

**Supplementary material 1. Projected relative changes of total biomass and total catch**

Table S1. Projected relative changes in total biomass for the different fishing scenarios and for the RCP8.5 climate change scenario (2021-2050 and 2071-2100) scenarios. Changes (in %) were compared to the current situation (fishing and climate conditions in 2006-2013). F corresponds to fishing mortality, Lc to length at recruitment in the catch, Lmat to Lc=length at maturity, Lopt to Lc=optimal length (sensus Froese, Winker, Gascuel, Sumaila, & Pauly, 2016) and Sq to Status quo.

	Fishing scenarios																			
	F +10%	F +20%	F +30%	F +40%	Sq	F - 10%	F - 20%	F - 30%	F - 40%	F - 50%	F - 75%	Lma t	Lop t	Lc +10%	Lc +20%	Lc +30%	Lc +40%	Lc +50%	Lc +75%	
Time period	Baseline (2006-2013)	0	0	1	0	-	1	2	2	3	5	19	17	9	1	1	0	-1	1	5
	2021 – 2050 (RCP8.5)	4	4	5	4	5	4	6	7	7	9	21	20	13	5	5	6	5	4	8
	2071 – 2100 (RCP8.5)	21	21	21	20	22	22	24	25	27	28	38	38	31	23	24	24	23	27	26

Table S2. Projected relative changes in total catch for the different fishing scenarios and for the RCP8.5 climate change scenario (2021-2050 and 2071-2100) scenarios. Changes (in %) were compared to the current situation (fishing and climate conditions in 2006-2013). F corresponds to fishing mortality, Lc to length at recruitment in the catch, Lmat to Lc=length at maturity, Lopt to Lc=optimal length (sensus Froese, Winker, Gascuel, Sumaila, & Pauly, 2016) and Sq to Status quo.

	Fishing scenarios																			
	F +10%	F +20%	F +30%	F +40%	Sq	F -10%	F -20%	F -30%	F -40%	F -50%	F -75%	Lmat	Lopt	Lc +10%	Lc +20%	Lc +30%	Lc +40%	Lc +50%	Lc +75%	
Time period	Baseline (2006-2013)	3	2	4	8	-	1	1	2	6	2	-17	-57	-55	-13	-23	-32	-42	-48	-62
	2021 – 2050 (RCP8.5)	4	8	8	10	0	0	-1	1	2	2	-18	-56	-54	-12	-22	-30	-40	-50	-64
	2071 – 2100 (RCP8.5)	11	16	15	19	7	6	5	5	7	5	-13	-57	-53	-10	-18	-27	-37	-40	-60

### Supplementary material 2. Residuals of linear regressions applied to size spectra

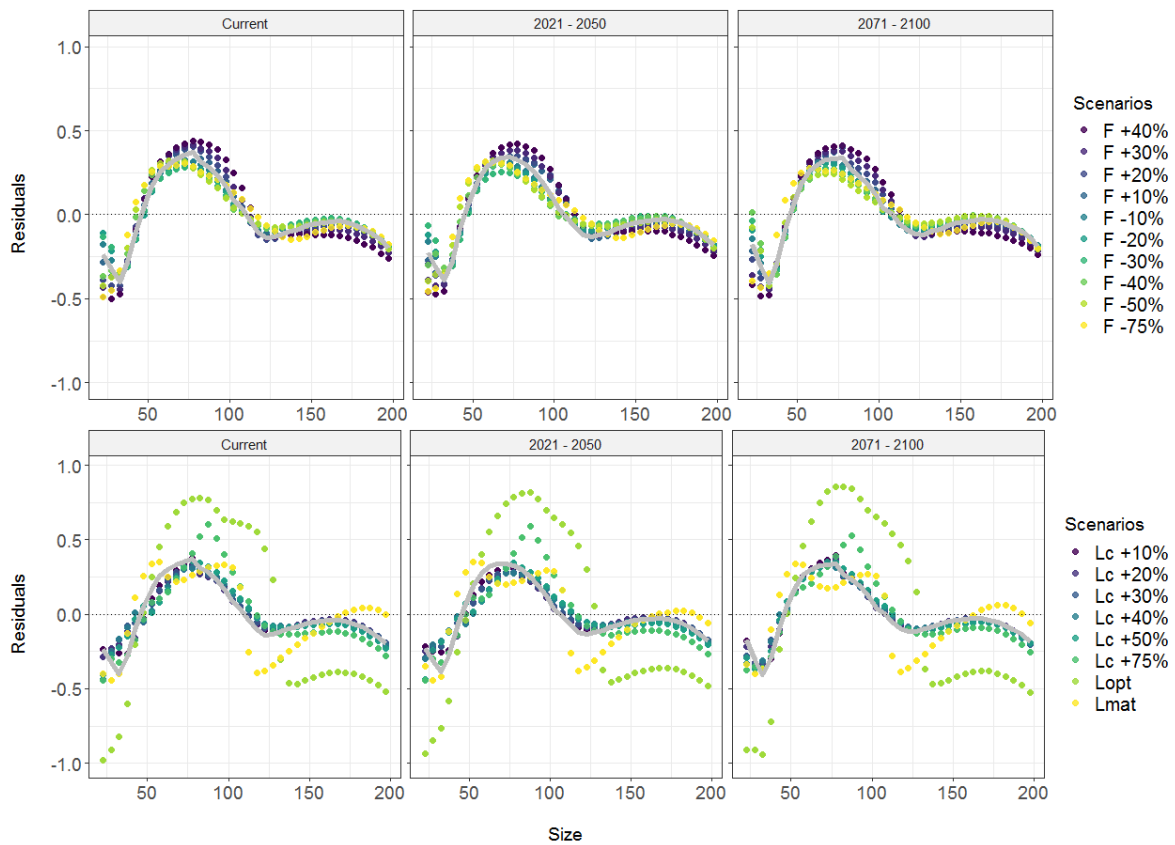


Figure S1. Residuals of the linear regressions applied to the community size spectra resulting from different fishing and climate change scenarios (2021-2050 and 2071-2100). Current period corresponds to fishing and climate conditions in 2006-2013 (grey line).

### Supplementary material 3. Principal Component Analysis

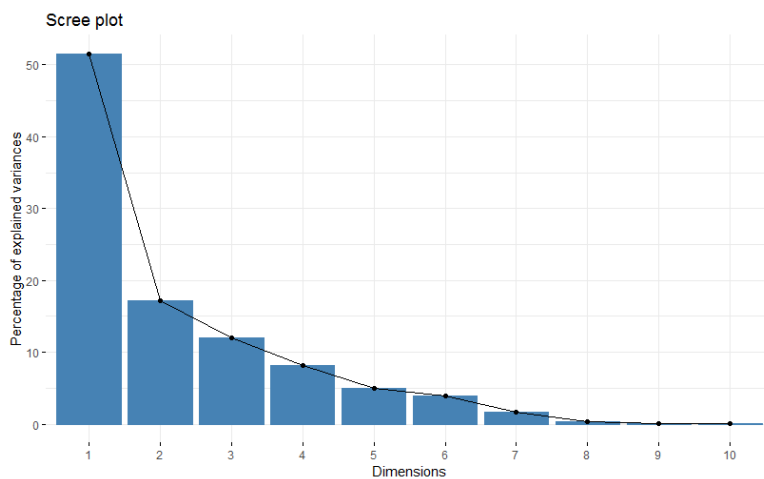


Figure S2. Eigenvalues of PCA performed on fishing scenarios (individuals) and ecological indicators (variables)

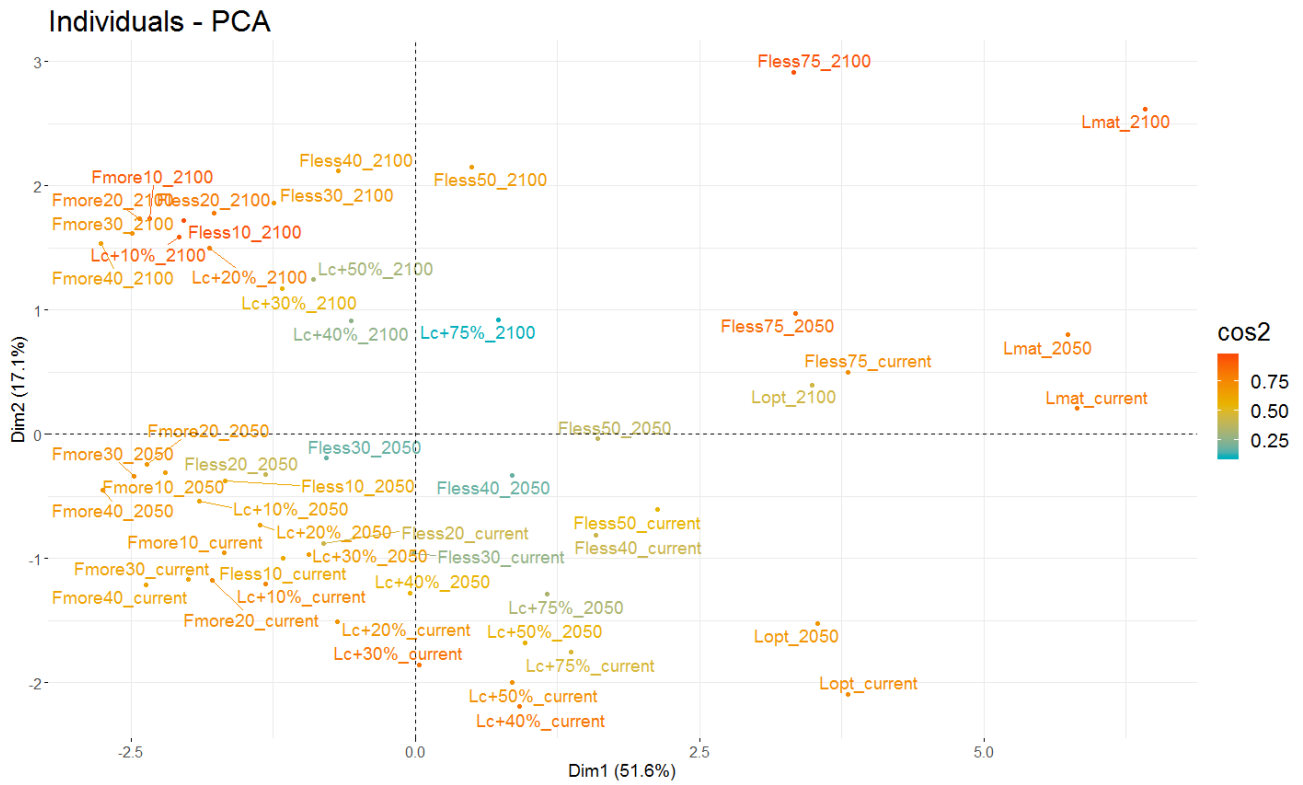


Figure S3. Graph of individuals (i.e. fishing scenarios). Cos2 corresponds to the quality of representation of individuals in the PCA.

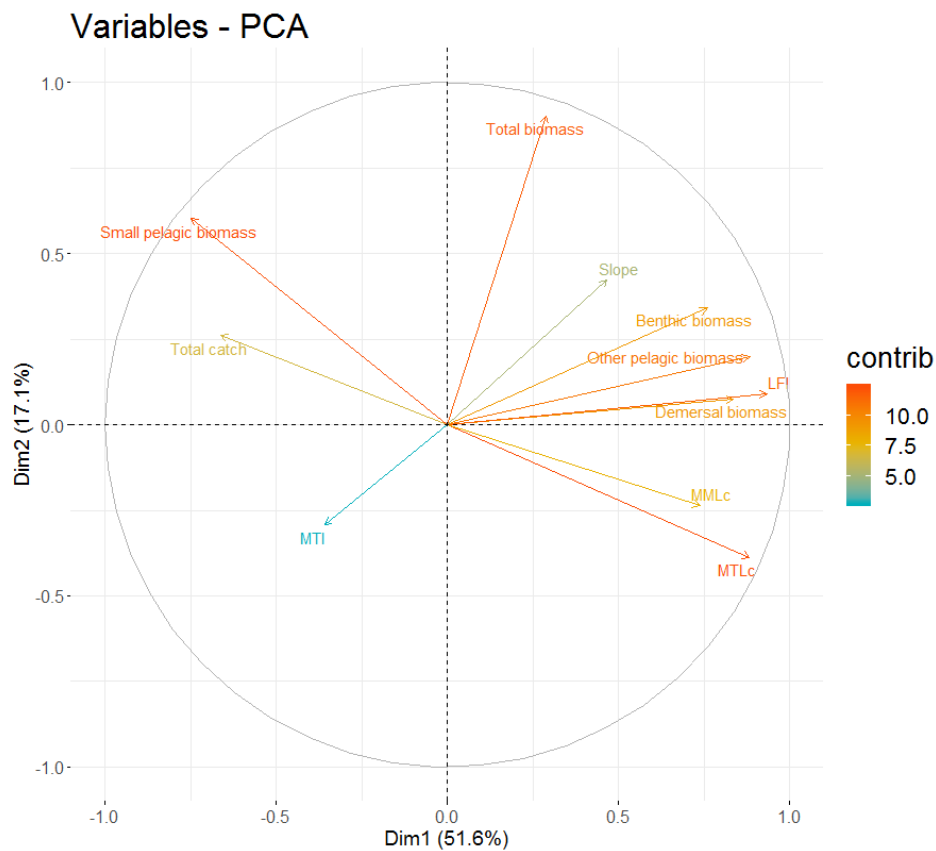


Figure S4. Variable correlation plot and relative contribution of variables in PCA (i.e. ecological indicators)

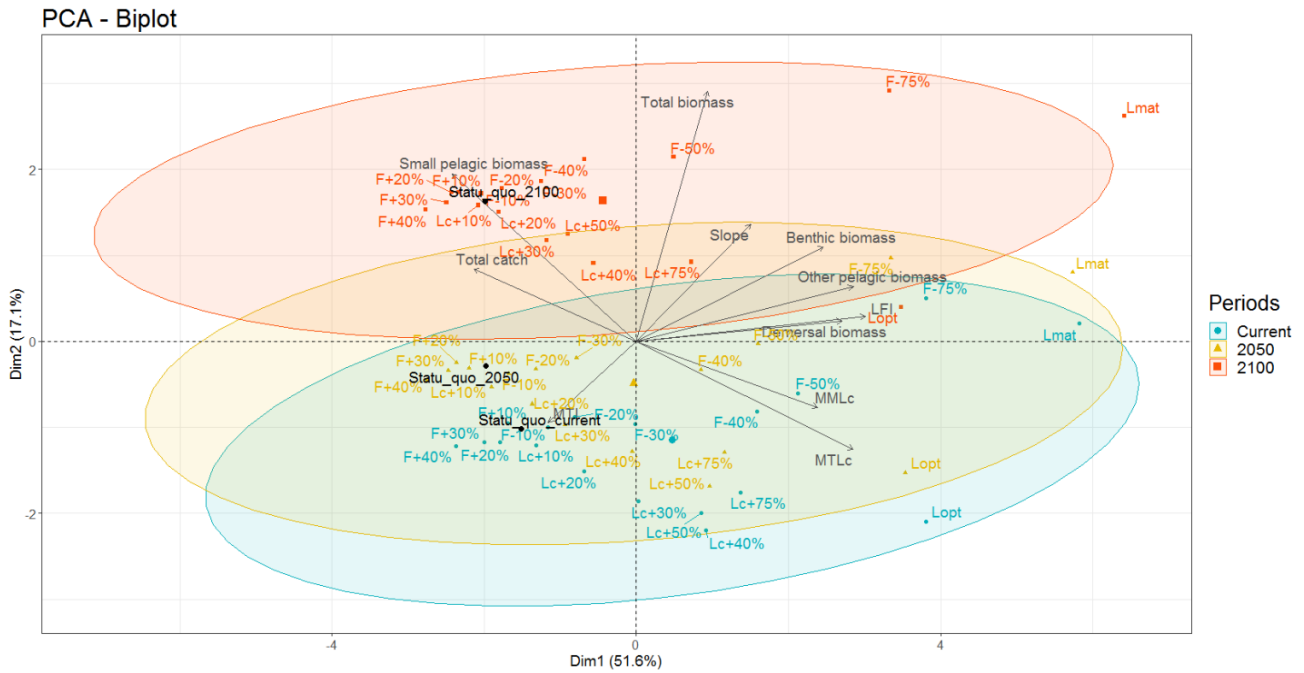


Figure S5. Principal Components Analysis (PCA) of the 54 scenarios (18 fishing scenarios per time period: current, 2021-2050 and 2071-2100). Ellipses represents concentration ellipses in normal probability. The fisheries "statu quo" scenarios for each time period (statu quo current, statu quo 2050 and statu quo 2100) are considered as supplementary individuals (i.e. they do not contribute to the PCA construction).