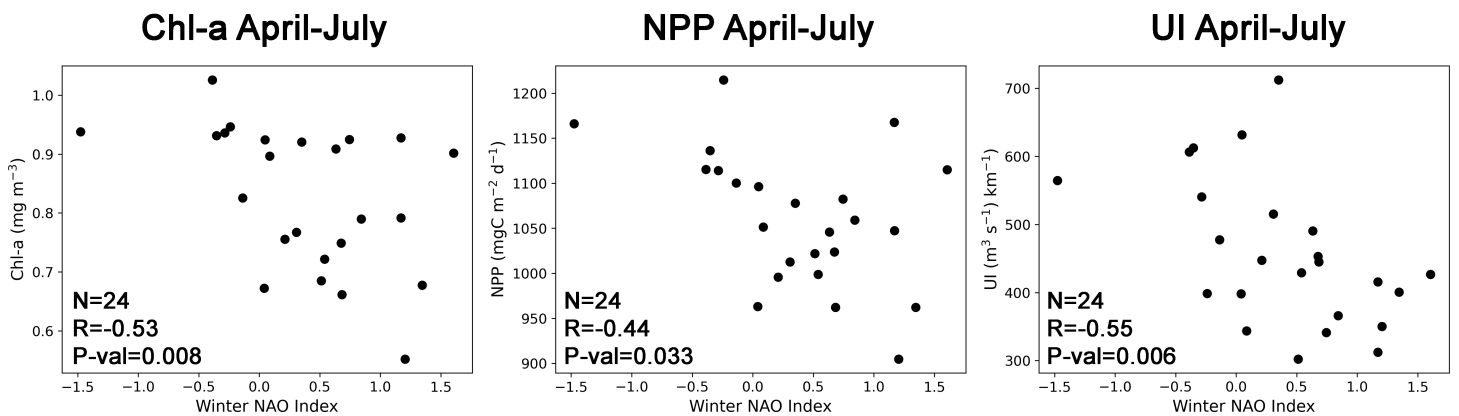

Fig. S3: Relationship between the Winter NAO index (mean NAO index during December-March) for the winter preceding the spawning season and the mean chlorophyll-a (Chl-*a*; mg m^{-3}), net primary production (NPP; mgC m^{-2} d^{-1}) and upwelling index (UI; m^3 s^{-1} km^{-1}) during the spawning period (April-July).
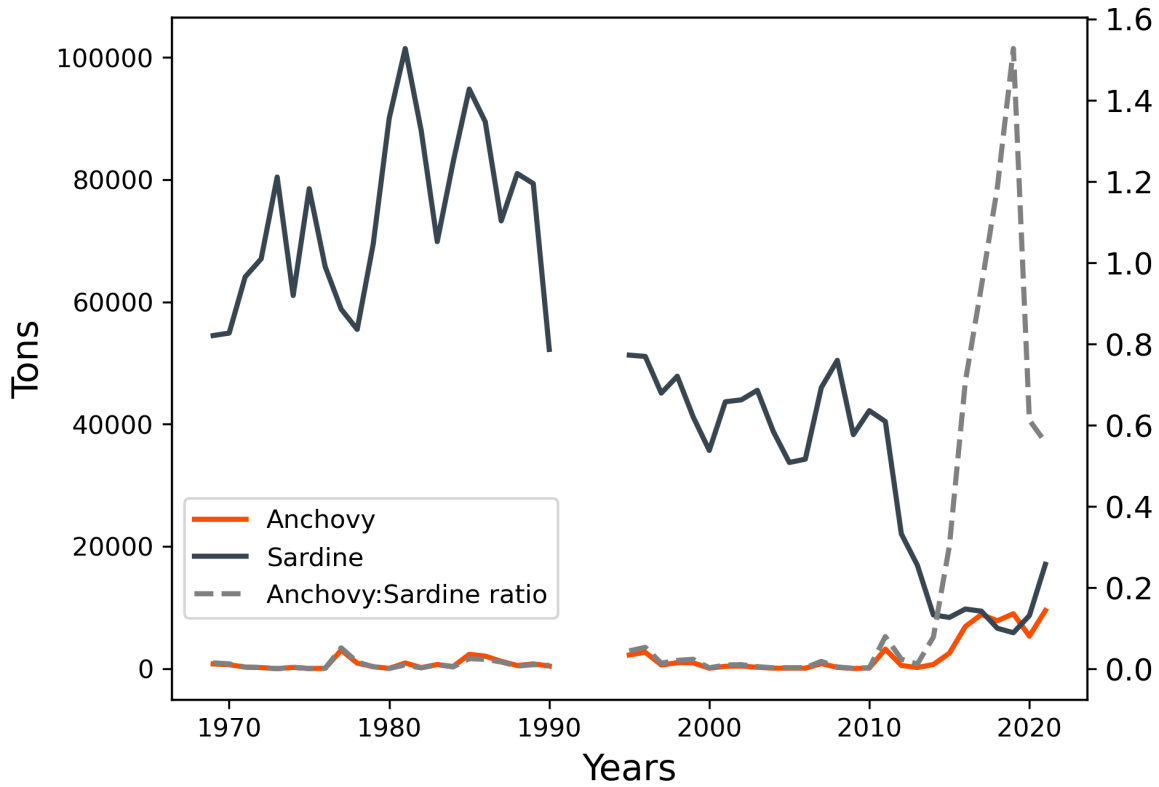
Fig. S4: Total landings of European anchovy (orange line) and European sardine (black line) in the Western coast of Portugal from 1969 to 2021. The anchovy-to-sardine ratio (grey dashed line) is also plotted in the secondary axis.
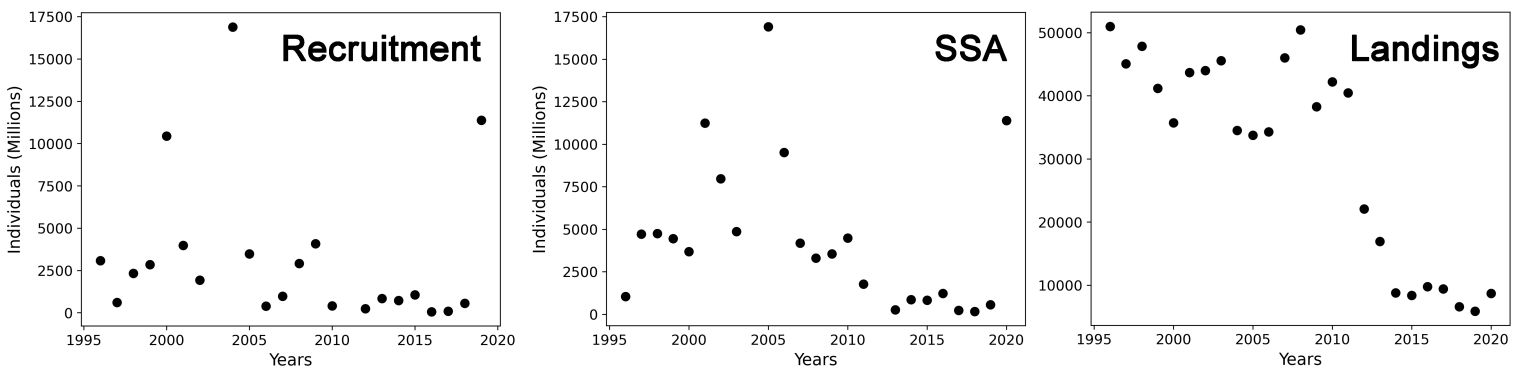

Fig. S5: Yearly estimates of sardine recruitment strength, spawning stock abundance (SSA) and total landings in western Portugal during the period 1996-2021.

Table S1: Mean, median, minimum, maximum, standard deviation and percentiles 15, 40, 60, and 85 for each of the environmental variables used in optimal windows analysis: net primary production (NPP; mgC m^{-3} d^{-1}), sea surface temperature (SST; ºC), sea surface salinity (SSS; unitless), upwelling index (UI; m^3 s^{-1} km^{-1}), and total precipitation (mm). Note that the descriptive statistics were calculated using the 8-day weeks means used in the optimal windows analysis.

	NPP (mgC m^{-3} d^{-1})	SST (ºC)	SSS (unitless)	UI (m^3 s^{-1} km^{-1})	Total Precipitation (mm)
Mean	1056.87	16.81	35.19	459.98	11.24
Median	1016.74	16.89	35.24	443.81	3.32
Min	630.31	13.46	33.92	-914.78	0.0
Max	2174.40	20.77	35.85	2570.08	122.40
Standard Dev	226.30	1.68	0.33	456.63	17.75
P15	845.79	14.87	34.89	36.10	0.22
P40	977.43	16.28	35.16	330.91	1.85
P60	1082.18	17.45	35.31	560.73	6.28
P85	1284.76	18.62	35.51	917.68	23.07