

SUPPLEMENTARY MATERIALS

Table S1. Summary of main features of case studies and survey sample

	Torre Guaceto	Egadi Islands	Telašćica	Gouraya	Taza	Tabarka
Designation	MPA	MPA	Nature Park	National Park – MPA projected II	National Park – MPA projected II	MPA projected
IUCN category	IV	IV	V	II	II	-
Country	Italy	Italy	Croatia	Algeria	Algeria	Tunisia
Date of establishment/Starting process of establishment	Inter-Ministerial Decree 4/12/1991	Inter-Ministerial Decree 27 th December 1991	27 th 1988 Official Gazette "Narodne novine" 14/88	NP: Decree no 84-327 of 3 November 1984: “Création du Parc National de Gouraya (Wilaya de Bejaïa)”; MPA: Proposed in 2003, updated in 2013 with a reduction of the surface area of the MPA	NP: Decree no 84-328 of 3 November 1984 : “Création du Parc National de Taza et de Banc des Kabyles Marine– Reserve; MPA: proposed in 2009	Projected in the Loi-cadre sur les Aires Marines et Côtiers Protégées (AMCP) de Banc des Kabyles Marine– Law no 49-2009 of 20 July 2009. Ministerial Decree on 28 April 2017 "Creation of the 'National Council for Marine and Coastal Protected Area'".
Stage of establishment	Actively managed	Actively managed	Actively managed	Proposed/Committed	Proposed/Committed	Proposed/Committed
Description	2,200 ha on the south-east coast of Italy, in the Apulia region, in the province of Brindisi	53,992 ha on the north-west coast of Sicily, in the province of Trapani. It includes the three islands of Favignana, Levanzo and Marettimo, plus the islets of Formica and Maraone.	6999.28 ha located on the eastern coast of the Adriatic Sea, covering the southern part of the island of Dugi Otok. The bay is surrounded by 13 islands, islets and rocks.	7.842 ha on the west of the Gulf of Bejaïa in the municipality of Bejaïa	9.603 ha on the north-east coast of Algiers	327.855 ha on the north-west coast of Tunisia
Legal national framework	Framework Law on Protected Areas n° 394/1991	Framework Law on Protected Areas n° 394/1991	Nature Protection Act 2013 (OG 80/13)	Law no 11-02 (Pas classification and management) Law no 02-02 (protection of the coastal areas)	Law no 11-02 (Pas classification and management) Law no 02-02 (protection of the coastal areas)	Law no 88-20 of 13 April 1988: “Code forestier” Law no 94-122 of 28 November 1994 : “Code de l’aménagement du territoire e de l’urbanisme” Law no 2009-49 of 20 July 2009: “Aires marines et côtières protégées”
International recognition	Sites of Community Importance (92/43/CE) Natura 2000 Special Protection Area Bird Directive (79/409/CE) Convention on Wetlands of International Importance – Torre Guaceto Ramsar Site) European Charter for Sustainable Tourism in Protected Areas Special Area of Conservation and a Special	SIC ITA010004 “Isola di Favignana” SIC ITA010002 “Isola di Marettimo” SIC ITA010003 “Isola di Levanzo” SIC ITA010024 “Fondali dell’Arcipelago delle Isole Egadi” ZPS ITA010027 “Arcipelago delle Egadi- Area marina e terrestre Important Birs Area - I.B.A IT 57 “Egadi Islands”.	Natura 2000 Tentative List of the UNESCO World Heritage (29/01/2007) Important Bird Area – I.B.A. HR018 “Kornati National Park and Telašćica Nature Park	UNESCO – Biosphere Reserve (2004)	UNESCO -Biosphere Reserve	-

	Protected Area of the Mediterranean Importance 2019 Blue Parks Awardee					
Zoning	<ul style="list-style-type: none"> • Zone A: integral reserve • Zone B: general reserve • Zone C: partial reserve 	<ul style="list-style-type: none"> • Zone A: integral reserve • Zone B: general reserve • Zone C: partial reserve • Zone D: buffer protection zone 	<ul style="list-style-type: none"> • Zone one of strict protection: 1a and 1b • Zone of active protection: 1. Sub-zone for the regulation of commercial activities; 2. Sub-zone for the conservation of marine biological resources; 3. No-take sub-zone • Zone of sustainable use • Zone D: buffer protection zone 	<ul style="list-style-type: none"> • Area of ecological interest • Economic exploitation zone • Buffer zone 	<ul style="list-style-type: none"> • No-take zone • Peripheral zone • Buffer zone 	-
Government authority	Management Consortium with representatives from Brindisi and Carovigno municipalities and WWF	Municipality of Favignana	Telascica Nature Park Public Institution located in Sali (Dugi Otok)	Directorate General of Forests (DGF)	Directorate General of Forests (DGF)	-
Staff capacity Full-time	10	15	24	74 (terrestrial park)	-	-
Seasonal	5	45	15	-	-	-
Budget capacity	€ 1,146,265	€ 1,147,035.79	€ 1,500,000	-	-	-
Planning & Management tools	Management plan (2002); ISEA; Management plan for artisanal fishing in co-management with SSF	Management plan (2010); ISEA	Management plan (2012-2022); Sustainable Tourism Plan; Fishery Management plan 2021	-	-	-
Fishery regulations	Fishery regulation (2008)	Supplementary procedural guidelines to the Egadi Islands MPA (Ministerial Decree n° 145 of 23 June 2010)	Fisheries Act, Rule Books	National Law 1-11 3-07-2001, regarding fish, aquaculture, traditional fish trade near the coast. Local fisheries management plan approval is required	National Law 1-11 3-07-2001, regarding fish, aquaculture, traditional fish trade near the coast. Local fisheries management plan approval is required	Ministerial Decree 20/09/1994 and 28/09/1995- Tunisian Ministry of Agriculture
Patrol & regulation enforcement	MPA integrate the surveillance activity provided by national and local institution with own personnel five units (two rubber boats and 1 jeep + 1 boat to collect floating rubbish and debris)	4 naval units in summer period to support the surveillance activities carried out by the competent authorities	5 guards all year round + 2 extra during the summer, 10 boats. To be improved with SSF involvement in enforcement activities	-	-	-

Table S2. Description of the response variables underlie MPAs social acceptability

Variable	Description	Survey question	Score
Trust (proxy of MPA acceptability)	Positive assumption about motivations and intentions of other part, that affects the level of stakeholder support for management activity	How would you classify the overall level of small-scale fishermen support for the MPA?	98=missing value 1= strong opposition to the MPA 2= some opposition to the MPA 3=neutral (neither support nor opposition) towards the MPA 4= some support for the MPA 5= strong support for the MPA
		On the whole, how do you evaluate the establishment of an MPA?	98= missing value 1= Very negative 2= Rather negative 3= Neutral 4= Rather positive 5= Very positive
Environmental Quality	Perceptions about state of marine resources and changes in fish stock and volume catch	In general, would you say that the number of fish in the sea are increasing, decreasing or is <u>unchanging</u> over time?	98=missing value 1= Decreasing 2=Unchanging 3= Increasing
		Since you started to fish, the volume of your catches is increased, decreased or unchanged?	98= missing value 1= Decreased 2= Unchanged 3= Increased
Relationship “SSF & recreational fishers”	Assessment of relationship quality levels between SSF and recreational fishers	Please, define how you consider the relationship between SSF and recreational fishers	98= missing value 1= Very bad 2= Bad 3= Neutral 4= Good 5= Very good
Relationship “SSF & other professional fishers”	Assessment of relationship quality levels between SSF and others professional fishers’ categories	Please, define how you consider the relationship between SSF and other professional fishers	98= missing value 1= Very bad 2= Bad 3= Neutral 4= Good 5= Very good
Relationship “SSF & tourists”	Assessment of relationship quality levels between SSF and tourists	Please, define how you consider the relationship between SSF and tourists	98= missing value 1= Very bad 2= Bad 3= Neutral 4= Good 5= Very good
Level of illegal fishing	Perceptions of the level of illegal fishing	In your opinion, which is the overall level of illegal fishing?	98= Missing value 1= High 2= Medium 3= Low 4= No poaching
Illegal fishing impacts	Perception of the level of impact of illegal fishing on artisanal fishing	Do you think that illegal fishing is impacting small scale fishery?	98= Missing value 1= High impact 2= Medium impact 3= Low impact 4= No impact

MPA social role	Assessment of the level of satisfaction about the social role of MPA	Please rate your personal opinion about your level of satisfaction or dissatisfaction on the social impacts of the MPA	98=missing value 1=Very dissatisfied 2=Somewhat dissatisfied 3=Neutral 4=Somewhat satisfied 5=Very satisfied
	Assessment of the level of importance about the social role of MPA	Please rate your personal opinion about the social impacts of the MPA	98= missing value 1= Not important 2= Slightly important 3= Fairly important 4= Important 5= Very important
MPA governance role	Assessment of the level of satisfaction about the planning & decision-making process performed or be performed by the MPA	Please rate your personal opinion about your level of satisfaction or dissatisfaction on the planning and decision-making process for the MPA	98=missing value 1=Very dissatisfied 2=Somewhat dissatisfied 3=Neutral 4=Somewhat satisfied 5=Very satisfied
	Assessment of the level of importance about the planning & decision-making process performed or be performed by the MPA	Please rate your personal opinion about the governance and decision-making process of the MPA	98= missing value 1= Not important 2= Slightly important 3= Fairly important 4= Important 5= Very important
MPA management role	Assessment of the level of satisfaction about the management role of MPA	Please rate your personal opinion about your level of satisfaction or dissatisfaction on the overall management activities of the MPA	98=missing value 1=Very dissatisfied 2=Somewhat dissatisfied 3=Neutral 4=Somewhat satisfied 5=Very satisfied
	Assessment of the level of importance about the management role of MPA	Please rate your personal opinion about the managerial impacts on the MPA	98= missing value 1= Not important 2= Slightly important 3= Fairly important 4= Important 5= Very important
MPA economic impacts	Assessment of the economic impacts that the MPA has generated or could generated on artisanal fishing	What do you think has been/will be the impact of the MPA on your income?	98=missing value 1= the MPA has/will lead to a decline in your income 2=the MPA has not had/won't an effect on your income 3= the MPA has/will lead to an increase in your income
Biodiversity conservation	Assessment of the degree of agreement about the SSF support on biodiversity conservation activities	Please indicate to what extend you agree with this statement: The small-scale fishermen could work with MPA management to help to protect biodiversity	98=missing value 1= Fully disagree 2= Somewhat disagree 3=Neutral 4= Somewhat agree 5= Fully agree
Environmental education	Assessment of the degree of agreement about the SSF support on environmental education activities	Please indicate to what extend you agree with this statement: The small-scale fishermen could be willing to practice fishing with	98=missing value 1= Fully disagree 2= Somewhat disagree 3=Neutral

		educational aims or other educational activities to promote conservation goals	4= Somewhat agree 5= Fully agree
Stewardship	Assessment of the degree of degree of agreement about the SSF commitment to monitor, identify and reduce illegal fishing	Please indicate to what extend you agree with this statement: The small-scale fishermen could cooperate with the MPA authority to monitor, identify and reduce illegal fishing	98=missing value 1= Fully disagree 2= Somewhat disagree 3=Neutral 4= Somewhat agree 5= Fully agree

**The term 'other professional fishers' encompasses those fishers mainly oriented towards a medium and large-scale fishery. Operating at larger scale than SSF, they have a semi-industrial or industrial nature and generally used large vessels (greater than 12 m in length) for fishing activities that are mainly carried out in offshore fishing zones.*

Table S3. Description of predictors of MPAs social acceptability

SOCIO – DEMOGRAPHIC DIMENSION				
Variable	Description	Survey questions/Definition for measurement	Potential responses	Categorization
Age (AGE)	Age of respondents	What is your age group?	98=missing value 1=20-30 years old 2=31-40 years old 3=41-50 years old 4=51-60 years old 5=61+ years old	Young: under 40 years old Old: over 41 years old
Study degree (SD)	Level of education of small-scale fishers	What is your highest level of education completed?	98=missing variable 1=None 2=Elementary school 3=Middle school 4=High school 5=University degree – Bachelors or higher	Low educational level: at most elementary school High educational level: at least middle school
GOVERNANCE DIMENSION				
Variable	Description	Survey questions/Definition for measurement	Potential responses	Categorization
Institutional Maturity (IM)	Level of legislative support (MPA legally gazetted) recognized under statutory civil law, international convention or agreement	Legal MPA status	1= MPA has been legally gazetted 2= MPA is not gazetted	MPA legally gazetted MPA not legally gazetted

Table S4. Contextual variables description at national level

Country	Algeria (%)	Croatia (%)	Italy (%)	Tunisia (%)
1. Marine protected Areas (% of territorial waters)	0.1	8.5	8.8	1.0
2. Terrestrial and Marine Protected Areas (% of total territorial area)	7.1	23.6	13.4	5.2
3. Natural resources' contribution to GDP (% of GDP)*	16.4	0.7	0.1	2.2

Sources: World Bank, 2019. World Development Indicators; World Database on Protected Areas (WDPA)

* The contribution of Natural resources to the GDP was the sum of oil rents, natural gas rents, coal rents, mineral rents, and forest rents. The estimates of natural resources contribution to GDP are calculated as the difference between the price of a commodity and the average cost of producing it. These unit rents are then multiplied by the physical quantities countries extract or harvest to determine the contribution of each commodity as a share of gross domestic product (GDP).

Table S5. Criteria for determining the number of principle components

	eigenvalue	variance%	cum.variance%	Scree plot
Dim.1	4.5755051	32.6821796	32.68218	
Dim.2	2.5975129	18.5536634	51.23584	
Dim.3	1.8552912	13.2520799	64.48792	
Dim.4	1.0174155	7.2672533	71.75518	
Dim.5	0.8496726	6.0690902	77.82427	
Dim.6	0.7055225	5.0394467	82.86371	
Dim.7	0.5410603	3.8647165	86.72843	
Dim.8	0.5041786	3.6012755	90.32971	
Dim.9	0.4229729	3.0212353	93.35094	
Dim.10	0.2714820	1.9391569	95.29010	
Dim.11	0.2054236	1.4673111	96.75741	
Dim.12	0.1803391	1.2881367	98.04555	
Dim.13	0.1615370	1.1538358	99.19938	
Dim.14	0.1120867	0.8006192	100.0000	

Table S6. Frequency distribution of socio-demographic variables

Variable	Total sample (%) (N=124)	Telašćica (%) (N=7)	Torre Guaceto (%) (N=5)	Egadi Islands (%) (N=21)	Gouraya (%) (N=37)	Tabarka (%) (N=20)	Taza (%) (N=34)
<u>AGE</u>							
20-30 years old	6	14	0	21	0	5	9
31-40 years old	19	14	0	11	22	35	18
41-50 years old	34	43	0	26	43	15	44
51-60 years old	33	29	100	26	35	30	26
61+ years old	6	0	0	16	0	15	3
Missing value	2	-	-	-	-	-	-
<u>STUDY DEGREE</u>							
None	12	0	0	0	19	20	12.1
Elementary school	23	0	40	20	6	55	27.3
Middle school	22	0	60	55	17	10	15.2
High school	34	100	0	25	44	15	33.3

University degree/Bachelors or higher	7	0	0	0	14	0	12.1
Missing value	2	-	-	-	-	-	-
<u>TYPE OF GEARS</u>							
Trammel net/Gillnet	94	100	100	71	100	95	97
Longlines (Bottom & Pelagic)	44	0	0	52	51	60	38
Traps for multi species fisheries/Lobster fisheries/Cephalopod fisheries	8	29	20	33	0	0	0
Lines/A pique	6	0	0	14	8	5	3
<u>N. OF PEOPLE IN HOUSEHOLD</u>							
1 person	9	0	0	5	14	10	9.1
2 persons	9	29	0	16	11	0	6.1
3 persons	8	14	0	16	5	10	6.1
4 persons	35	43	100	47	35	25	27.3
5 persons	25	14	0	11	27	35	33.3
6 persons	8	0	0	0	8	5	18.2
7 persons	2	0	0	5	0	10	0
8 persons	1	0	0	0	0	5	0
Missing value	2	-	-	-	-	-	-

Table S7. Correlation matrix between variables

	Trust	Environmental quality	SSF & Recreational fishers	SSF & Other professional fishers	SSF & Tourists	Illegal fishing level	Illegal fishing impact	MPA social role	MPA governance role	MPA management role	MPA economic impact	Biodiversity conservation	Environmental Education	Stewardship	% of MPAs	% of Terrestrial and Marine PAs	Natural resources' contribution to GDP
Trust	1.000	0.567	0.027	0.405	0.311	0.089	0.115	0.476	0.490	0.515	0.538	0.348	0.335	0.129	0.193	0.163	-0.389
Environmental quality	0.567	1.000	-0.050	0.574	0.314	-0.014	-0.083	0.598	0.636	0.657	0.332	0.113	0.228	0.130	0.050	-0.182	-0.488
SSF & Recreational fishers	0.027	-0.050	1.000	0.145	0.009	0.083	0.099	-0.106	-0.082	0.006	-0.007	-0.190	-0.095	-0.156	0.152	0.278	-0.124
SSF & Other professional fishers	0.405	0.574	0.145	1.000	0.547	0.501	0.487	0.363	0.447	0.625	0.060	-0.037	0.211	-0.046	0.619	0.345	-0.911
SSF & Tourists	0.311	0.314	0.009	0.547	1.000	0.509	0.450	0.170	0.209	0.418	0.068	0.091	0.171	0.000	0.575	0.382	-0.649
Illegal fishing level	0.089	-0.014	0.083	0.501	0.509	1.000	0.851	-0.137	-0.070	0.159	-0.164	-0.046	0.059	-0.067	0.853	0.661	-0.667
Illegal fishing impact	0.115	-0.083	0.099	0.487	0.450	0.851	1.000	-0.132	-0.091	0.183	-0.111	-0.003	0.113	-0.138	0.920	0.835	-0.685
MPA social role	0.476	0.598	-0.106	0.363	0.170	-0.137	-0.132	1.000	0.812	0.743	0.425	-0.020	0.219	-0.064	-0.095	-0.154	-0.313
MPA governance role	0.490	0.636	-0.082	0.447	0.209	-0.070	-0.091	0.812	1.000	0.781	0.409	0.012	0.207	-0.017	0.010	-0.124	-0.407
MPA management role	0.515	0.657	0.006	0.625	0.418	0.159	0.183	0.743	0.781	1.000	0.373	-0.001	0.363	-0.078	0.268	0.142	-0.627
MPA economic impact	0.538	0.332	-0.007	0.060	0.068	-0.164	-0.111	0.425	0.409	0.373	1.000	0.110	0.251	0.043	-0.102	-0.043	-0.056
Biodiversity conservation	0.348	0.113	-0.190	-0.037	0.091	-0.046	-0.003	-0.020	0.012	-0.001	0.110	1.000	0.434	0.464	0.014	0.004	0.006
Environmental education	0.335	0.228	-0.095	0.211	0.171	0.059	0.113	0.219	0.207	0.363	0.251	0.434	1.000	0.270	0.094	0.068	-0.230
Stewardship	0.129	0.130	-0.156	-0.046	0.000	-0.067	-0.138	-0.064	-0.017	-0.078	0.043	0.464	0.270	1.000	-0.097	-0.238	0.072
% of MPAs	0.193	0.050	0.152	0.619	0.575	0.853	0.920	-0.095	0.010	0.268	-0.102	0.014	0.094	-0.097	1.000	0.843	-0.807
% of Terrestrial and Marine PAs	0.163	-0.182	0.278	0.345	0.382	0.661	0.835	-0.154	-0.124	0.142	-0.043	0.004	0.068	-0.238	0.843	1.000	-0.547
Natural resources' contribution to GDP	-0.389	-0.488	-0.124	-0.911	-0.649	-0.667	-0.685	-0.313	-0.407	-0.627	-0.056	0.006	-0.230	0.072	-0.807	-0.547	1.000

Table S8. Correlation matrix between variables and principal components

	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
Environmental quality	0.792	-0.184	-0.063	-0.087	0.328
SSF & Recreational fishers	-0.029	0.240	-0.282	0.814	0.384
SSF & Other professional fishers	0.716	0.483	-0.087	-0.047	0.271
SSF & Tourists	0.524	0.528	0.131	-0.108	0.043
Illegal fishing level	0.215	0.885	0.139	-0.054	-0.104
Illegal fishing impact	0.212	0.870	0.147	0.027	-0.235
MPA social role	0.767	-0.341	-0.298	-0.146	-0.054
MPA governance role	0.806	-0.281	-0.267	-0.148	0.033
MPA management role	0.891	0.010	-0.196	-0.078	-0.009
MPA economic impact	0.505	-0.382	0.009	0.406	-0.468
Trust	0.742	-0.116	0.212	0.310	-0.113
Biodiversity conservation	0.177	-0.191	0.816	0.068	0.008
Environmental education	0.444	-0.084	0.547	0.105	-0.174
Stewardship	0.061	-0.237	0.705	-0.062	0.432



Figure S1. Graphic representation of the correlation matrix between variables and principal components

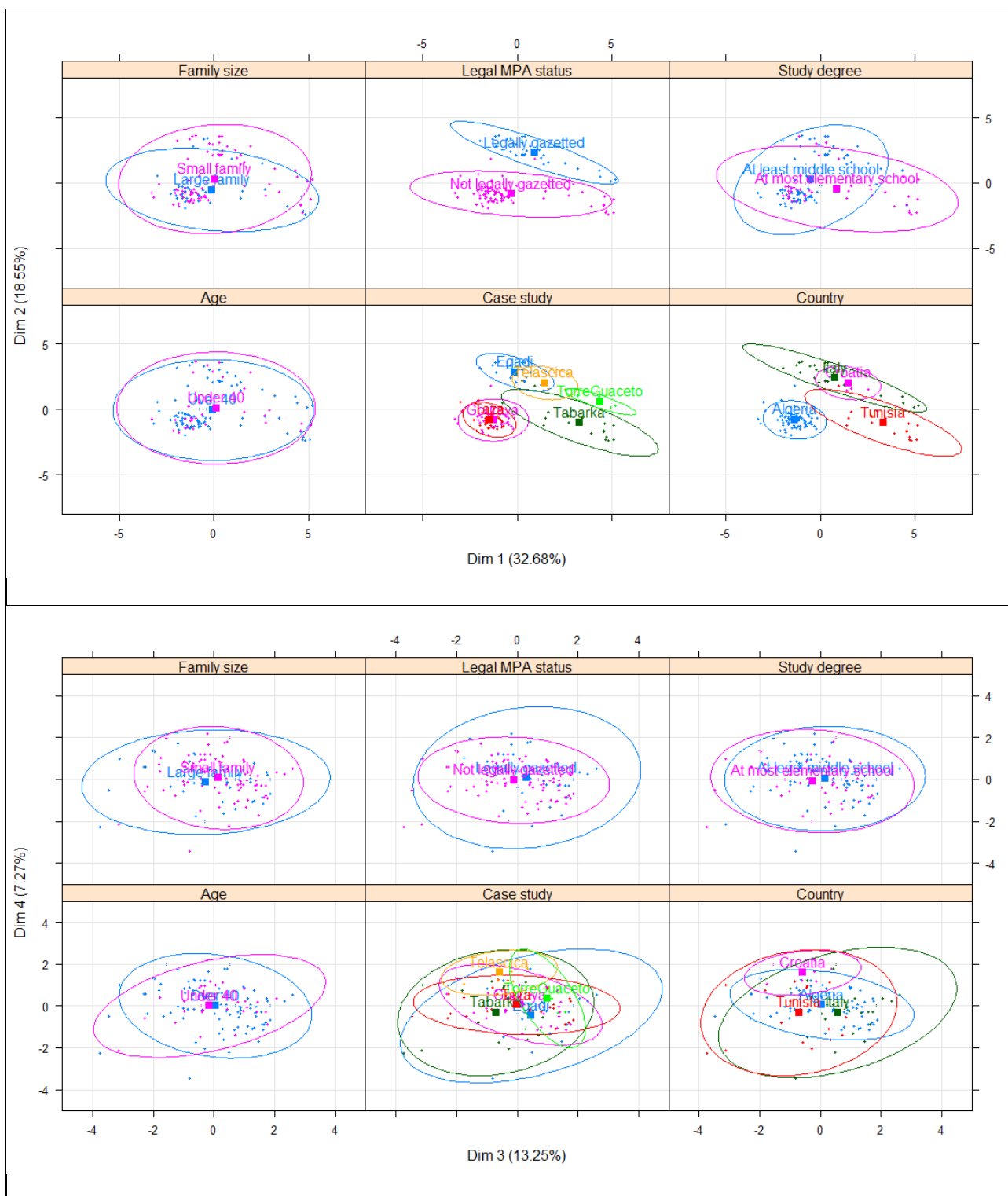


Figure S2. SSF' representation of the plane defined by the first and second PCs and the third and fourth PCs, classified according to the various supplementary qualitative variables identified in the model.