

Supplementary Material: Effectiveness of community-based TURF-reserves in Mexican small-scale fisheries

Raw data and code are available on GitHub at: <https://github.com/jcvdav/ReserveEffect>

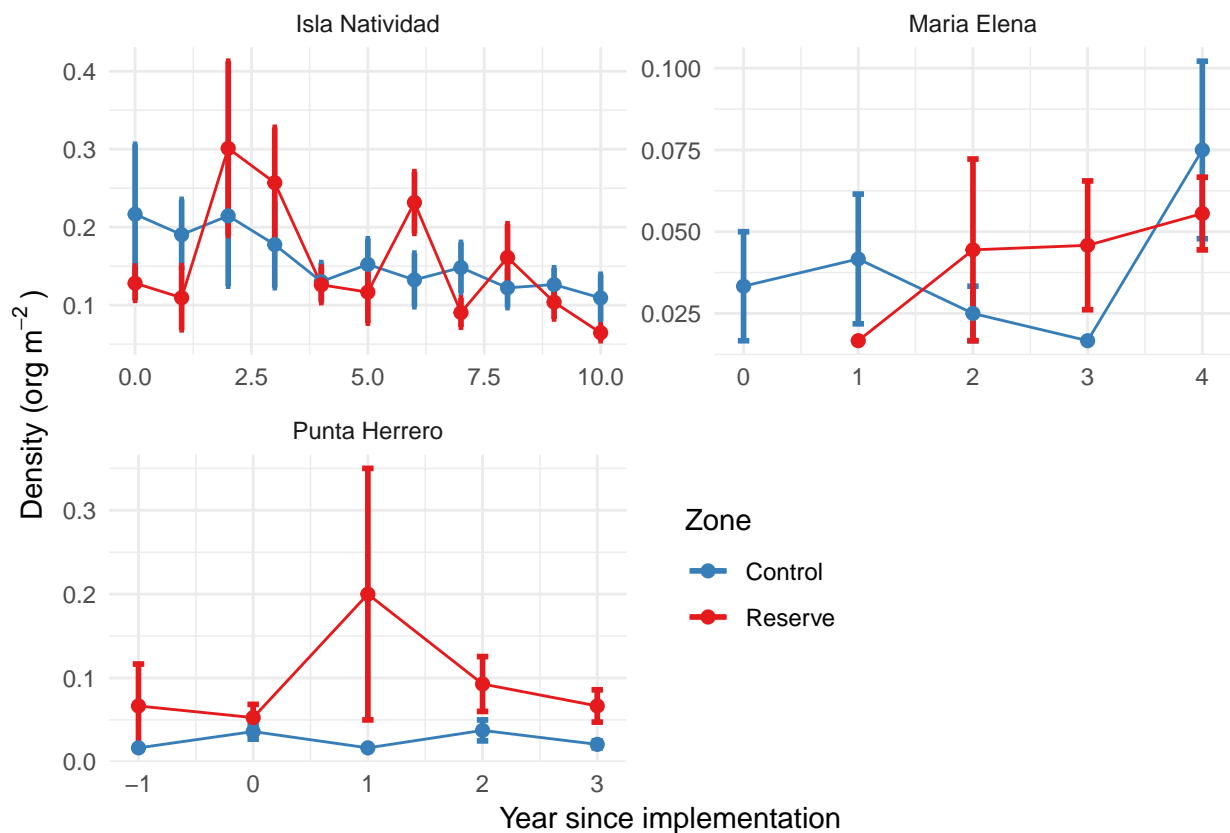


Figure S1: Time series of lobster densities. Bars indicate standard errors.

Table S1. Number of invertebrate transects performed in each site of each community.

Community	Control	Reserve
Isla Natividad	415	244
Maria Elena	27	21
Punta Herrero	51	73

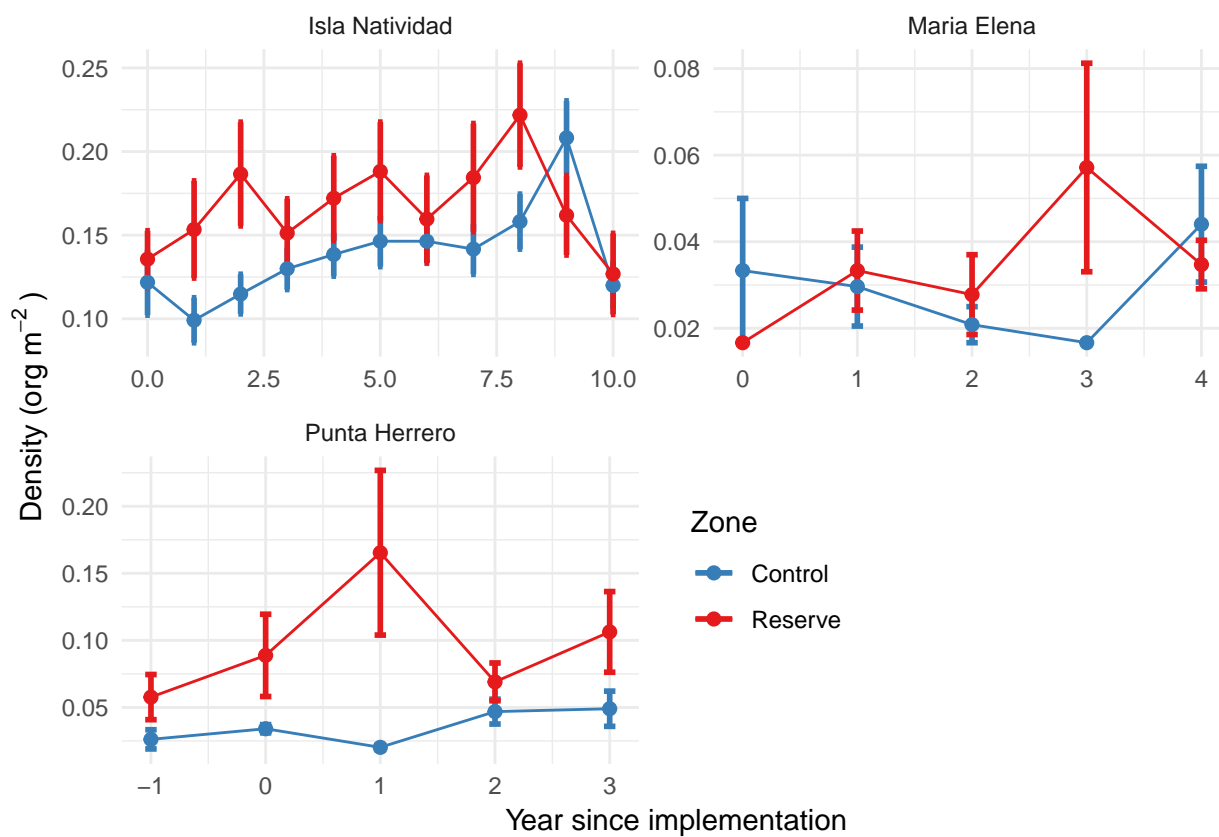
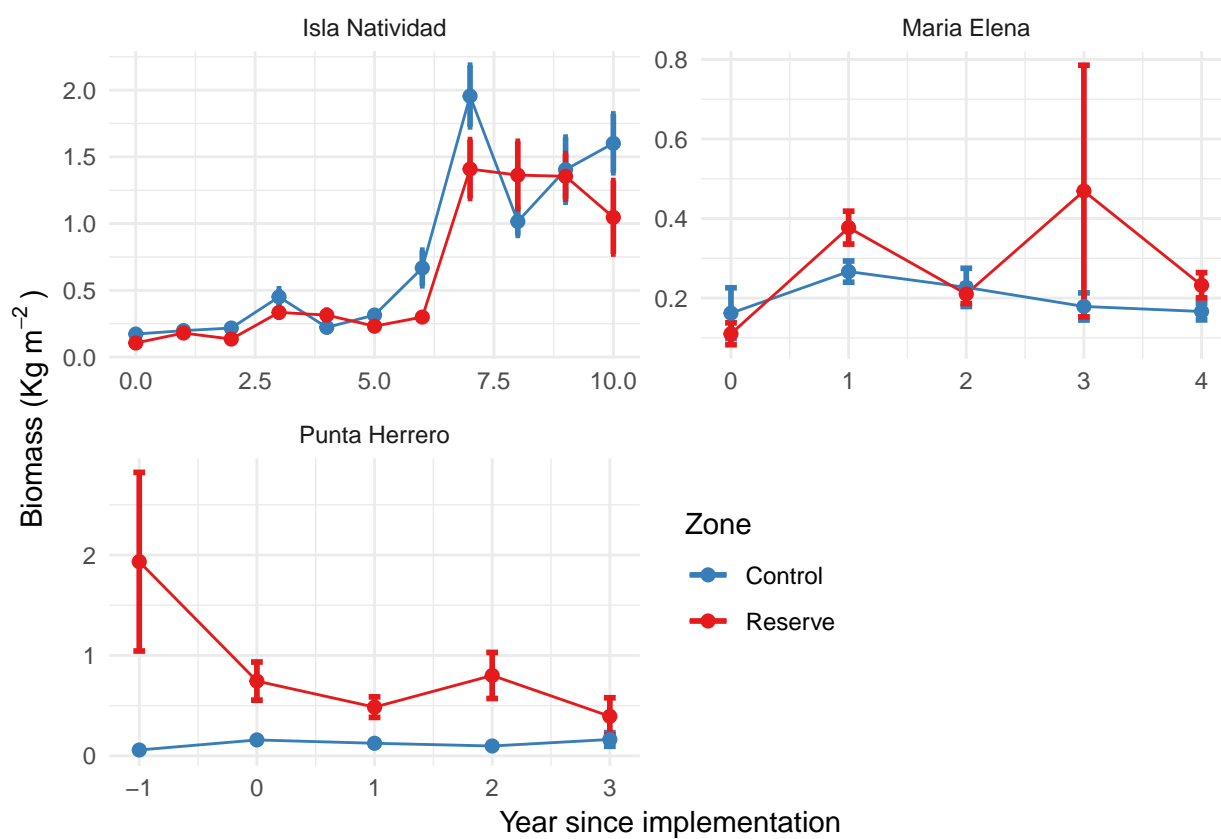
**Figure S2:** Time series of invertebrate densities. Bars indicate standard errors.

Table S2. Number of fish transects performed in each site of each community.

Community	Control	Reserve
Isla Natividad	400	241
Maria Elena	44	45
Punta Herrero	82	85

**Figure S3:** Time series of fish biomass. Bars indicate standard errors.

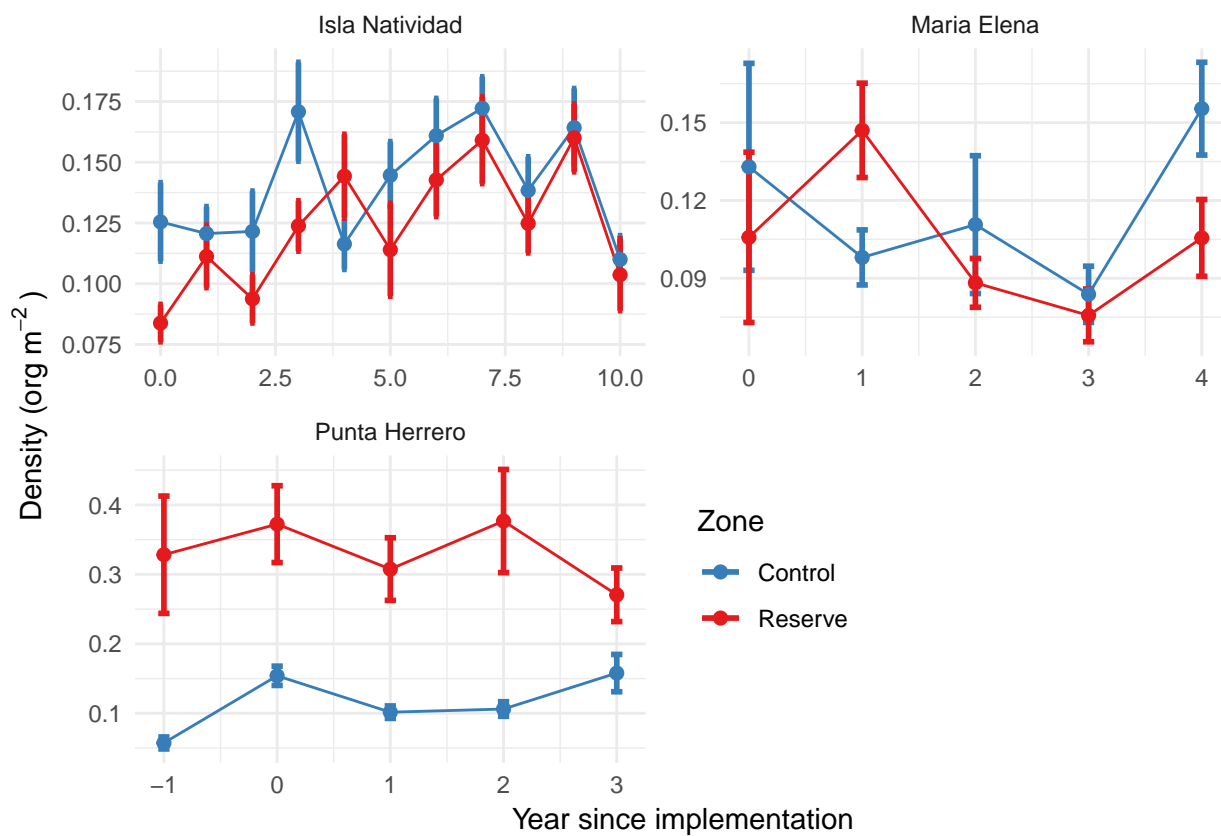


Figure S4: Time series of fish densities. Bars indicate standard errors.

Table S3. Mean ex-vessel prices (MXP / Kg) for lobster (*Panulirus* spp.) on each TURF (community) and group (Control = only TURF, Treated = TURF and reserve).

Community	Group	TURF	Before	After
Yucatan Peninsula	Control	Langosteros Del Caribe	165.58	176.72
Yucatan Peninsula	Control	Vigia Chico	177.66	175.31
Yucatan Peninsula	Treated	Cozumel	178.21	170.49
Baja California	Control	Bahia Tortugas	155.60	122.46
Baja California	Control	La Purisima	67.54	157.88
Baja California	Control	Pesc Nacionales De Abulon	67.16	88.79
Baja California	Treated	Buzos Y Pescadores De La Baja California	89.35	190.07

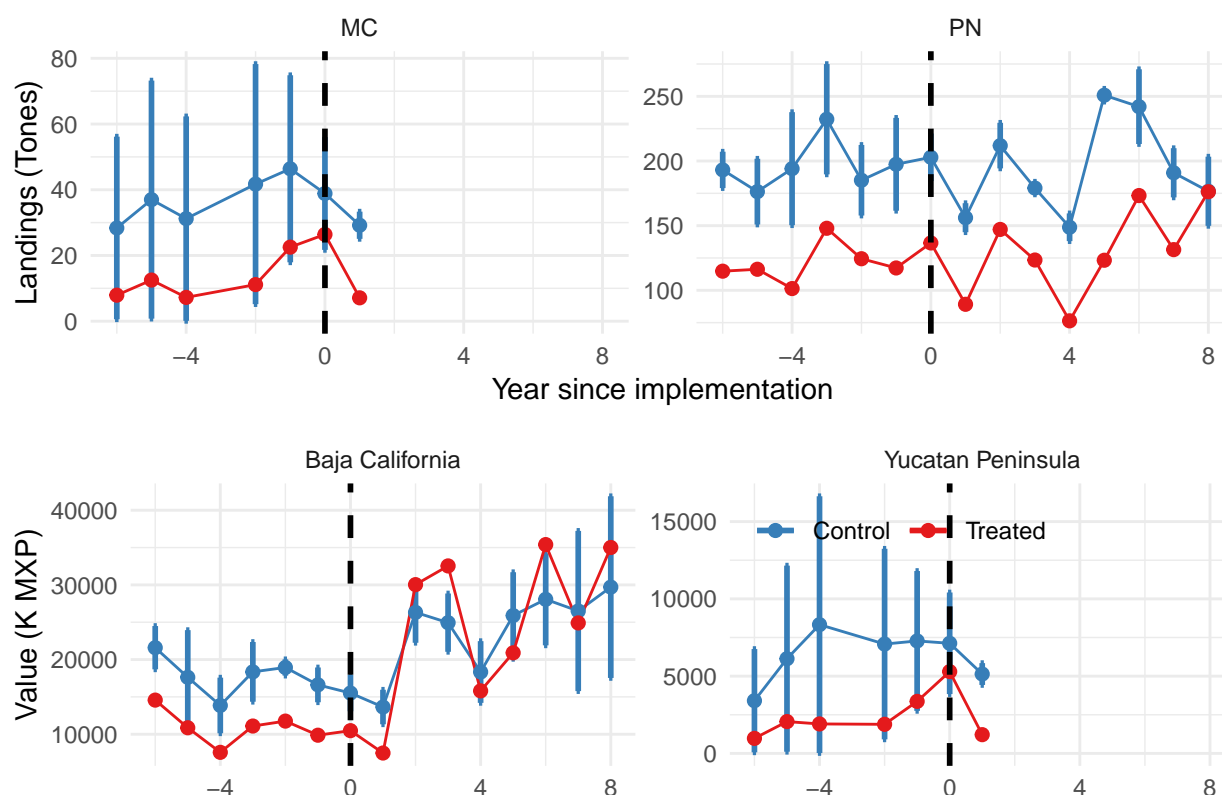


Figure S5: Time series of landings and value of landings.

Table S4. Coefficient estimates of biological indicators for Isla Natividad.

	<i>Dependent variable:</i>			
	Lobster abundance (1)	Fish biomass (2)	Invertebrate abundance (3)	Invertebrate biomass (4)
zonaReserva	−0.011 (0.058)	−0.001*** (0.001)	0.014 (0.026)	−0.042** (0.018)
year1	0.032 (0.067)	0.001* (0.001)	−0.023 (0.024)	−0.005 (0.020)
year2	0.0002 (0.077)	0.001 (0.001)	−0.007 (0.023)	−0.004 (0.023)
year3	0.023 (0.072)	0.008*** (0.002)	0.008 (0.023)	0.045* (0.026)
year4	−0.030 (0.058)	0.002*** (0.001)	0.017 (0.023)	−0.009 (0.019)
year5	−0.006 (0.061)	0.005*** (0.001)	0.025 (0.025)	0.019 (0.021)
year6	−0.014 (0.062)	0.014*** (0.004)	0.025 (0.024)	0.036 (0.022)
year7	−0.021 (0.060)	0.069*** (0.012)	0.020 (0.025)	0.047** (0.021)
year8	−0.026 (0.059)	0.038*** (0.005)	0.036 (0.026)	0.013 (0.021)
year9	−0.038 (0.057)	0.044*** (0.010)	0.086*** (0.029)	0.039* (0.023)
year10	−0.066 (0.057)	0.052*** (0.010)	−0.002 (0.024)	−0.015 (0.019)
zonaReserva:year1	−0.058 (0.078)	0.002* (0.001)	0.040 (0.041)	0.032 (0.025)
zonaReserva:year2	0.126 (0.121)	−0.0003 (0.001)	0.058 (0.042)	0.014 (0.026)
zonaReserva:year3	0.053 (0.093)	−0.001 (0.002)	0.007 (0.035)	−0.005 (0.029)
zonaReserva:year4	0.035 (0.065)	0.004*** (0.001)	0.020 (0.038)	0.070*** (0.027)
zonaReserva:year5	−0.045 (0.068)	−0.001 (0.001)	0.028 (0.042)	0.011 (0.030)
zonaReserva:year6	0.096 (0.075)	−0.007* (0.004)	−0.001 (0.039)	0.023 (0.028)
zonaReserva:year7	−0.030 (0.065)	−0.014 (0.018)	0.029 (0.044)	0.029 (0.028)
zonaReserva:year8	0.012 (0.069)	0.017 (0.017)	0.050 (0.044)	0.028 (0.026)
zonaReserva:year9	0.002 (0.064)	0.004 (0.013)	−0.060 (0.041)	0.037 (0.028)
zonaReserva:year10	−0.016 (0.062)	−0.017 (0.016)	−0.007 (0.038)	0.035 (0.025)
Constant	0.122** (0.054)	0.003*** (0.0005)	0.122*** (0.020)	0.125*** (0.016)
Observations	659	2,987	3,714	2,987
R ²	0.049	0.090	0.012	0.020
Residual Std. Error	0.189 (df = 637)	0.072 (df = 2965)	0.244 (df = 3692)	0.177 (df = 2965)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table S5. Coefficient estimates of biological indicators for Maria Elena.

	<i>Dependent variable:</i>			
	Lobster abundance (1)	Fish biomass (2)	Invertebrate abundance (3)	Invertebrate biomass (4)
zonaReserva	−0.033** (0.013)	−0.001 (0.002)	−0.017 (0.013)	−0.027 (0.051)
year1	0.008 (0.023)	0.004** (0.002)	−0.004 (0.016)	−0.035 (0.041)
year2	−0.019 (0.015)	0.002 (0.002)	−0.012 (0.013)	−0.022 (0.048)
year3	−0.028** (0.014)	0.001 (0.002)	−0.017 (0.013)	−0.049 (0.041)
year4	0.023 (0.028)	0.001 (0.002)	0.011 (0.019)	0.022 (0.043)
zonaReserva:year1	−0.003 (0.024)	0.004 (0.002)	0.020 (0.018)	0.076 (0.056)
zonaReserva:year2	0.046* (0.024)	0.001 (0.002)	0.024 (0.016)	0.005 (0.059)
zonaReserva:year3	0.074*** (0.024)	0.008 (0.007)	0.057** (0.027)	0.019 (0.053)
zonaReserva:year4	0.001 (0.031)	0.002 (0.002)	0.007 (0.020)	−0.023 (0.056)
Constant	0.033** (0.013)	0.004** (0.001)	0.033*** (0.013)	0.133*** (0.040)
Observations	48	1,146	75	1,146
R ²	0.222	0.012	0.113	0.019
Residual Std. Error	0.038 (df = 38)	0.021 (df = 1136)	0.034 (df = 65)	0.196 (df = 1136)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table S6. Coefficient estimates of biological indicators for Punta Herrero.

	<i>Dependent variable:</i>			
	Lobster abundance (1)	Fish biomass (2)	Invertebrate abundance (3)	Invertebrate biomass (4)
zonaReserva	0.004 (0.009)	0.018*** (0.006)	0.055* (0.031)	0.218*** (0.057)
year-1	−0.006 (0.007)	−0.003*** (0.001)	−0.008 (0.007)	−0.097*** (0.016)
year1	−0.008 (0.005)	−0.002* (0.001)	−0.014*** (0.004)	−0.052*** (0.017)
year2	0.004 (0.009)	−0.002*** (0.001)	0.013 (0.010)	−0.048*** (0.017)
year3	−0.001 (0.006)	−0.001 (0.002)	0.015 (0.013)	0.004 (0.030)
zonaReserva:year-1	0.017 (0.023)	0.025 (0.021)	−0.023 (0.036)	0.053 (0.102)
zonaReserva:year1	0.018 (0.024)	−0.009 (0.007)	0.090 (0.069)	−0.012 (0.073)
zonaReserva:year2	0.019 (0.021)	0.0004 (0.009)	−0.033 (0.035)	0.052 (0.094)
zonaReserva:year3	0.016 (0.016)	−0.012 (0.008)	0.003 (0.045)	−0.106 (0.074)
Constant	0.011** (0.005)	0.005*** (0.001)	0.034*** (0.003)	0.154*** (0.014)
Observations	124	1,628	262	1,628
R ²	0.051	0.025	0.054	0.036
Residual Std. Error	0.049 (df = 114)	0.061 (df = 1618)	0.169 (df = 252)	0.572 (df = 1618)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table S7. Coefficient estimates of socioeconomic indicators Isla Natividad.

	<i>Dependent variable:</i>	
	Landings	valor
	(1)	Revenues (2)
zonaReserva	−66.248*** (21.192)	−5.040* (2.817)
year-6	−9.747 (26.691)	6.074 (4.376)
year-5	−26.548 (36.201)	2.106 (7.819)
year-4	−8.805 (54.742)	−1.665 (5.141)
year-3	29.433 (53.606)	2.834 (5.409)
year-2	−17.752 (37.964)	3.423 (3.086)
year-1	−5.421 (46.563)	1.095 (3.894)
year1	−46.722* (24.836)	−1.873 (3.882)
year2	9.037 (29.383)	10.802** (5.477)
year3	−23.798 (21.935)	9.425* (5.316)
year4	−54.097** (24.541)	2.816 (5.541)
year5	48.012** (21.950)	10.380 (7.267)
year6	39.160 (39.516)	12.549 (7.653)
year7	−11.992 (30.520)	10.988 (12.703)
year8	−26.265 (37.453)	14.186 (14.328)
zonaReserva:year-6	−12.067 (26.691)	−1.980 (4.376)
zonaReserva:year-5	6.214 (36.201)	−1.715 (7.819)
zonaReserva:year-4	−26.453 (54.742)	−1.237 (5.141)
zonaReserva:year-3	−18.071 (53.606)	−2.213 (5.409)
zonaReserva:year-2	5.569 (37.964)	−2.142 (3.086)
zonaReserva:year-1	−13.914 (46.563)	−1.703 (3.894)
zonaReserva:year1	−0.696 (24.836)	−1.119 (3.882)
zonaReserva:year2	1.436 (29.383)	8.758 (5.477)
zonaReserva:year3	10.607 (21.935)	12.639** (5.316)
zonaReserva:year4	−6.110 (24.541)	2.515 (5.541)
zonaReserva:year5	−61.368*** (21.950)	0.047 (7.267)
zonaReserva:year6	−2.498 (39.516)	12.371 (7.653)
zonaReserva:year7	6.842 (30.520)	3.441 (12.703)
zonaReserva:year8	65.875* (37.453)	10.347 (14.328)
Constant	202.868*** (21.192)	15.517*** (2.817)
Observations	60	60
R ²	0.638	0.492
Residual Std. Error (df = 30)	43.483	9.794

Note: *p<0.1; **p<0.05; ***p<0.01

Table S8. Coefficient estimates of socioeconomic indicators for Maria Elena.

	<i>Dependent variable:</i>	
	Landings	valor
	(1)	Revenues (2)
zonaReserva	−12.452 (21.012)	−1.831 (4.026)
year-6	−10.495 (39.993)	−3.715 (5.741)
year-5	−1.865 (49.084)	−0.997 (8.401)
year-4	−7.648 (43.503)	1.206 (10.941)
year-2	2.857 (49.422)	−0.051 (8.558)
year-1	7.519 (40.701)	0.151 (6.850)
year1	−9.668 (21.613)	−1.990 (4.118)
zonaReserva:year-6	−7.993 (39.993)	−0.607 (5.741)
zonaReserva:year-5	−12.027 (49.084)	−2.239 (8.401)
zonaReserva:year-4	−11.520 (43.503)	−4.595 (10.941)
zonaReserva:year-2	−18.129 (49.422)	−3.360 (8.558)
zonaReserva:year-1	−11.395 (40.701)	−2.079 (6.850)
zonaReserva:year1	−9.629 (21.613)	−2.092 (4.118)
Constant	38.859* (21.012)	7.125* (4.026)
Observations	21	21
R ²	0.230	0.242
Residual Std. Error (df = 7)	39.665	7.294
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01		