How does climate change affect a fishable resource? The case of the royal sea cucumber (*Parastichopus regalis*) in the central Mediterranean Sea

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Supplementary Figure 1. Length-frequency distribution of *Parastichopus regalis* obtained by means of 113 morphometric measurements of specimens caught during the MEDITS survey carried out in 2018. TL, total length expressed in centimetres. Dotted red lines indicate the mean length at age in *Isostichopus fuscus* calculated according to the growth parameters (L ∞ =33.74 cm; K=0.27 year⁻¹ and t0=0) estimated by Glockner-Fegatti et al. (2016). Dotted black lines indicate the mean length at age in *I. fuscus* calculated according to the growth parameters (L ∞ =42.5 cm; K=0.21 year⁻¹ and t0=0) estimated by Ramírez-González et al. (2020).



Supplementary Figure 2. Trends of all environmental predictors at sea surface level between June and September in the study area (GSA16) between 2008 and 2010. Black points represent the monthly average of the follow variables at sea surface level: SSChl (Chlorophyll, mg/m³), SSNH4 (Ammonium, mmol/m³), SSO2 (Dissolved oxygen, mmol/m³), SSpH (pH, reported in total scale), SSPO4 (Phosphate, mmol/m³), SSS (Salinity, psu) and SST (temperature, °C). The black dotted lines are depicted in the case of a non-linear relationship (p>0.05) between the variable and years whereas, the black filled lines indicate a significant linear relationship (p<0.05). The grey areas indicate the 95% confidence interval.



Supplementary Figure 3. Trends of all environmental predictors at 100 meters' depth in the continental shelf of study area and fishing effort of bottom trawling with LOA<24 operating in the GSA 16 between 2008 and 2010. For the environmental variables black points represent the monthly average: 100m-NH4 (Ammonium, mmol/m3), 100m-O2 (Dissolved oxygen, mmol/m3), 100m-pH (pH, reported in total scale), 100m-PO4 (Phosphate, mmol/m3), 100m-S (Salinity, psu) and 100m-T (temperature, °C). For the fishing effort black point represent the yearly average expressed in DayAtSea*GT. The black dotted lines are depicted in the case of a non-linear relationship (p>0.05) between the variable and years whereas, the black filled lines indicate a significant linear relationship (p<0.05). The grey areas indicate the 95% confidence interval.



Supplemtary Figure 4. Correlogram plot depicting the relationships between the logarithmic of the *P. regalis* DI and all the normalized predictor variables (environmental and anthropic). Numbers indicate the Spearman's rho (ρ) coefficients between variables, red (negative) and blue (positive) colour scales indicate the sign and magnitude of the correlation. Only significant relationships (p<0.05) were represented in the plot.