

# Looking for a simple assessment tool for a complex task: short-term evaluation of changes in fisheries management measures in the Pomo Pits area (Adriatic Sea)

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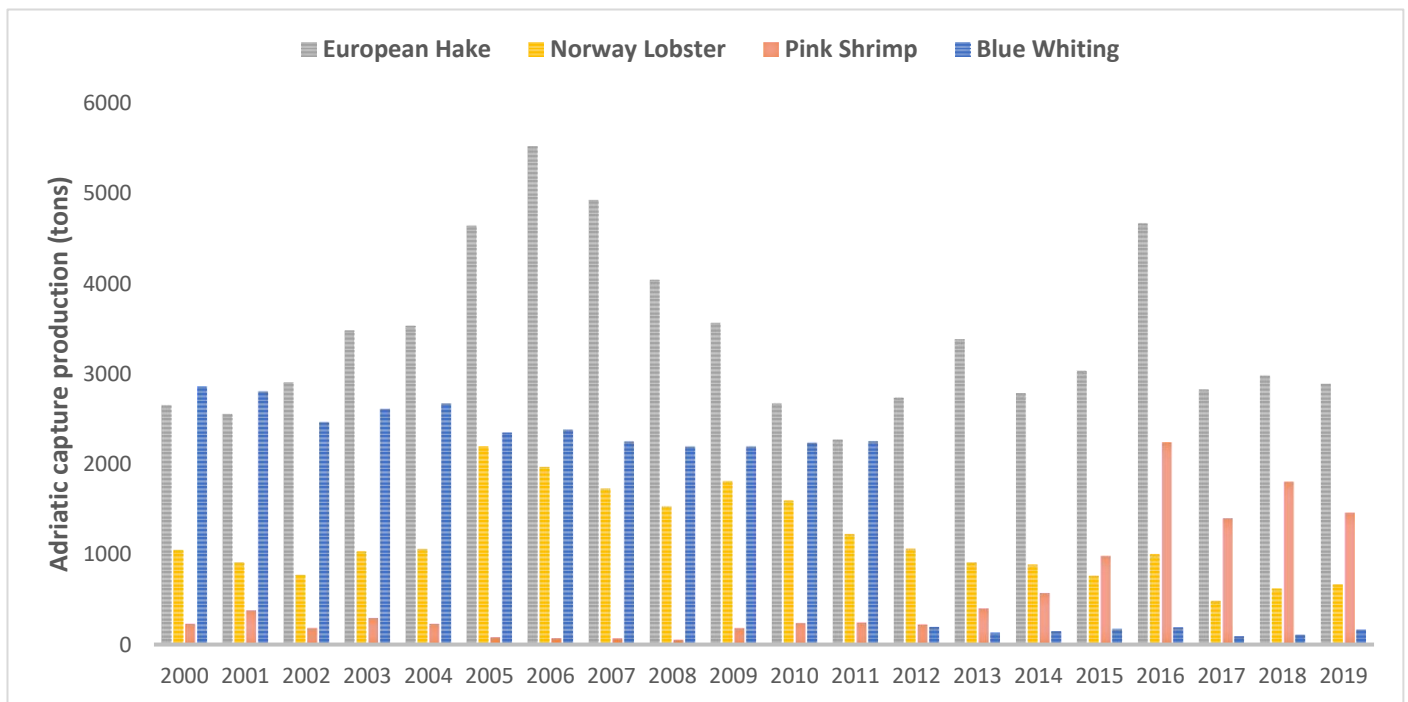
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## Supplementary materials

**Table S1.** Acronyms table. References in square brackets referred to the main text.

Acronym	Explanation	Definition
EFH	Essential Fish Habitats	areas in which fish spawning, breeding, feeding or growth to maturity occur [7]
MPA	Marine Protected Area	a classic spatial management tool to protect marine biodiversity by limiting the effects of multiple human activities [6]
FRA	Fishery Protected Area	areas in which restrictions on fishing effort and/or fishery ban have been implemented specifically to manage some important resource and/or protect EFHs [11]
NTZ	No-Take Zones	a type of MPA where all potentially damaging activities are prohibited [15]
PPA	Partially Protected Areas	a type of MPA aiming to find a compromise between habitat preservation and human interests [16]



**Figure S1.** FAO-GFCM Adriatic Capture production (in tons) from 2000 to 2020 for European Hake (grey), Norway lobster (yellow), Pink Shrimp (red), and Blue Whiting (blue).

**Table S2.** Parametric one-way ANOVA for biomass ( $\text{kg}/\text{km}^2$ ) and density ( $\text{N}/\text{km}^2$ ) indices of *Nephrops norvegicus* by *Closure* factor for strata “A”, “B” and “ext ITA”. Analysis of the variance of both CPUE indices (biomass index above, density index below) by area (“A”, “B”, “ext ITA”) across the three levels of the *Closure* factor for *Nephrops norvegicus*. “*Closure*” is the factor, “Df” is the number of degree of freedom, “Sum Sq” represents the sums of squares, “Mean Sq” is the mean of squares, “F” is the ratio of the sum of squares, “Pr(>F)” is the combination of the F-statistic with the degrees of freedom. The asterisk (\*) refers to the level of significance.

CPUE index	Area		Df	Sum Sq	Mean Sq	F	Pr(>F)
Biomass index	“A”	<i>Closure</i>	2	12740	6370	10.35	0.00174**
		Residuals	14	8616	615		
	“B”	<i>Closure</i>	2	305	152.7	0.452	0.64
		Residuals	40	13512	337.8		
	“ext ITA”	<i>Closure</i>	2	3292	1646.0	3.507	0.0485*
		Residuals	21	9855	469.3		
Density index	“A”	<i>Closure</i>	2	31266327	15633163	7.44	0.00629**
		Residuals	14	29416444	2101175		
	“B”	<i>Closure</i>	2	7105754	3552877	1.709	0.194
		Residuals	40	83146953	2078674		
	“ext ITA”	<i>Closure</i>	2	82906158	41453079	4.9917	0.01684*
		Residuals	21	174391574	8304361		

**Table S3.** Parametric one-way ANOVA for biomass ( $\text{kg}/\text{km}^2$ ) and density ( $\text{N}/\text{km}^2$ ) indices of *Merluccius merluccius* by *Closure* factor for strata “A”, “B” and “ext ITA”. Analysis of the variance of both CPUE indices (biomass index above, density index below) by area (“A”, “B”, “ext ITA”) across the three levels of the *Closure* factor for *Merluccius merluccius*. “*Closure*” is the factor, “Df” is the

number of degree of freedom, “Sum Sq” represents the sums of squares, “Mean Sq” is the mean of squares, “F” is the ratio of the sum of squares, “Pr(>F)” is the combination of the F-statistic with the degrees of freedom. The asterisk (\*) refers to the level of significance.

CPUE index	Area		Df	Sum Sq	Mean Sq	F	Pr(>F)
Biomass index	“A”	<i>Closure</i>	2	66005	33002	11.99	0.000925***
		Residuals	14	38541	2753		
	“B”	<i>Closure</i>	2	20115	10057	4.055	0.0249*
		Residuals	40	99204	2480		
	“ext ITA”	<i>Closure</i>	2	5102	2551	2.007	0.159
		Residuals	21	26692	1271		
Density index	“A”	<i>Closure</i>	2	326475378	163237689	13.12	0.000617***
		Residuals	14	174184408	12441743		
	“B”	<i>Closure</i>	2	80081735	40040867	3.223	0.0504
		Residuals	40	496990709	12424768		
	“ext ITA”	<i>Closure</i>	2	26287903	13143952	1.412	0.266
		Residuals	21	195474073	9308289		

**Table S4.** Parametric one-way ANOVA for biomass (kg/km<sup>2</sup>) and density (N/km<sup>2</sup>) indices of *Parapeneus longirostris* by *Closure* factor for strata “A”, “B” and “ext ITA”. Analysis of the variance of both CPUE indices (biomass index above, density index below) by area (“A”, “B”, “ext ITA”) across the three levels of the *Closure* factor for *Parapeneus longirostris*. “*Closure*” is the factor, “Df” is the number of degree of freedom, “Sum Sq” represents the sums of squares, “Mean Sq” is the mean of squares, “F” is the ratio of the sum of squares, “Pr(>F)” is the combination of the F-statistic with the degrees of freedom. The asterisk (\*) refers to the level of significance.

CPUE index	Area		Df	Sum Sq	Mean Sq	F	Pr(>F)
Biomass index	“A”	<i>Closure</i>	2	209287	104644	16.42	0.000213***
		Residuals	14	89224	6373		
	“B”	<i>Closure</i>	2	16984.39	8492.2	8.27	0.001
		Residuals	40	41096.47	1027.41		
	“ext ITA”	<i>Closure</i>	2	54724.67	27362.33	5.62	0.011
		Residuals	21	102328.02	4872.76		
Density index	“A”	<i>Closure</i>	2	6.823e+09	3.411e+09	13.85	0.000481***
		Residuals	14	3.449e+09	2.463e+08		
	“B”	<i>Closure</i>	2	821385025.13	410692512.56	7.17	0.002
		Residuals	40	2290477144.48	57261928.61		
	“ext ITA”	<i>Closure</i>	2	7.267e+09	3.634e+09	3.035	0.0695
		Residuals	21	2.514e+09	1.197e+09		

**Table S5.** Parametric one-way ANOVA for biomass (kg/km<sup>2</sup>) and density (N/km<sup>2</sup>) indices of *Micromesistius poutassou* by *Closure* factor for strata “A”, “B” and “ext ITA”. Analysis of the variance of both CPUE indices (biomass index above, density index below) by area (“A”, “B”, “ext ITA”) across the three levels of the *Closure* factor for *Micromesistius poutassou*. “*Closure*” is the factor, “Df” is the number of degree of freedom, “Sum Sq” represents the sums of squares, “Mean Sq” is the mean of squares, “F” is the ratio of the sum of squares, “Pr(>F)” is the combination of the F-statistic with the degrees of freedom. The asterisk (\*) refers to the level of significance.

CPUE index	Area		Df	Sum Sq	Mean Sq	F	Pr(>F)
Biomass index	“A”	<i>Closure</i>	2	13506	6753	0.395	0.681
		Residuals	14	239193	17085		
	“B”	<i>Closure</i>	2	1308	654.2	0.583	0.563
		Residuals	40	44895	1122.4		
	“ext ITA”	<i>Closure</i>	2	1626	812.8	3.983	0.0342*
		Residuals	21	4286	204.1		
Density index	“A”	<i>Closure</i>	2	1800852	900426	0.279	0.76
		Residuals	14	45128323	3223452		
	“B”	<i>Closure</i>	2	3034463	1517231	0.334	0.718
		Residuals	40	181639265	4540982		
	“ext ITA”	<i>Closure</i>	2	4236799	2118399	0.36	0.702
		Residuals	21	123596520	5885549		

**Table S6.** Parametric one-way ANOVA for biomass (kg/km<sup>2</sup>) and density (N/km<sup>2</sup>) indices of *Munida spp.* by *Closure* factor for strata “A”, “B” and “ext ITA”. Analysis of the variance of both CPUE indices (biomass index above, density index below) by area (“A”, “B”, “ext ITA”) across the three levels of the *Closure* factor for *Munida spp.* “*Closure*” is the factor, “Df” is the number of degree of freedom, “Sum Sq” represents the sums of squares, “Mean Sq” is the mean of squares, “F” is the ratio of the sum of squares, “Pr(>F)” is the combination of the F-statistic with the degrees of freedom. The asterisk (\*) refers to the level of significance.

CPUE index	Area		Df	Sum Sq	Mean Sq	F	Pr(>F)
Biomass index	“A”	<i>Closure</i>	2	15243	7622	0.406	0.674
		Residuals	14	262503	18750		
	“B”	<i>Closure</i>	2	58295	29148	1.412	0.256
		Residuals	40	825656	20641		
	“ext ITA”	<i>Closure</i>	2	32482	146241	4.336	0.0409*
		Residuals	11	41203	3746		
Density index	“A”	<i>Closure</i>	2	5.060e+09	2.530e+09	0.347	0.722
		Residuals	5	3.641e+10	7.282e+09		
	“B”	<i>Closure</i>	2	1.861e+10	9.307e+09	1.596	0.216
		Residuals	37	2.157e+11	5.830e+09		
	“ext ITA”	<i>Closure</i>	2	13484092608.82	6742046304.41	4.36	0.036
		Residuals	13	20097465115.76	1545958855.06		