The following supplements accompany the article

Identifying where vulnerable species occur in a data-poor context: combining satellite imaging and underwater occupancy surveys

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Supplement 1

Target species and study area

FigS1: Marine sub-areas of the case study area

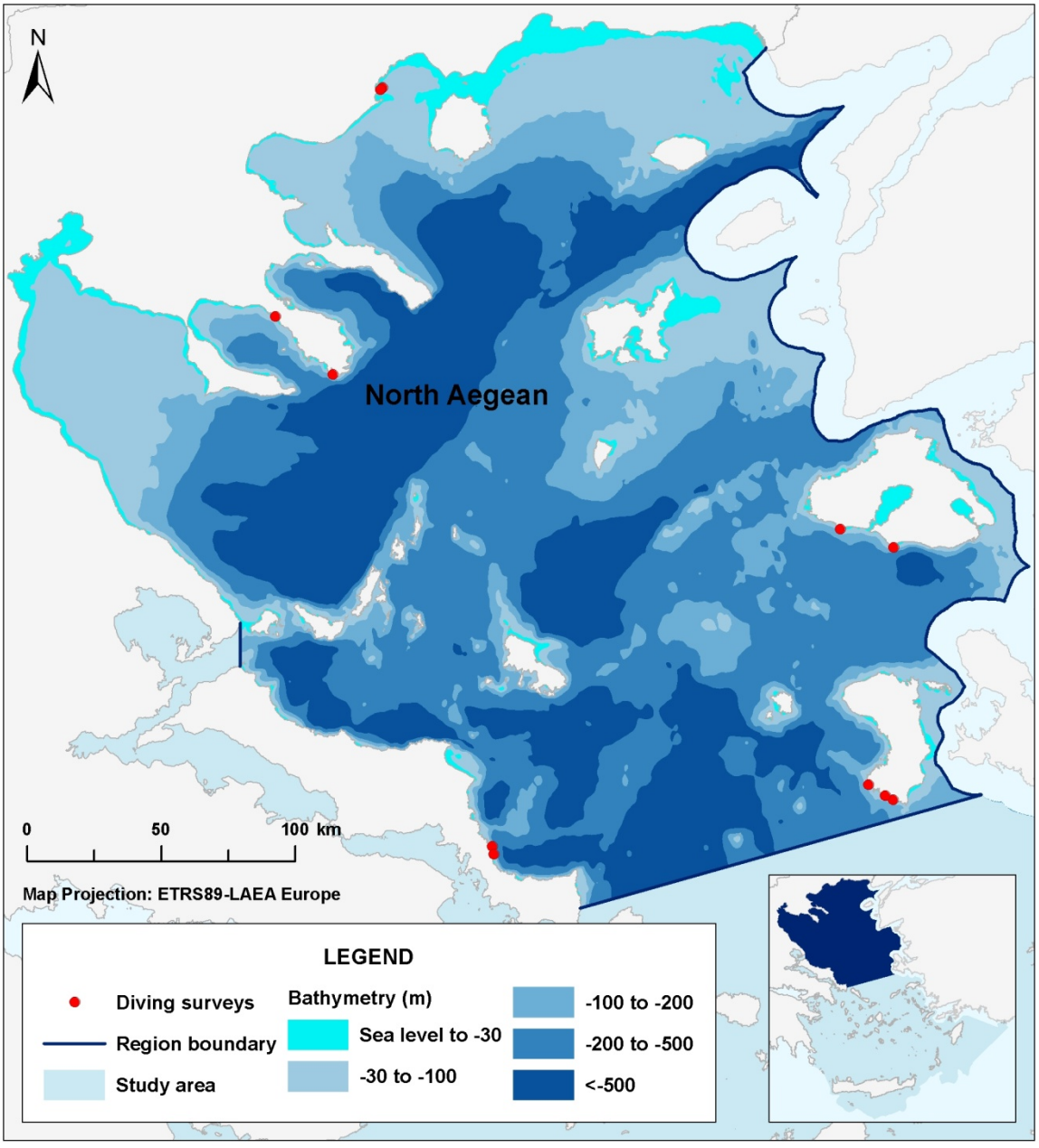

Fig. S1a: North Aegean. The sampling stations are indicated by red dots.

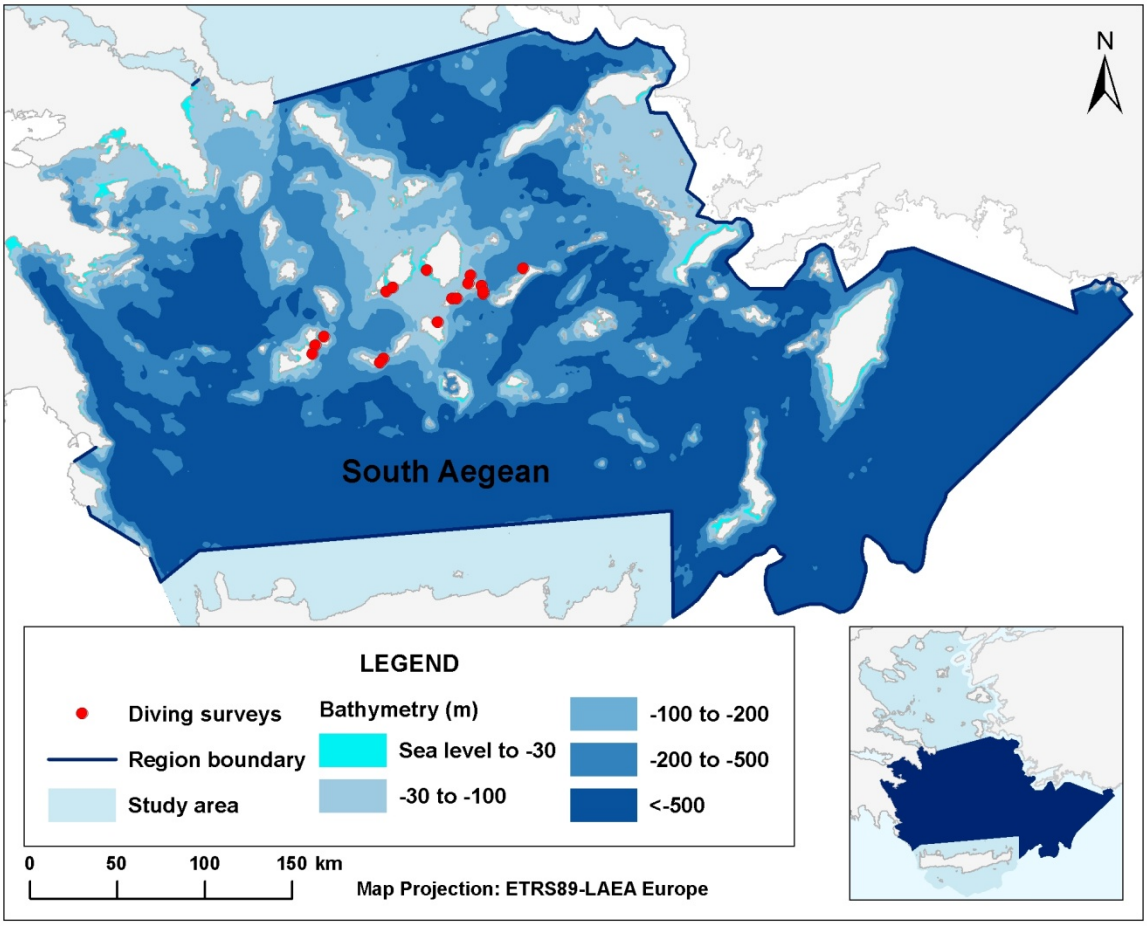

Fig. S1b: South Aegean. The sampling stations are indicated by red dots.

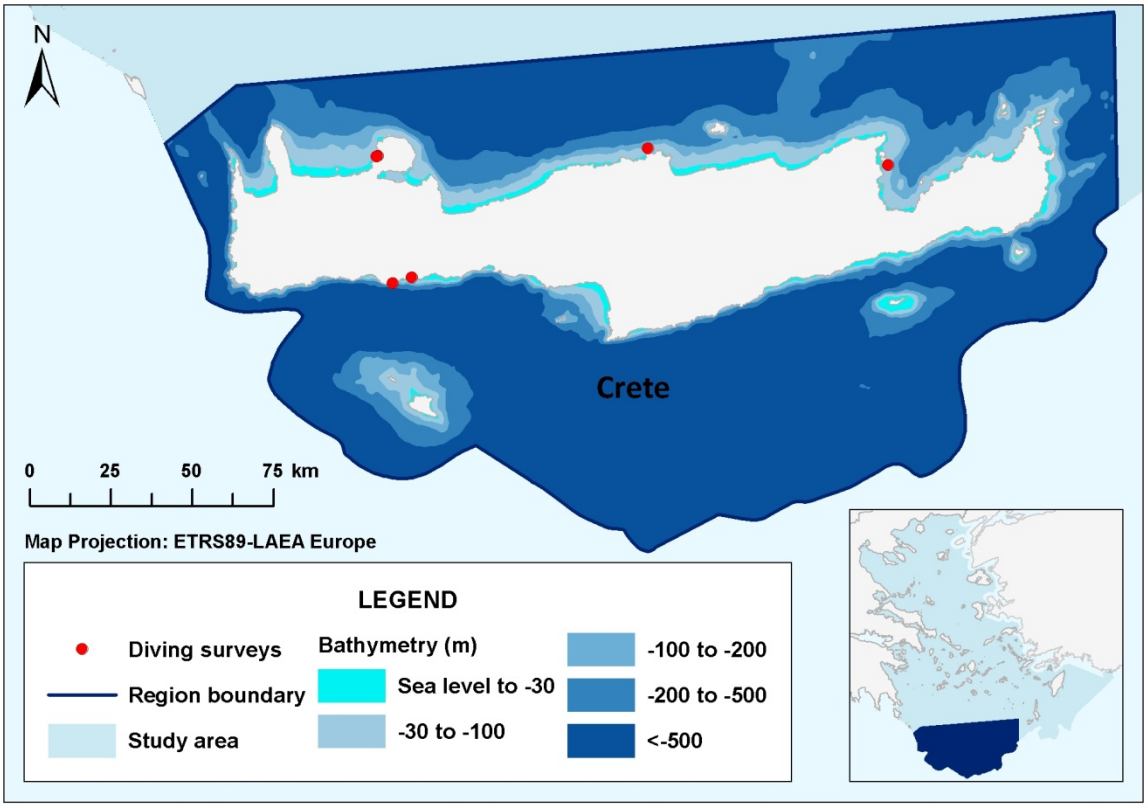

Fig. S1c: Crete. The sampling stations are indicated by red dots.

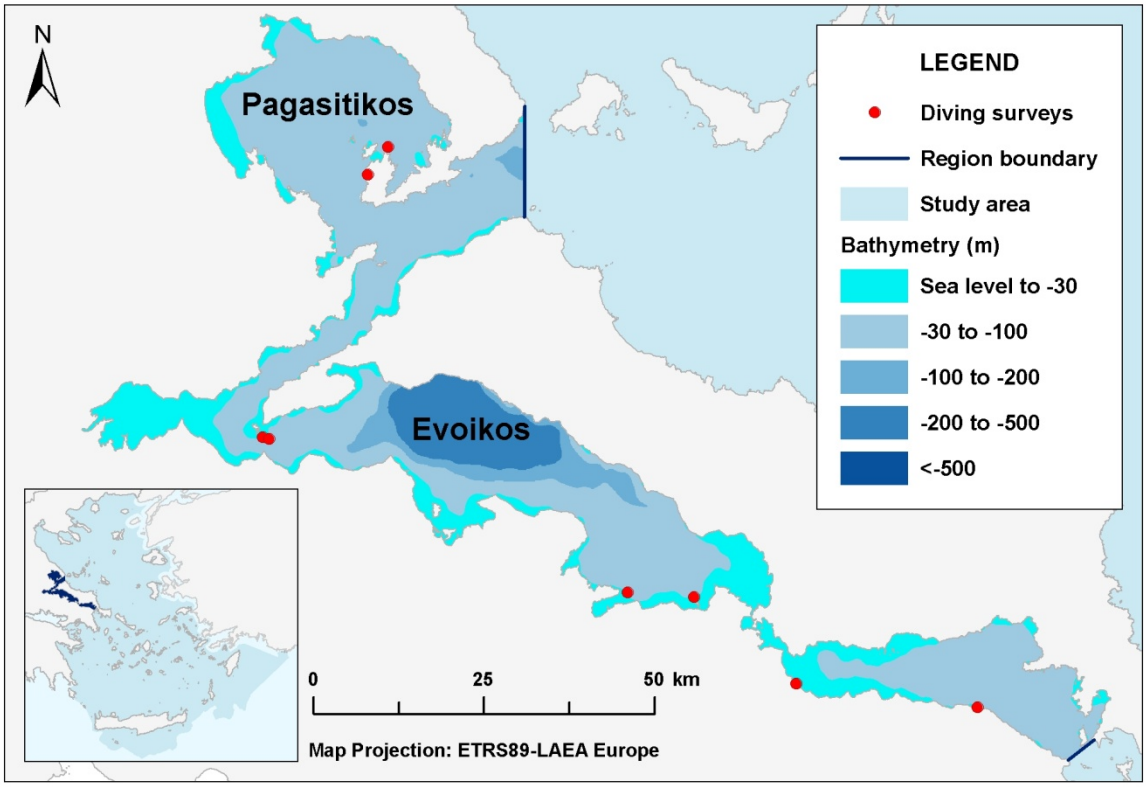

Fig. S1d: Pagasitikos and Evoikos Gulfs. The sampling stations are indicated by red dots.

Fig S2: Photographs of target species of the present study (as of Table 1): (a) *Aplysina aerophoba* (Nardo, 1833); (b) *Axinella cannabina* (Esper, 1794); (c) *Axinella polypoides* Schmidt, 1862; (d) *Sarcotragus foetidus* Schmidt, 1862; (e) *Tethya* spp.; (f) *Cladocora caespitosa* (Linnaeus, 1767); (g) *Charonia variegata* (Lamarck, 1816); (h) *Erosaria spurca* (Linnaeus, 1758); (i) *Luria lurida* (Linnaeus, 1758); (j) *Zonaria pyrum* (Gmelin, 1791); (k) *Pholas dactylus* Linnaeus, 1758; (l) *Centrostephanus longispinus* (Philippi, 1845); (m) *Ophidiaster ophidianus* (Lamarck, 1816); (n)

Hippocampus guttulatus Cuvier, 1829; (o) *Hippocampus hippocampus* (Linnaeus, 1758). All photos were taken during the present field survey except (c), (e), (i), (j), and (o). Photo credits: (a), (b), (c), (d), (f), (h), (i), (l), (m), (o) Thanos Dailianis; (e), (n) Maria Sini; (g), (k) Vasilis Gerovasileiou; (j) courtesy of Dimitris Poursanidis.

Supplement 2

Environmental variables and habitat mapping

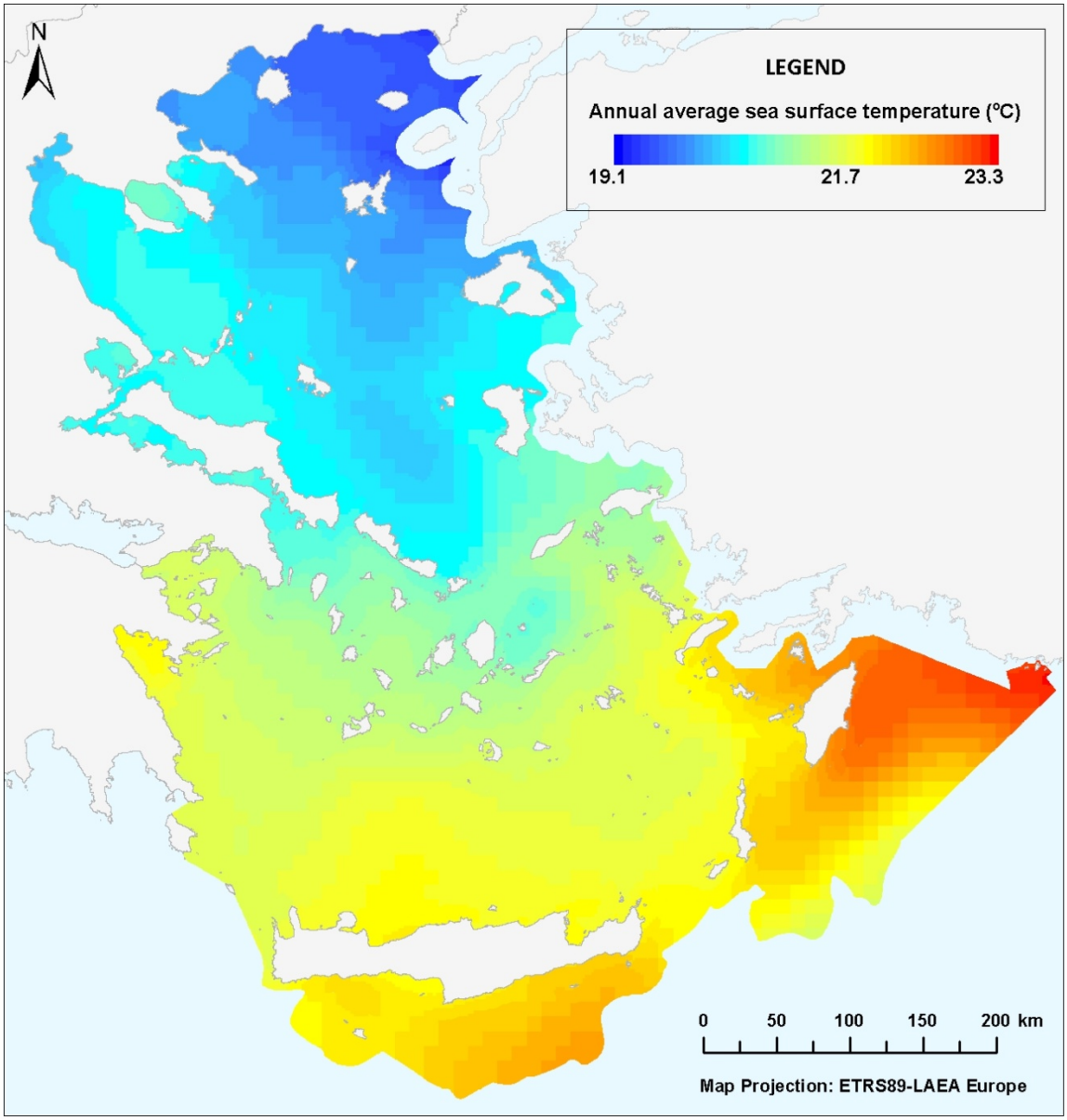

Fig S3: Annual average of sea surface temperature (*Tm*)

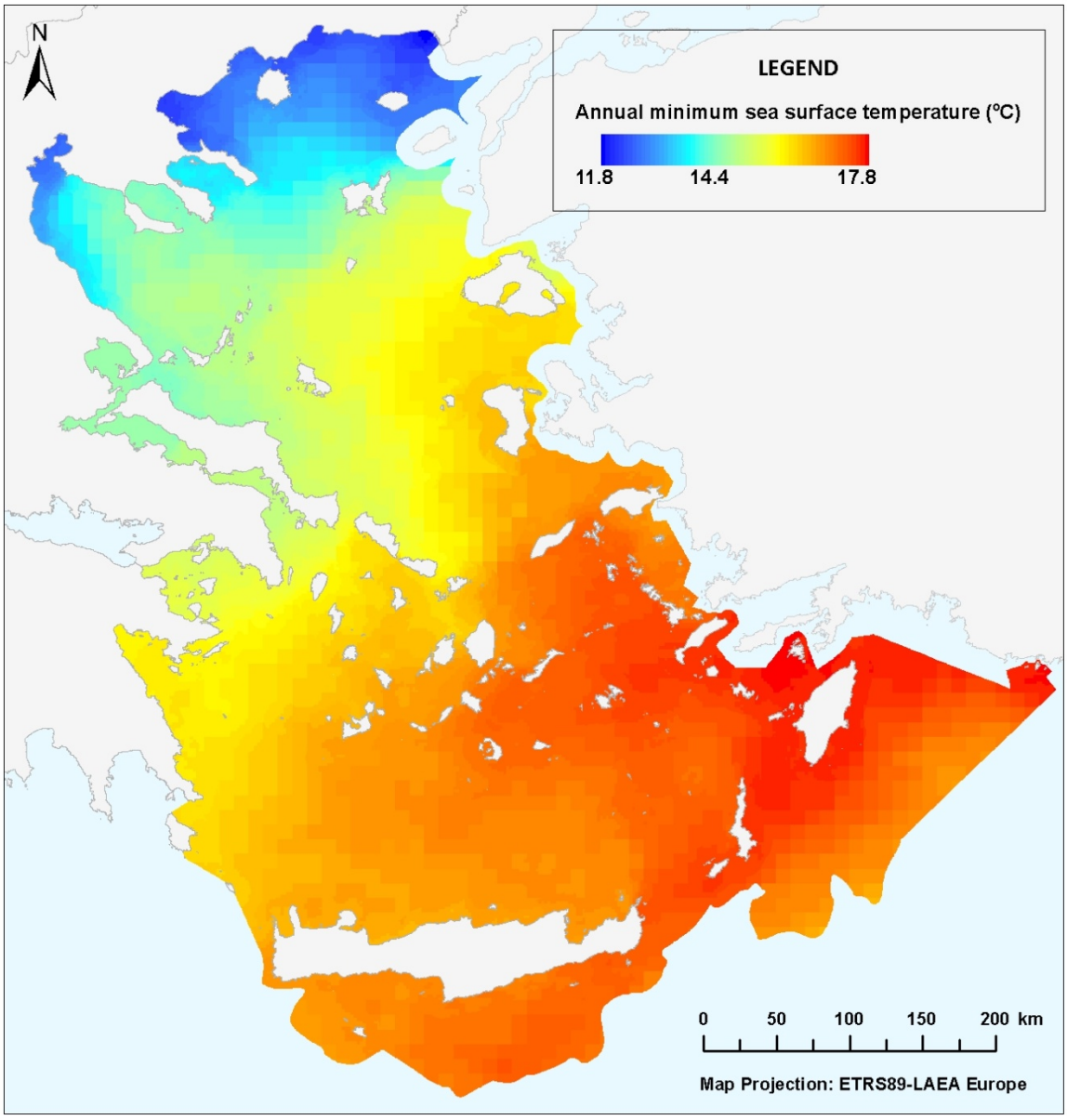

Fig S4: Annual minimum of sea surface temperature (*Tmin*)

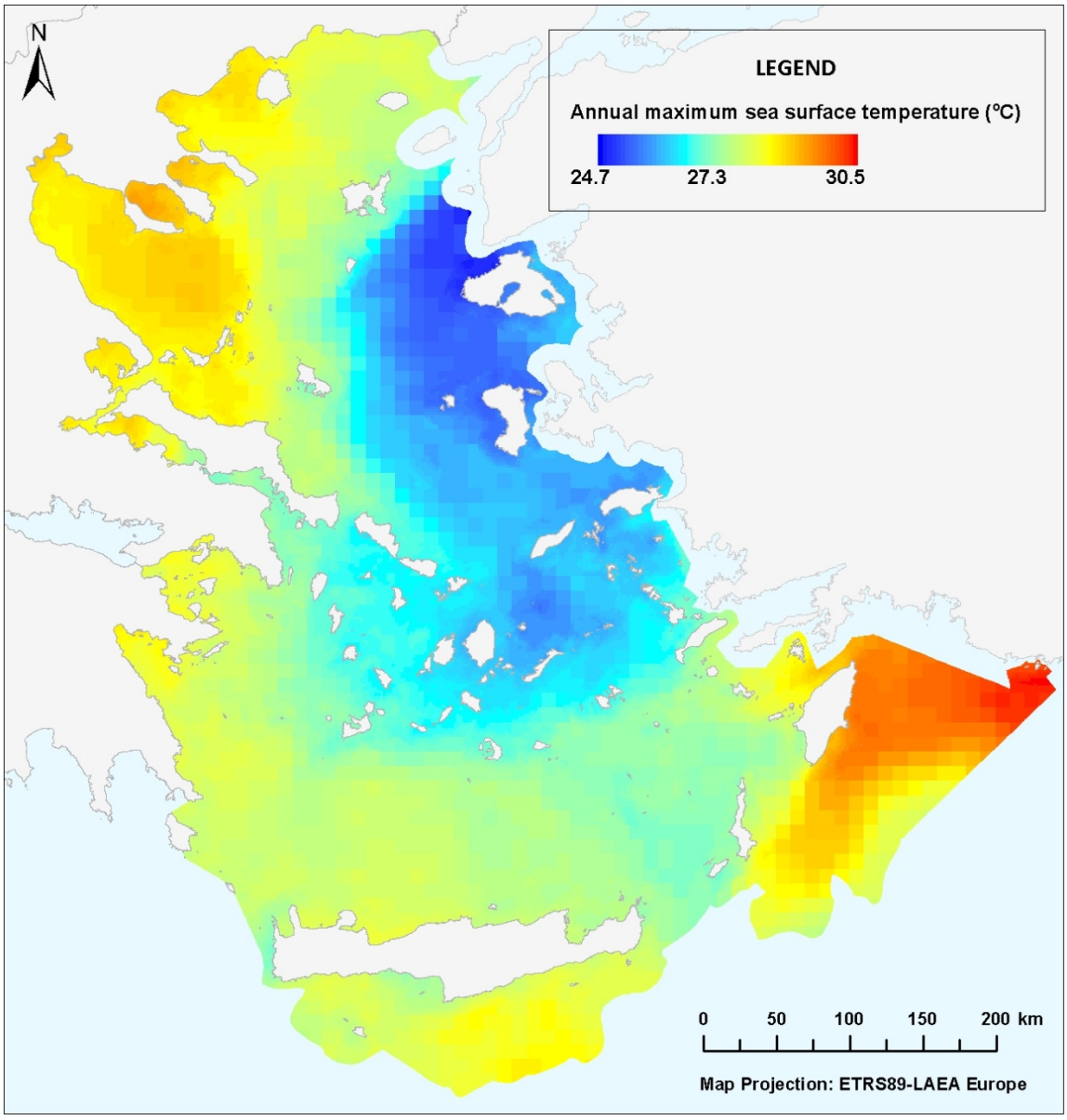

Fig S5: Annual maximum of sea surface temperature (Tmax)

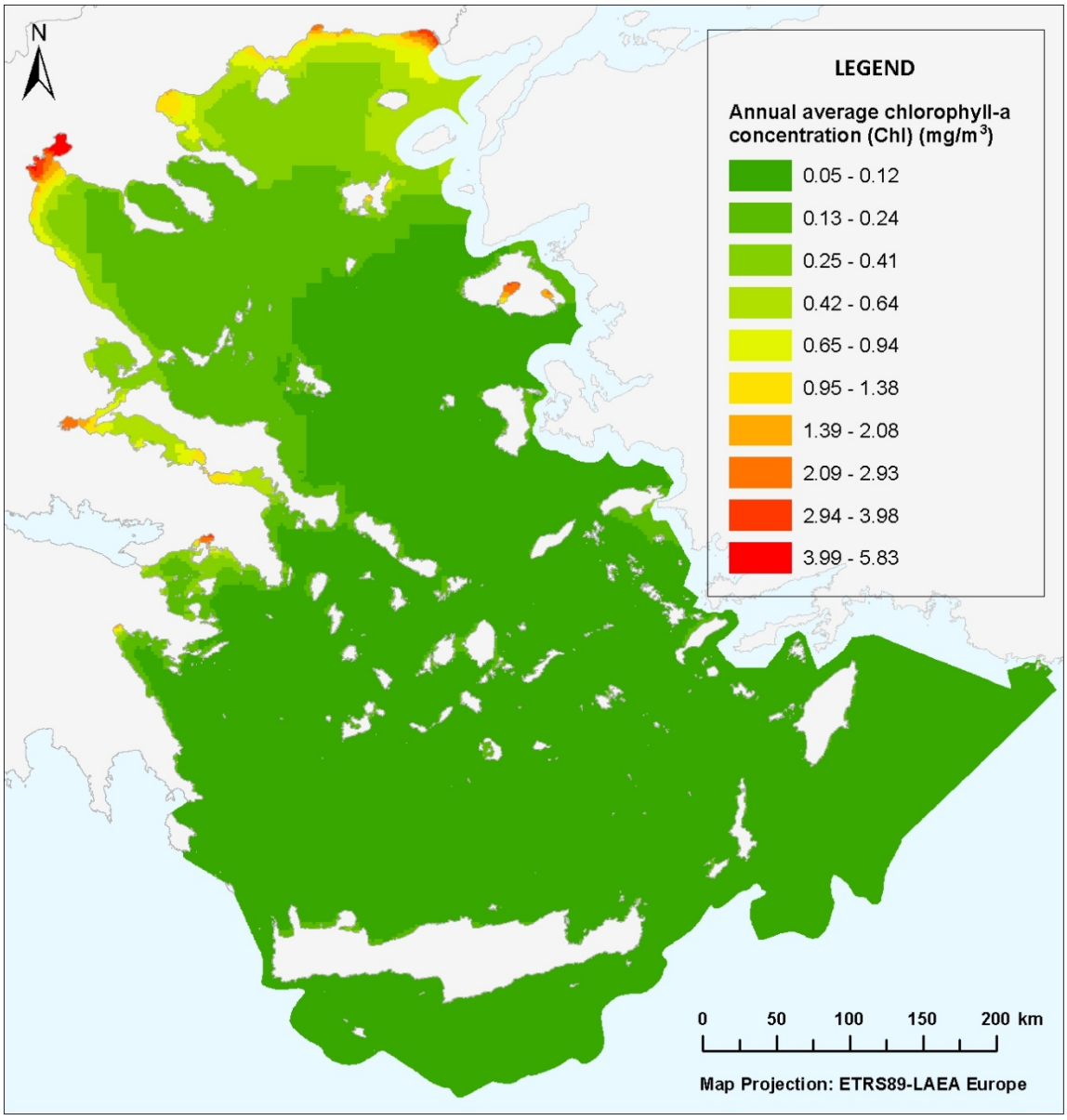

Fig S6: Annual average of chlorophyll-a concentration (*Chl*)

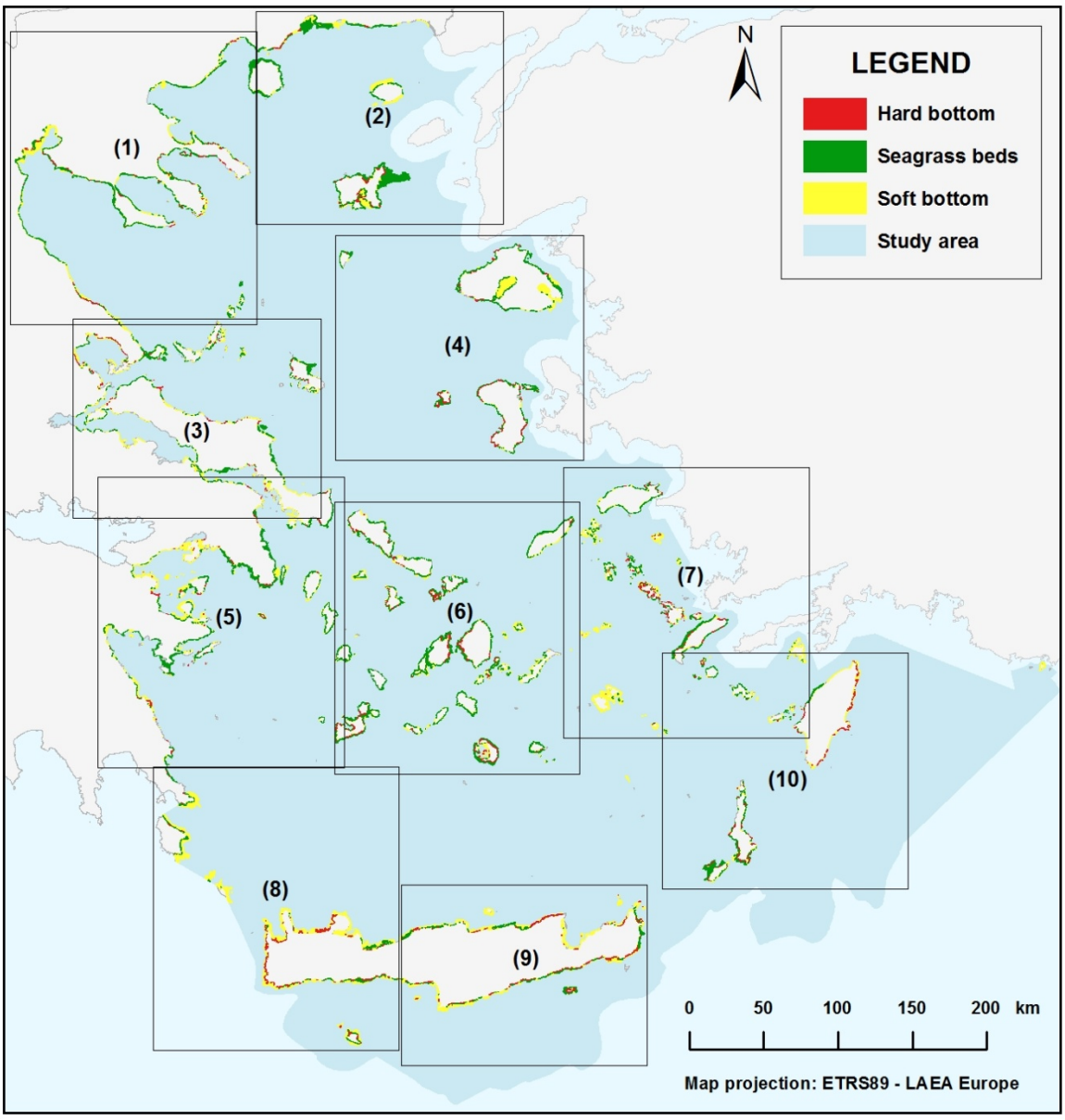

Fig S7: Habitat mapping based on satellite imaging.

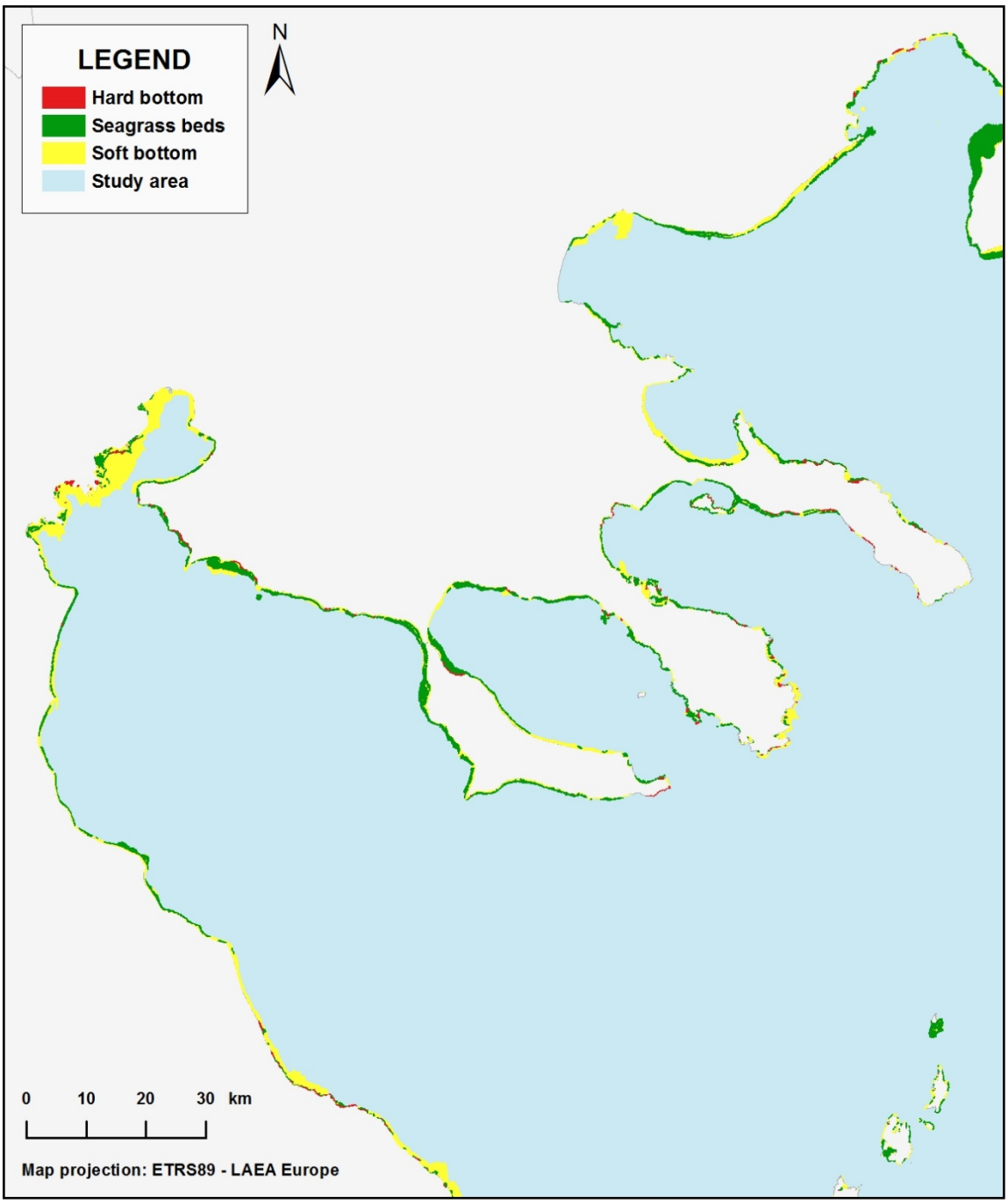

Fig S7.1: Habitat mapping based on satellite imaging.

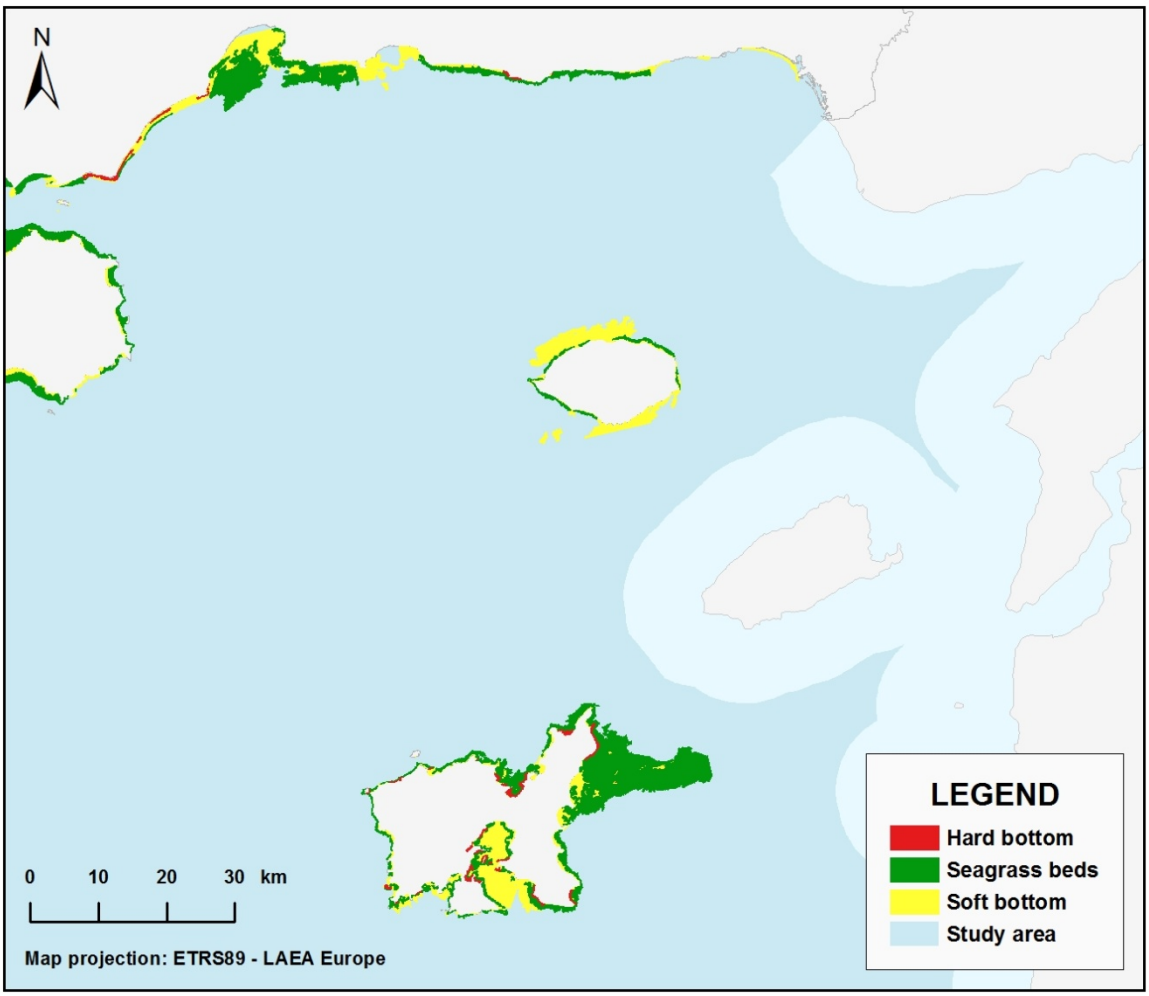

Fig S7.2: Habitat mapping based on satellite imaging.

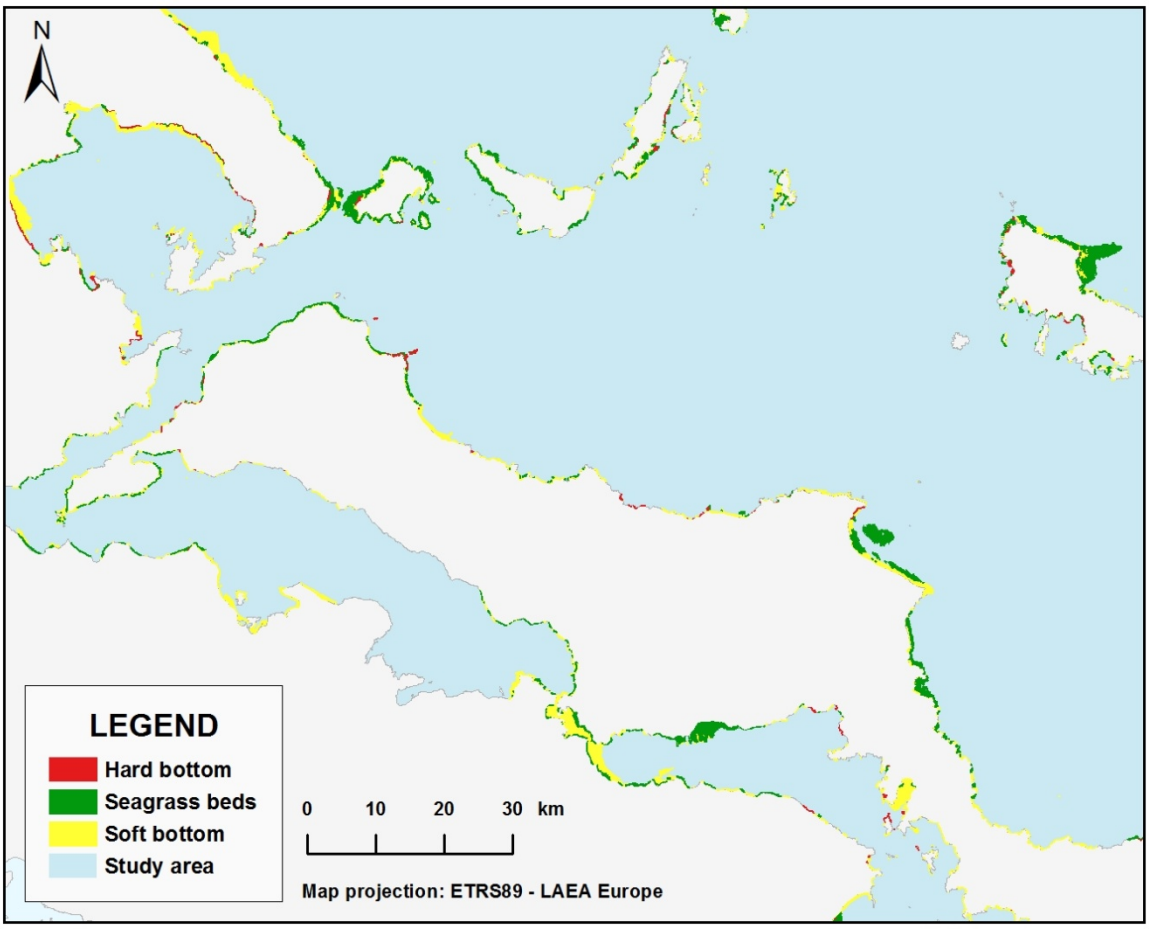

Fig S7.3: Habitat mapping based on satellite imaging.

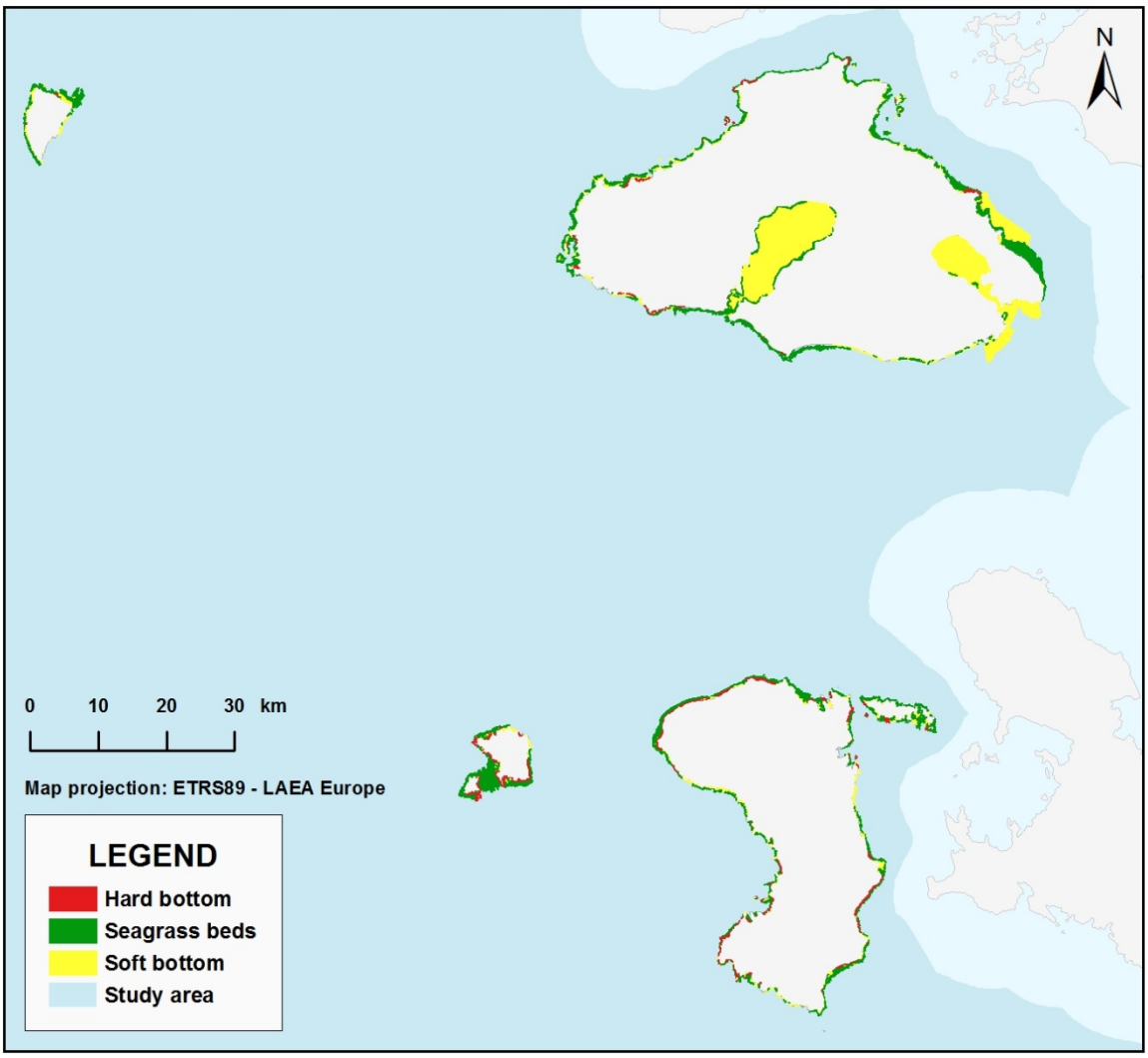

Fig S7.4: Habitat mapping based on satellite imaging.

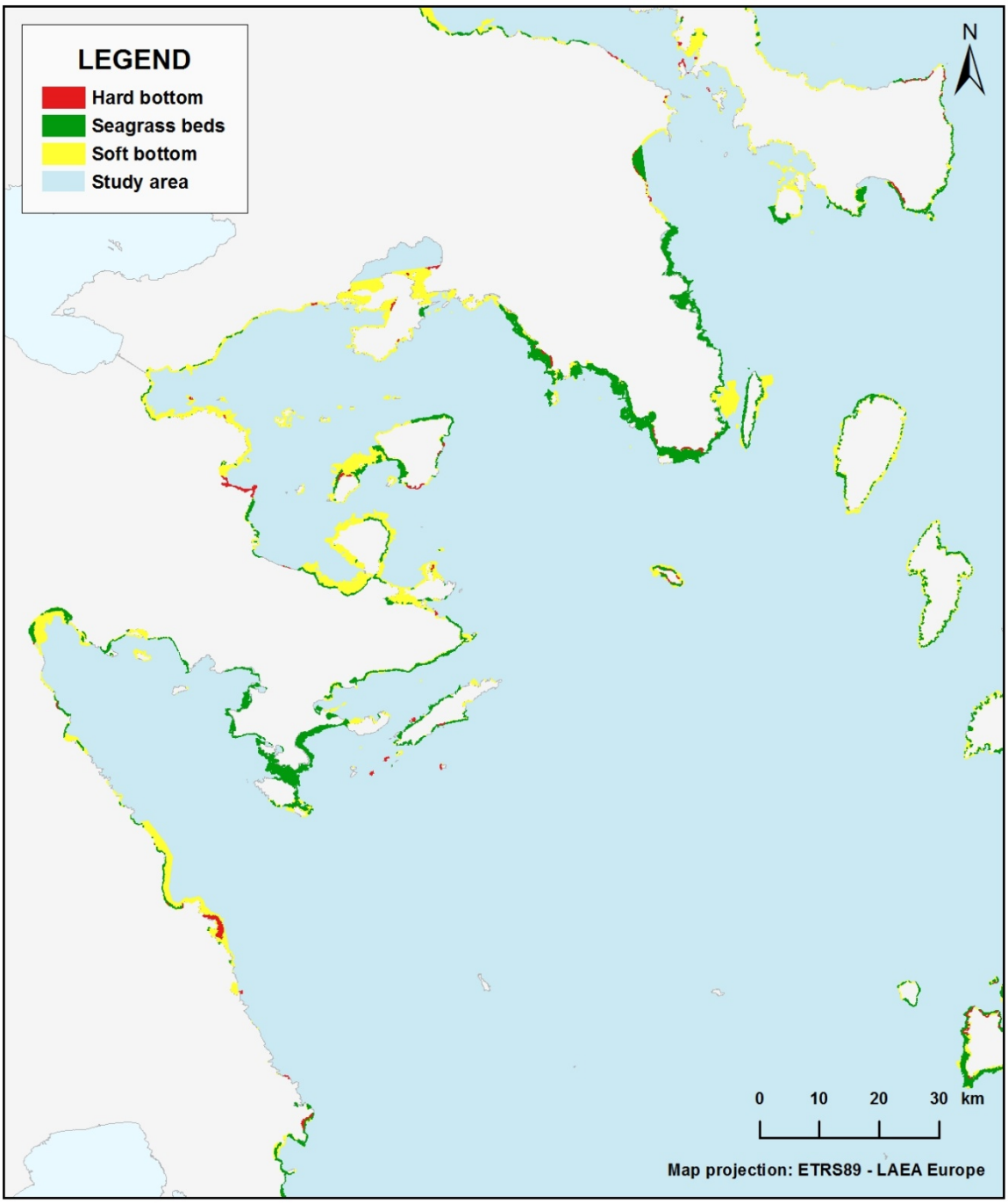

Fig S7.5: Habitat mapping based on satellite imaging.

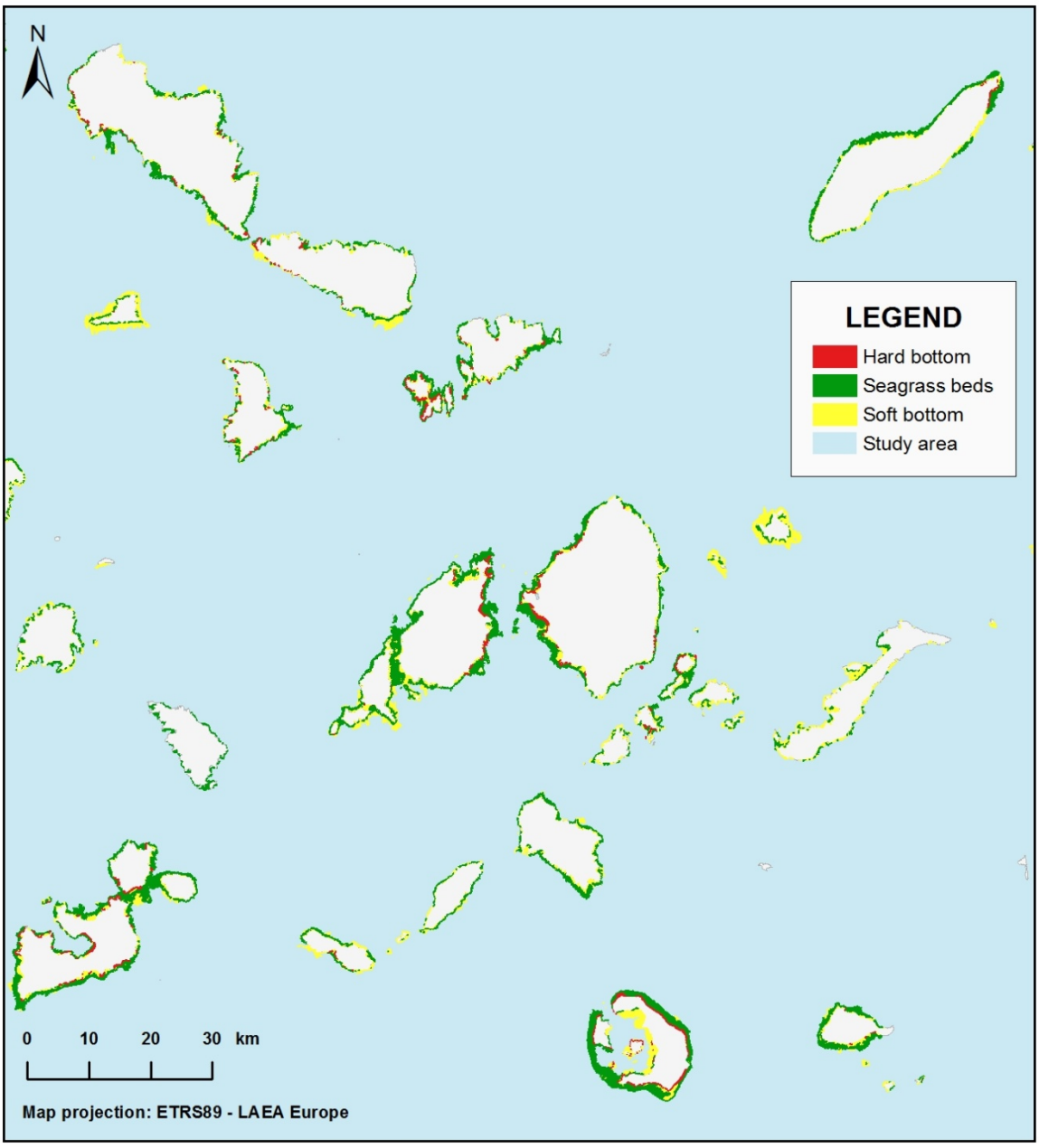

Fig S7.6: Habitat mapping based on satellite imaging.

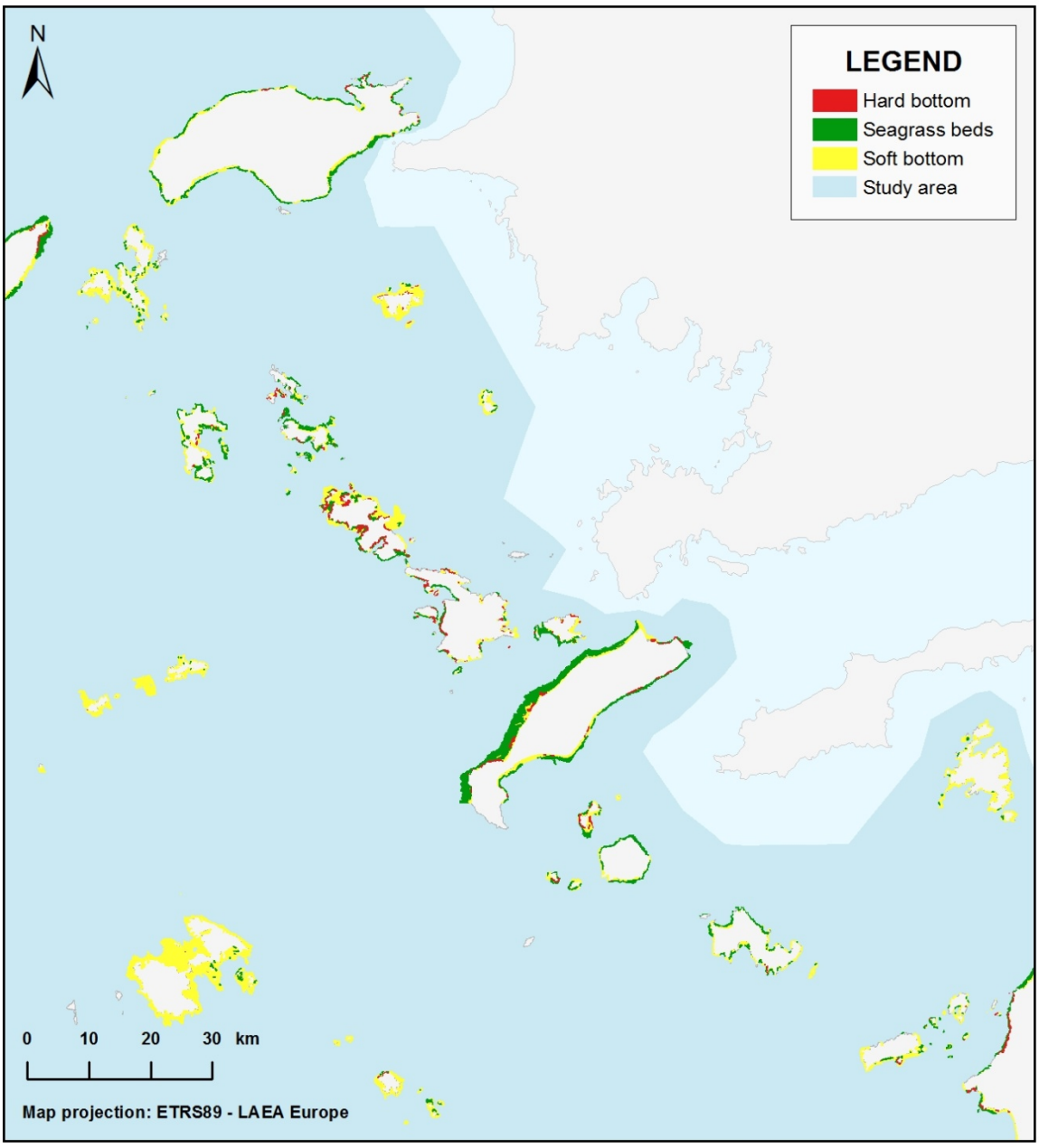

Fig S7.7: Habitat mapping based on satellite imaging.

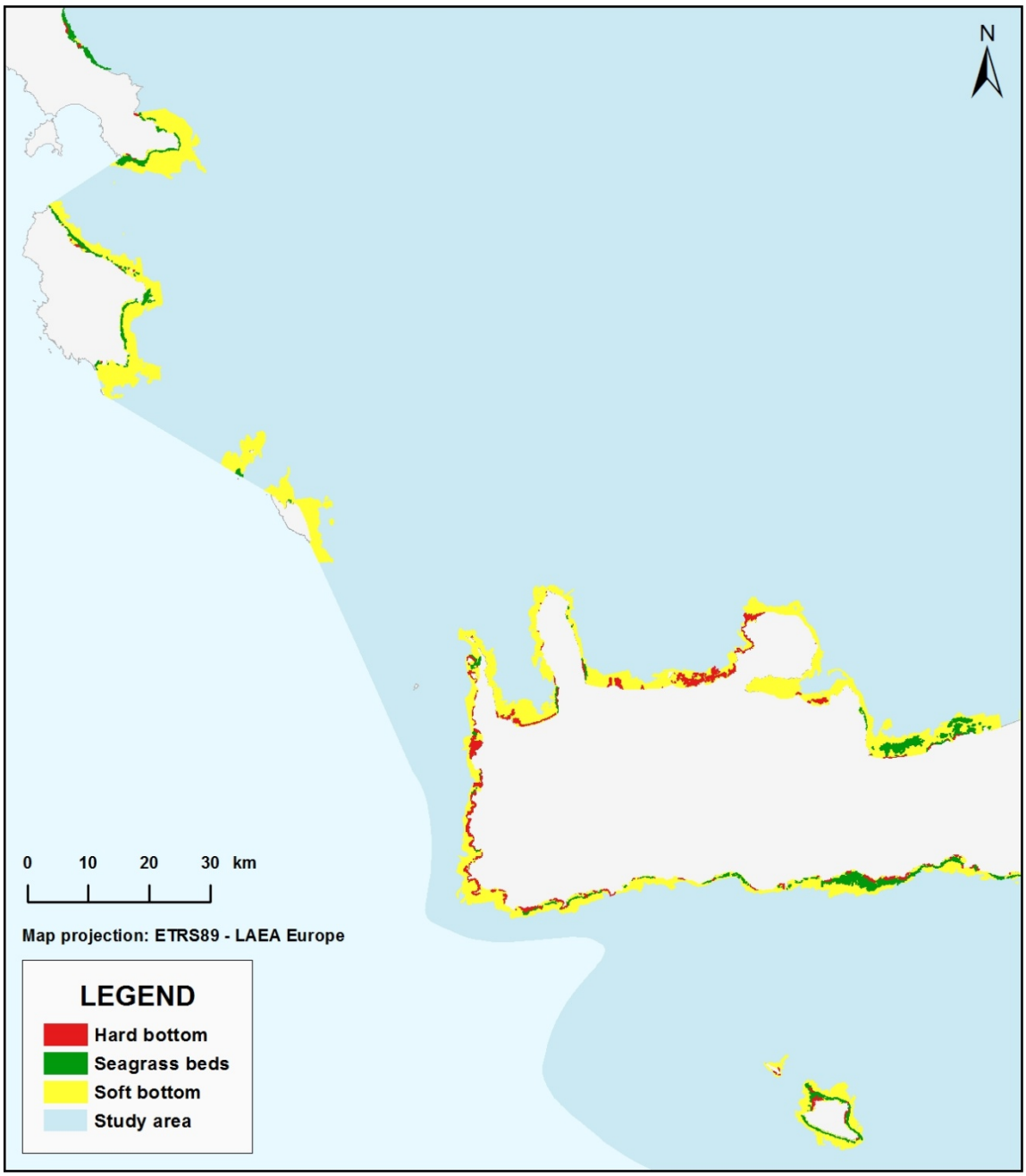

Fig S7.8: Habitat mapping based on satellite imaging.

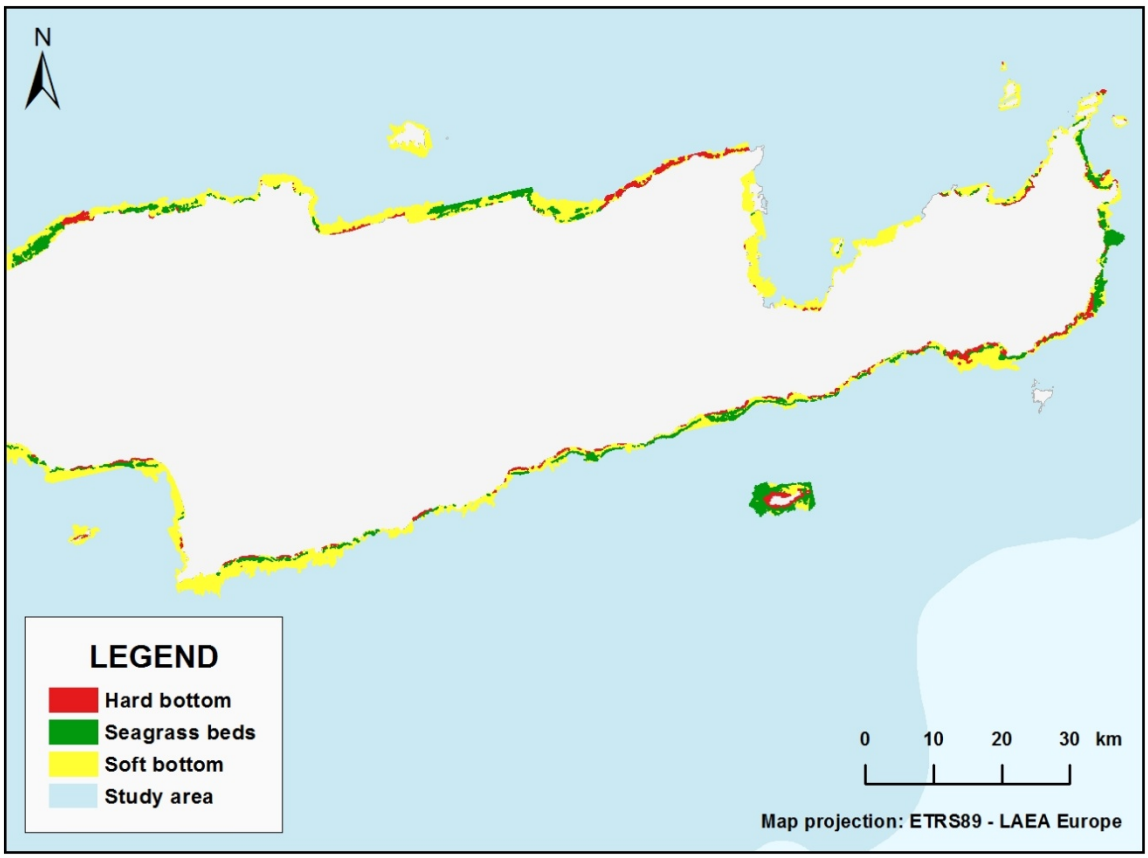

Fig S7.9: Habitat mapping based on satellite imaging.

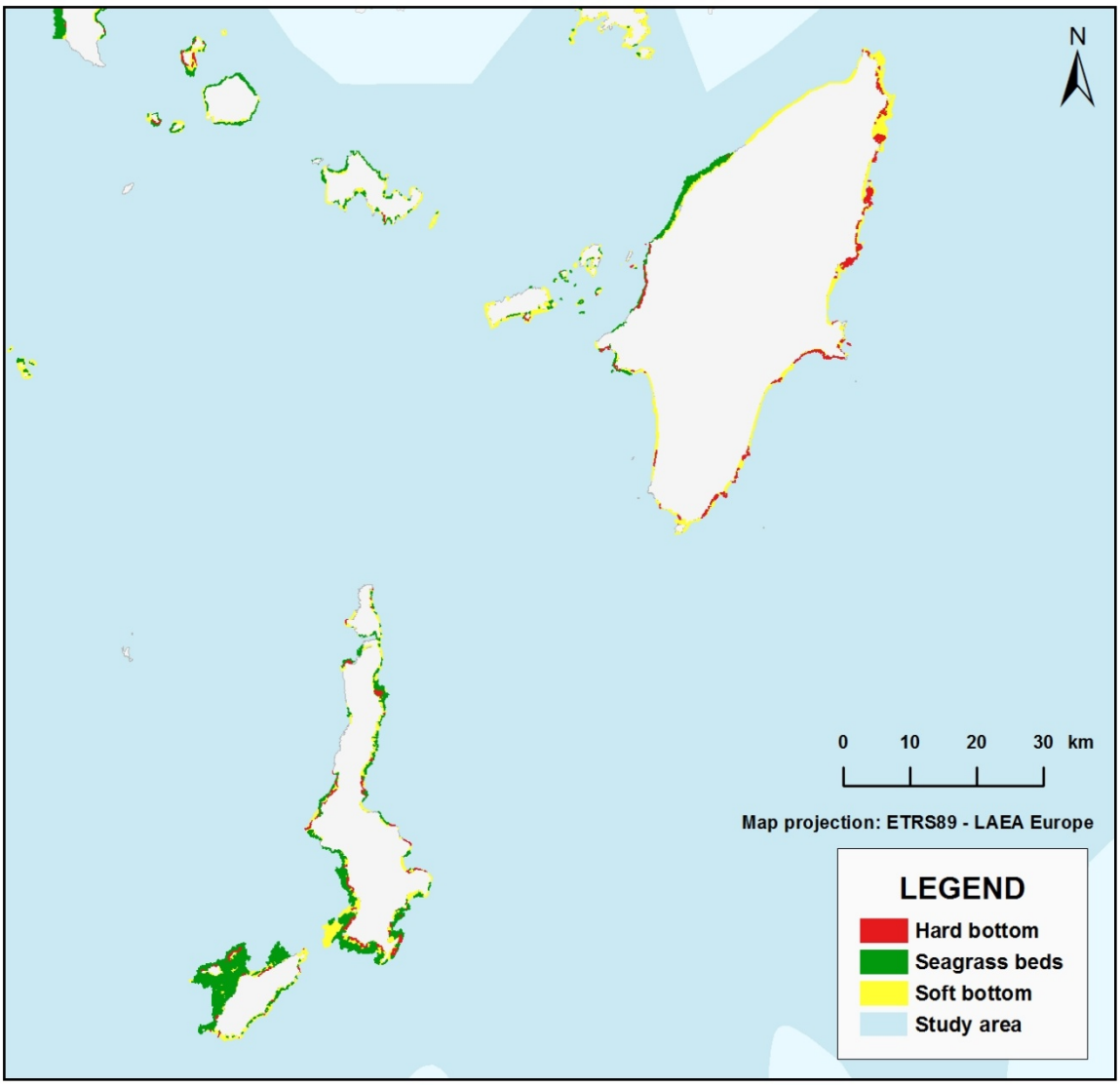

Fig S7.10: Habitat mapping based on satellite imaging.

Supplement 3

Tables with occupancy modelling results

Table S1: Results of the model selection procedure examining factors predicting the probability of presence ψ of 6 protected taxa, using logistic regression. The factors considered were annual average sea surface temperature (*Tm*), annual minimum sea surface temperature (*Tmin*), annual maximum sea surface temperature (*Tmax*), annual average chlorophyll-a concentration (*Chl*), depth, and marine sub-area (*Marea*); the model with equal probability of presence for all sites is denoted as $\psi(\cdot)$. Detection probability was considered as either being constant, denoted as $p(\cdot)$, or different for each of the 4 observers, denoted as *p(obs)*. Reported is the relative difference in AIC values compared to the top-ranked model (ΔAIC), and the AIC model weights (*w*). For each species, the models are ranked according to *w* values. The 95% confidence set of models is shown in bold. See main text for Assumption codes.

Sarcotragus foetidus

Model notation	Assumptions	ΔAIC	w(%)	average ψ	SE(ψ)
ψ(Tmin+depth) p(obs)	O3, O7, D2	0.00	60.6	0.679	0.032
ψ(Tmin+Chl+depth) p(obs)	O3, O5, O7, D2	1.69	26.0	0.680	0.030
ψ(Tmin) p(obs)	O3, D2	4.33	7.0	0.679	0.029
ψ(Tmin+Chl) p(obs)	O3, O5, D2	6.09	2.9	0.679	0.034
ψ(Tmin+depth) p(.)	O3, O7, D1	6.67	2.2	0.679	0.031
ψ(Tmin+Chl+depth) p(.)	O3, O5, O7, D1	8.44	0.9	0.679	0.028
ψ(Tmin) p(.)	O3, D1	10.54	0.3	0.679	0.036
ψ(Tmin+Chl) p(.)	O3, O5, D1	12.36	0.1	0.679	0.032
ψ(Tmax+Chl+depth) p(obs)	O4, O5, O7, D2	14.36	0.1	0.685	0.035
ψ(Tmax+Chl) p(obs)	O4, O5, D2	17.11	0.0	0.689	0.037
ψ(MArea+depth) p(obs)	O6, O7, D2	18.42	0.0	0.682	0.033
ψ(Tmax+depth) p(obs)	O4, O7, D2	19.20	0.0	0.683	0.034
ψ(Tmax) p(obs)	O4, D2	21.48	0.0	0.687	0.033
ψ(Tmax+Chl+depth) p(.)	O4, O5, O7, D1	21.50	0.0	0.682	0.032
ψ(MArea) p(obs)	O6, D2	23.03	0.0	0.680	0.028
ψ(Tm+Chl+depth) p(obs)	O2, O5, O7, D2	23.90	0.0	0.682	0.039
ψ(Tmax+Chl) p(.)	O4, O5, D1	23.93	0.0	0.685	0.034
ψ(MArea+depth) p(.)	O6, O7, D1	24.87	0.0	0.682	0.026
ψ(Tmax+depth) p(.)	O4, O7, D1	25.86	0.0	0.682	0.031
ψ(Tmax) p(.)	O4, D1	27.86	0.0	0.685	0.028
ψ(Tm+Chl) p(obs)	O2, O5, D2	28.71	0.0	0.678	0.033
ψ(MArea) p(.)	O6, D1	29.19	0.0	0.680	0.032
ψ(Tm+depth) p(obs)	O2, O7, D2	29.89	0.0	0.682	0.034
ψ(Tm+Chl+depth) p(.)	O2, O5, O7, D1	31.46	0.0	0.680	0.030
ψ(Tm) p(obs)	O2, D2	34.35	0.0	0.678	0.033
ψ(Tm+Chl) p(.)	O2, O5, D1	36.06	0.0	0.677	0.035
ψ(Tm+depth) p(.)	O2, O7, D1	36.99	0.0	0.681	0.034
ψ(Chl+depth) p(obs)	O5, O7, D2	38.56	0.0	0.682	0.031
ψ(Tm) p(.)	O2, D1	41.36	0.0	0.678	0.033
ψ(Chl) p(obs)	O5, D2	42.57	0.0	0.681	0.034
ψ(Chl+depth) p(.)	O5, O7, D1	47.15	0.0	0.677	0.031
ψ(Chl) p(.)	O5, D1	50.77	0.0	0.676	0.034
ψ(depth) p(obs)	O4, D2	63.94	0.0	0.680	0.033
ψ(.) p(obs)	O1, D2	66.82	0.0	0.679	0.034
ψ(depth) p(.)	O7, D1	71.93	0.0	0.677	0.029
ψ(.) p(.)	O1, D1	74.62	0.0	0.677	0.034
model average				**0.679**	**0.031**

Aplysina aerophoba

Model notation	Assumptions	ΔAIC	w(%)	average ψ	SE(ψ)
ψ(MArea) p(.)	O6, D1	0.00	29.9	0.359	0.031
ψ(MArea) p(obs)	O6, D2	0.77	20.3	0.358	0.030
ψ(MArea+depth) p(.)	O6, O7, D1	1.84	11.9	0.358	0.029
ψ(Tmax+Chl) p(.)	O4, O5, D1	2.17	10.1	0.368	0.028
ψ(MArea+depth) p(obs)	O6, O7, D2	2.60	8.2	0.358	0.025
ψ(Tmax+Chl+depth) p(.)	O4, O5, O7, D1	4.07	3.9	0.368	0.033
ψ(Chl) p(.)	O5, D1	4.54	3.1	0.366	0.027
ψ(Tmax+Chl) p(obs)	O4, O5, D2	4.75	2.8	0.367	0.033
ψ(Tm+Chl) p(.)	O2, O5, D1	5.43	2.0	0.365	0.031
ψ(Tmin+Chl) p(.)	O3, O5, D1	6.07	1.4	0.366	0.029
ψ(Chl+depth) p(.)	O5, O7, D1	6.49	1.2	0.366	0.026
ψ(Tmax+Chl+depth) p(obs)	O4, O5, O7, D2	6.66	1.1	0.367	0.028
ψ(Chl) p(obs)	O5, D2	6.76	1.0	0.364	0.032
ψ(Tm+Chl+depth) p(.)	O2, O5, O7, D1	7.40	0.7	0.365	0.033
ψ(Tm+Chl) p(obs)	O2, O5, D2	7.64	0.7	0.363	0.033
ψ(Tmin+Chl+depth) p(.)	O3, O5, O7, D1	8.00	0.6	0.367	0.030
ψ(Tmin+Chl) p(obs)	O3, O5, D2	8.42	0.4	0.365	0.031
ψ(Chl+depth) p(obs)	O5, O7, D2	8.73	0.4	0.364	0.030
ψ(Tm+Chl+depth) p(obs)	O2, O5, O7, D2	9.63	0.2	0.364	0.032
ψ(Tmin+Chl+depth) p(obs)	O3, O5, O7, D2	10.36	0.2	0.366	0.028
ψ(Tmin) p(.)	O3, D1	60.71	0.0	0.361	0.036
ψ(Tmin) p(obs)	O3, D2	62.02	0.0	0.359	0.033
ψ(Tmin+depth) p(.)	O3, O7, D1	62.57	0.0	0.360	0.027
ψ(Tmin+depth) p(obs)	O3, O7, D2	63.85	0.0	0.359	0.027
ψ(Tm) p(.)	O2, D1	81.67	0.0	0.362	0.031
ψ(Tm) p(obs)	O2, D2	82.77	0.0	0.370	0.035
ψ(Tm+depth) p(.)	O2, O7, D1	83.48	0.0	0.362	0.027
ψ(Tm+depth) p(obs)	O2, O7, D2	84.51	0.0	0.371	0.037
ψ(Tmax) p(.)	O4, D1	97.85	0.0	0.358	0.033
ψ(Tmax) p(obs)	O4, D2	99.16	0.0	0.357	0.035
ψ(Tmax+depth) p(.)	O4, O7, D1	99.62	0.0	0.358	0.032
ψ(Tmax+depth) p(obs)	O4, O7, D2	100.93	0.0	0.357	0.031
ψ(·) p(·)	O1, D1	127.10	0.0	0.360	0.032
ψ(·) p(obs)	O1, D2	128.87	0.0	0.357	0.032
ψ(depth) p(·)	O4, D1	128.97	0.0	0.360	0.029
ψ(depth) p(obs)	O4, D2	130.73	0.0	0.357	0.035
model average				**0.361**	**0.030**

Cladocora caespitosa

Model notation	Assumptions	ΔAIC	w(%)	average ψ	SE(ψ)
ψ(Tm+Chl) p(.)	O2, O5, D1	0.00	18.0	0.250	0.028
ψ(Chl) p(.)	O5, D1	0.06	17.5	0.251	0.028
ψ(Tmin+Chl) p(.)	O3, O5, D1	1.43	8.8	0.250	0.027
ψ(Tmax+Chl) p(.)	O4, O5, D1	1.95	6.8	0.250	0.027
ψ(Chl+depth) p(.)	O5, O7, D1	1.95	6.8	0.251	0.027
ψ(Tm+Chl+depth) p(.)	O2, O5, O7, D1	1.95	6.8	0.250	0.028
ψ(MArea) p(obs)	O6, D2	1.99	6.7	0.213	0.030
ψ(MArea) p(.)	O6, D1	2.74	4.6	0.208	0.030
ψ(MArea+depth) p(obs)	O6, O7, D2	2.89	4.2	0.213	0.031
ψ(Tmin+Chl+depth) p(.)	O3, O5, O7, D1	3.40	3.3	0.250	0.029
ψ(MArea+depth) p(.)	O6, O7, D1	3.60	3.0	0.208	0.029
ψ(Tm+Chl) p(obs)	O2, O5, D2	3.65	2.9	0.250	0.026
ψ(Chl) p(obs)	O5, D2	3.81	2.7	0.250	0.028
ψ(Tmax+Chl+depth) p(.)	O4, O5, O7, D1	3.85	2.6	0.250	0.029
ψ(Tmin+Chl) p(obs)	O3, O5, D2	5.19	1.3	0.250	0.026
ψ(Tm+Chl+depth) p(obs)	O2, O5, O7, D2	5.61	1.1	0.250	0.030
ψ(Chl+depth) p(obs)	O5, O7, D2	5.70	1.0	0.250	0.031
ψ(Tmax+Chl) p(obs)	O4, O5, D2	5.72	1.0	0.250	0.028
ψ(Tmin+Chl+depth) p(obs)	O3, O5, O7, D2	7.15	0.5	0.250	0.026
ψ(Tmax+Chl+depth) p(obs)	O4, O5, O7, D2	7.62	0.4	0.250	0.027
ψ(Tmin) p(.)	O3, D1	50.71	0.0	0.228	0.051
ψ(Tmin+depth) p(.)	O3, O7, D1	52.27	0.0	0.226	0.052
ψ(Tmin) p(obs)	O3, D2	52.51	0.0	0.225	0.043
ψ(Tmin+depth) p(obs)	O3, O7, D2	54.05	0.0	0.223	0.052
ψ(Tm) p(obs)	O2, D2	73.59	0.0	0.250	0.110
ψ(Tm+depth) p(obs)	O2, O7, D2	75.04	0.0	0.249	0.092
ψ(Tm) p(.)	O2, D1	81.78	0.0	0.215	0.050
ψ(Tm+depth) p(.)	O2, O7, D1	83.36	0.0	0.215	0.038
ψ(Tmax) p(.)	O4, D1	83.53	0.0	0.208	0.025
ψ(Tmax+depth) p(.)	O4, O7, D1	84.83	0.0	0.208	0.030
ψ(Tmax) p(obs)	O4, D2	85.05	0.0	0.207	0.028
ψ(Tmax+depth) p(obs)	O4, O7, D2	86.37	0.0	0.207	0.029
ψ(.) p(obs)	O1, D2	126.87	0.0	0.218	0.029
ψ(depth) p(obs)	O4, D2	128.50	0.0	0.218	0.030
ψ(.) p(.)	O1, D1	129.21	0.0	0.209	0.024
ψ(depth) p(.)	O7, D1	130.88	0.0	0.209	0.025
model average				**0.243**	**0.032**

Axinella cannabina

Model notation	Assumptions	ΔAIC	w(%)	average ψ	SE(ψ)
ψ(Tmin+Chl+depth) p(obs)	O3, O5, O7, D2	0.00	54.6	0.200	0.027
ψ(MArea+depth) p(obs)	O6, O7, D2	1.50	25.8	0.195	0.025
ψ(Tmin+Chl+depth) p(.)	O3, O5, O7, D1	3.71	8.6	0.194	0.026
ψ(MArea+depth) p(.)	O6, O7, D1	3.72	8.5	0.194	0.027
ψ(Tmin+depth) p(obs)	O3, O7, D2	6.39	2.2	0.209	0.029
ψ(Tmin+depth) p(.)	O3, O7, D1	11.80	0.2	0.199	0.031
ψ(Tmax+Chl+depth) p(obs)	O4, O5, O7, D2	13.65	0.1	0.195	0.026
ψ(Tm+Chl+depth) p(obs)	O2, O5, O7, D2	14.68	0.0	0.193	0.031
ψ(Tmax+Chl+depth) p(.)	O4, O5, O7, D1	16.10	0.0	0.193	0.021
ψ(Tm+Chl+depth) p(.)	O2, O5, O7, D1	16.40	0.0	0.193	0.026
ψ(Chl+depth) p(obs)	O5, O7, D2	24.23	0.0	0.193	0.026
ψ(Chl+depth) p(.)	O5, O7, D1	25.77	0.0	0.193	0.024
ψ(Tm+depth) p(obs)	O2, O7, D2	34.96	0.0	0.196	0.026
ψ(Tmax+depth) p(obs)	O4, O7, D2	35.06	0.0	0.199	0.030
ψ(Tm+depth) p(.)	O2, O7, D1	36.43	0.0	0.196	0.025
ψ(Tmax+depth) p(.)	O4, O7, D1	37.94	0.0	0.195	0.024
ψ(MArea) p(obs)	O6, D2	58.33	0.0	0.195	0.024
ψ(Tmin+Chl) p(obs)	O3, O5, D2	58.75	0.0	0.195	0.024
ψ(MArea) p(.)	O6, D1	59.98	0.0	0.195	0.024
ψ(Tmin+Chl) p(.)	O3, O5, D1	60.48	0.0	0.195	0.029
ψ(Tmin) p(obs)	O3, D2	62.92	0.0	0.197	0.026
ψ(Tmin) p(.)	O3, D1	65.07	0.0	0.196	0.026
ψ(Tmax+Chl) p(obs)	O4, O5, D2	66.70	0.0	0.195	0.026
ψ(Tmax+Chl) p(.)	O4, O5, D1	68.43	0.0	0.195	0.026
ψ(Tm+Chl) p(obs)	O2, O5, D2	68.92	0.0	0.194	0.028
ψ(depth) p(obs)	O4, D2	69.50	0.0	0.195	0.025
ψ(Tm+Chl) p(.)	O2, O5, D1	70.23	0.0	0.195	0.026
ψ(depth) p(.)	O7, D1	70.70	0.0	0.196	0.029
ψ(Chl) p(obs)	O5, D2	77.15	0.0	0.194	0.025
ψ(Chl) p(.)	O5, D1	78.38	0.0	0.196	0.027
ψ(Tmax) p(obs)	O4, D2	80.71	0.0	0.196	0.024
ψ(Tm) p(obs)	O2, D2	81.81	0.0	0.195	0.026
ψ(Tmax) p(.)	O4, D1	82.79	0.0	0.195	0.024
ψ(Tm) p(.)	O2, D1	83.26	0.0	0.196	0.024
ψ(.) p(obs)	O1, D2	110.09	0.0	0.195	0.026
ψ(.) p(.)	O1, D1	111.49	0.0	0.196	0.027
model average				**0.198**	**0.026**

Centrostephanus longispinus

Model notation	Assumptions	ΔAIC	w(%)	average ψ	SE(ψ)
ψ(MArea+depth) p(obs)	O6, O7, D2	0.00	73.9	0.108	0.059
ψ(Tmax+Chl+depth) p(obs)	O4, O5, O7, D2	3.28	14.3	0.081	0.022
ψ(Tmin+depth) p(obs)	O3, O7, D2	6.92	2.3	0.337	0.122
ψ(Tmax+depth) p(.)	O4, O7, D1	7.29	1.9	0.272	0.098
ψ(Chl+depth) p(obs)	O5, O7, D2	8.10	1.3	0.095	0.033
ψ(Tmax+depth) p(obs)	O4, O7, D2	8.14	1.3	0.260	0.114
ψ(MArea+depth) p(.)	O6, O7, D1	8.54	1.0	0.113	0.084
ψ(Tmax+Chl+depth) p(.)	O4, O5, O7, D1	8.73	0.9	0.272	0.108
ψ(Tmin+Chl+depth) p(obs)	O3, O5, O7, D2	8.78	0.9	0.342	0.133
ψ(Tm+Chl+depth) p(obs)	O2, O5, O7, D2	9.36	0.7	0.084	0.090
ψ(MArea) p(obs)	O6, D2	10.20	0.5	0.104	0.048
ψ(Tmin+depth) p(.)	O3, O7, D1	10.88	0.3	0.346	0.115
ψ(Tmin) p(obs)	O3, D2	12.09	0.2	0.122	0.066
ψ(Tmin+Chl+depth) p(.)	O3, O5, O7, D1	12.48	0.1	0.360	0.119
ψ(Tmin+Chl) p(obs)	O3, O5, D2	14.00	0.1	0.119	0.079
ψ(Chl+depth) p(.)	O5, O7, D1	14.93	0.0	0.112	0.087
ψ(depth) p(obs)	O4, D2	15.79	0.0	0.108	0.047
ψ(Tm+Chl+depth) p(.)	O2, O5, O7, D1	15.83	0.0	0.111	0.088
ψ(Tm+depth) p(obs)	O2, O7, D2	16.79	0.0	0.125	0.145
ψ(Chl) p(obs)	O5, D2	17.44	0.0	0.096	0.056
ψ(Tmax+Chl) p(obs)	O4, O5, D2	17.99	0.0	0.096	0.032
ψ(Tmax) p(.)	O4, D1	18.28	0.0	0.117	0.149
ψ(MArea) p(.)	O6, D1	18.47	0.0	0.111	0.046
ψ(Tm+Chl) p(obs)	O2, O5, D2	18.63	0.0	0.085	0.110
ψ(Tmax+Chl) p(.)	O4, O5, D1	18.81	0.0	0.116	0.148
ψ(Tmin) p(.)	O3, D1	20.05	0.0	0.111	0.113
ψ(Tmax) p(obs)	O4, D2	20.88	0.0	0.494	0.103
ψ(Tmin+Chl) p(.)	O3, O5, D1	21.71	0.0	0.111	0.094
ψ(depth) p(.)	O7, D1	23.56	0.0	0.110	0.124
ψ(Chl) p(.)	O5, D1	24.18	0.0	0.111	0.132
ψ(Tm+Chl) p(.)	O2, O5, D1	24.94	0.0	0.112	0.110
ψ(Tm+depth) p(.)	O2, O7, D1	25.02	0.0	0.111	0.101
ψ(.) p(obs)	O1, D2	25.29	0.0	0.110	0.050
ψ(Tm) p(obs)	O2, D2	26.49	0.0	0.122	0.202
ψ(.) p(.)	O1, D1	33.01	0.0	0.110	0.100
ψ(Tm) p(.)	O2, D1	34.59	0.0	0.110	0.1283
model average				**0.119**	**0.070**

Charonia variegata

Model notation	Assumptions	ΔAIC	w(%)	average ψ	SE(ψ)
ψ(Tmax+Chl) p(.)	O4, O5, D1	0.00	20.7	0.041	0.017
ψ(Tm+Chl) p(.)	O2, O5, D1	0.97	12.7	0.041	0.015
ψ(Tmax+Chl) p(obs)	O4, O5, D2	1.77	8.5	0.039	0.019
ψ(Tmax+Chl+depth) p(.)	O4, O5, O7, D1	1.85	8.2	0.041	0.030
ψ(Tmax) p(.)	O4, D1	2.20	6.9	0.041	0.017
ψ(Chl) p(.)	O5, D1	2.32	6.5	0.041	0.014
ψ(Tm+Chl) p(obs)	O2, O5, D2	2.75	5.2	0.039	0.012
ψ(Tm+Chl+depth) p(.)	O2, O5, O7, D1	2.82	5.1	0.041	0.012
ψ(Tmax+Chl+depth) p(obs)	O4, O5, O7, D2	3.63	3.4	0.039	0.012
ψ(Tmax) p(obs)	O4, D2	3.98	2.8	0.039	0.017
ψ(Chl) p(obs)	O5, D2	4.00	2.8	0.039	0.012
ψ(Tmax+depth) p(.)	O4, O7, D1	4.14	2.6	0.041	0.012
ψ(Chl+depth) p(.)	O5, O7, D1	4.17	2.6	0.041	0.014
ψ(Tmin+Chl) p(.)	O3, O5, D1	4.18	2.6	0.041	0.012
ψ(Tm+Chl+depth) p(obs)	O2, O5, O7, D2	4.61	2.1	0.039	0.013
ψ(Tmin) p(.)	O3, D1	5.70	1.2	0.041	0.015
ψ(Chl+depth) p(obs)	O5, O7, D2	5.85	1.1	0.039	0.013
ψ(Tmin+Chl) p(obs)	O3, O5, D2	5.85	1.1	0.039	0.012
ψ(Tmax+depth) p(obs)	O4, O7, D2	5.92	1.1	0.039	0.016
ψ(Tmin+Chl+depth) p(.)	O3, O5, O7, D1	6.02	1.0	0.041	0.014
ψ(Tmin) p(obs)	O3, D2	7.34	0.5	0.039	0.013
ψ(Tmin+depth) p(.)	O3, O7, D1	7.60	0.5	0.041	0.037
ψ(Tmin+Chl+depth) p(obs)	O3, O5, O7, D2	7.70	0.4	0.039	0.013
ψ(Tmin+depth) p(obs)	O3, O7, D2	9.23	0.2	0.039	0.012
ψ(.) p(.)	O1, D1	12.59	0.0	0.041	0.013
ψ(MArea) p(.)	O6, D1	12.61	0.0	0.041	0.013
ψ(.) p(obs)	O1, D2	14.22	0.0	0.039	0.014
ψ(MArea) p(obs)	O6, D2	14.26	0.0	0.039	0.011
ψ(depth) p(.)	O7, D1	14.52	0.0	0.041	0.012
ψ(MArea+depth) p(.)	O6, O7, D1	14.53	0.0	0.041	0.038
ψ(Tm) p(.)	O2, D1	14.56	0.0	0.041	0.012
ψ(depth) p(obs)	O4, D2	16.15	0.0	0.039	0.044
ψ(MArea+depth) p(obs)	O6, O7, D2	16.19	0.0	0.039	0.012
ψ(Tm) p(obs)	O2, D2	16.19	0.0	0.039	0.012
ψ(Tm+depth) p(.)	O2, O7, D1	16.49	0.0	0.041	0.012
ψ(Tm+depth) p(obs)	O2, O7, D2	18.12	0.0	0.039	0.014
model average				**0.040**	**0.016**

Table S2: The coefficients of the predictor variables x_j included in the best model for each of six protected species, based on the logistic regression. Specifically, occupancy was modelled □□=□**O**+ □□□□□□. The categorical predictor MArea was modelled based on three dummy variables, *SAegean*, *NAegean*, and *EvPag*, being one when the specific location was in South Aegean, North Aegean, and Evoikos-Pagasitikos gulfs respectively and zero otherwise. The fourth marine sub-area (Crete) corresponded to the value of the intercept (i.e. when all three dummy variables were zero).

Coefficients of predictor variables in the best models ±SE									
	intercept	Tm	Tmin	Tmax	Chl	depth	SAegean	NAegean	EvPag
S. foetidus	0.99 ±0.19		1.30 ±0.20			-0.44 ±0.18			
A. aerophoba	-35.0 ±3.5						33.6 ±3.6	33.9 ±3.5	38.4 ±4.0
C. caespitosa	-1.39 ±0.89	-1.40 ±1.19			7.2 ±1.6				
A. cannabina	-2.97 ±0.43		-1.48 ±0.37		0.69 ±0.25	2.21 ±0.45			
C. longispinus	-34.9 ±2.2					1.05 ±0.37	33.4 ±2.2	32.1 ±2.3	0
C. variegata	-8.2 ±3.7			-1.05 ±0.59	-8.4 ±6.2				

Supplement 4

Potential Habitat Index (PHI) Maps

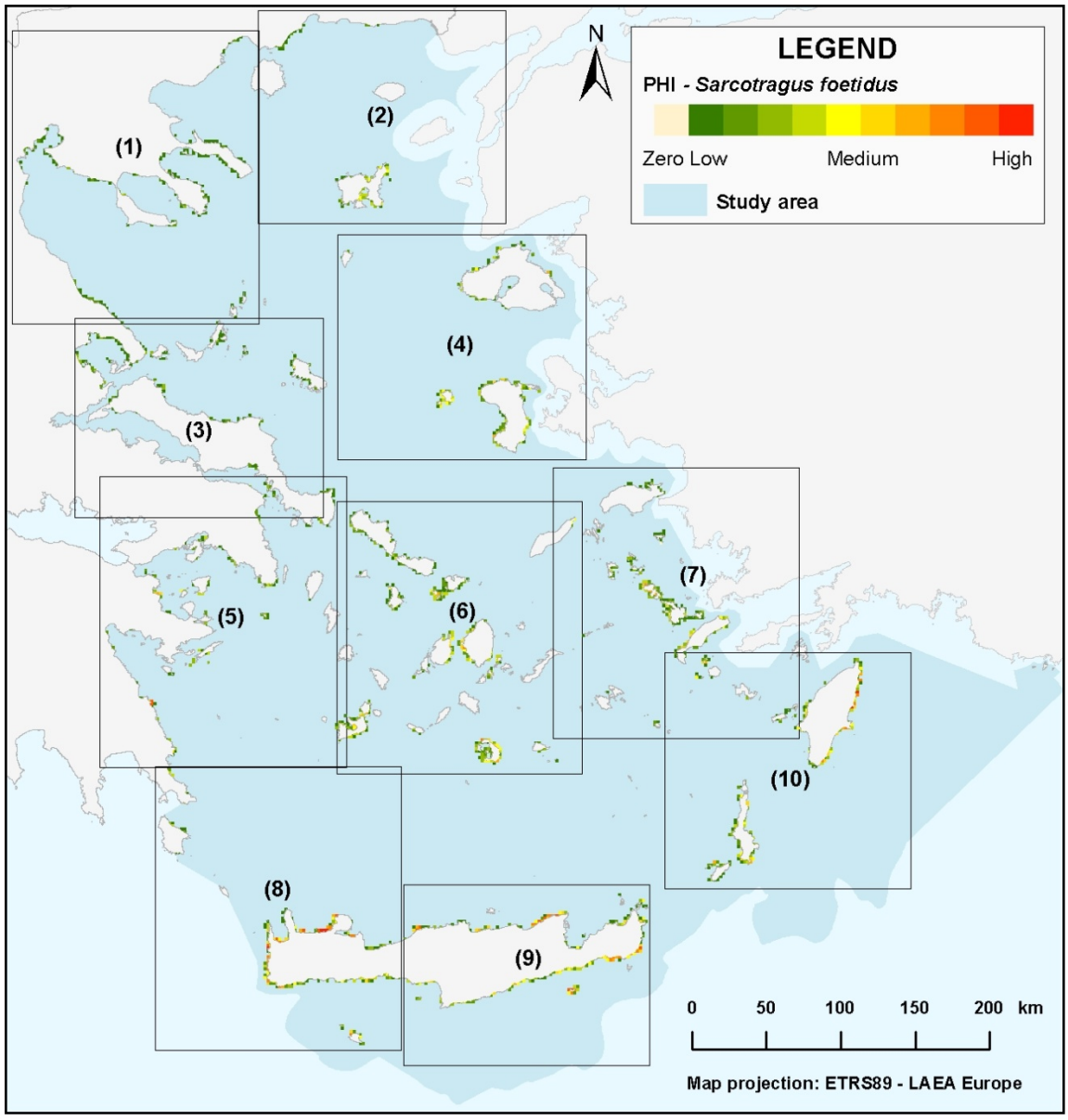

Figure S8: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI)

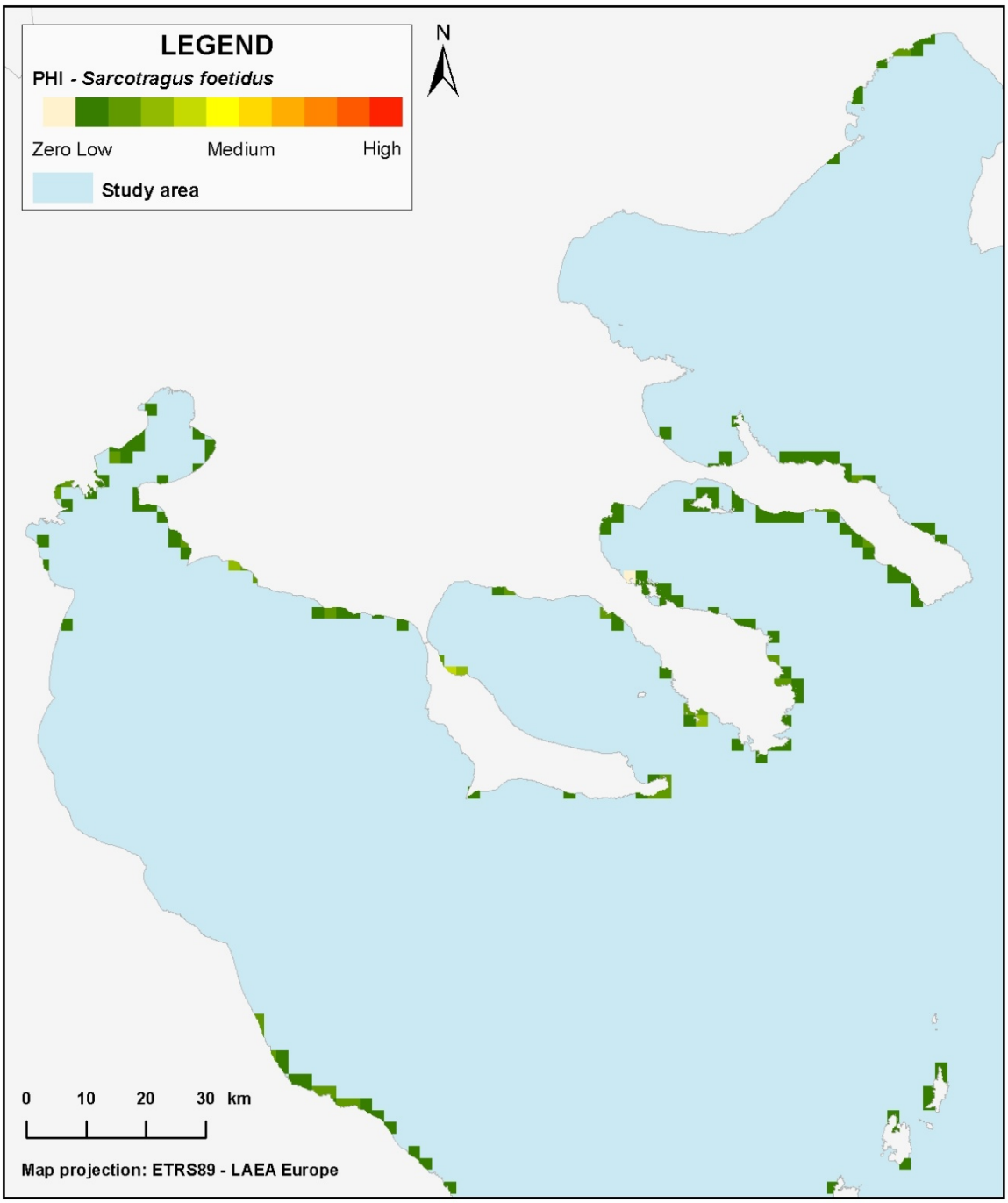

Fig S8.1: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

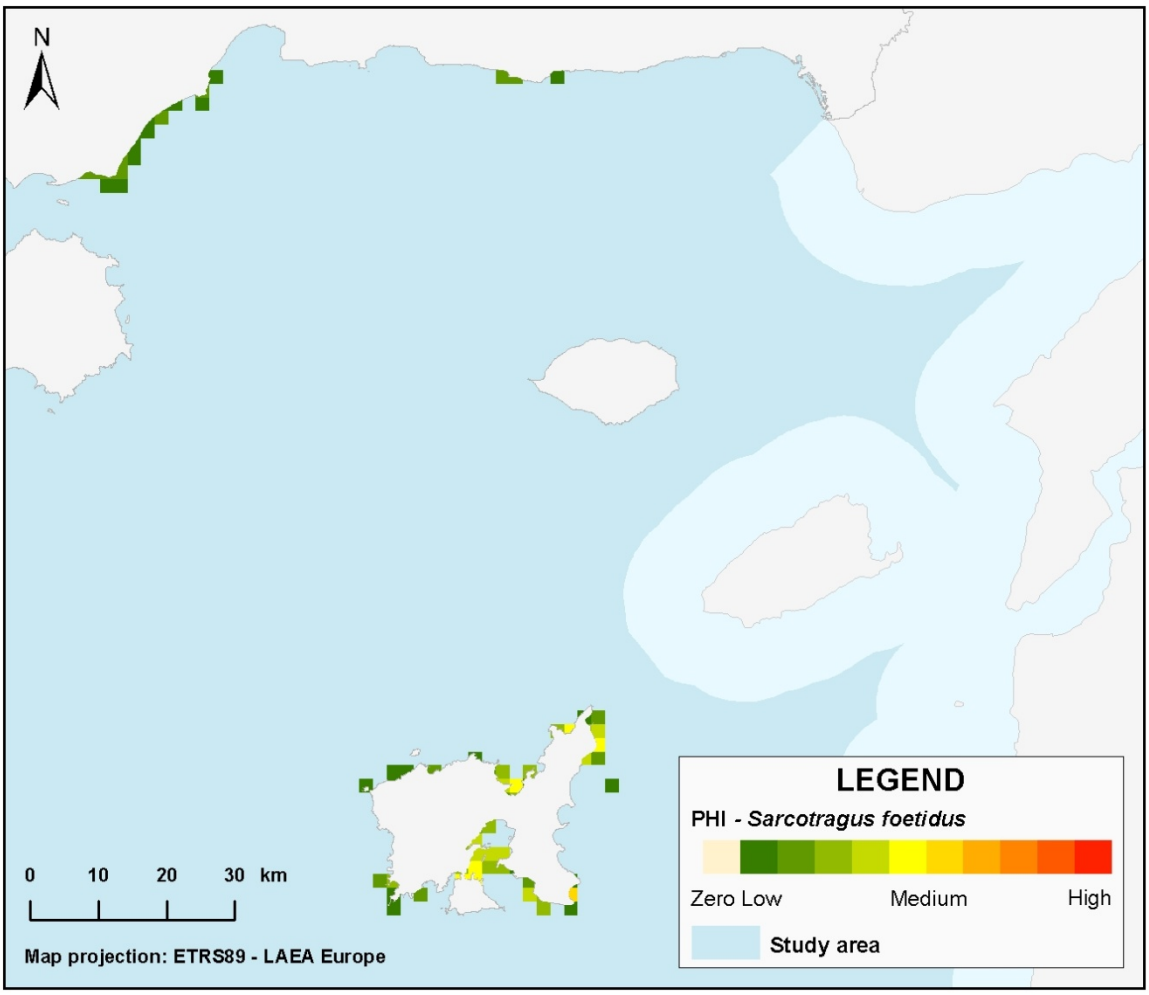

Fig S8.2: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

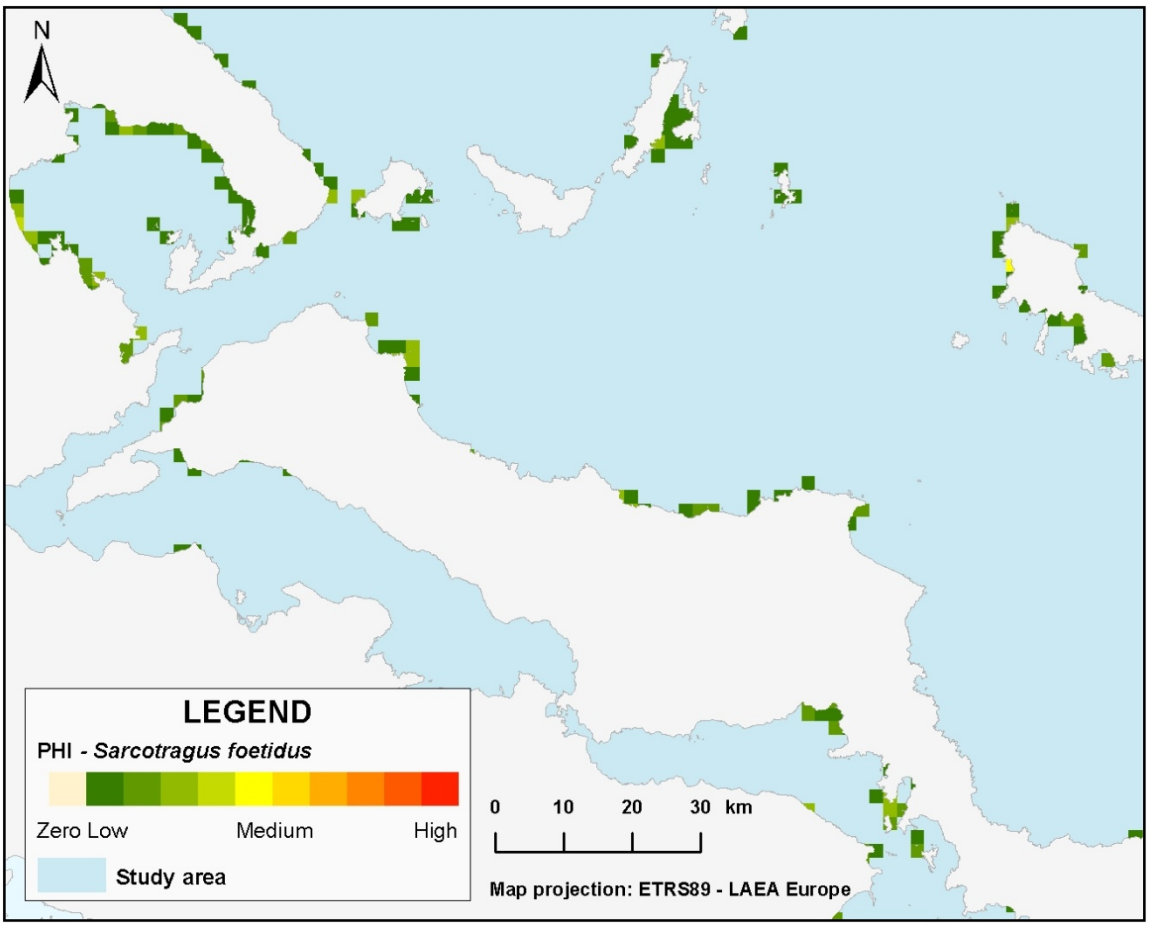

Fig S8.3: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

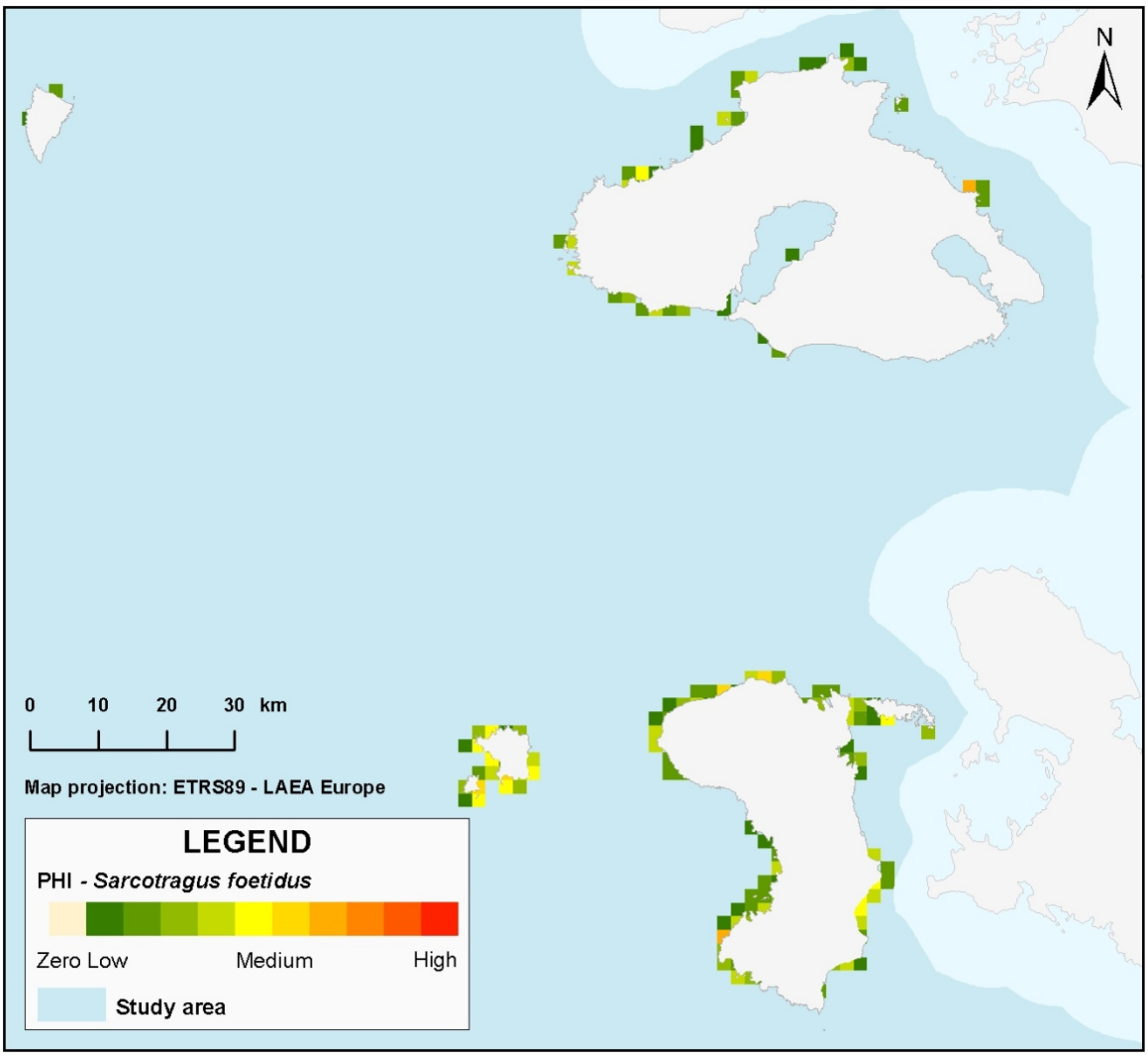

Fig S8.4: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

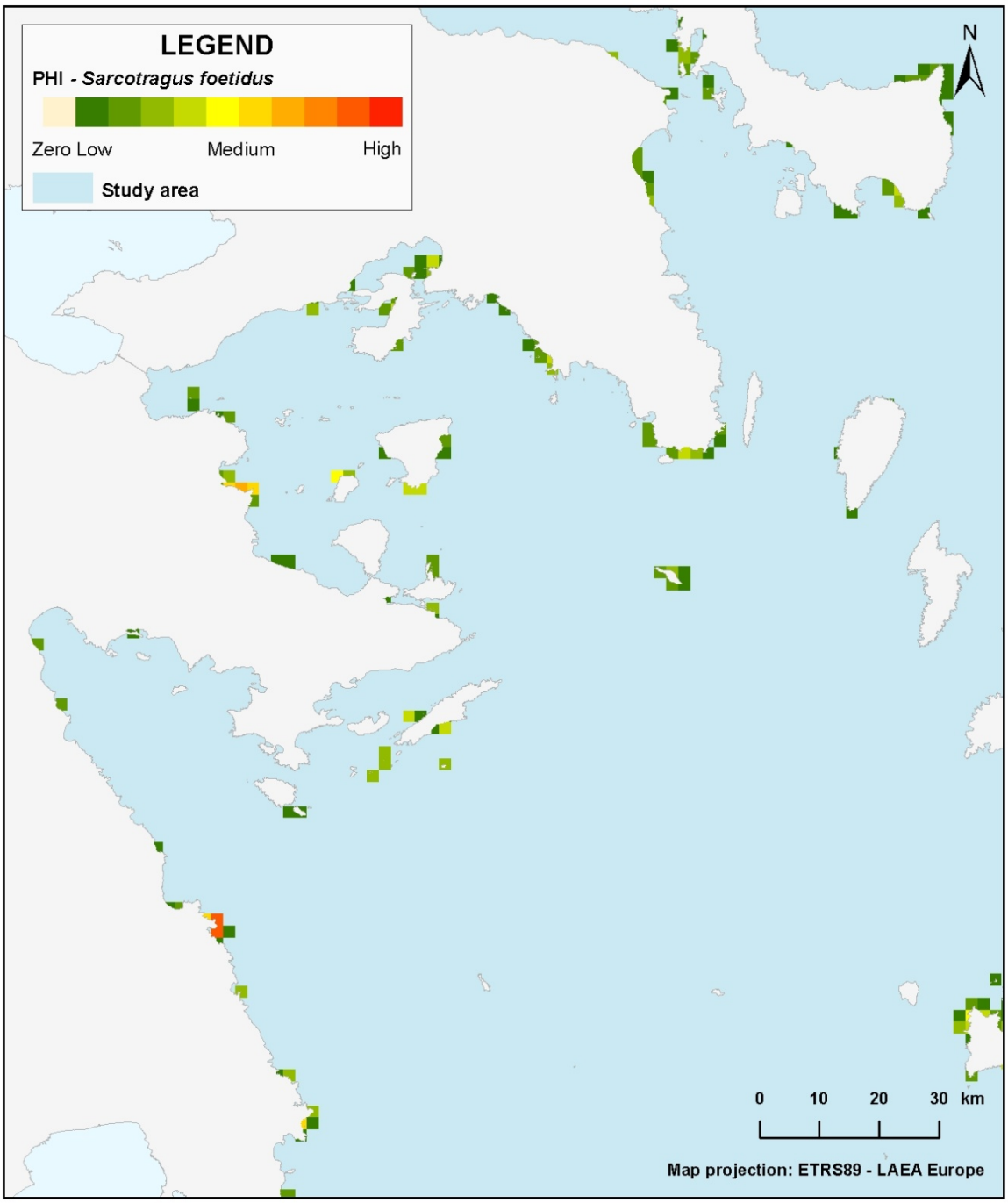

Fig S8.5: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

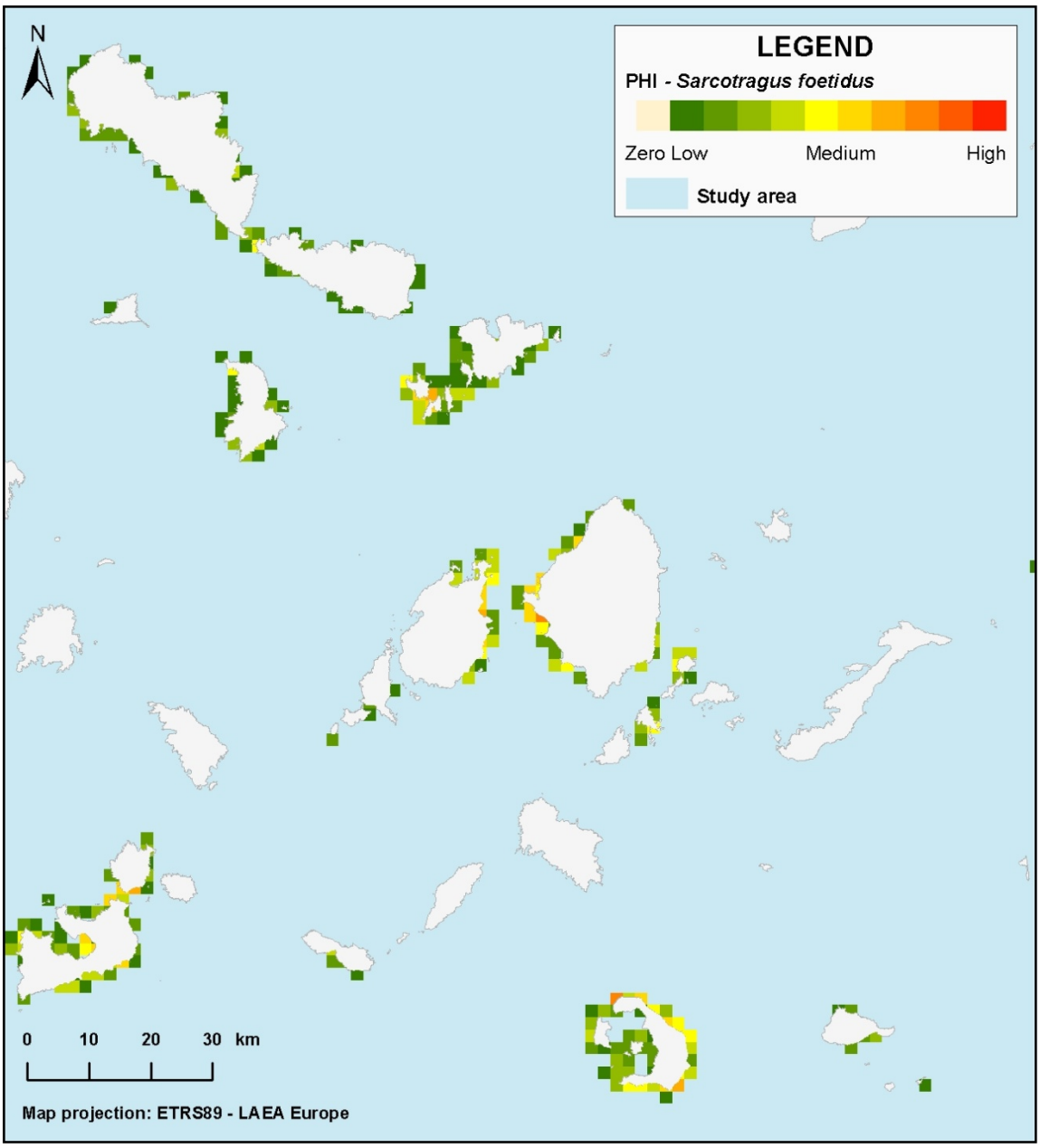

Fig S8.6: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

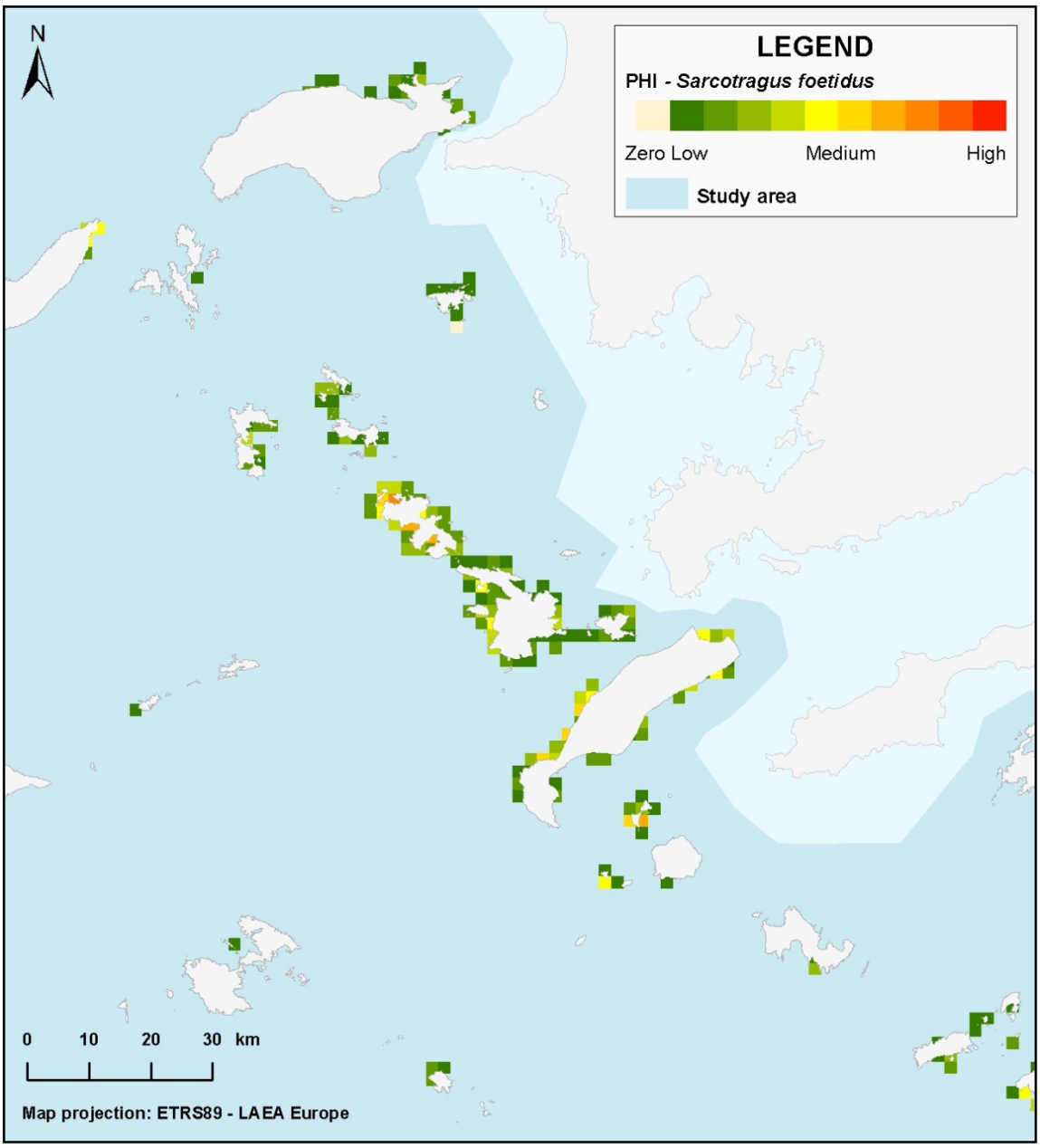

Fig S8.7: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

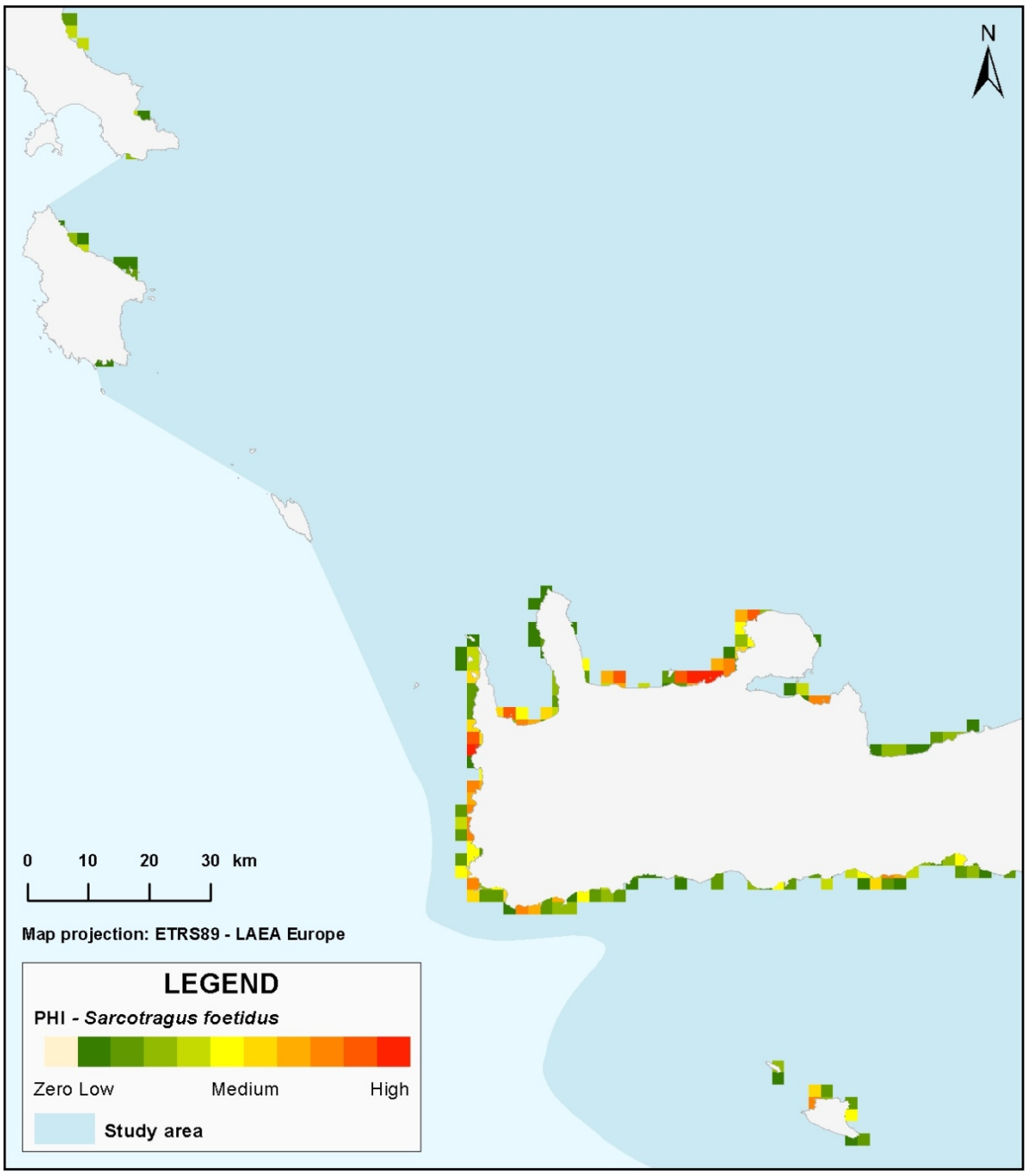

Fig S8.8: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

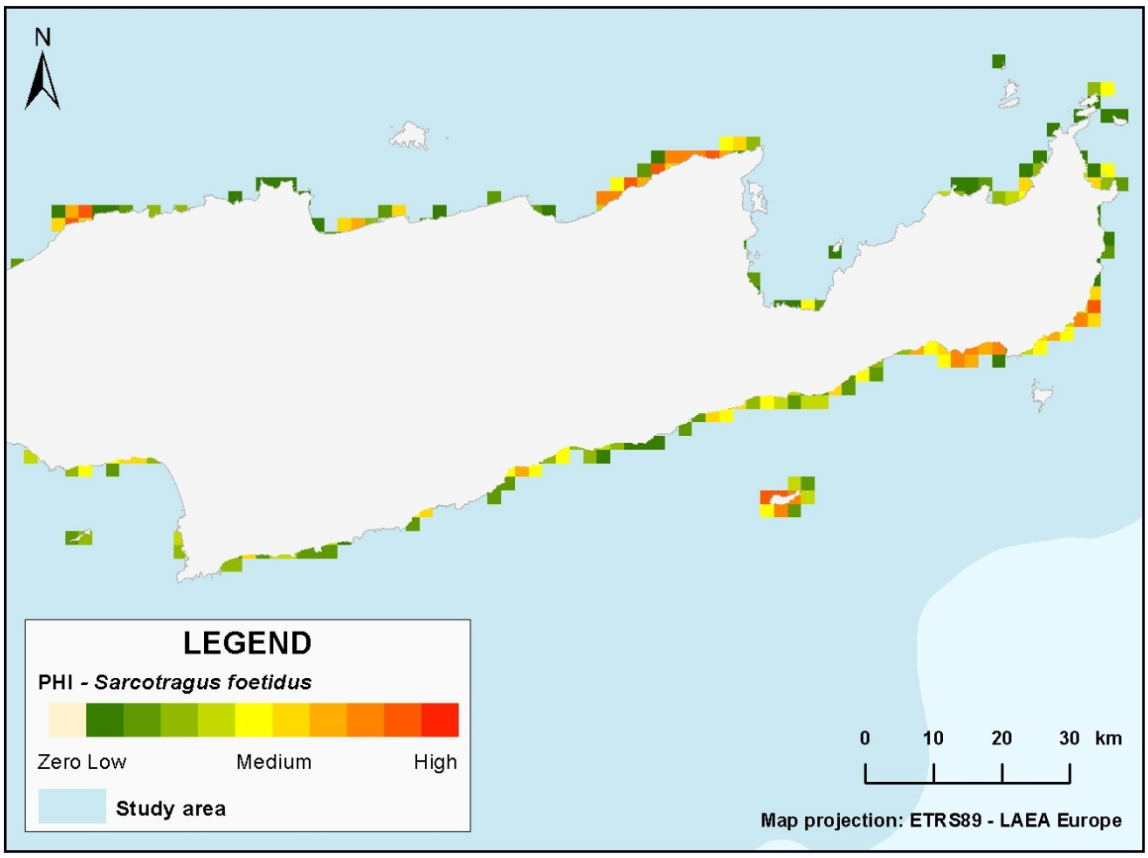

Fig S8.9: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

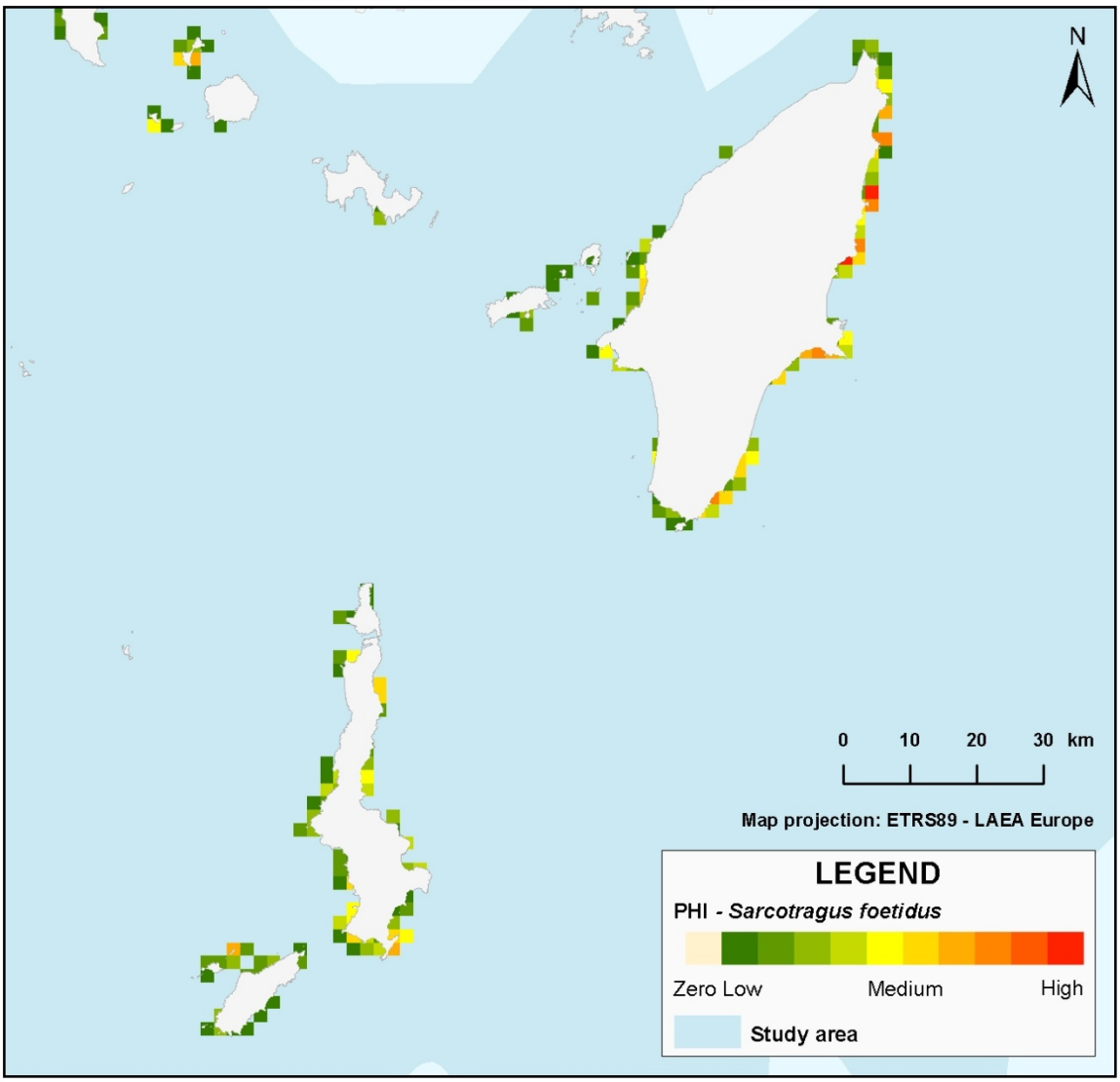

Fig S8.10: Identification of priority areas for the conservation of populations of ***Sarcotragus foetidus*** based on the Potential Habitat Index (PHI).

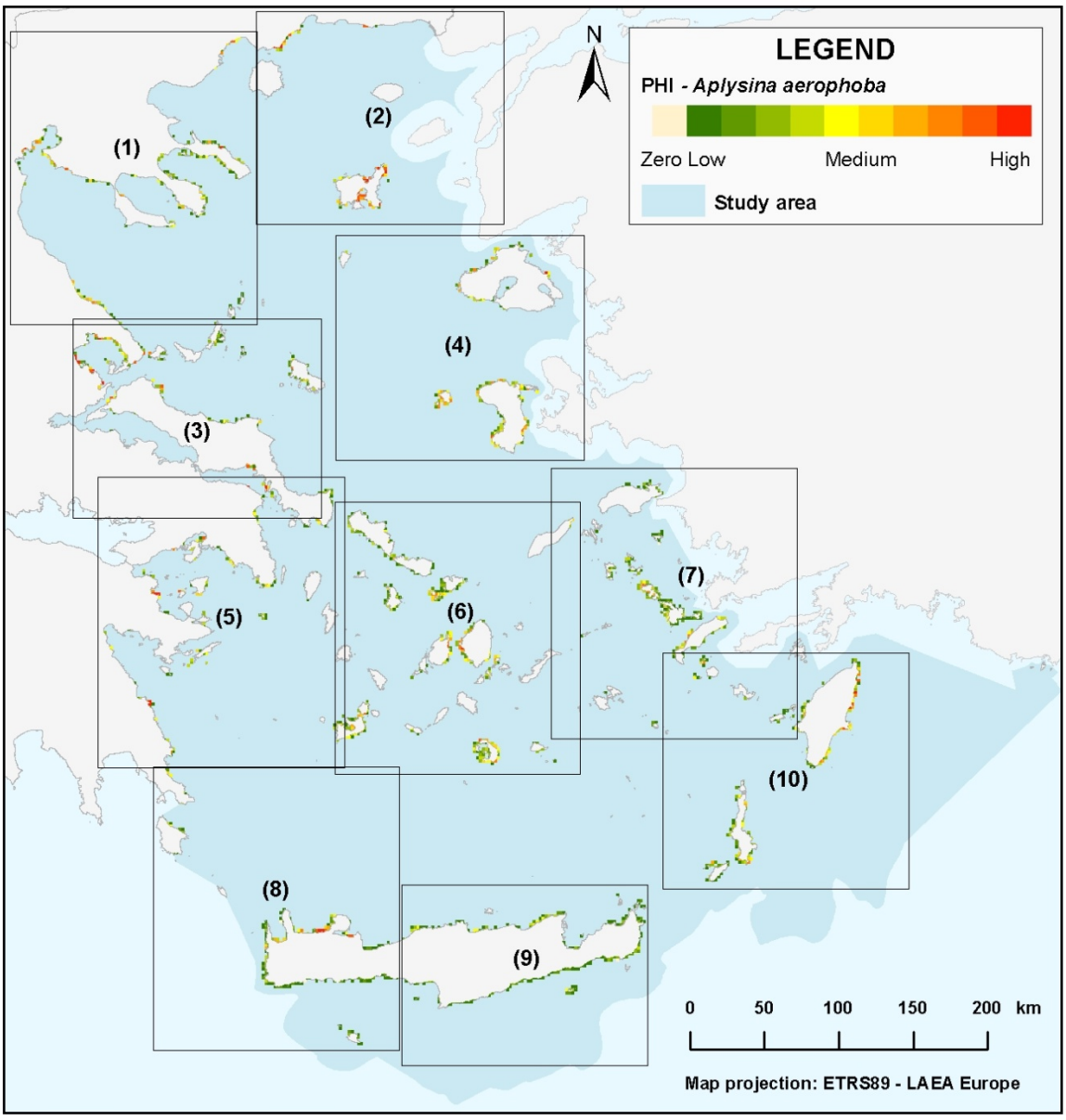

Figure S9: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI)

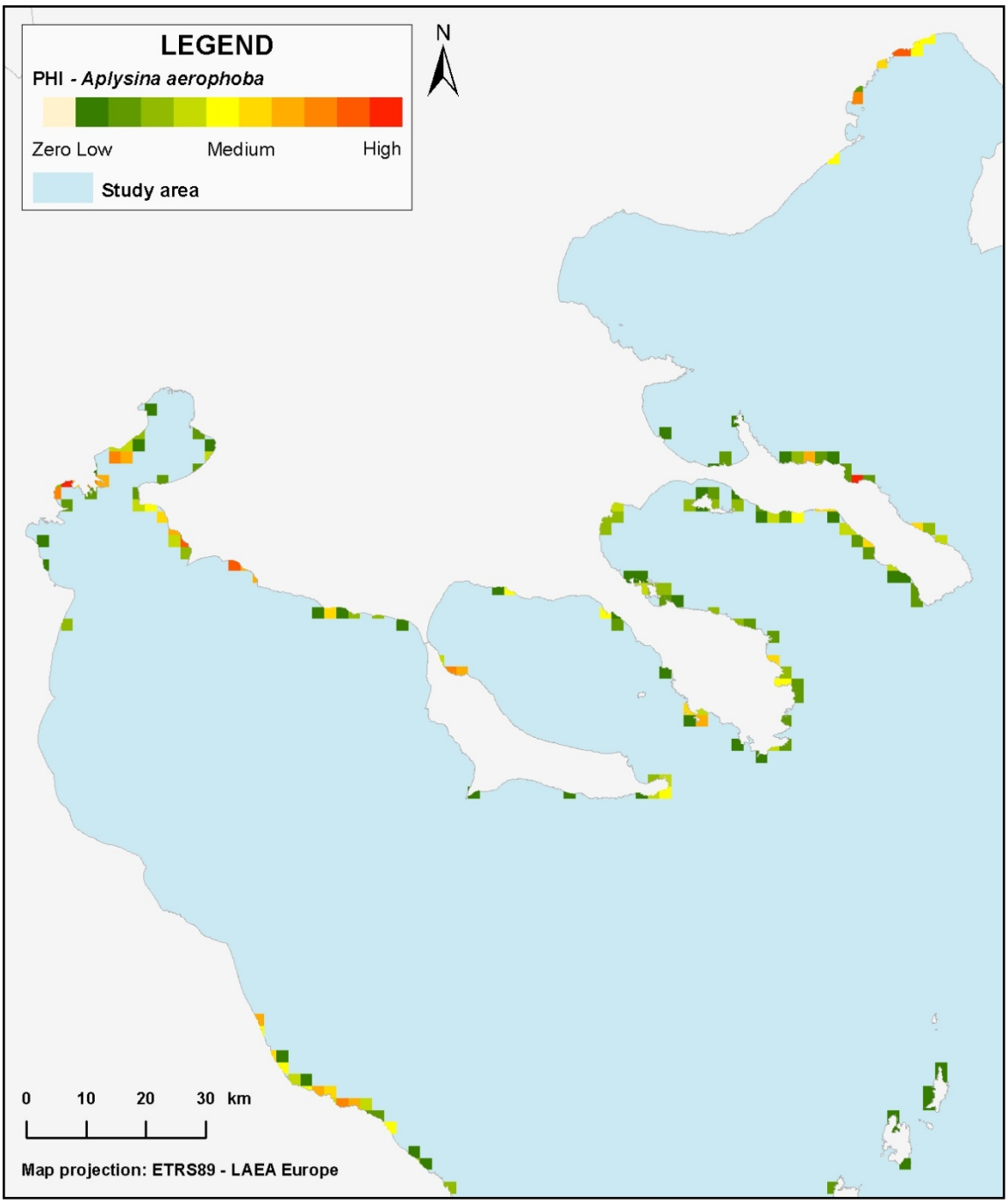

Fig S9.1: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

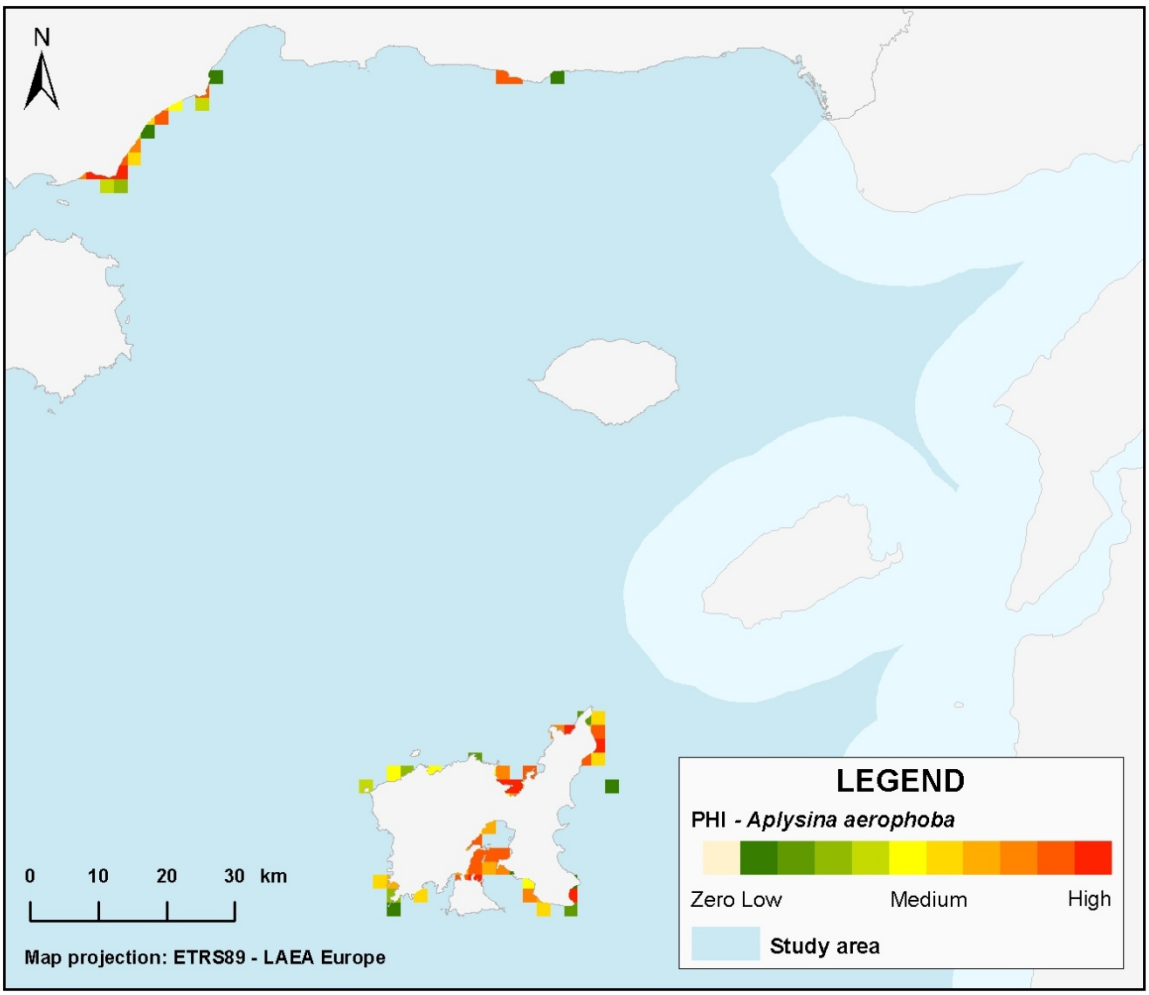

Fig S9.2: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

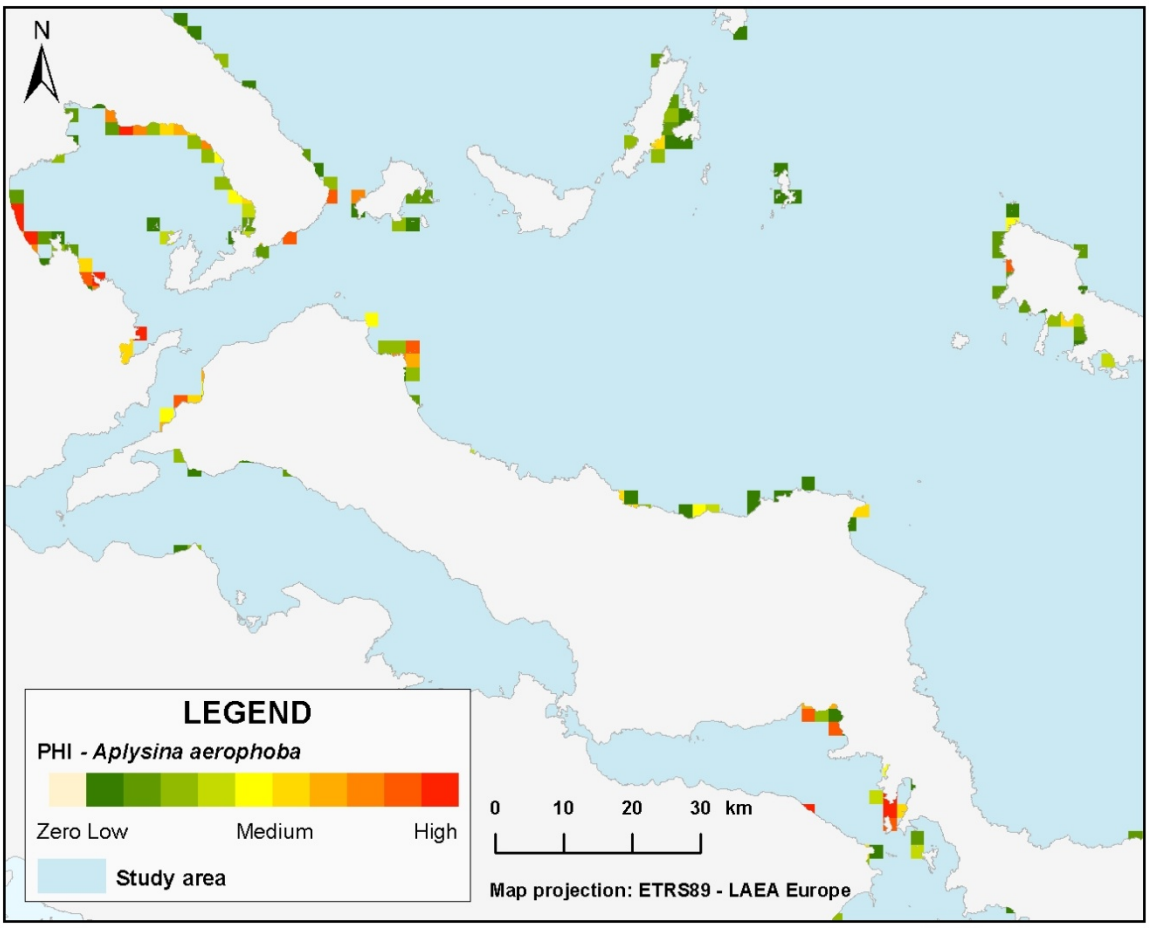

Fig S9.3: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

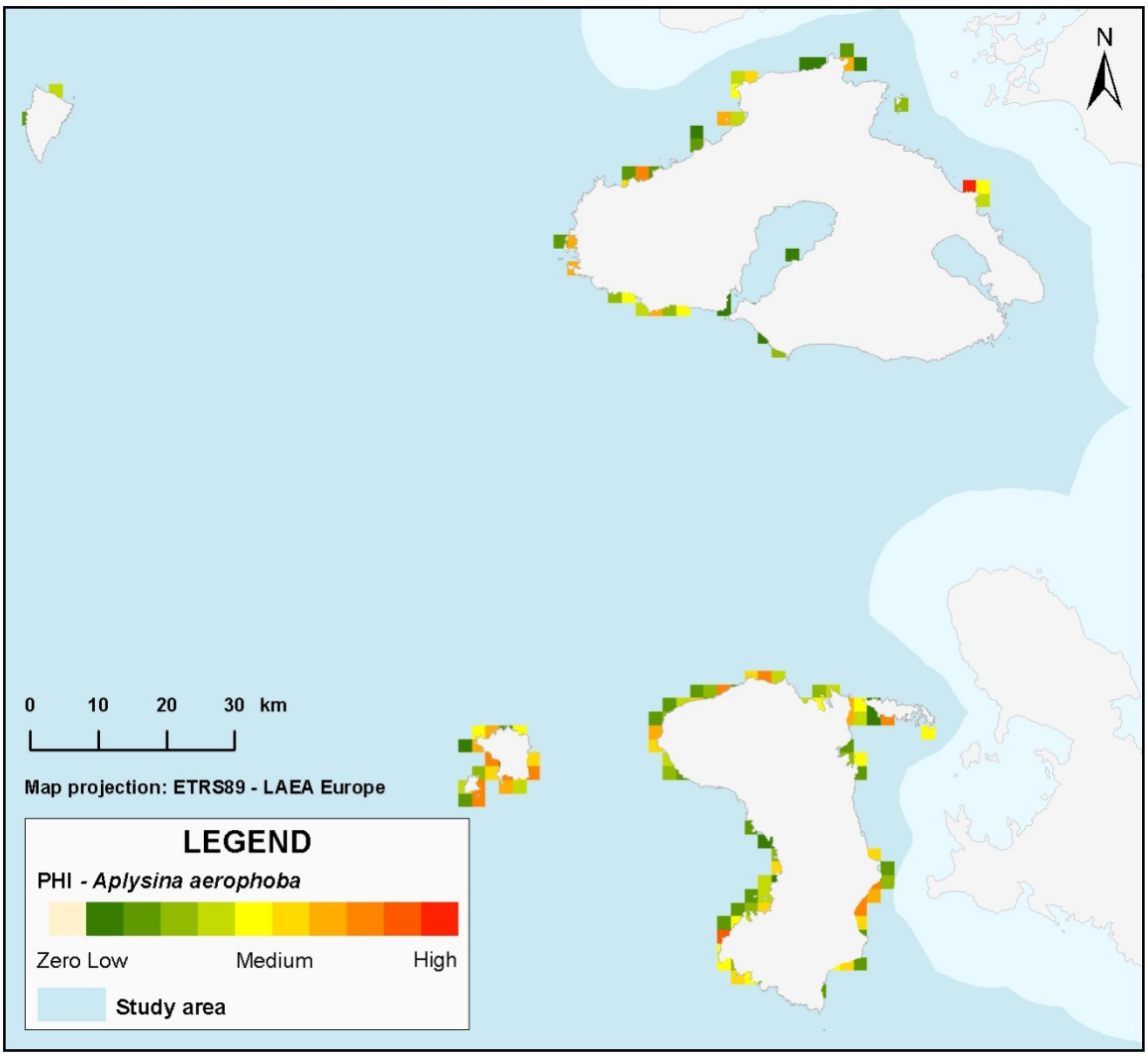

Fig S9.4: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

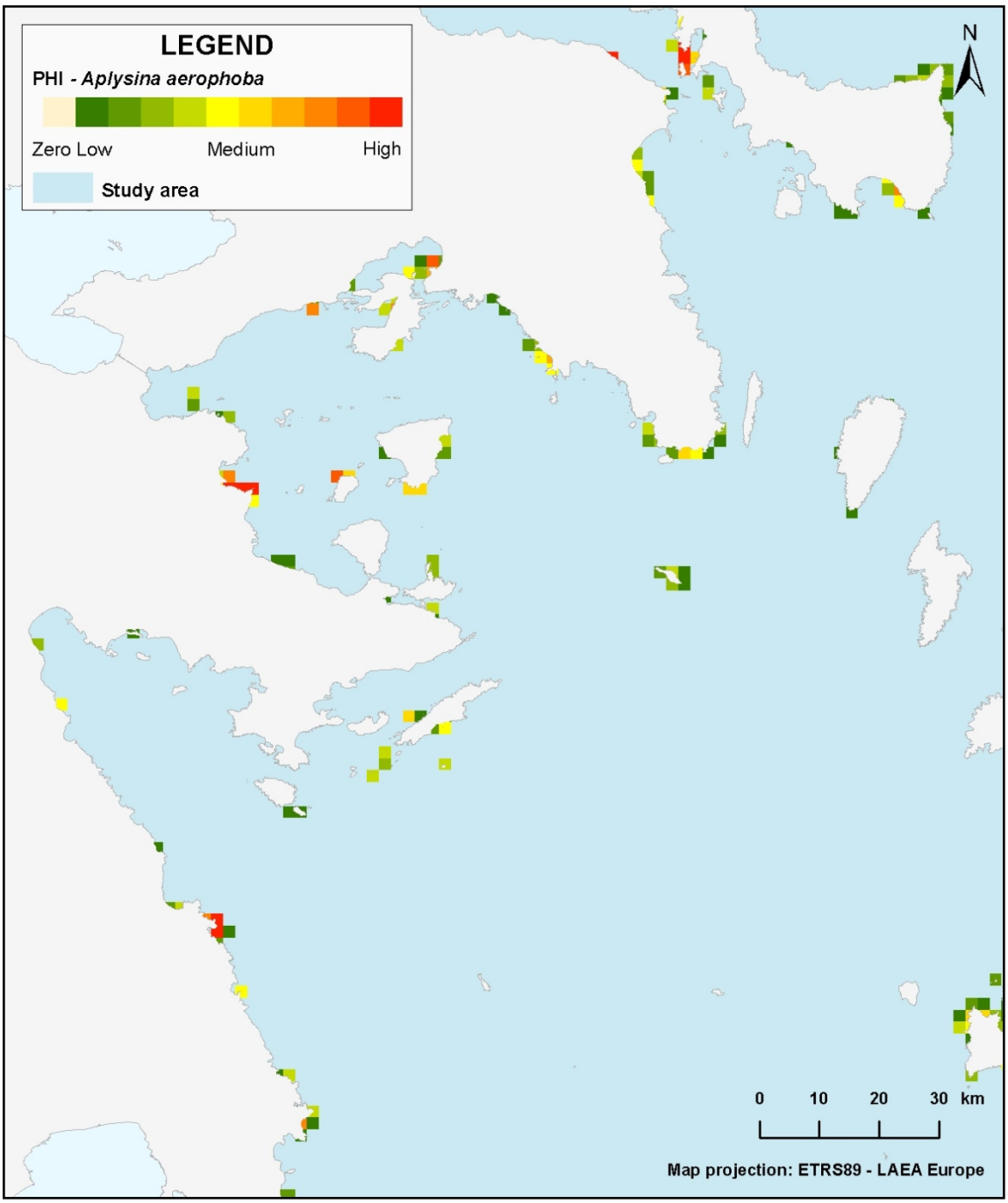

Fig S9.5: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

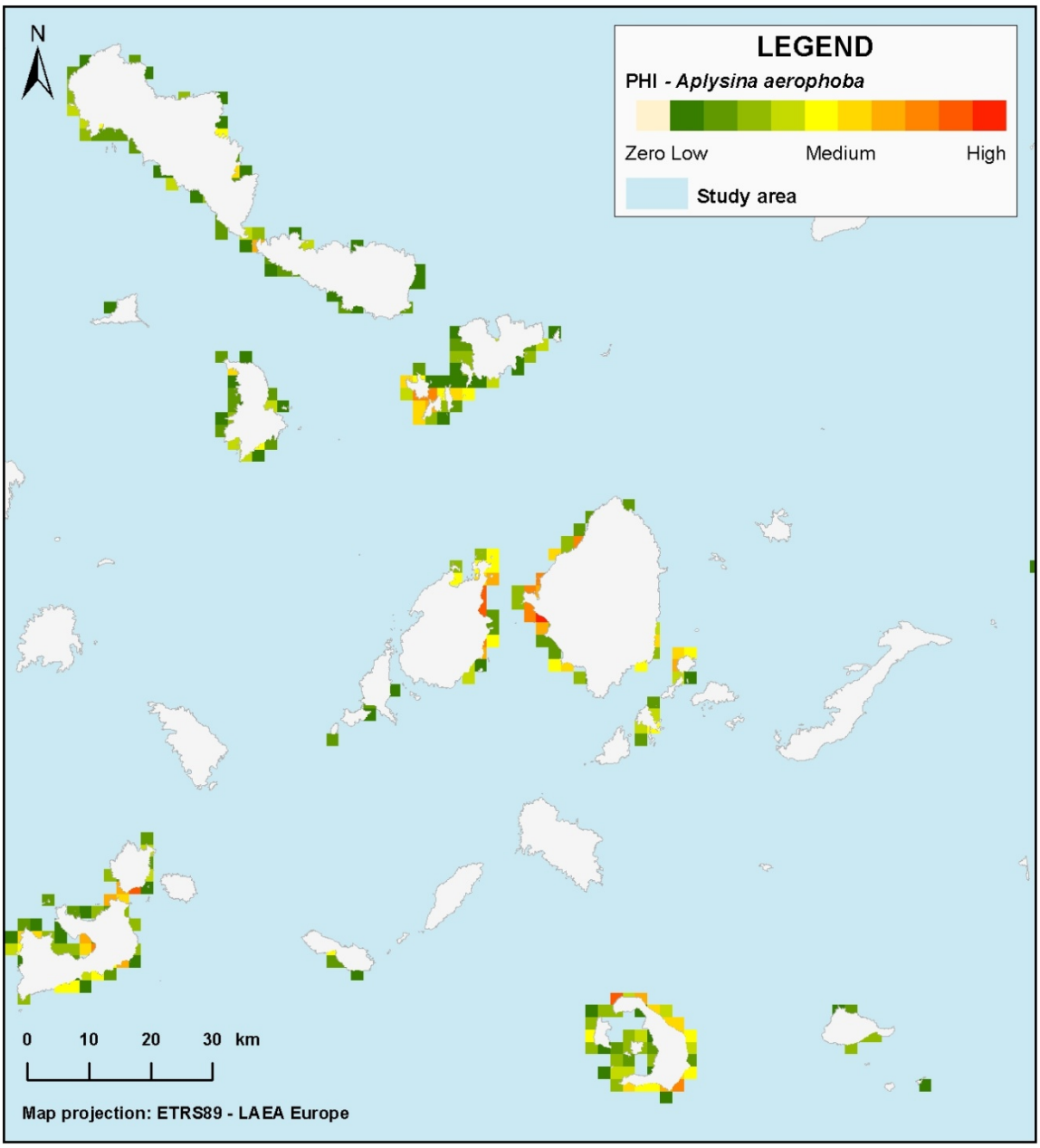

Fig S9.6: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

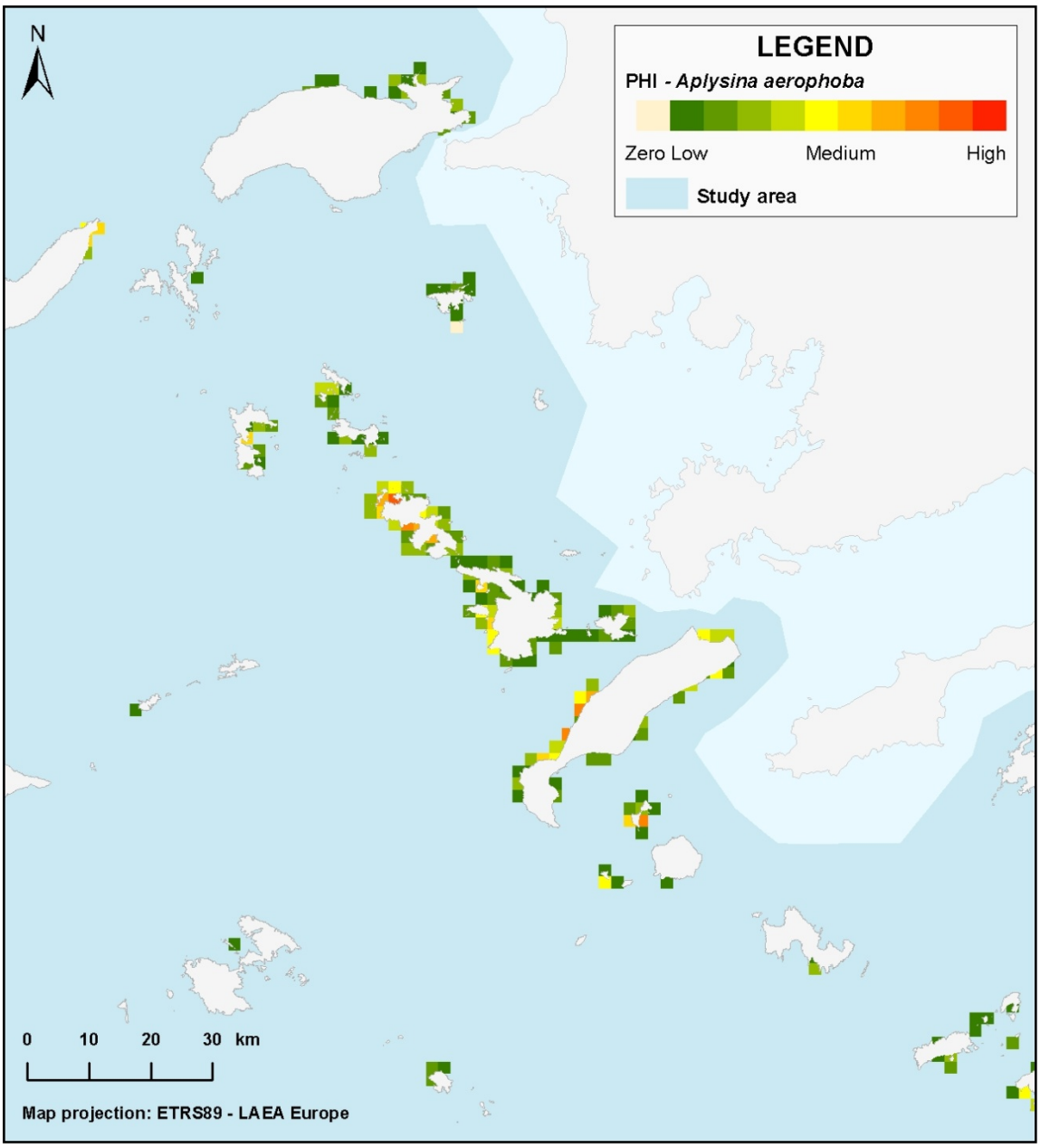

Fig S9.7: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

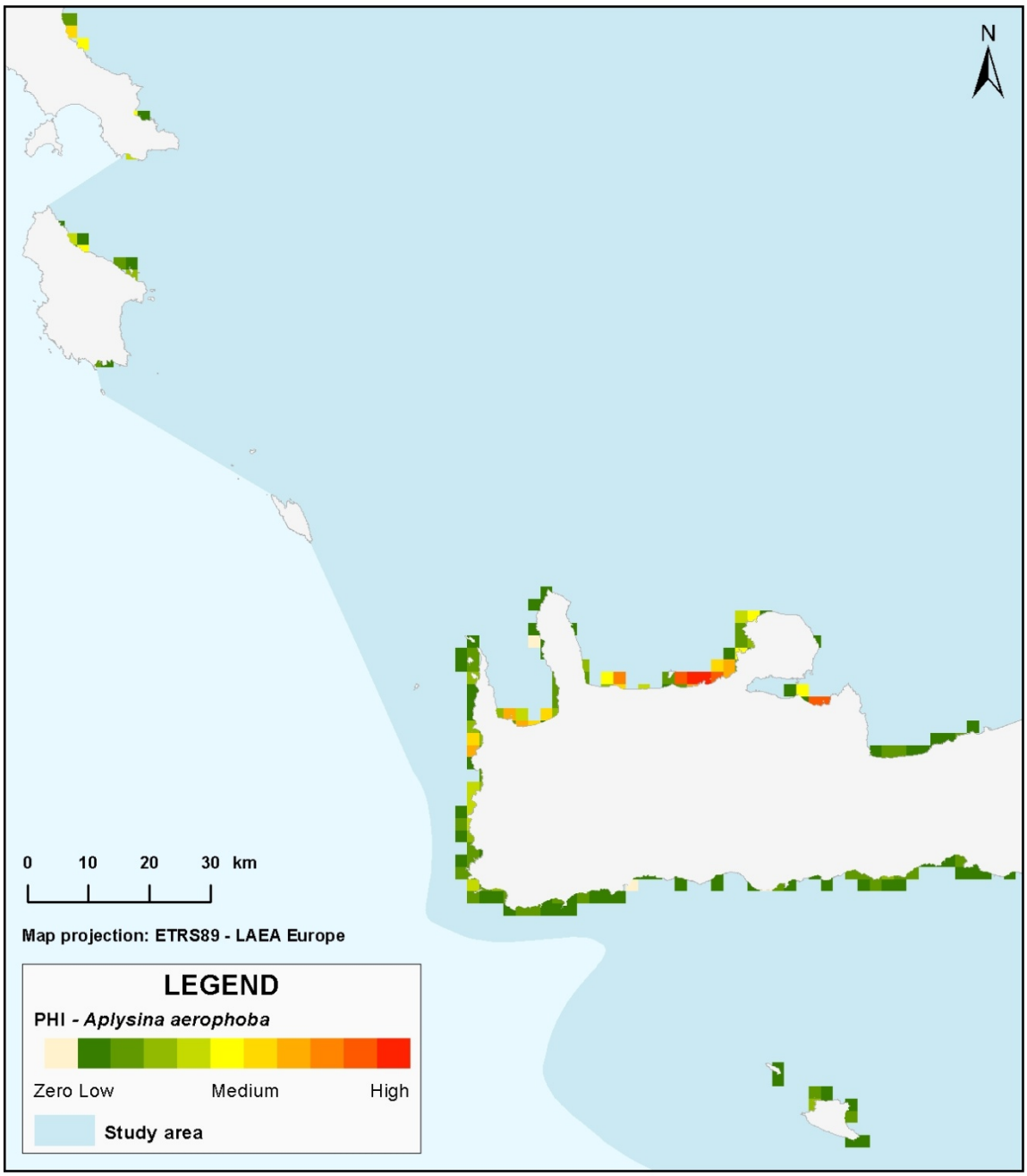

Fig S9.8: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

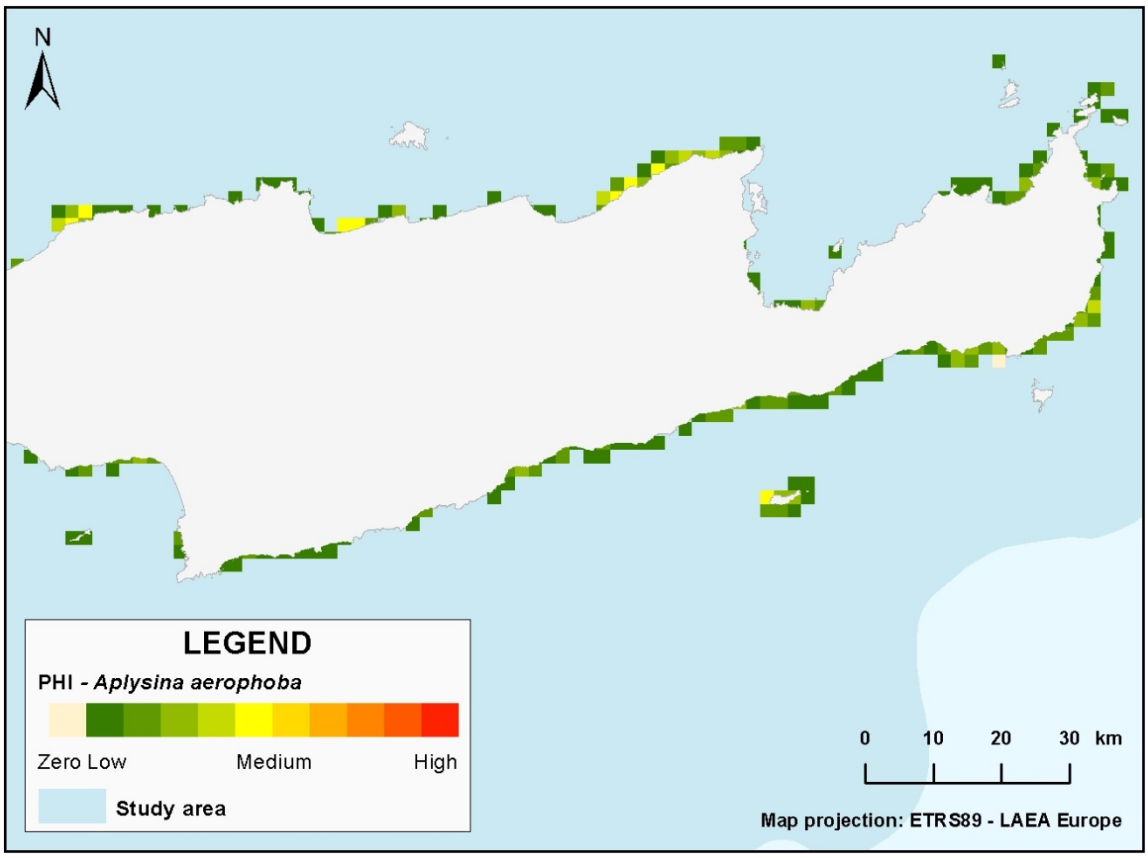

Fig S9.9: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

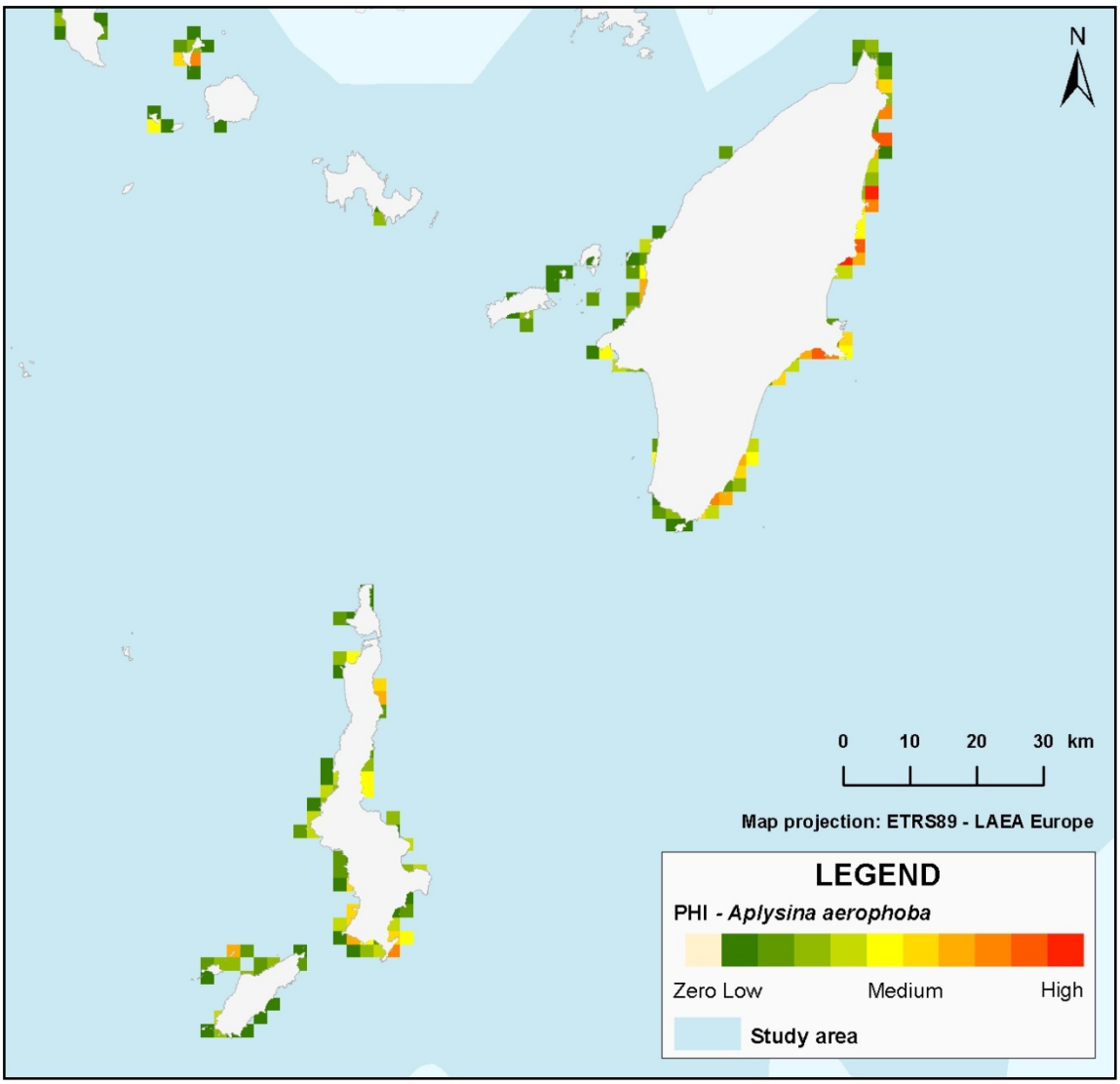

Fig S9.10: Identification of priority areas for the conservation of populations of ***Aplysina aerophoba*** based on the Potential Habitat Index (PHI).

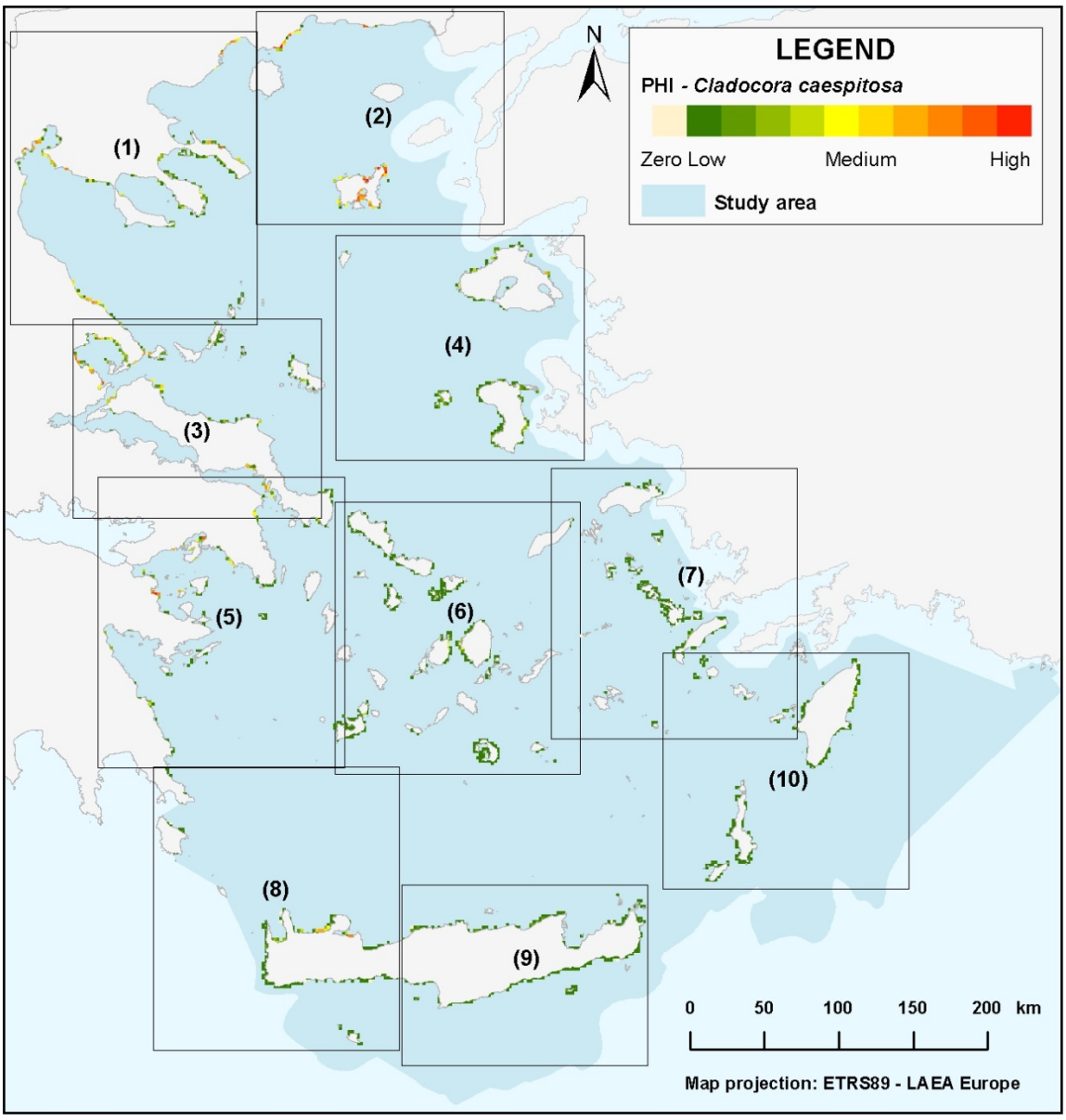

Figure S10: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI)

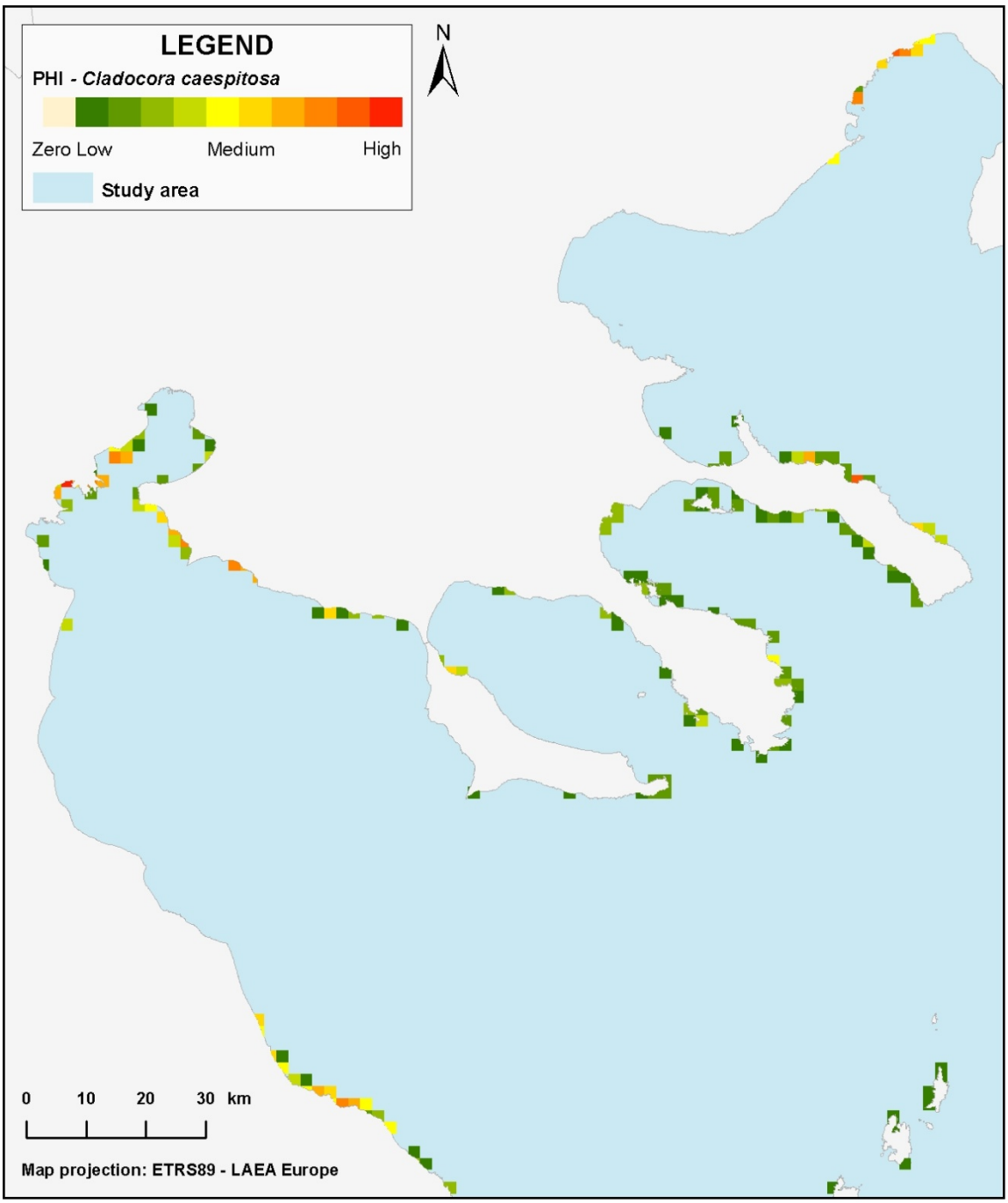

Fig S10.1: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

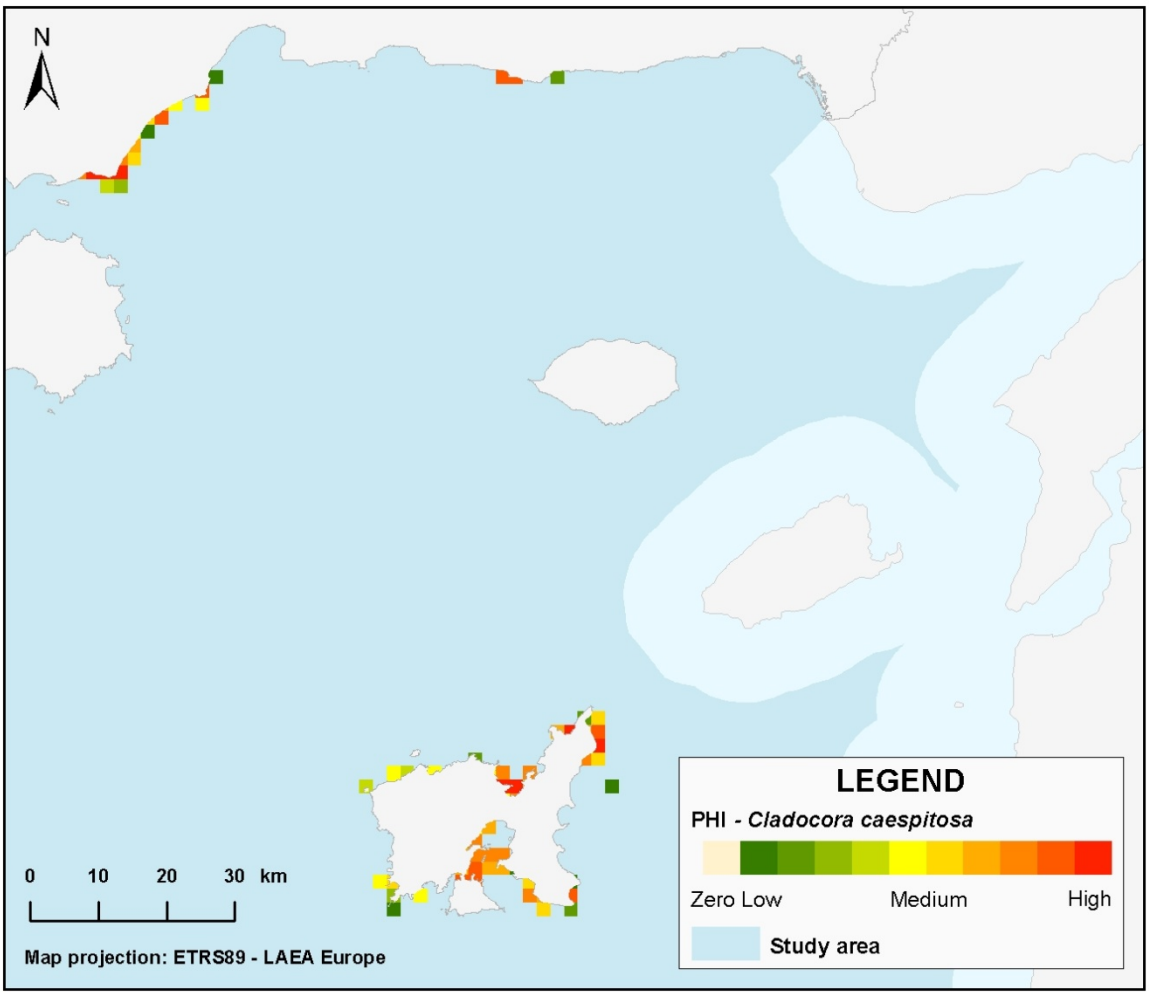

Fig S10.2: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

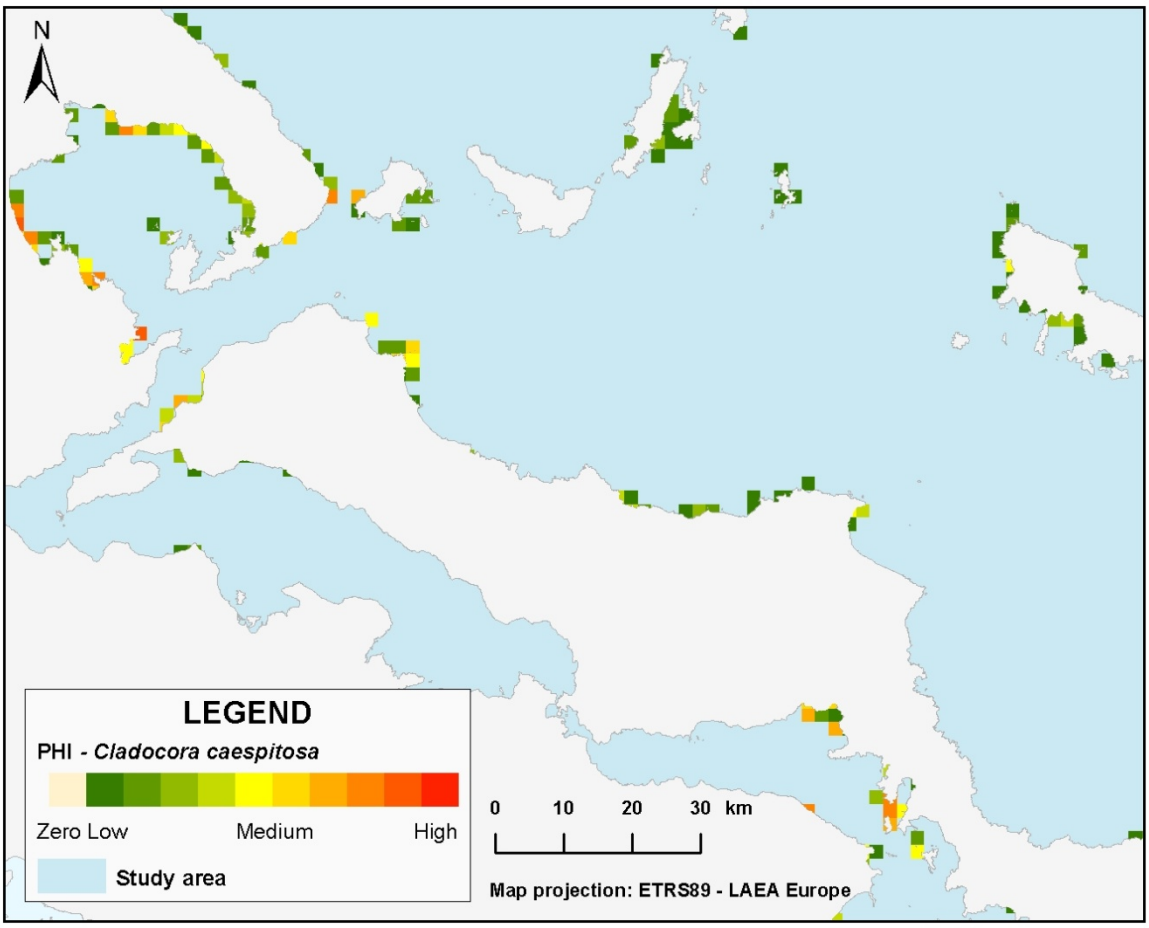

Fig S10.3: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

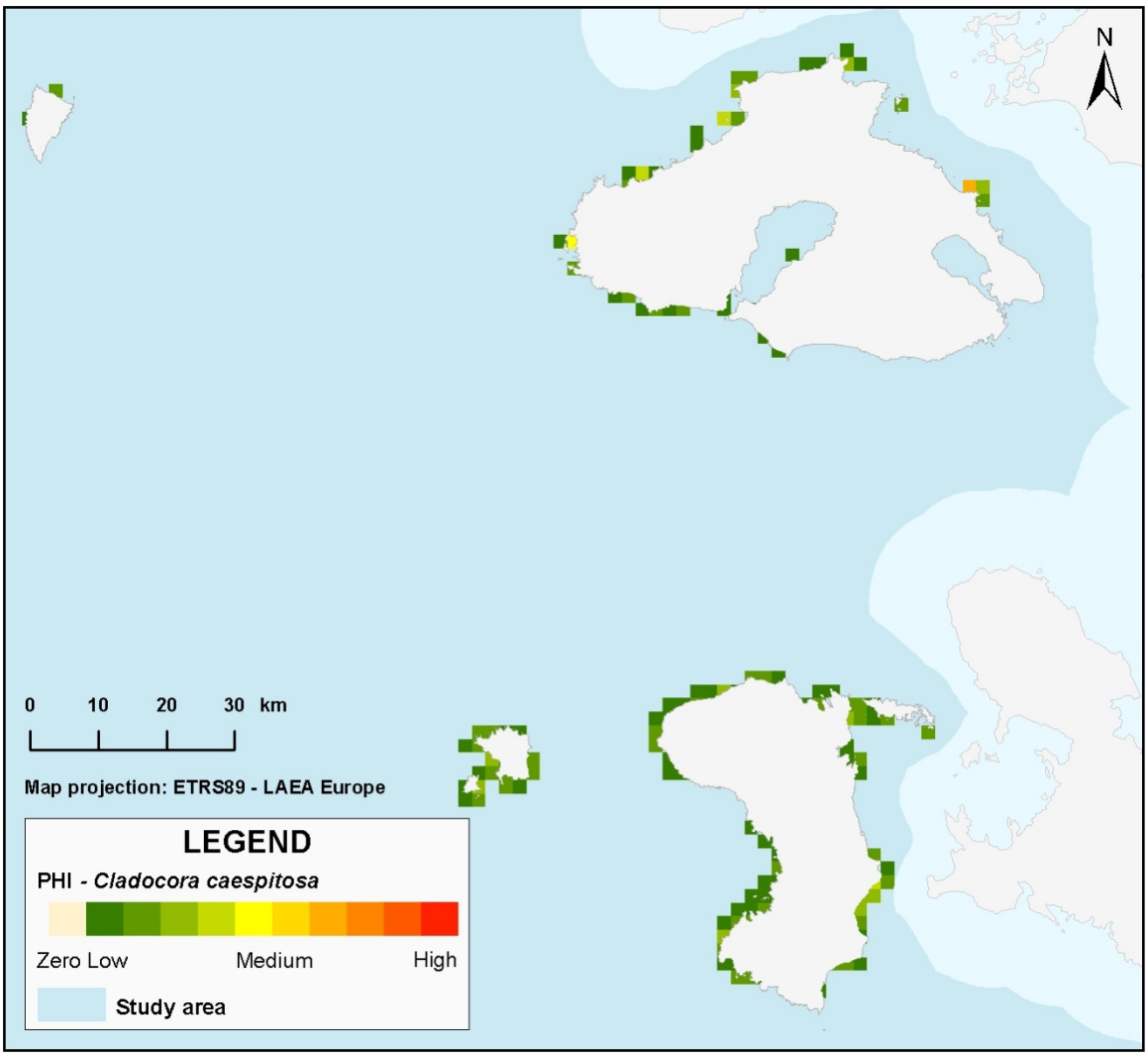

Fig S10.4: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

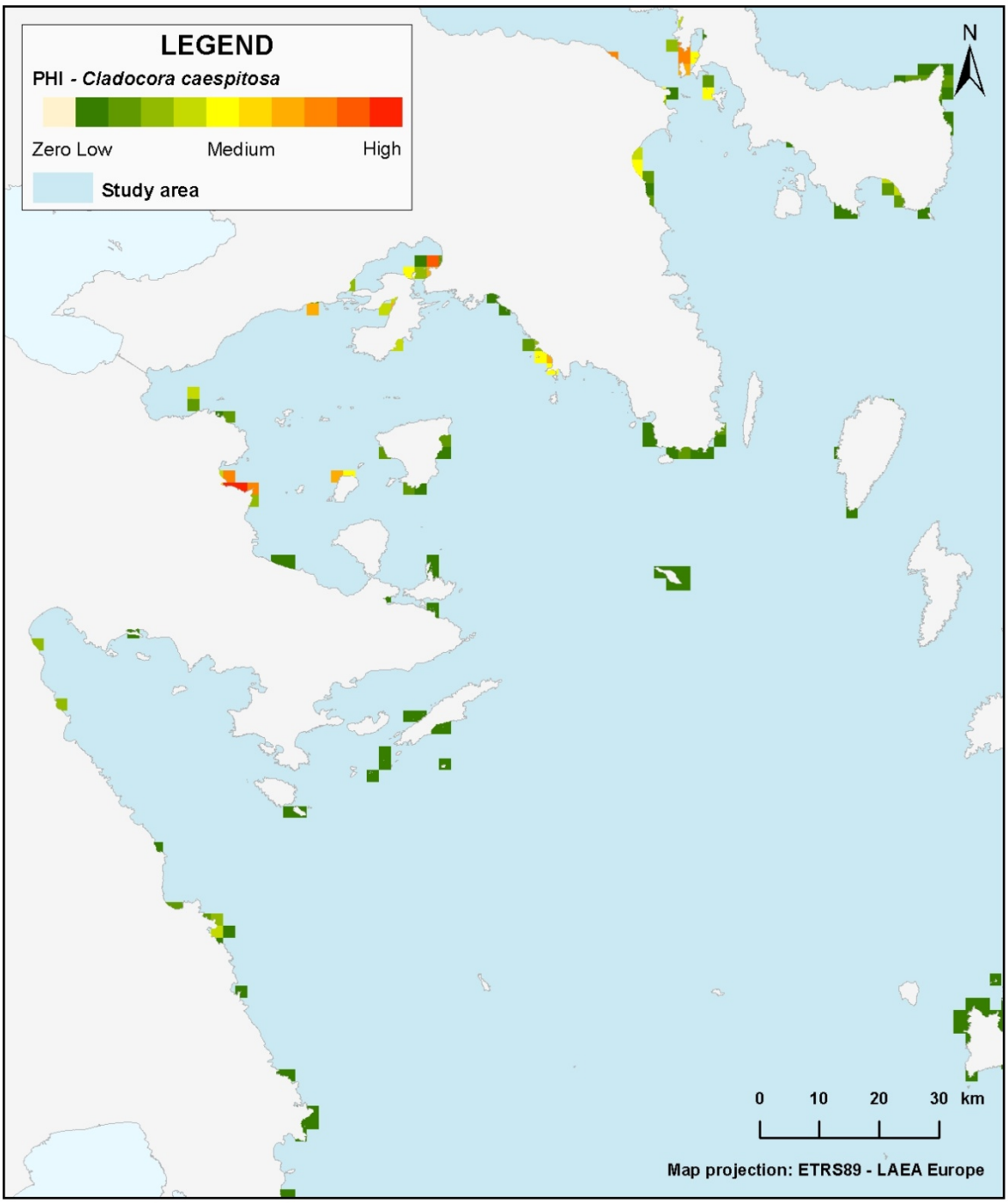

Fig S10.5: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

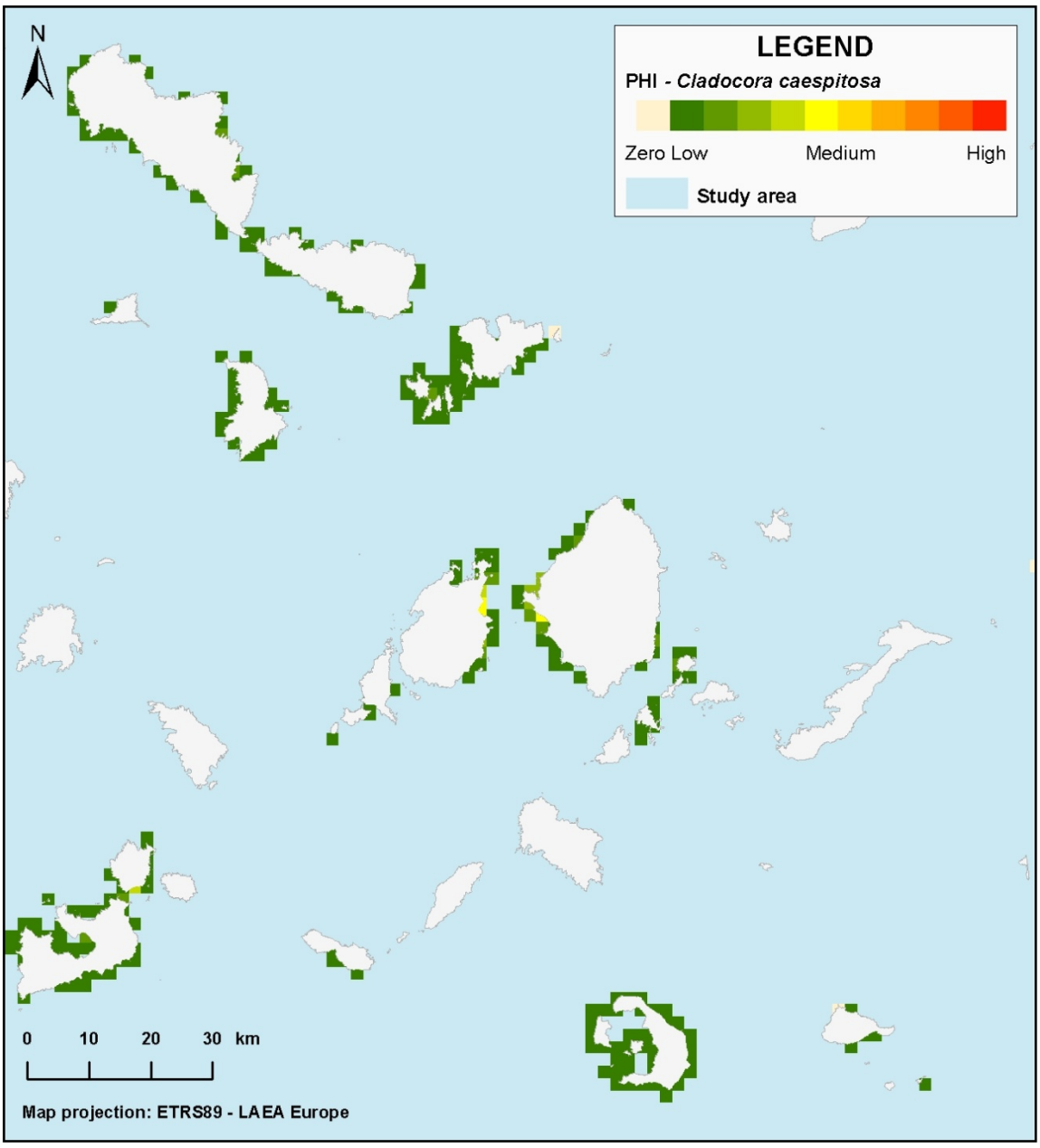

Fig S10.6: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

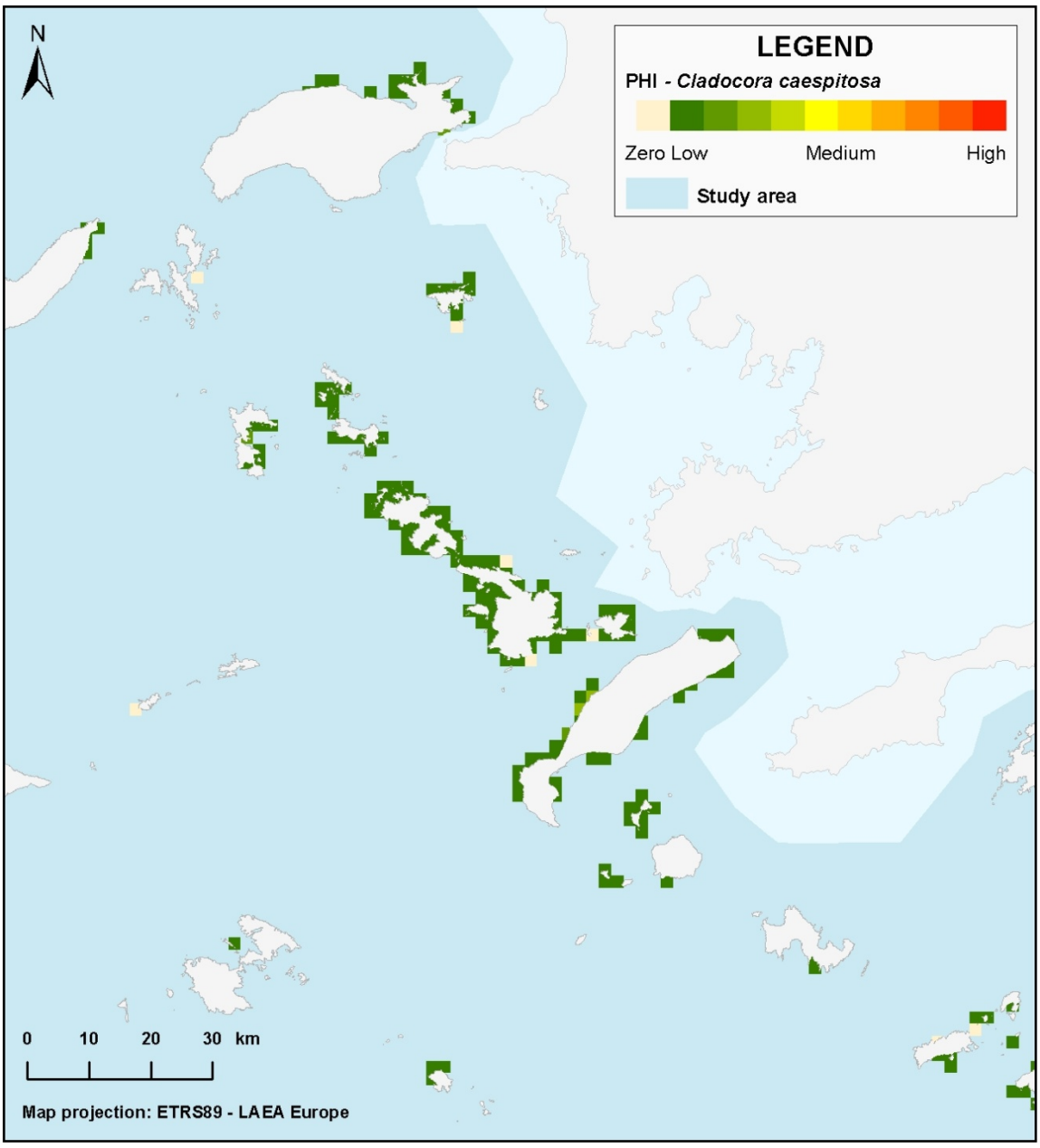

Fig S10.7: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

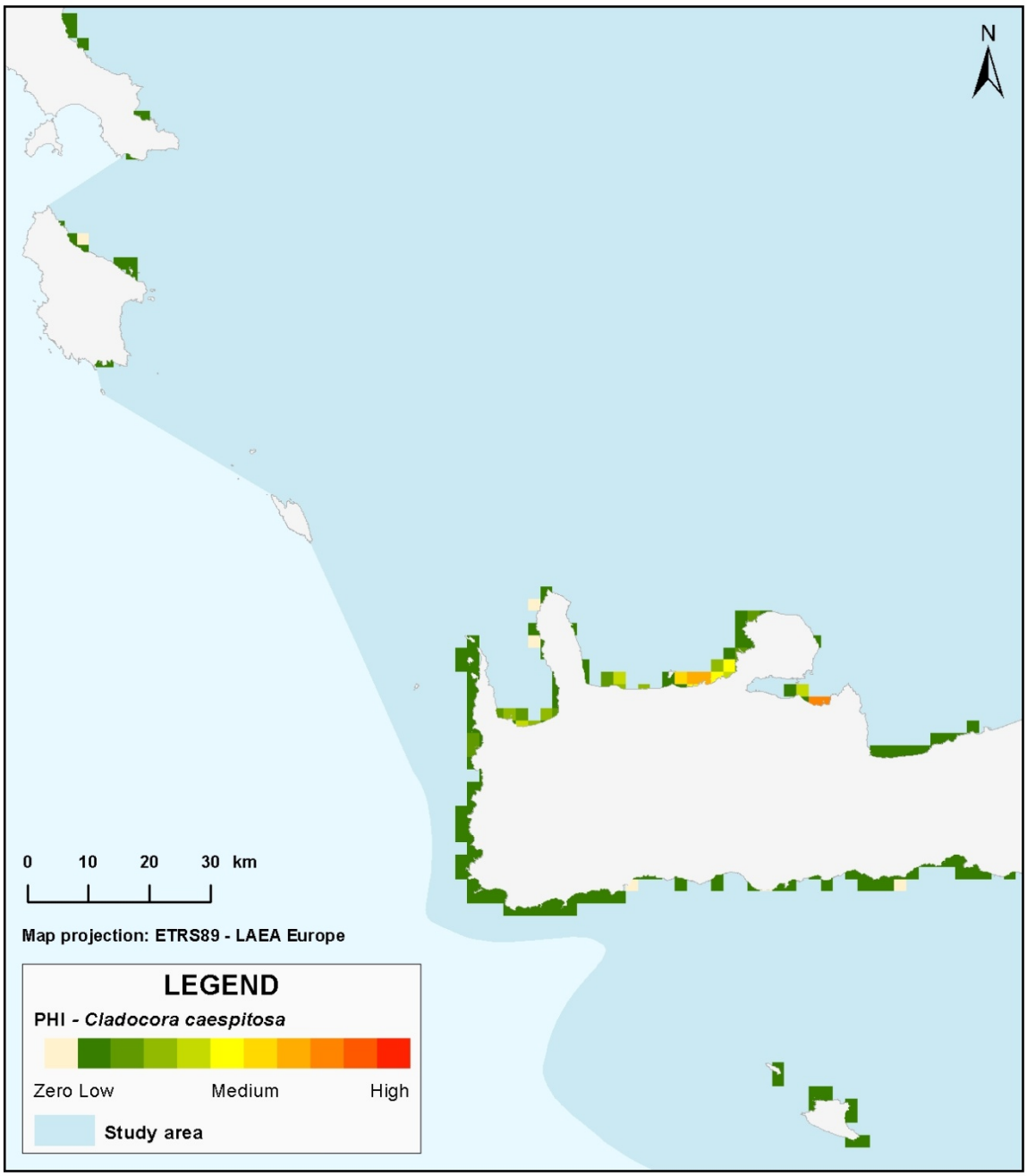

Fig S10.8: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

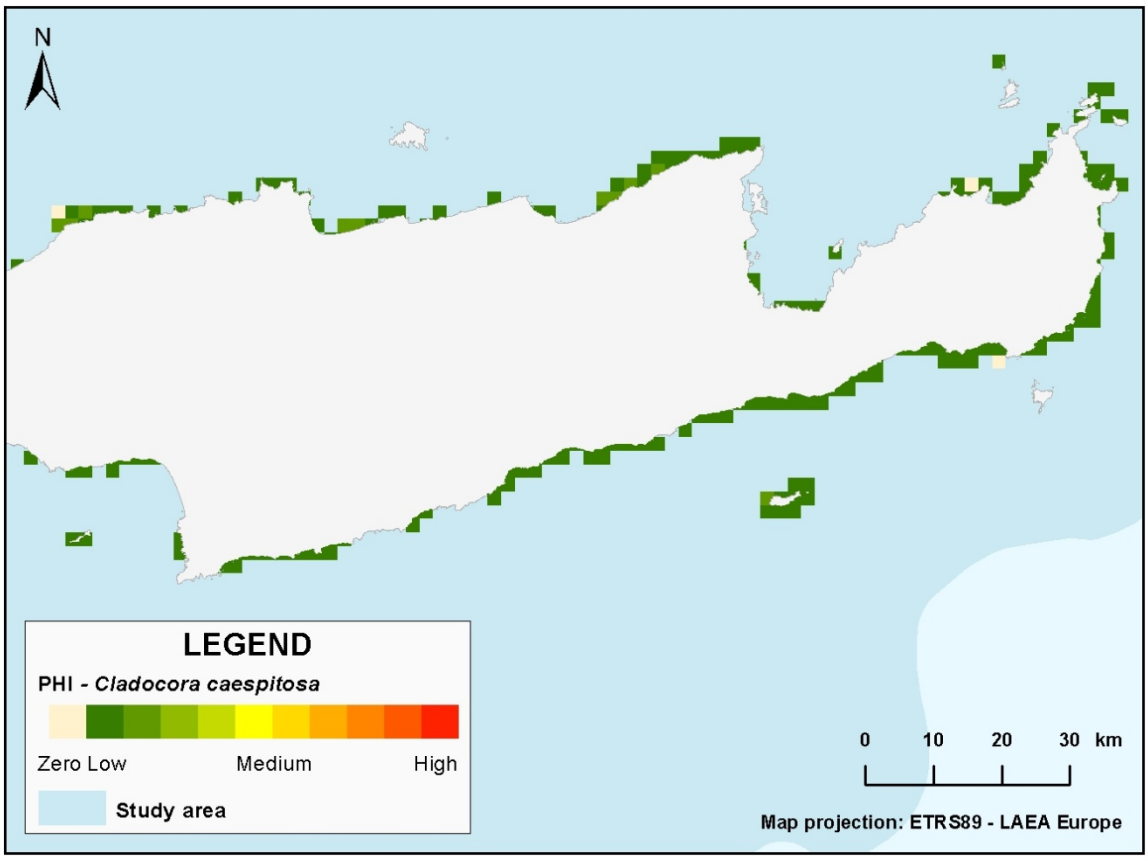

Fig S10.9: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

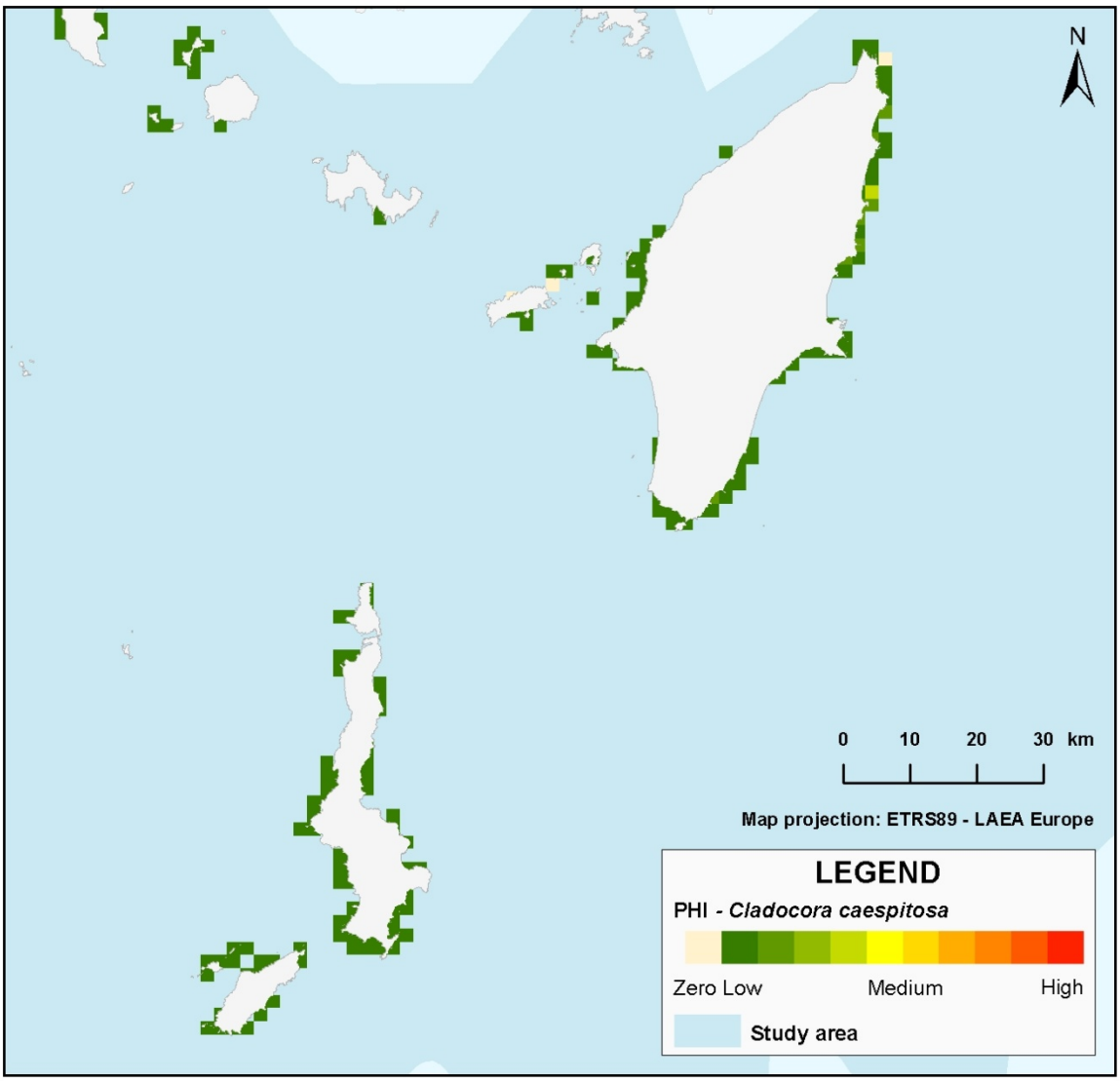

Fig S10.10: Identification of priority areas for the conservation of populations of ***Cladocora caespitosa*** based on the Potential Habitat Index (PHI).

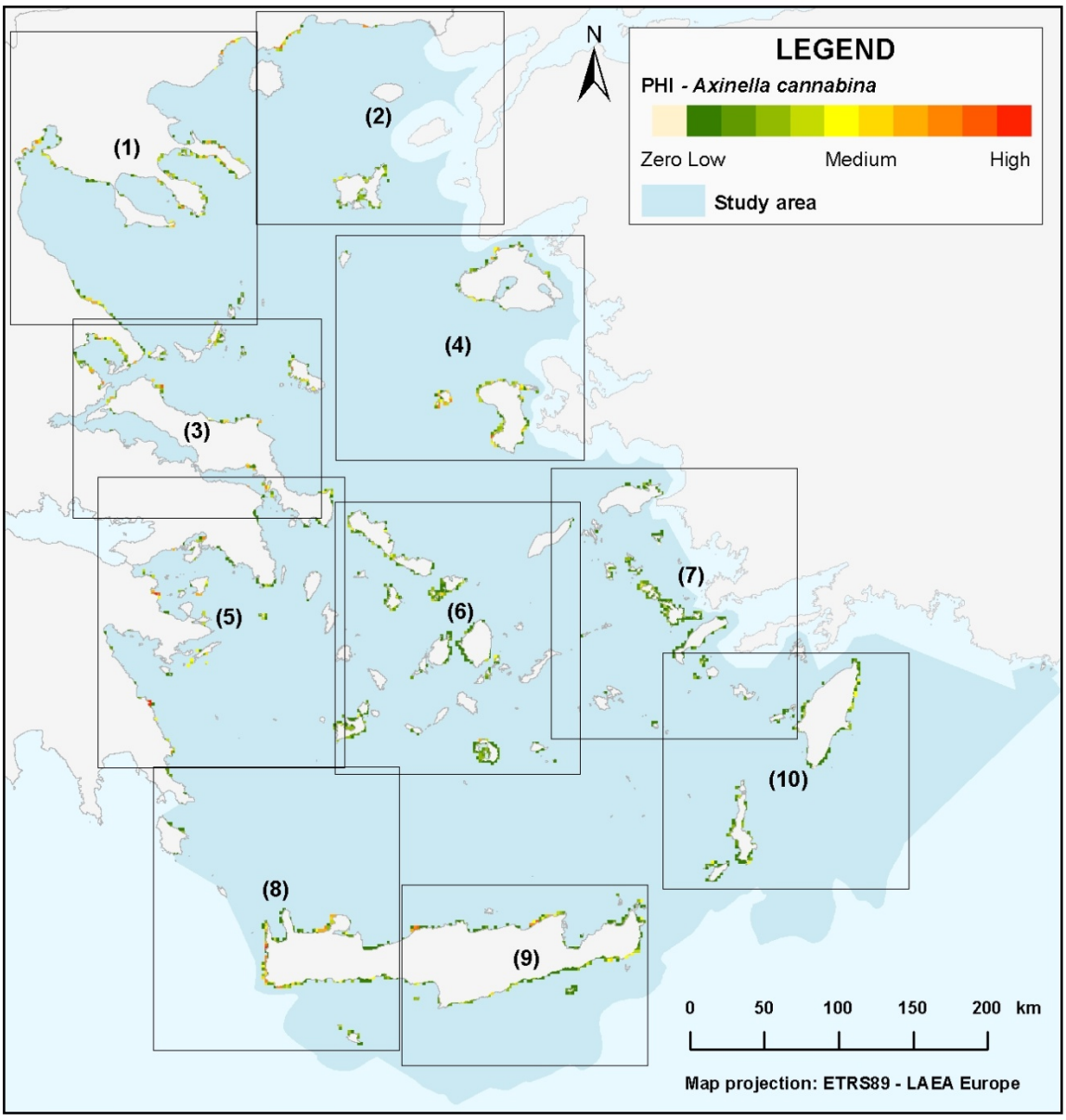

Figure S11: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI)

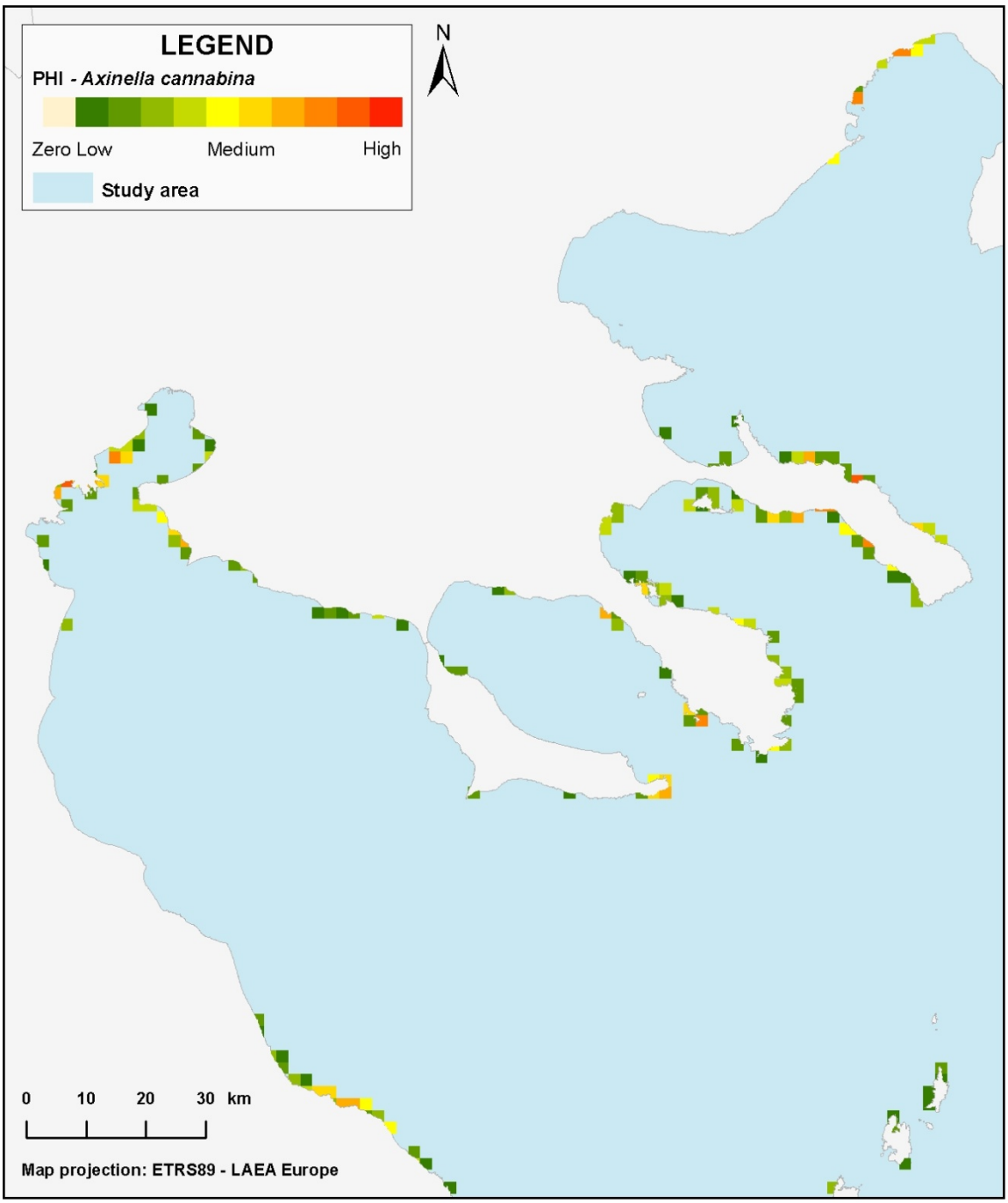

Fig S11.1: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

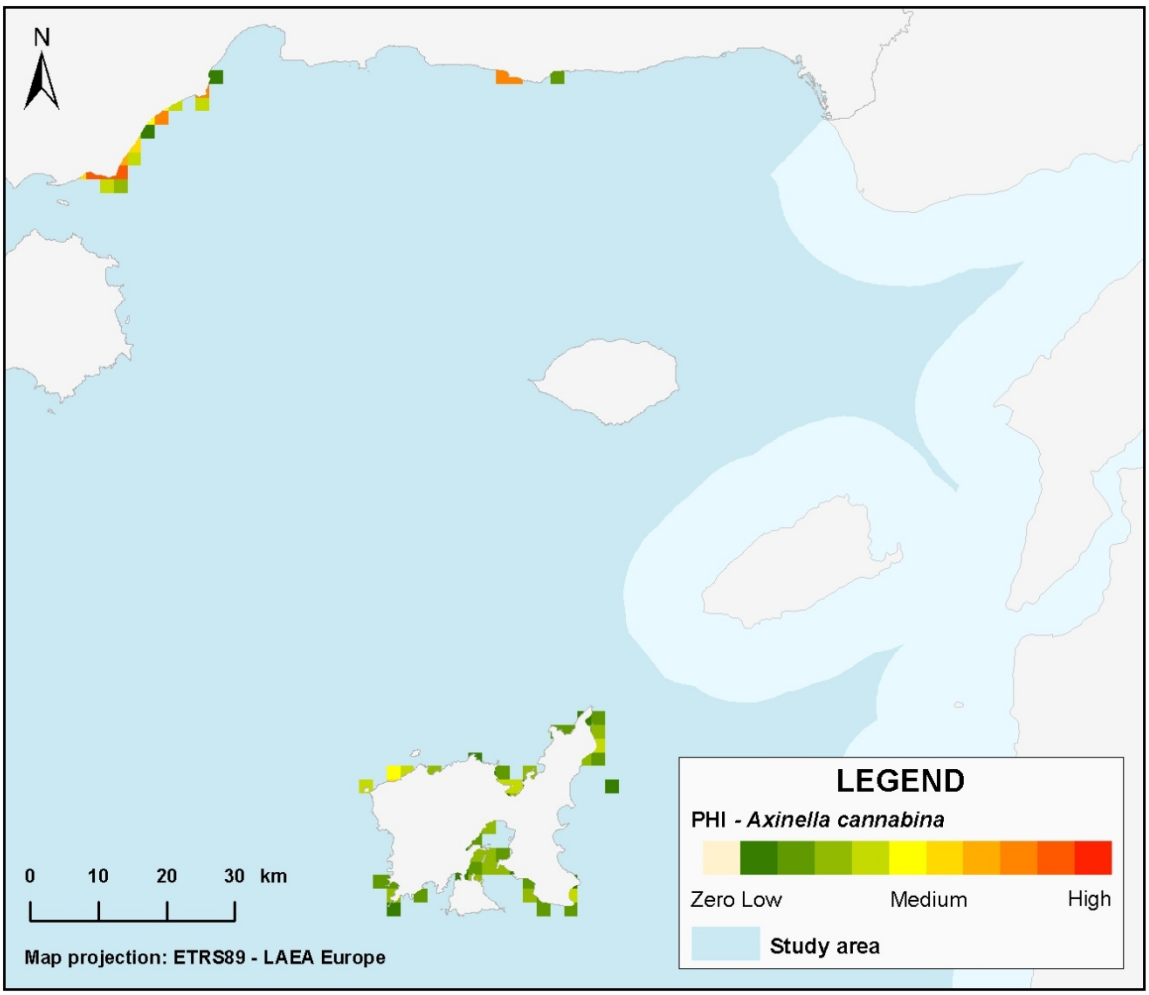

Fig S11.2: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

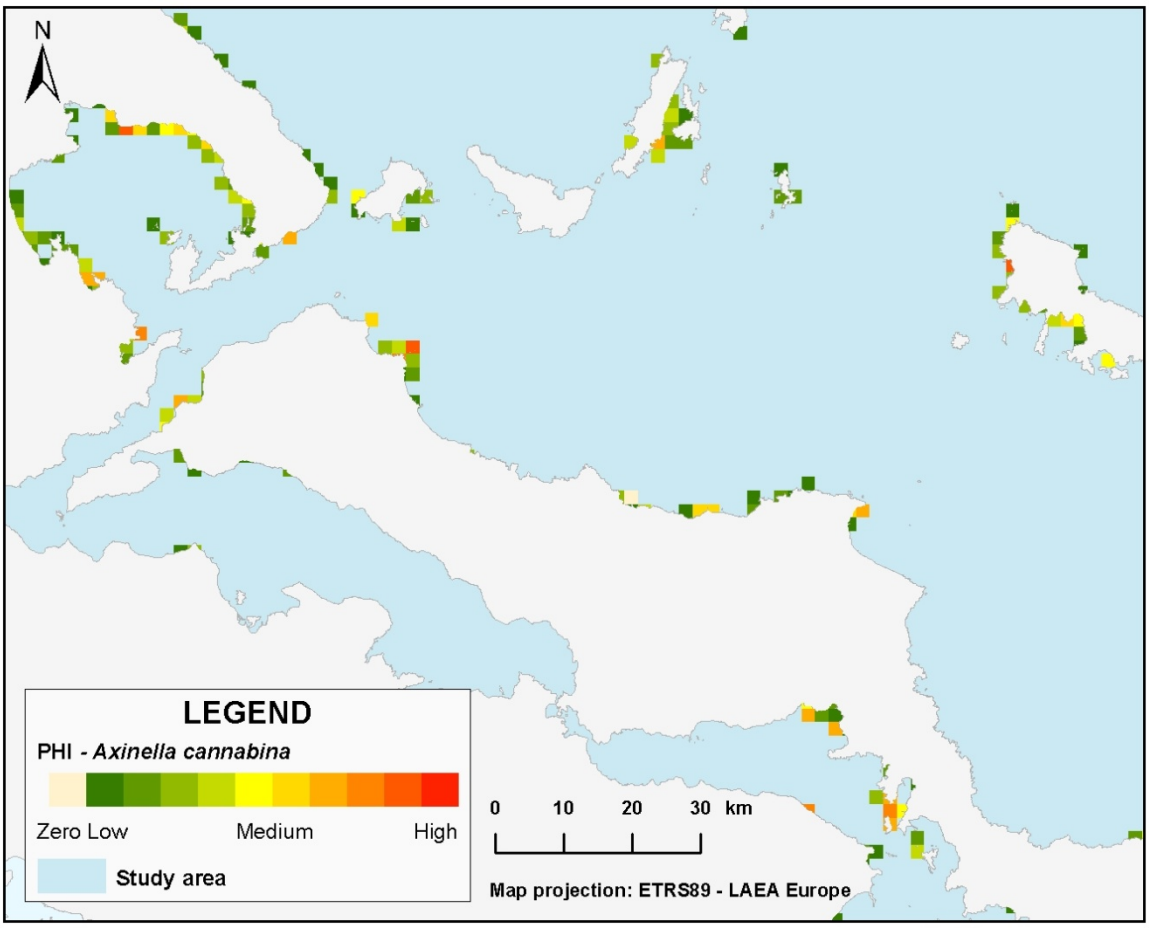

Fig S11.3: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

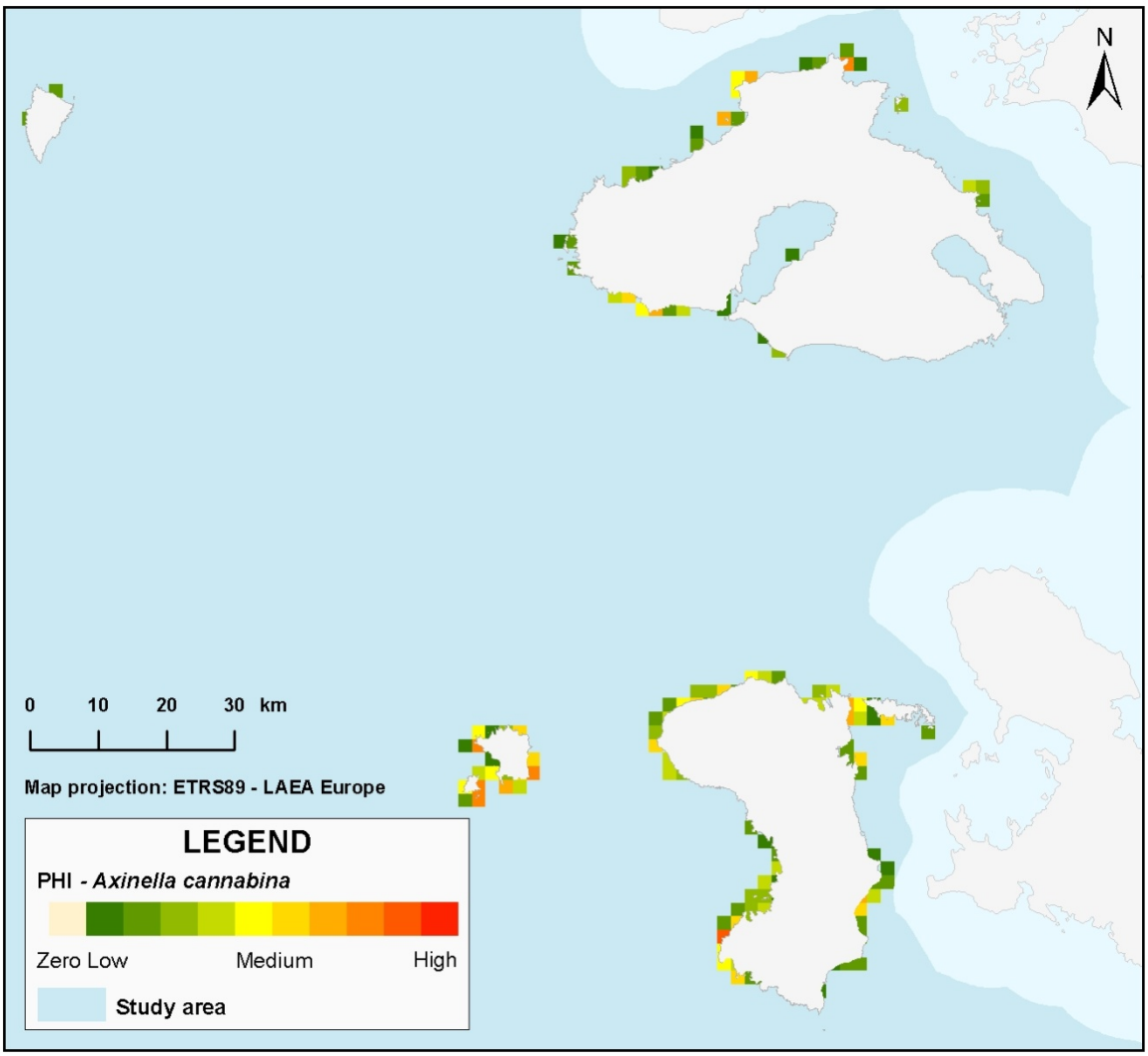

Fig S11.4: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

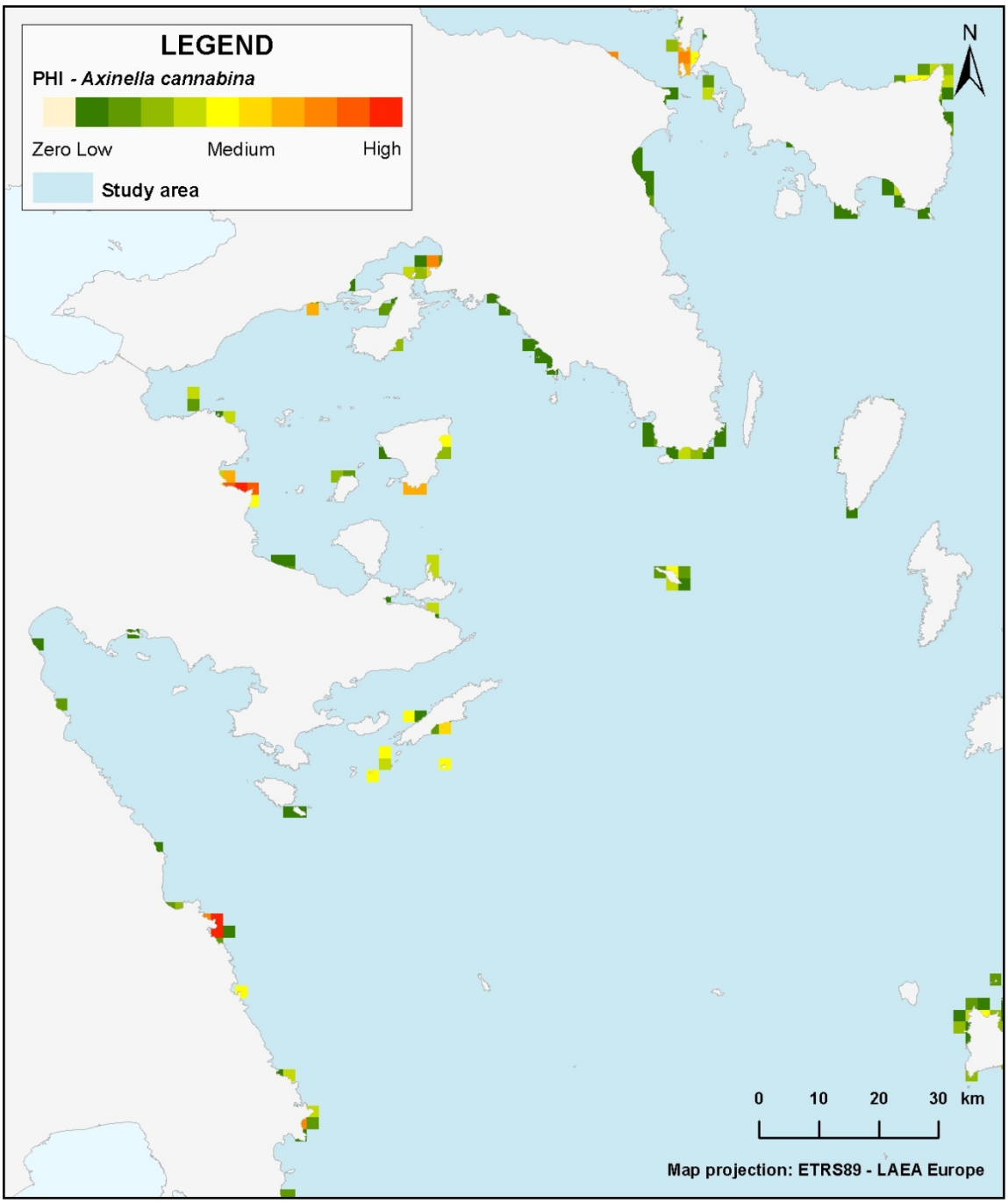

Fig S11.5: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

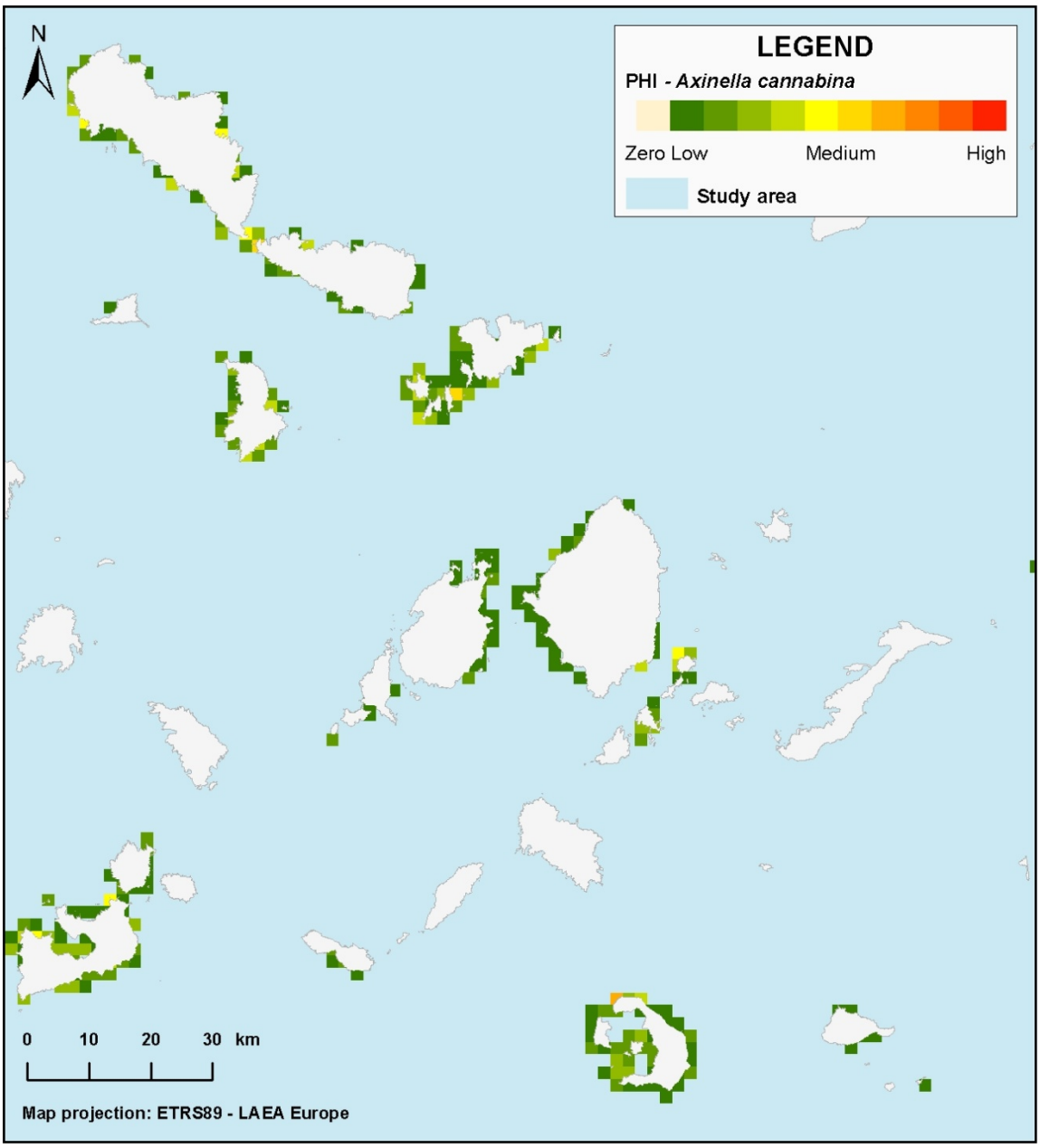

Fig S11.6: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

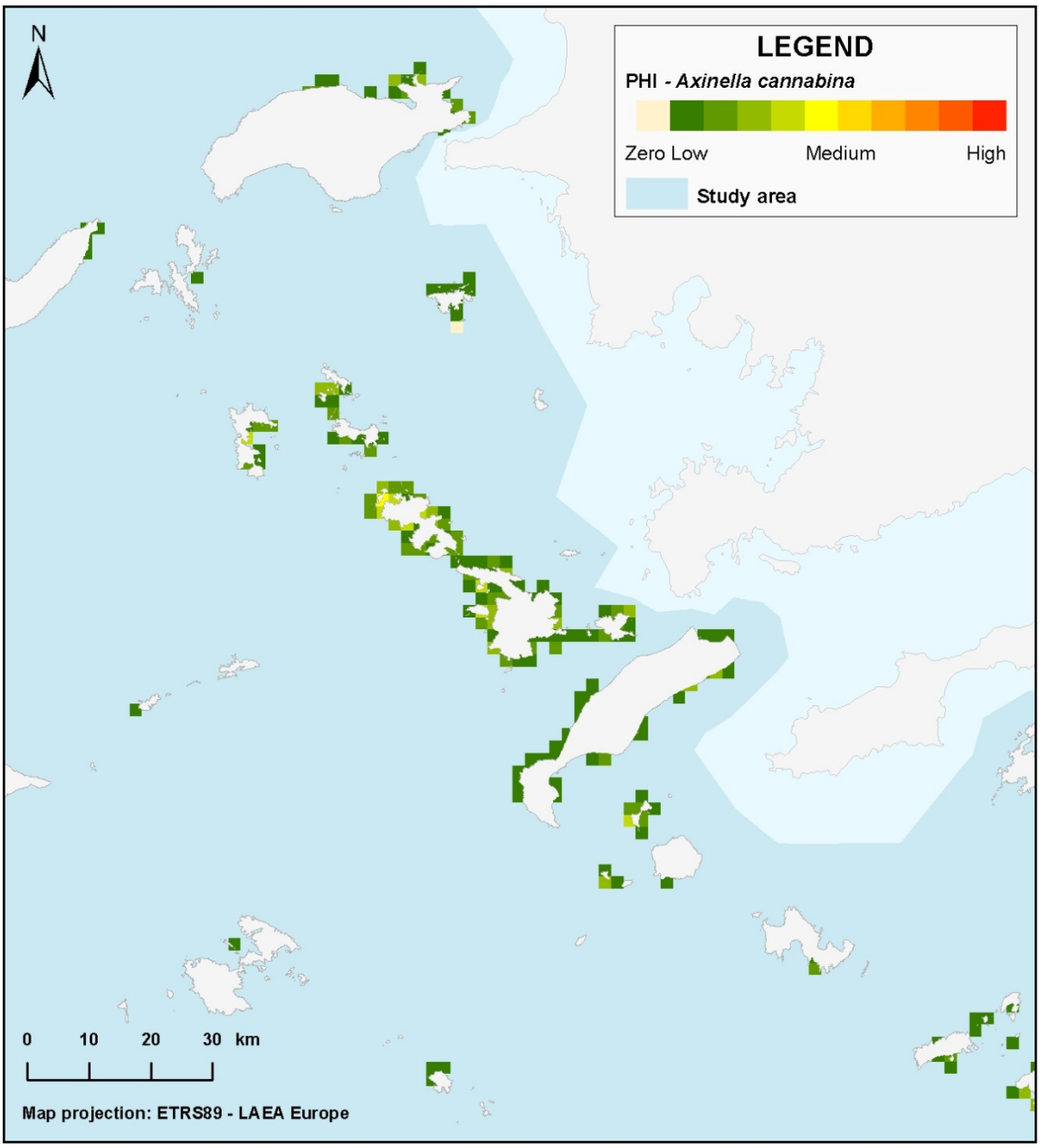

Fig S11.7: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

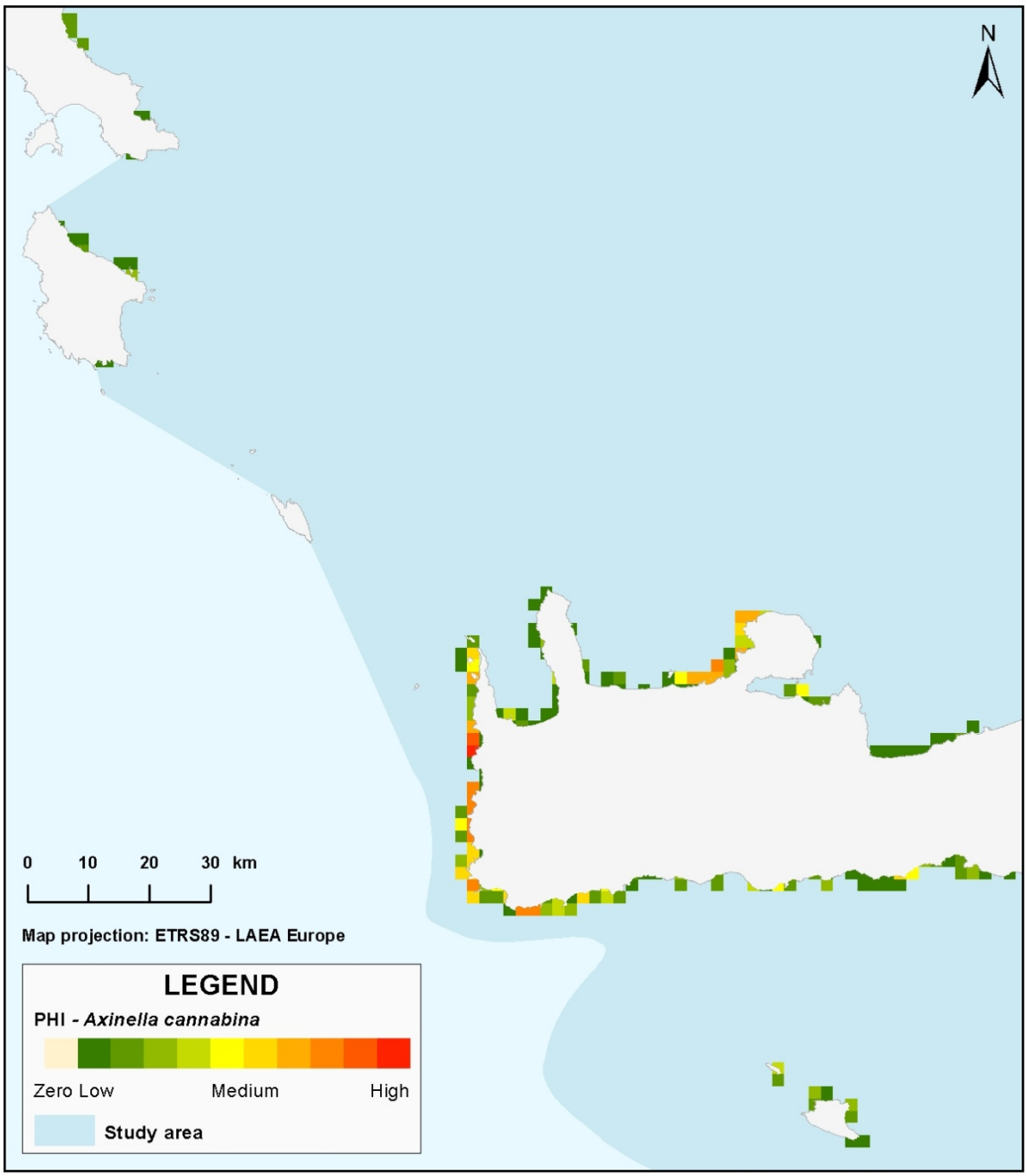

Fig S11.8: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

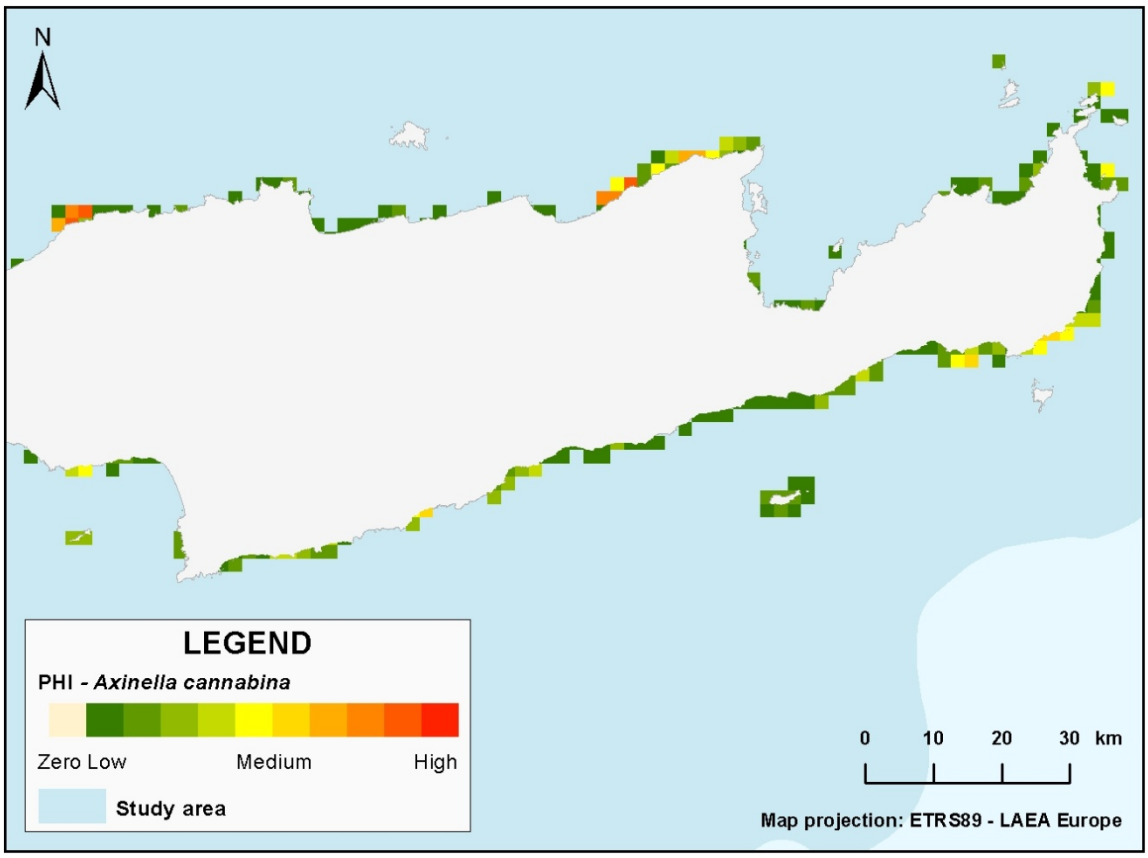

Fig S11.9: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

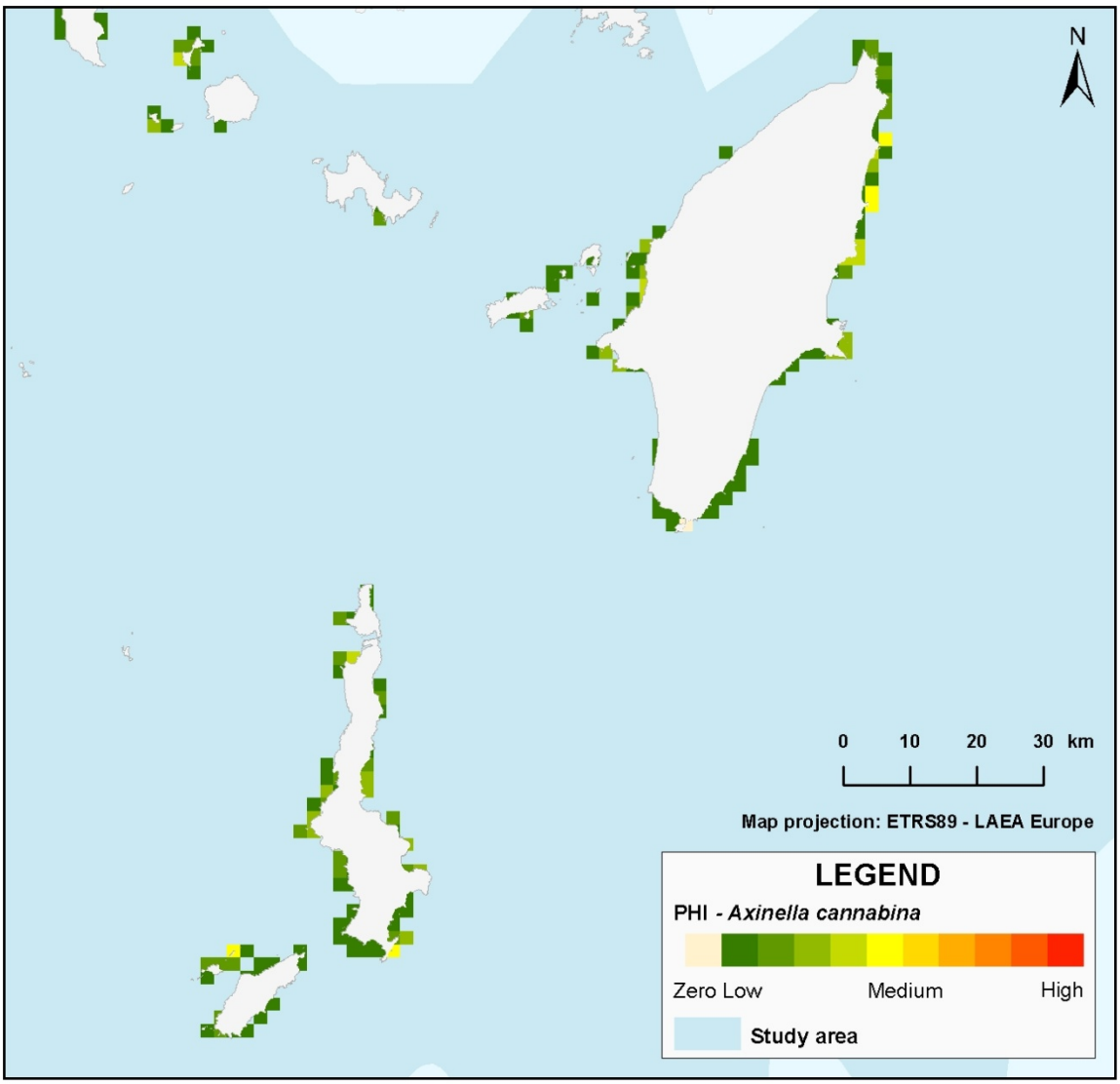

Fig S11.10: Identification of priority areas for the conservation of populations of ***Axinella cannabina*** based on the Potential Habitat Index (PHI).

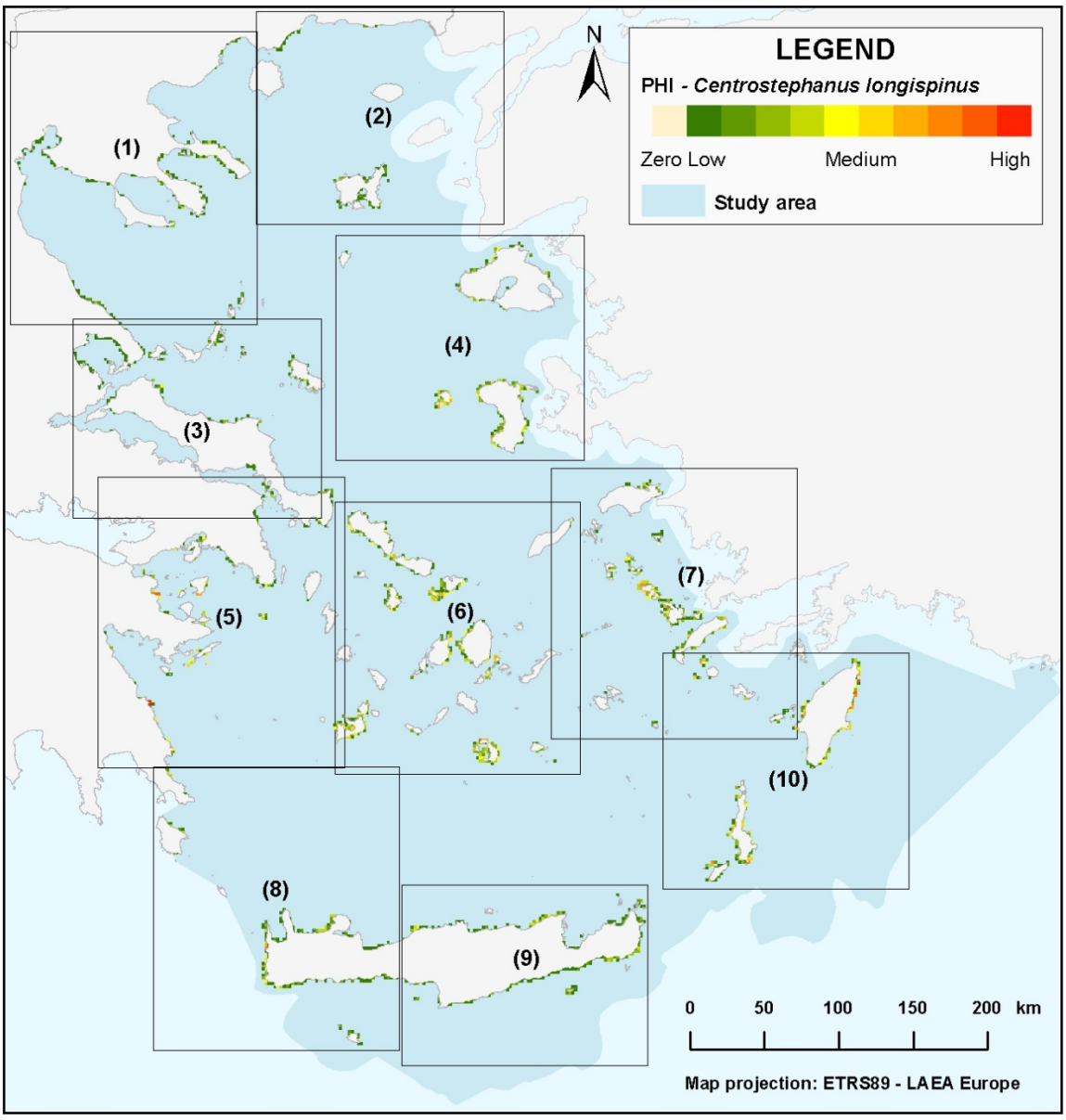

Figure S12: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI)

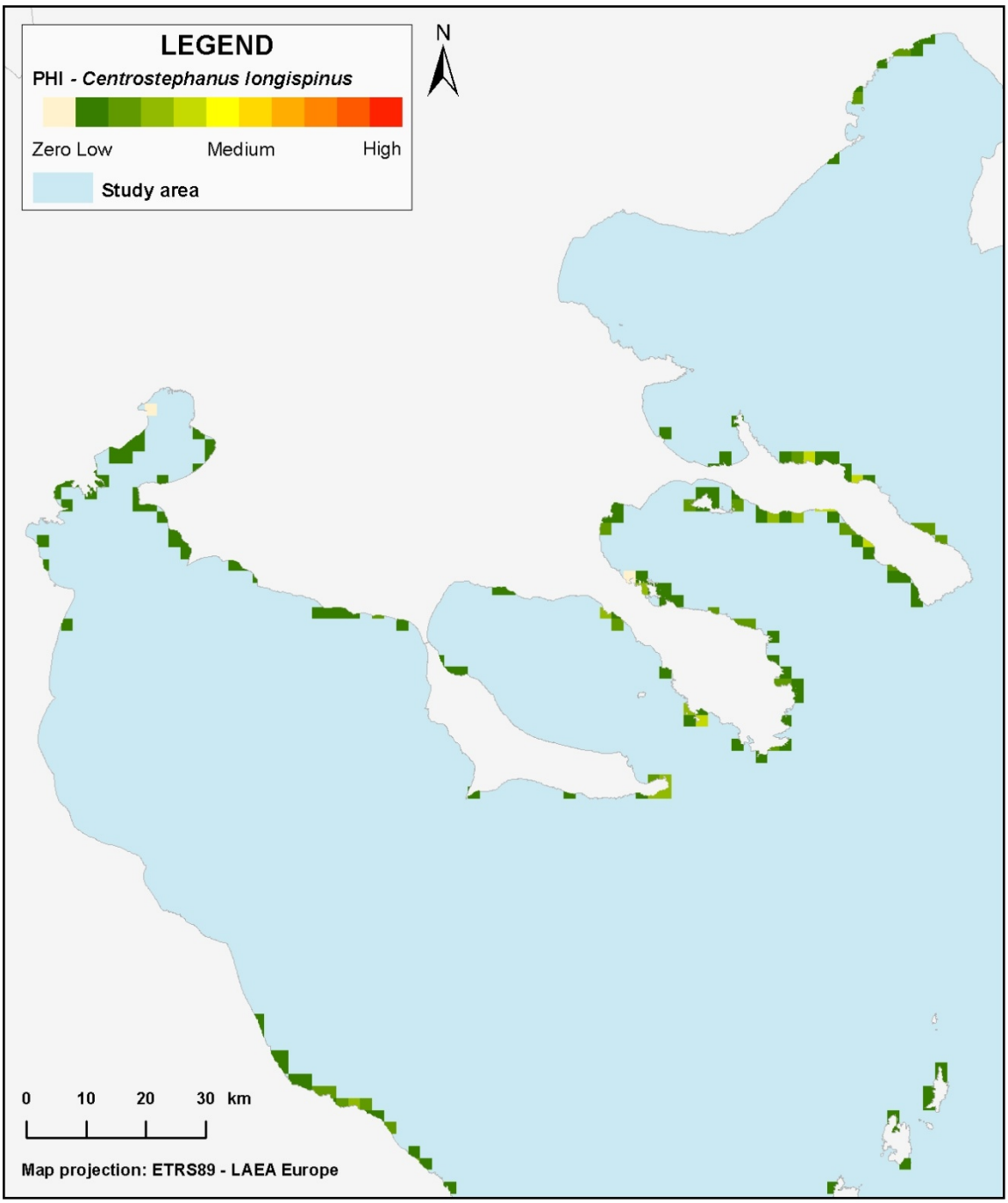

Fig S12.1: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

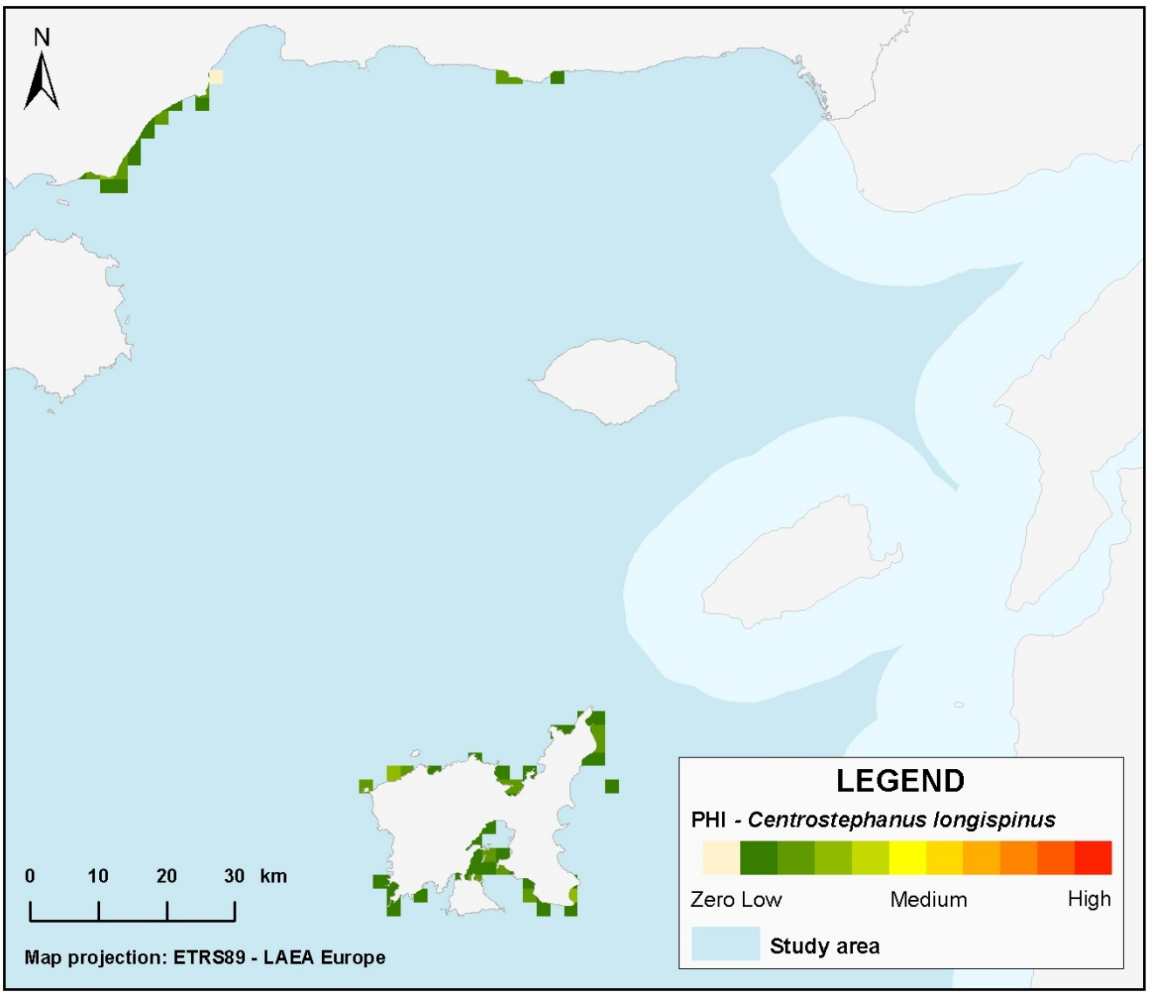

Fig S12.2: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

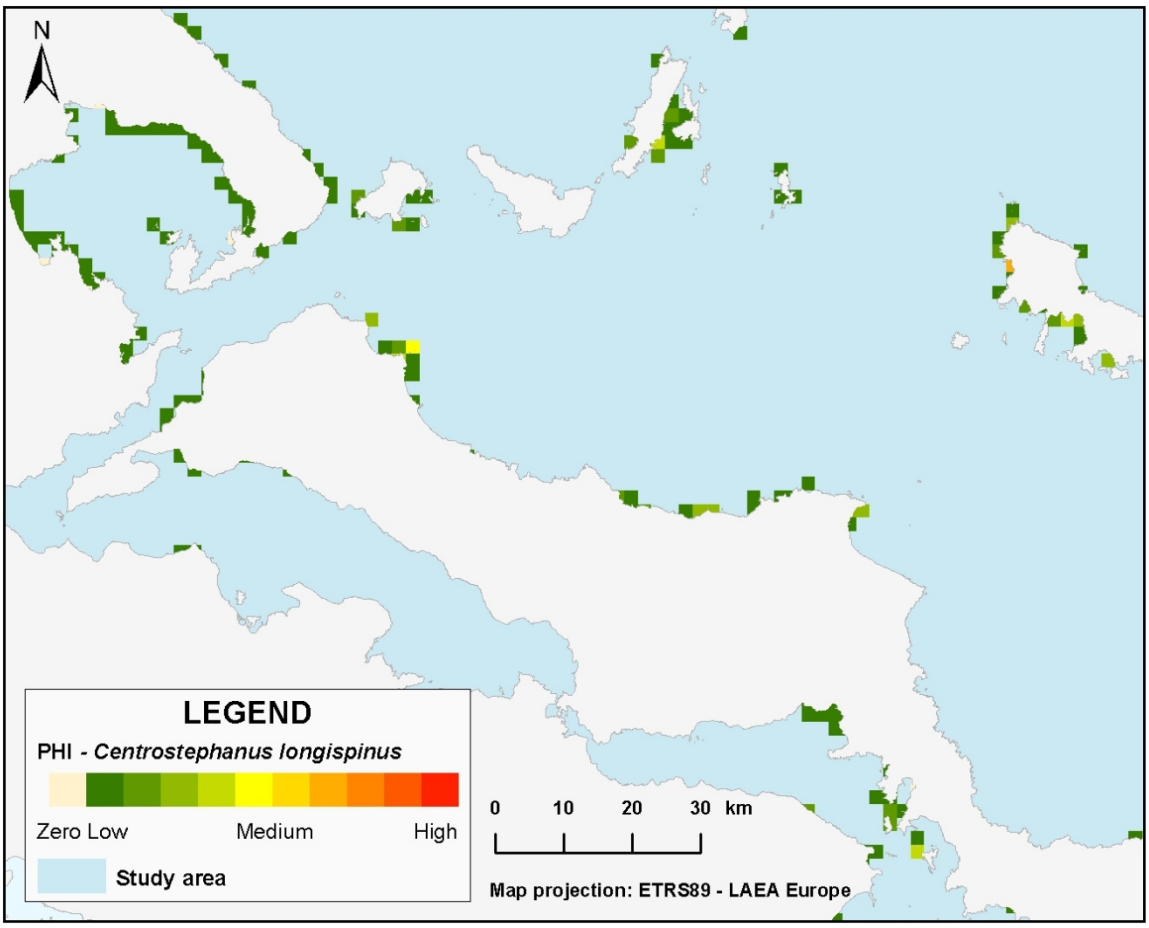

Fig S3.3: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

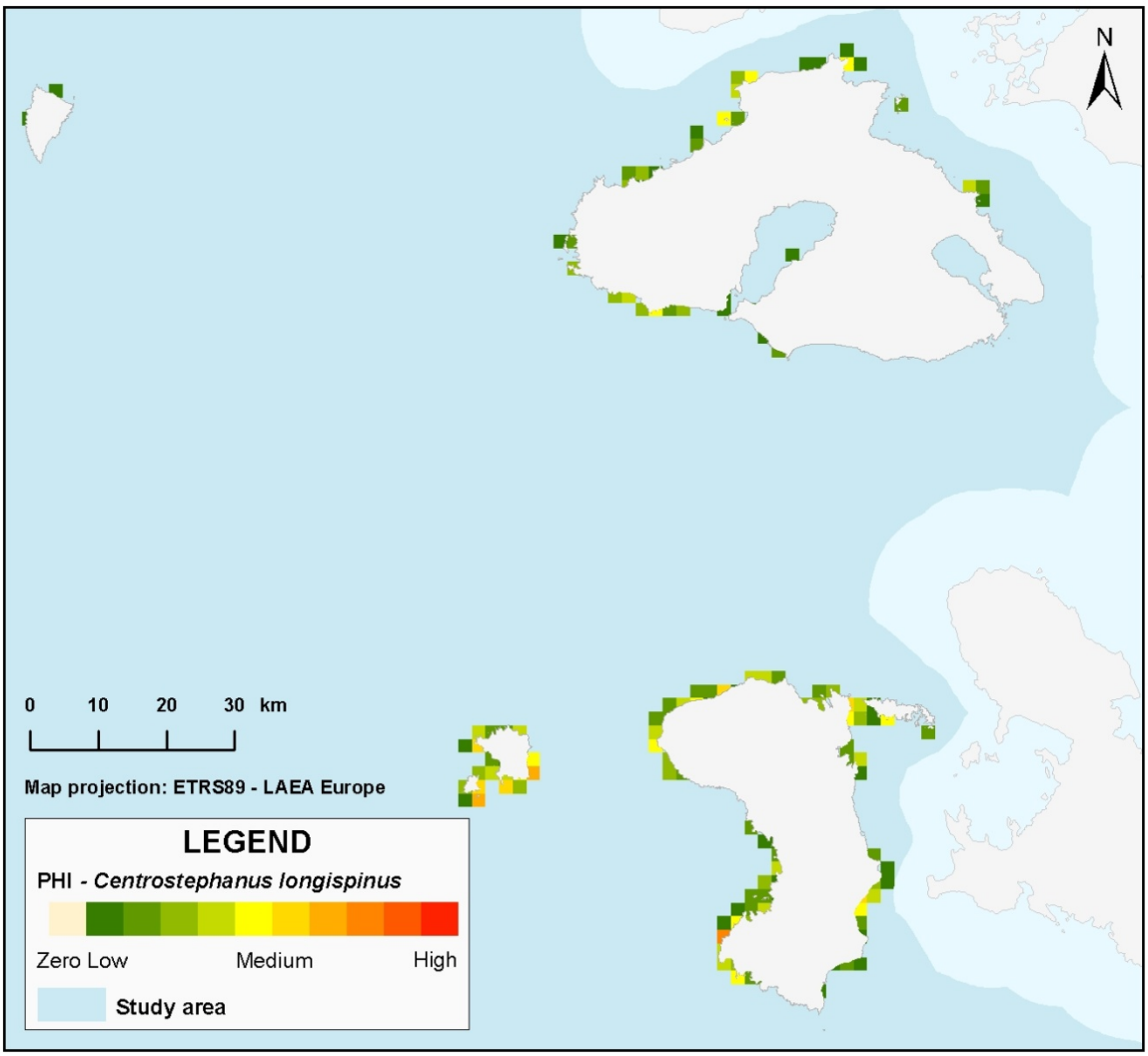

Fig S12.4: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

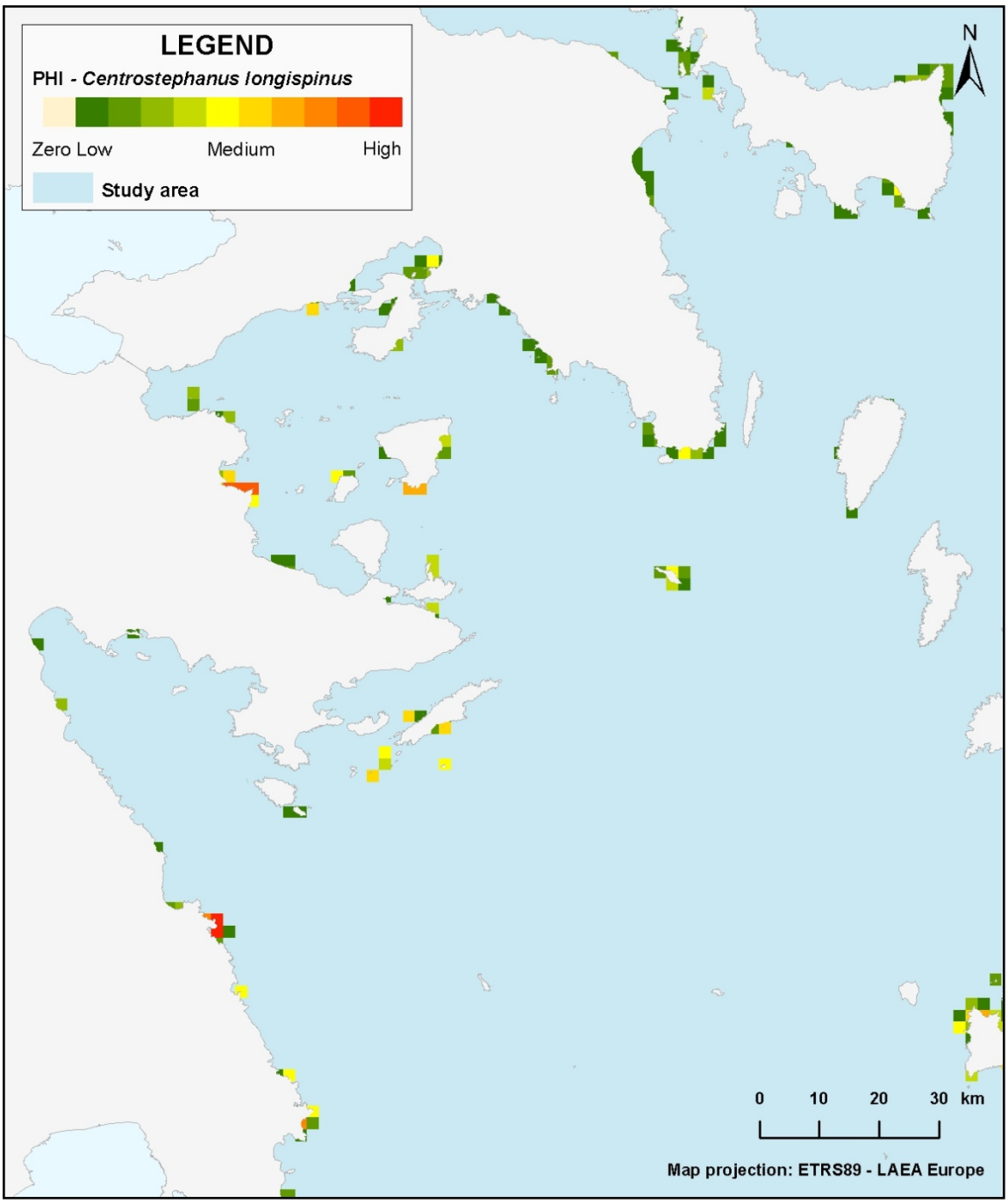

Fig S12.5: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

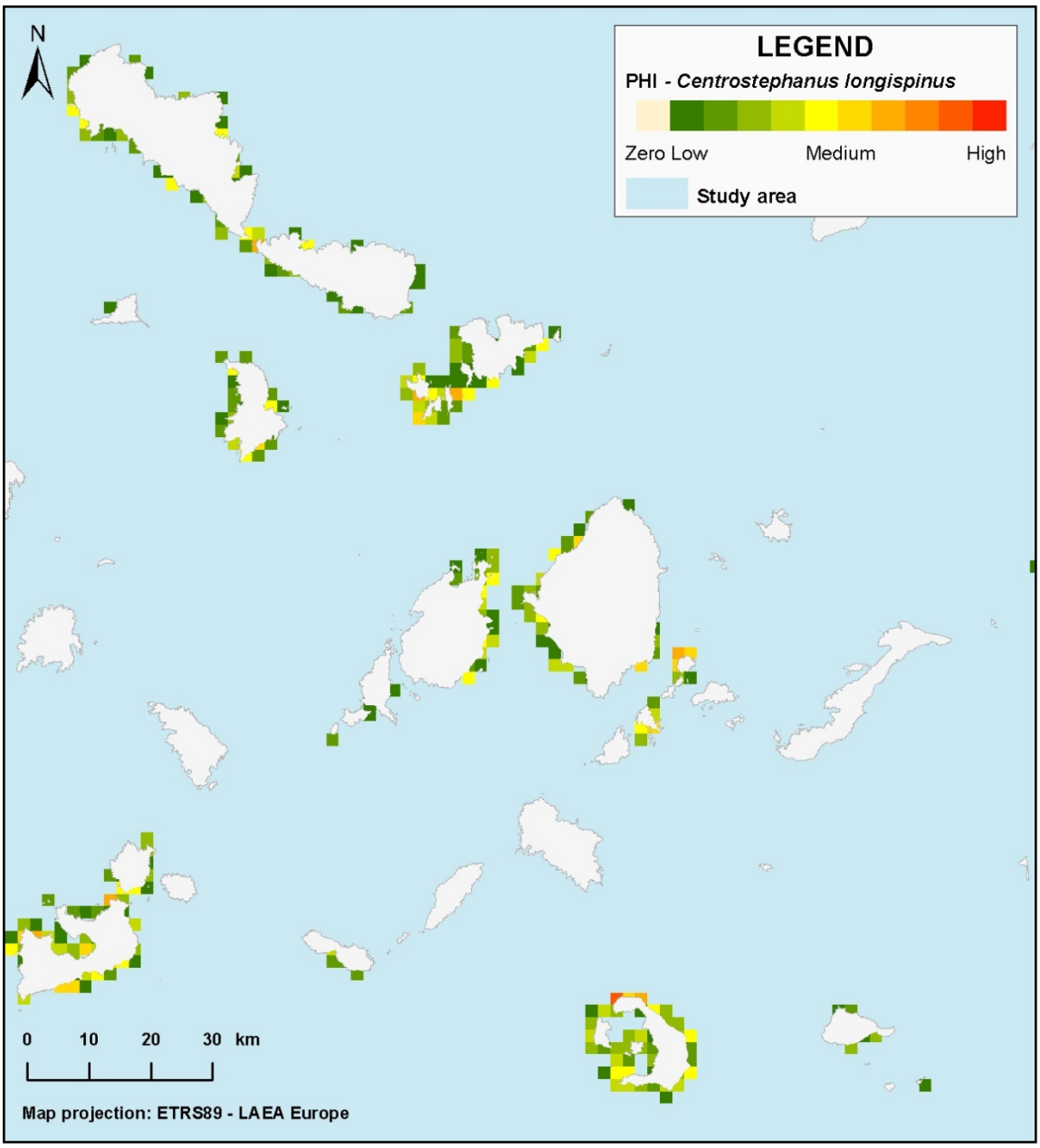

Fig S12.6: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

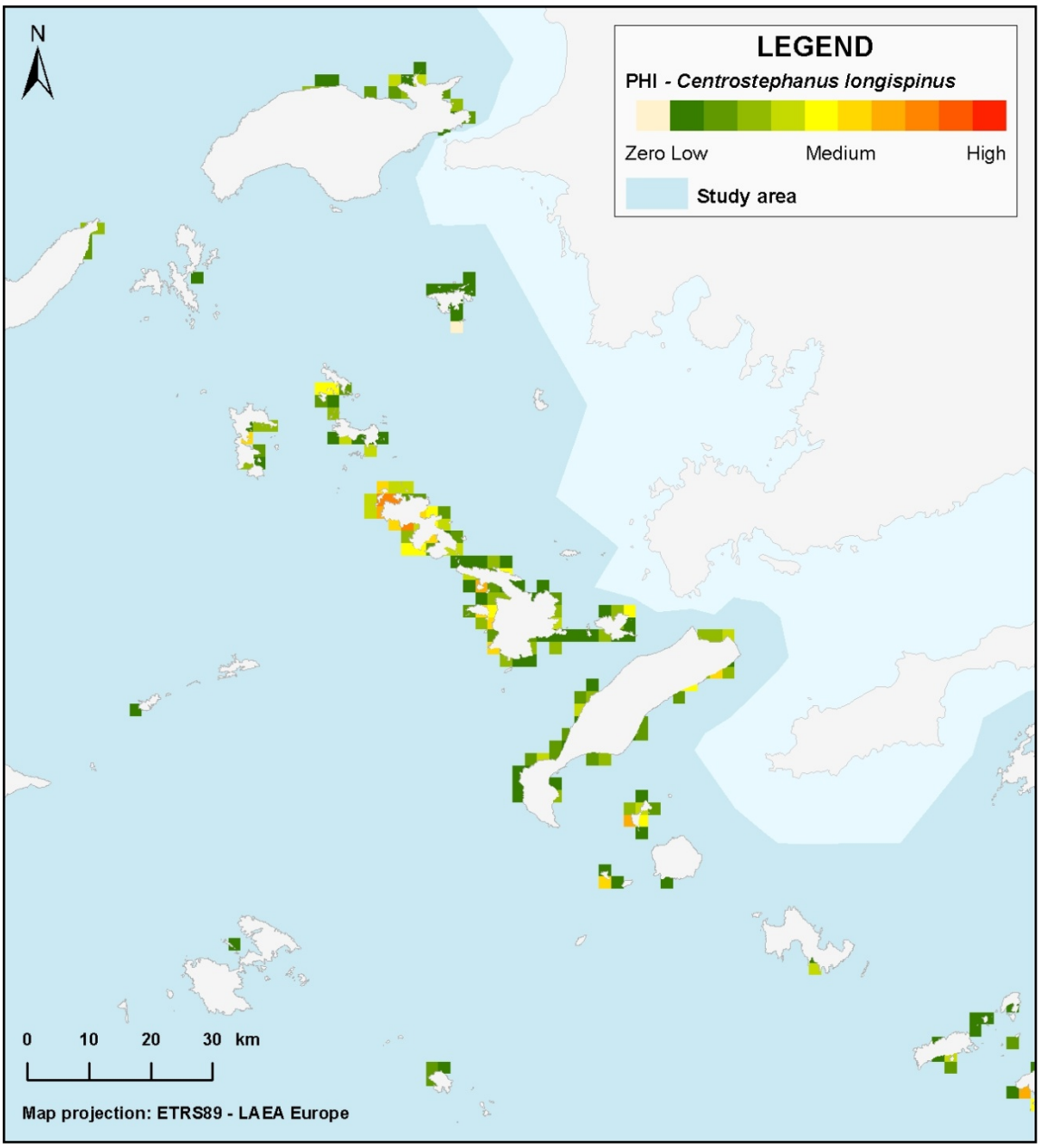

Fig S12.7: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

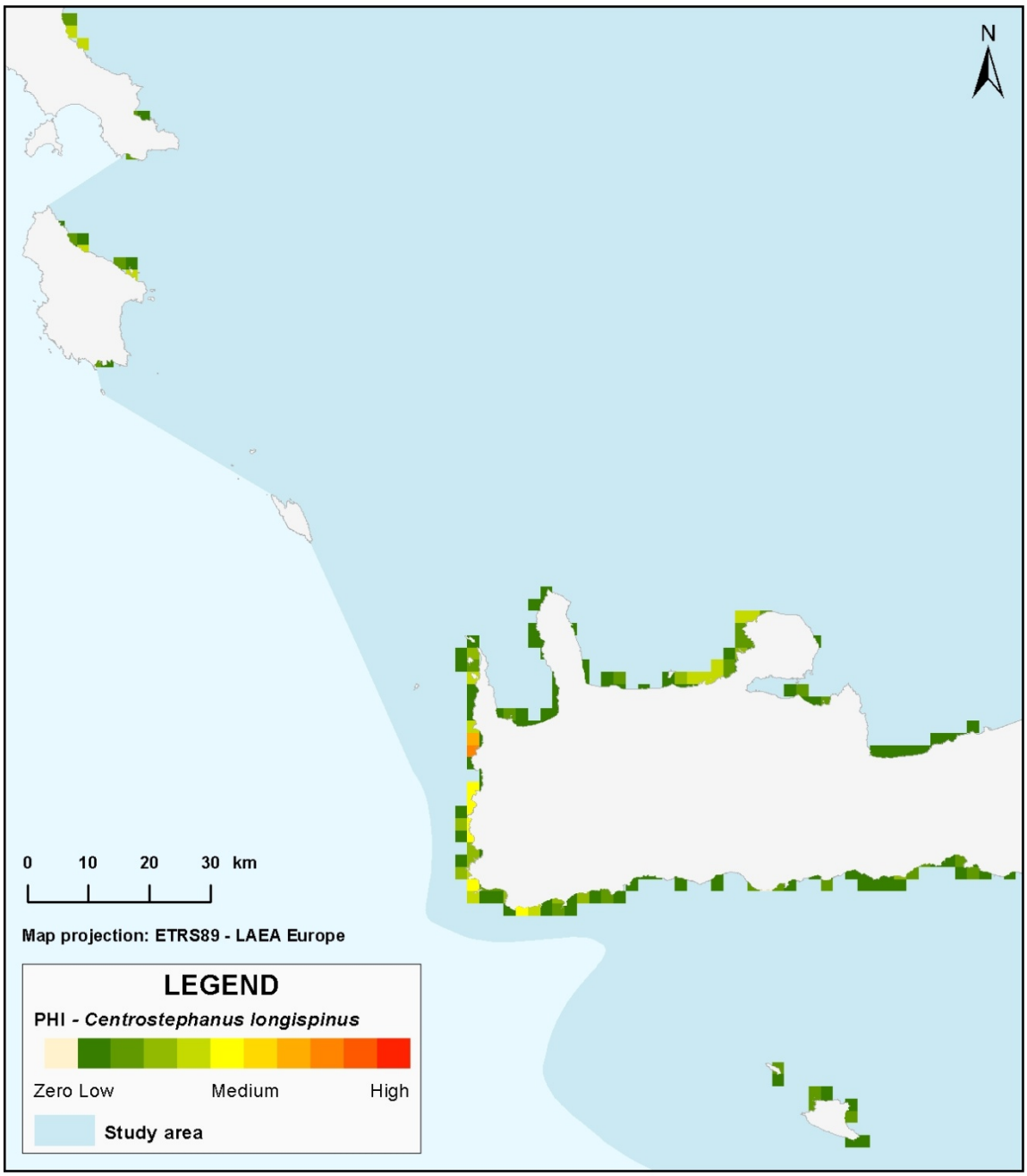

Fig S12.8: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

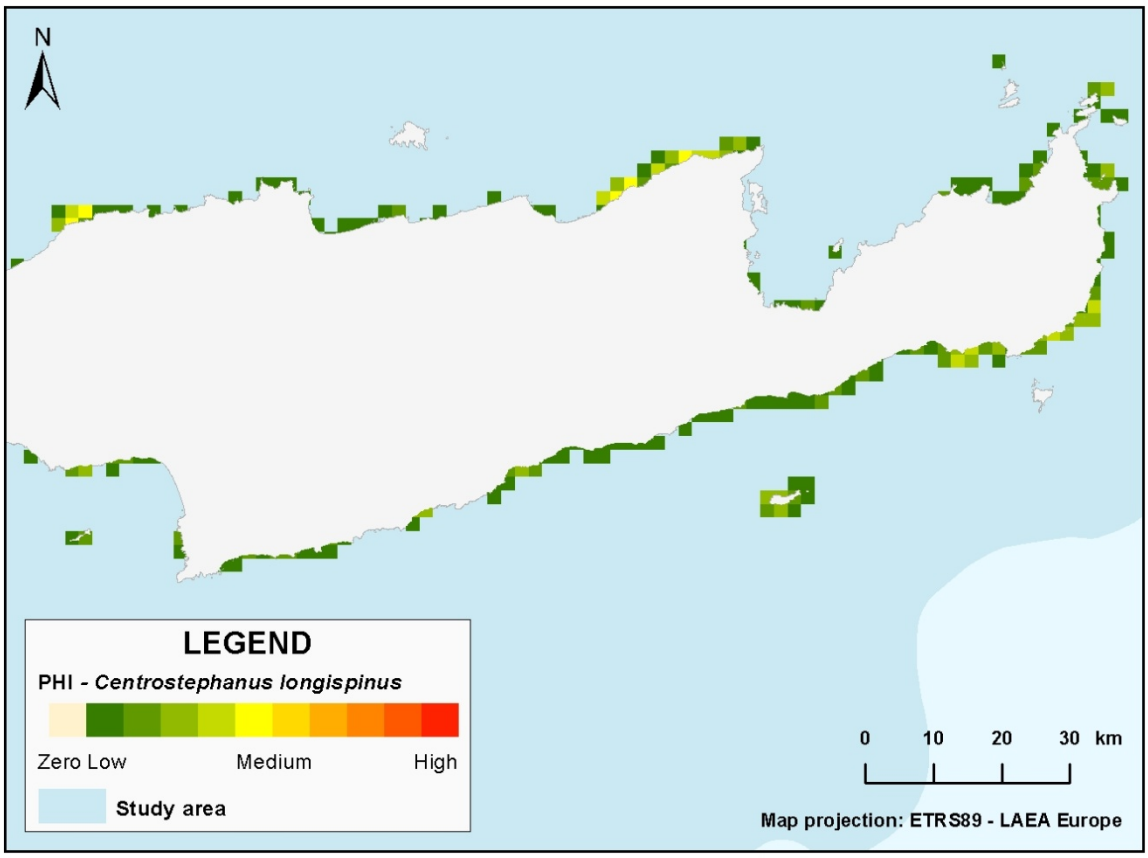

Fig S12.9: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

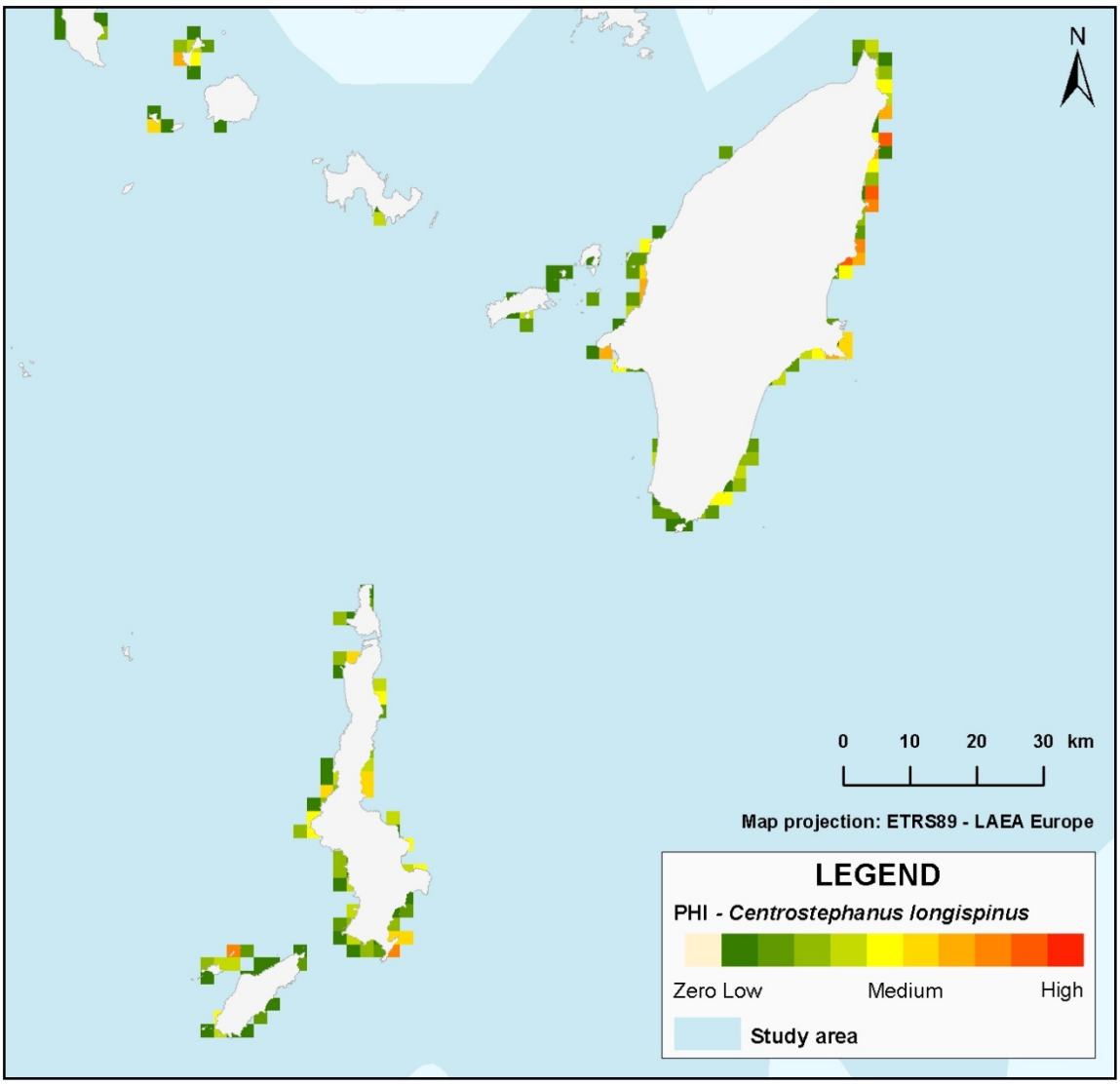

Fig S12.10: Identification of priority areas for the conservation of populations of ***Centrostephanus longispinus*** based on the Potential Habitat Index (PHI).

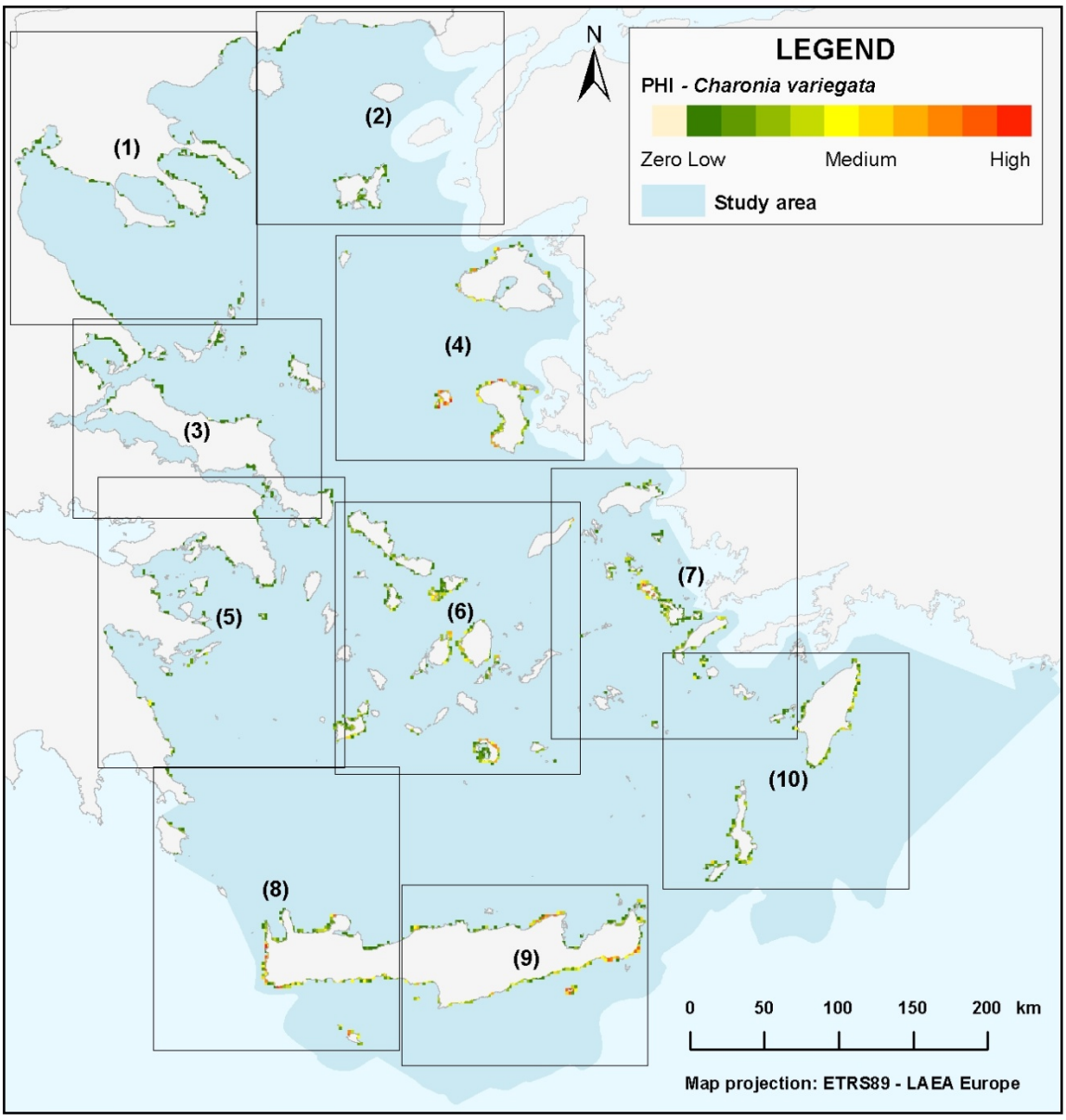

Figure S13: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI)

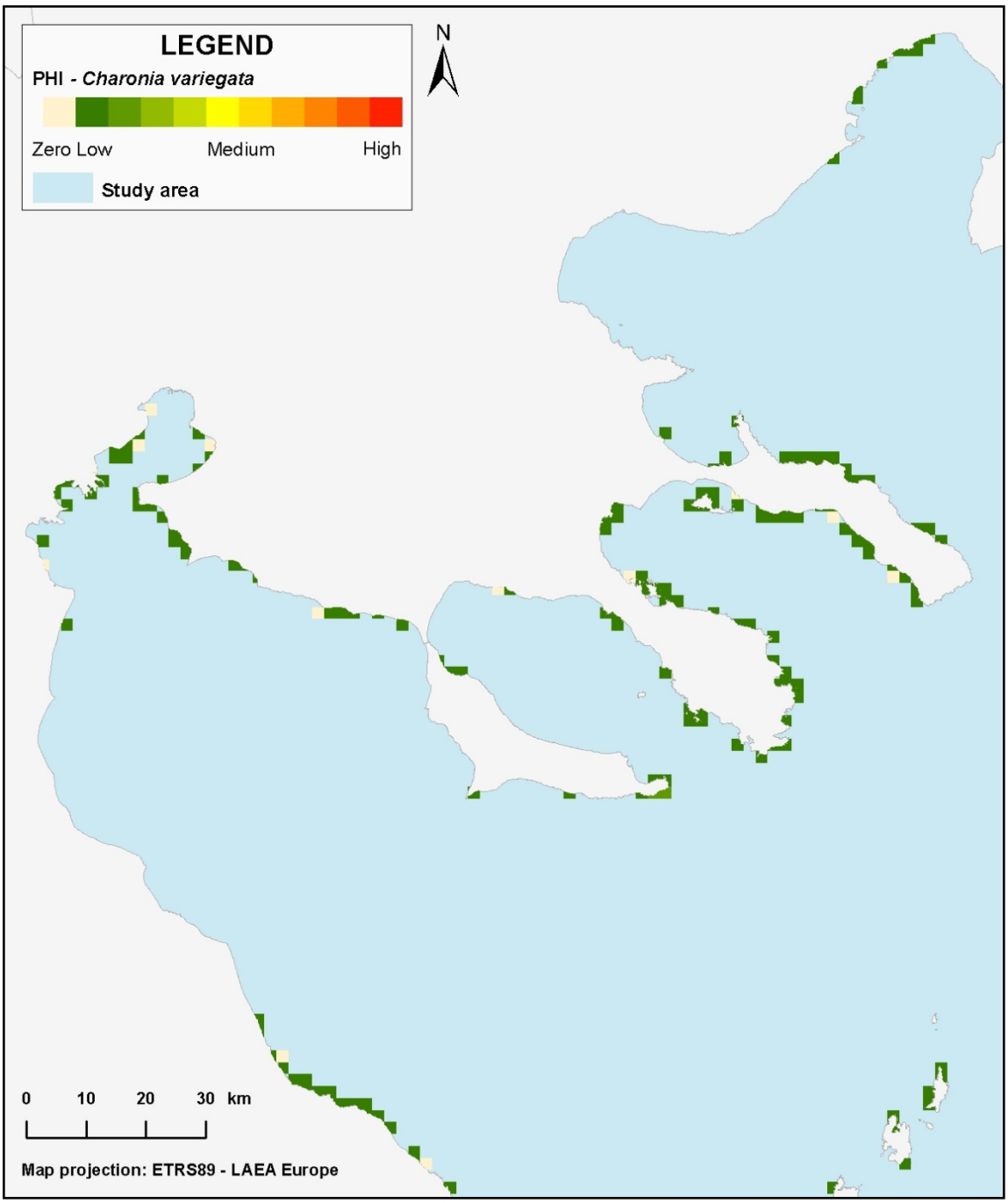

Fig S13.1: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

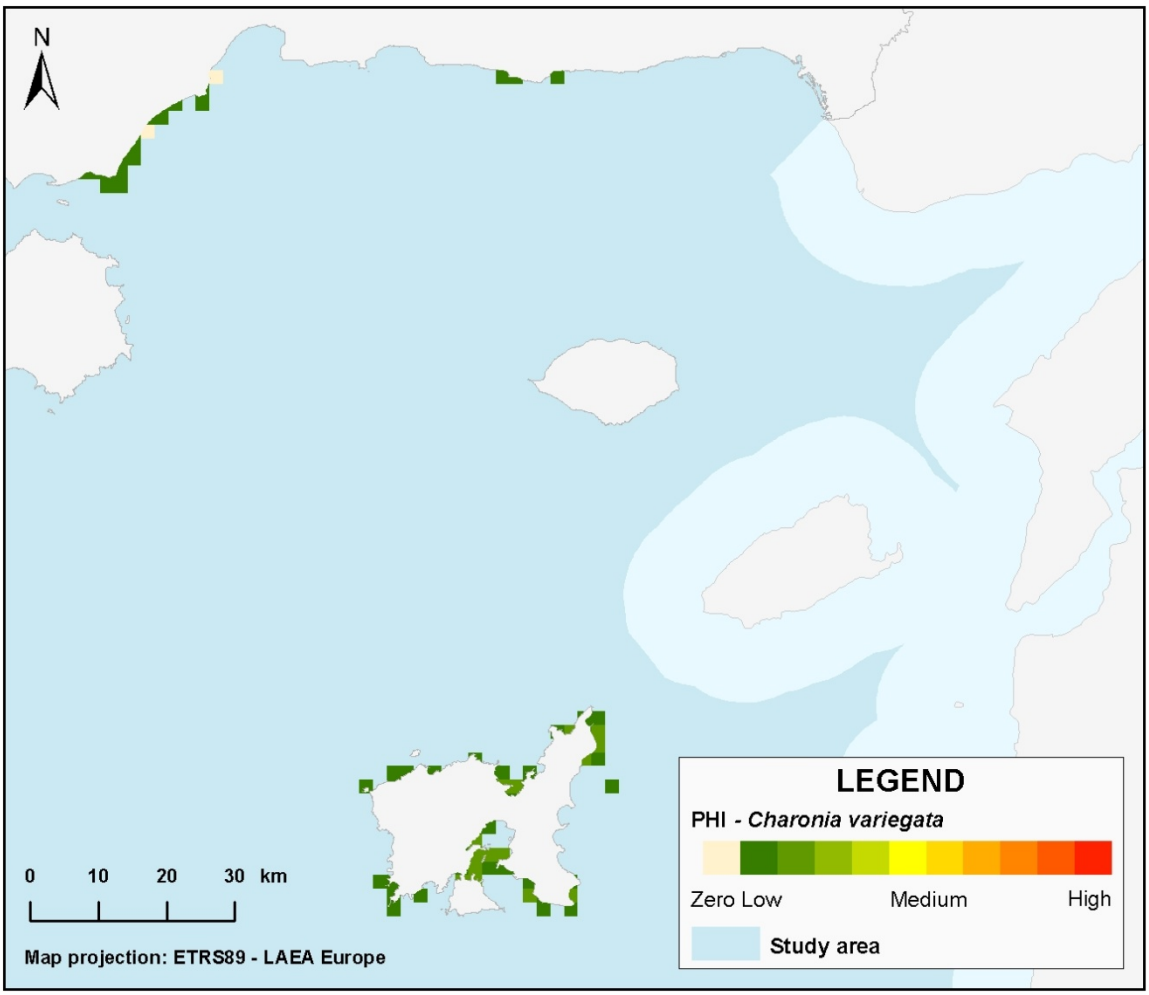

Fig S13.2: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

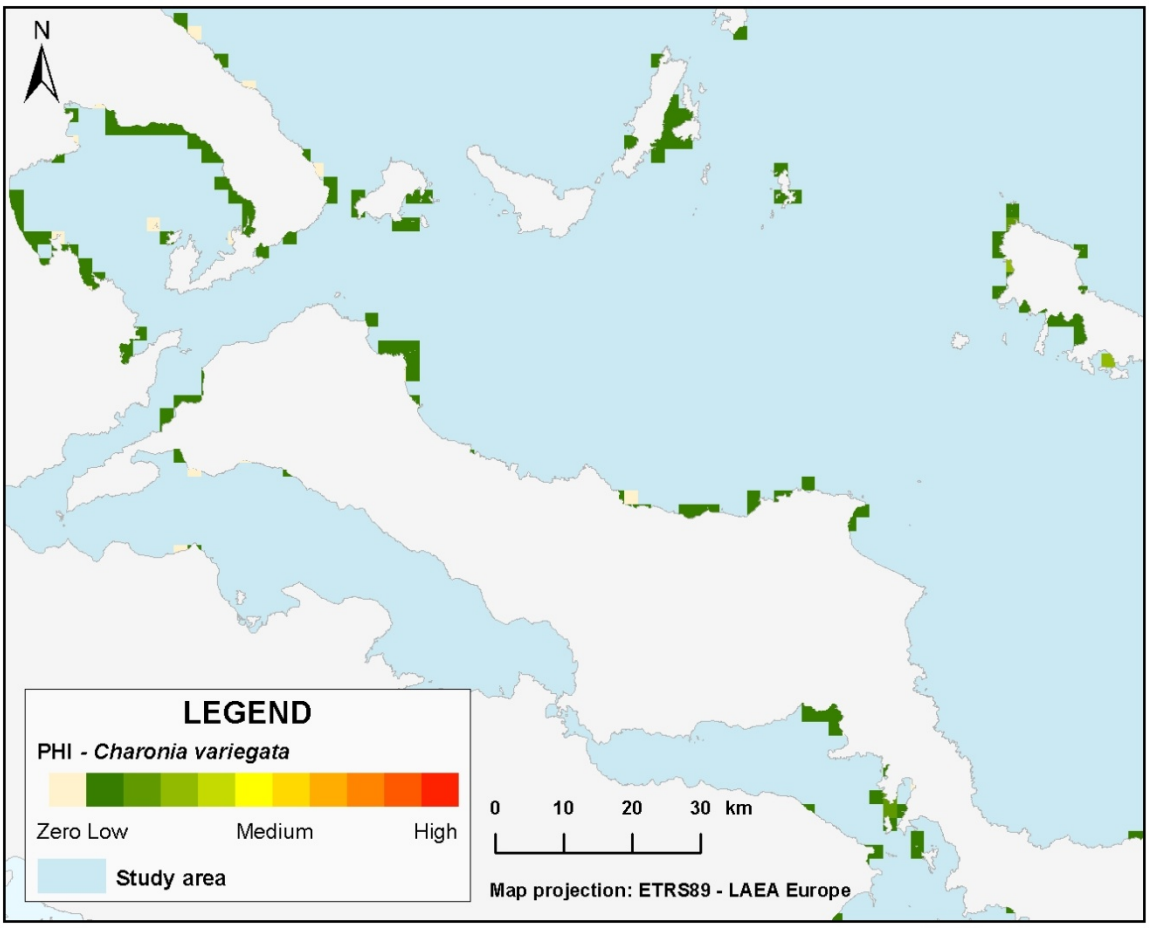

Fig S13.3: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

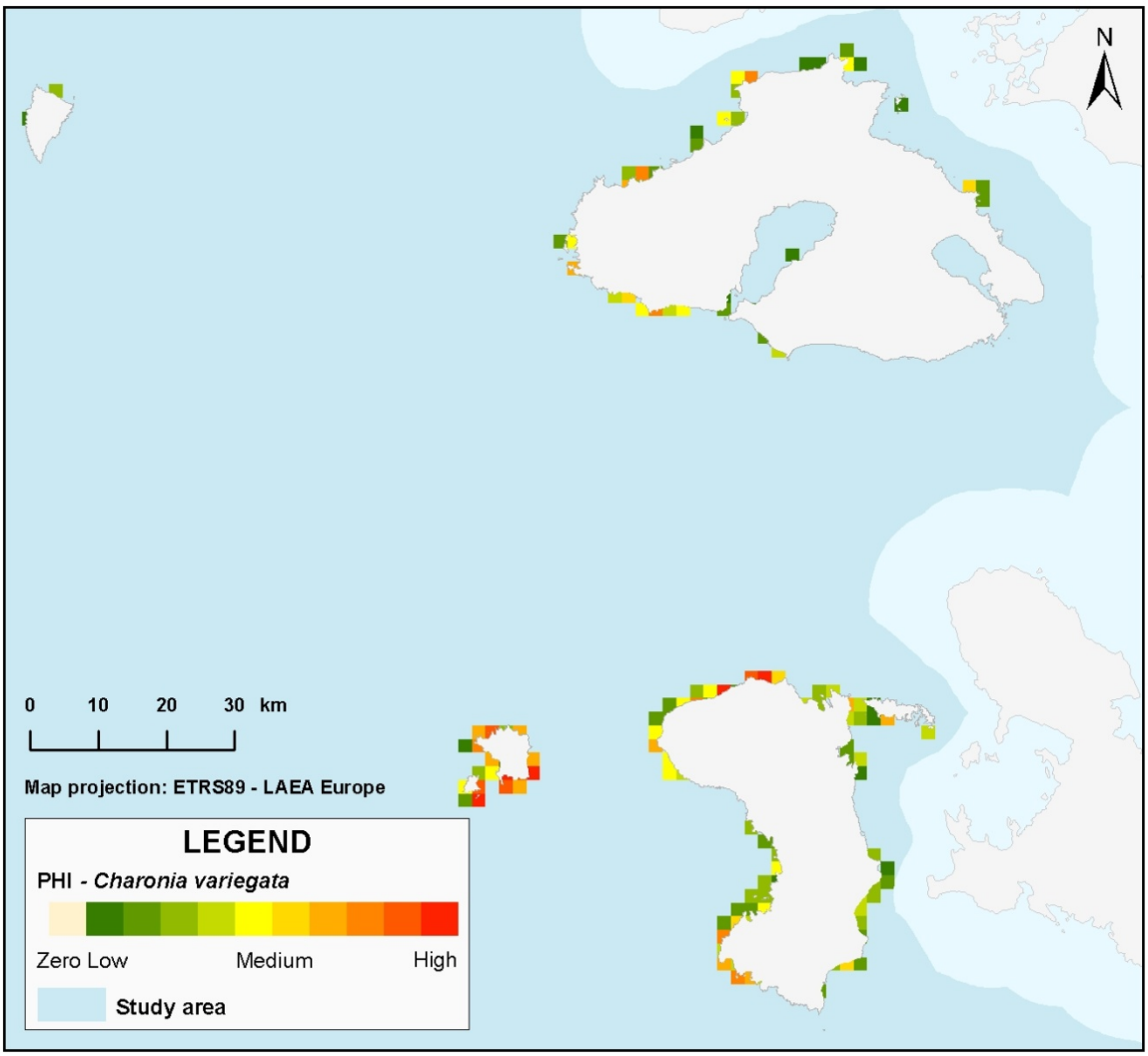

Fig S13.4: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

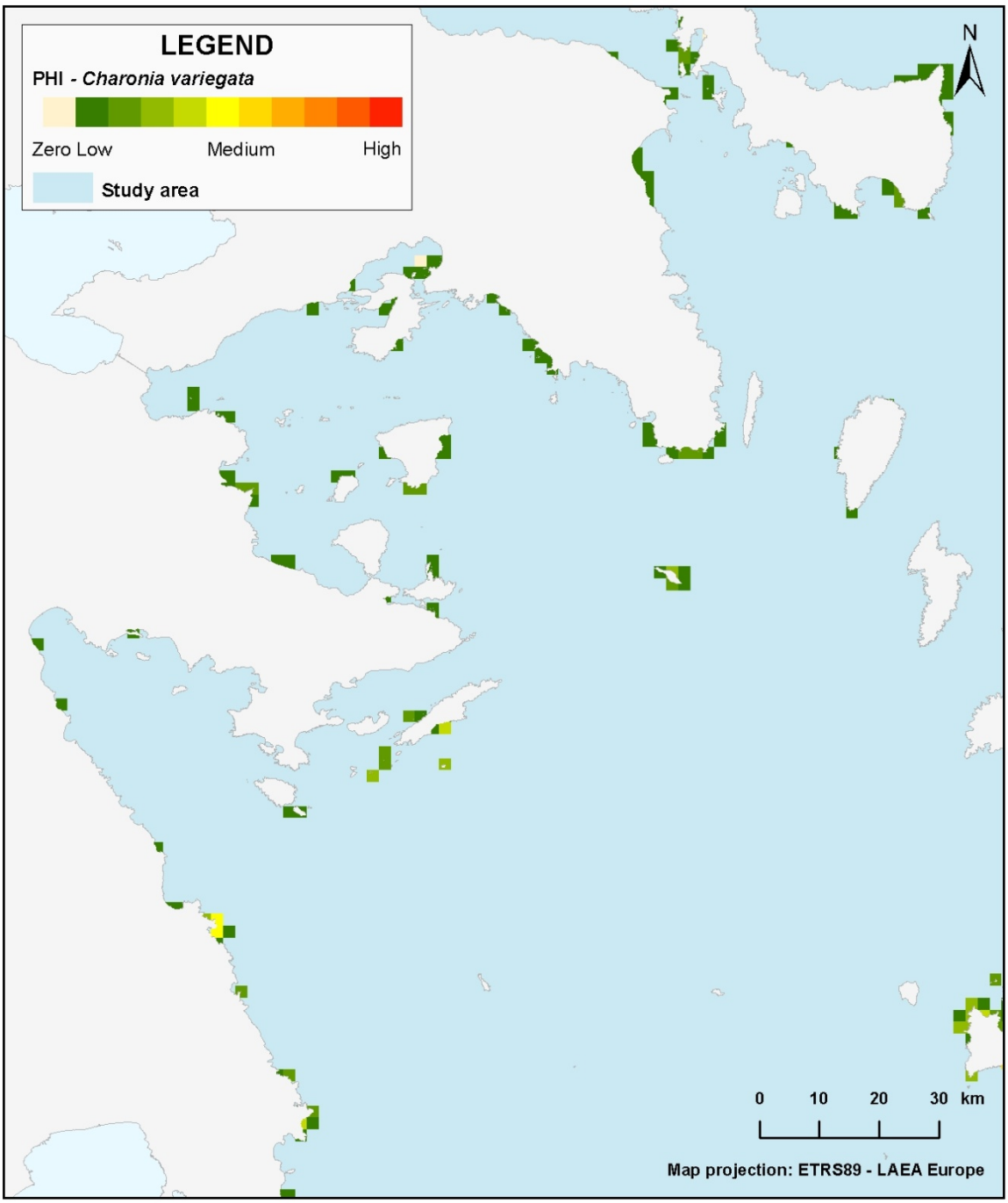

Fig S13.5: Identification of priority areas for the conservation of populations of ***A Charonia variegata*** based on the Potential Habitat Index (PHI).

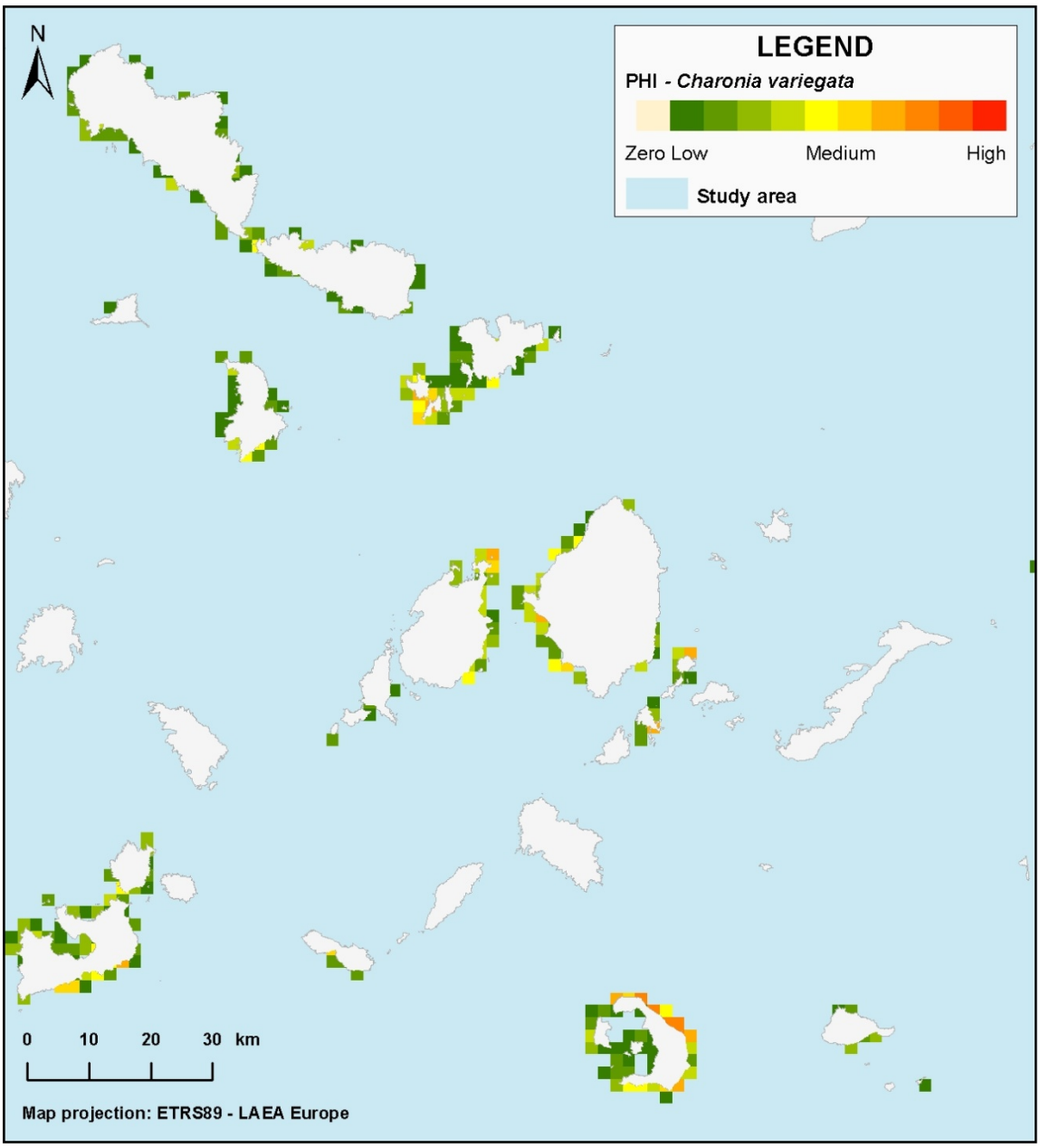

Fig S13.6: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

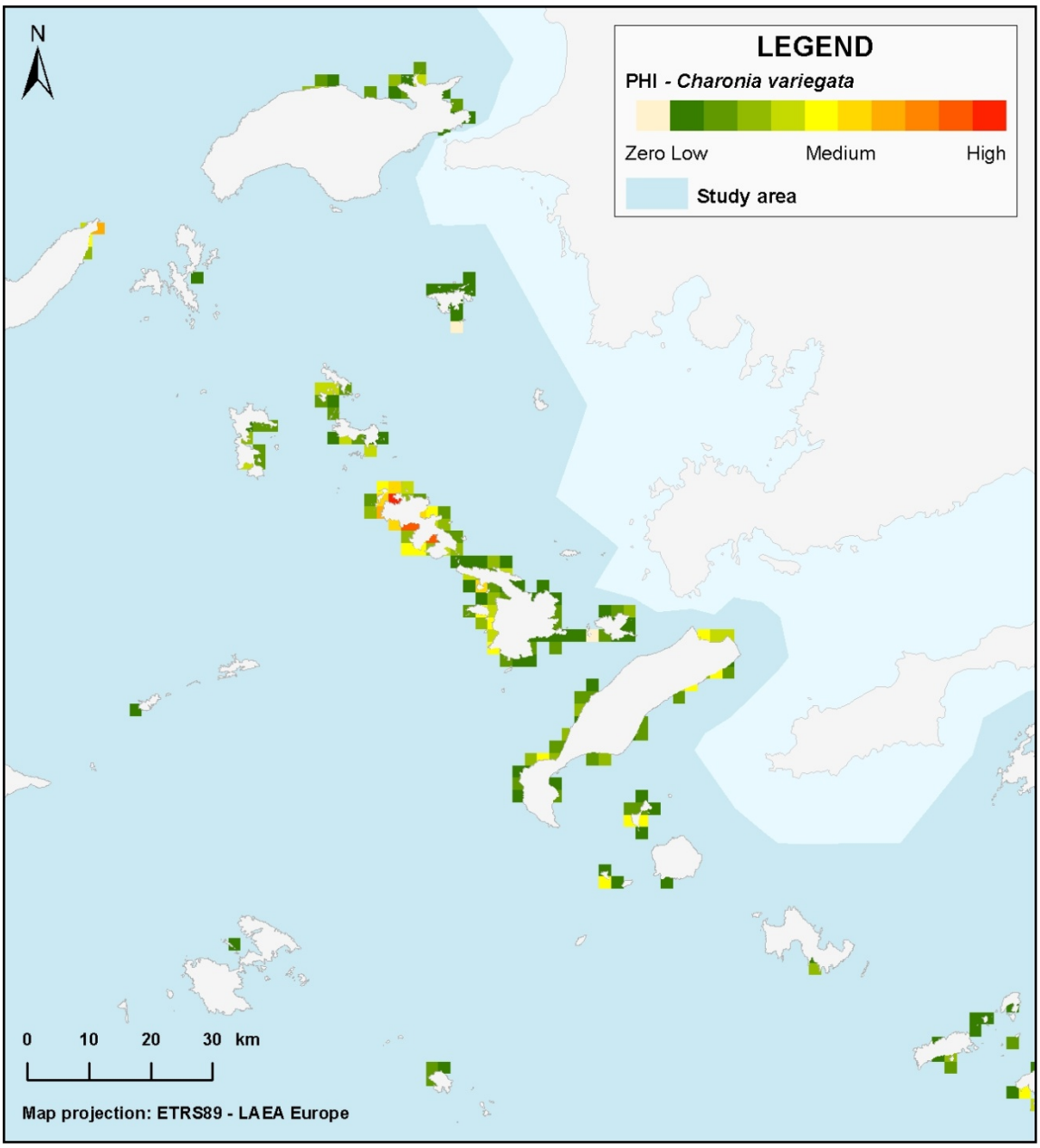

Fig S13.7: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

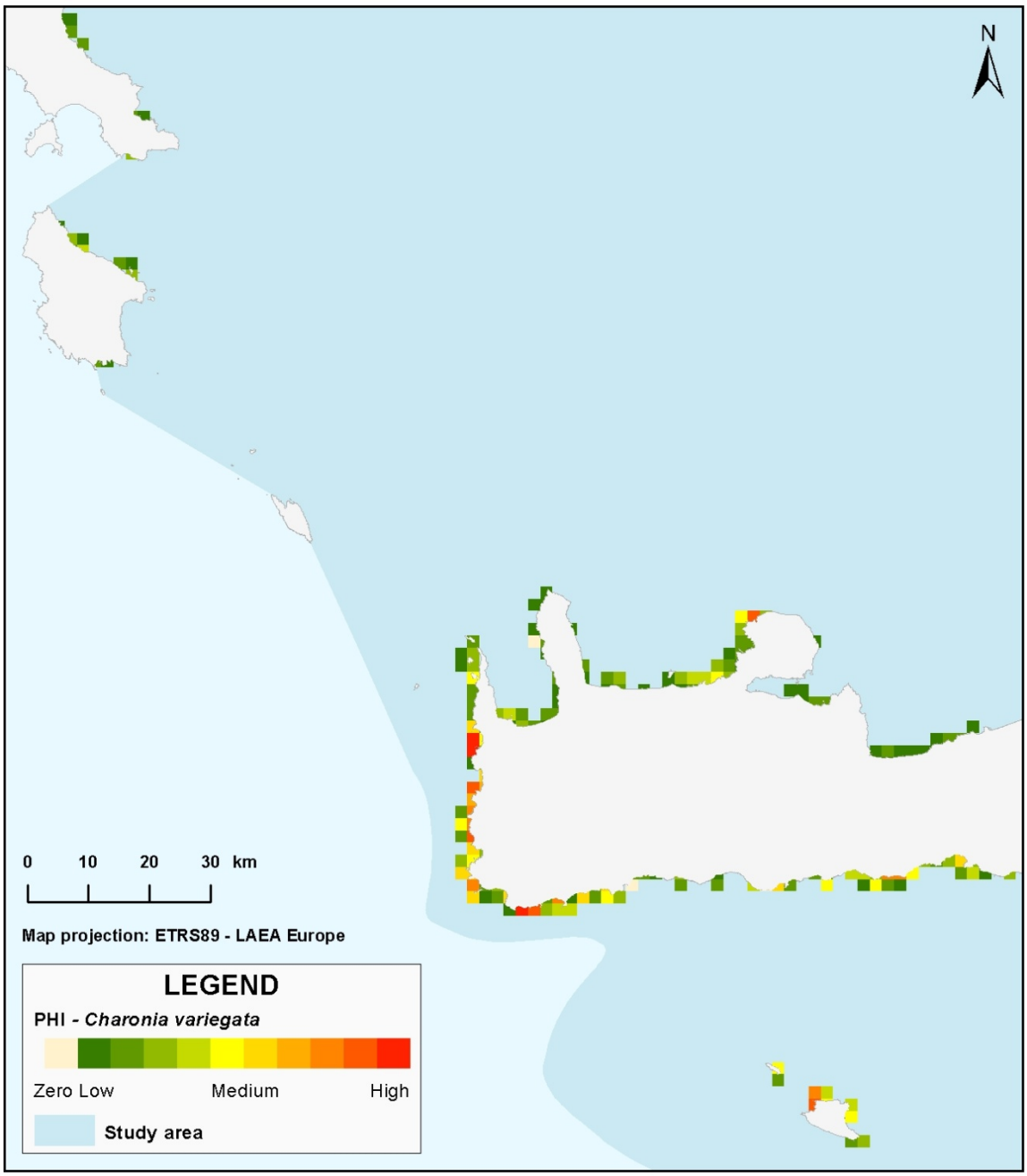

Fig S13.8: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

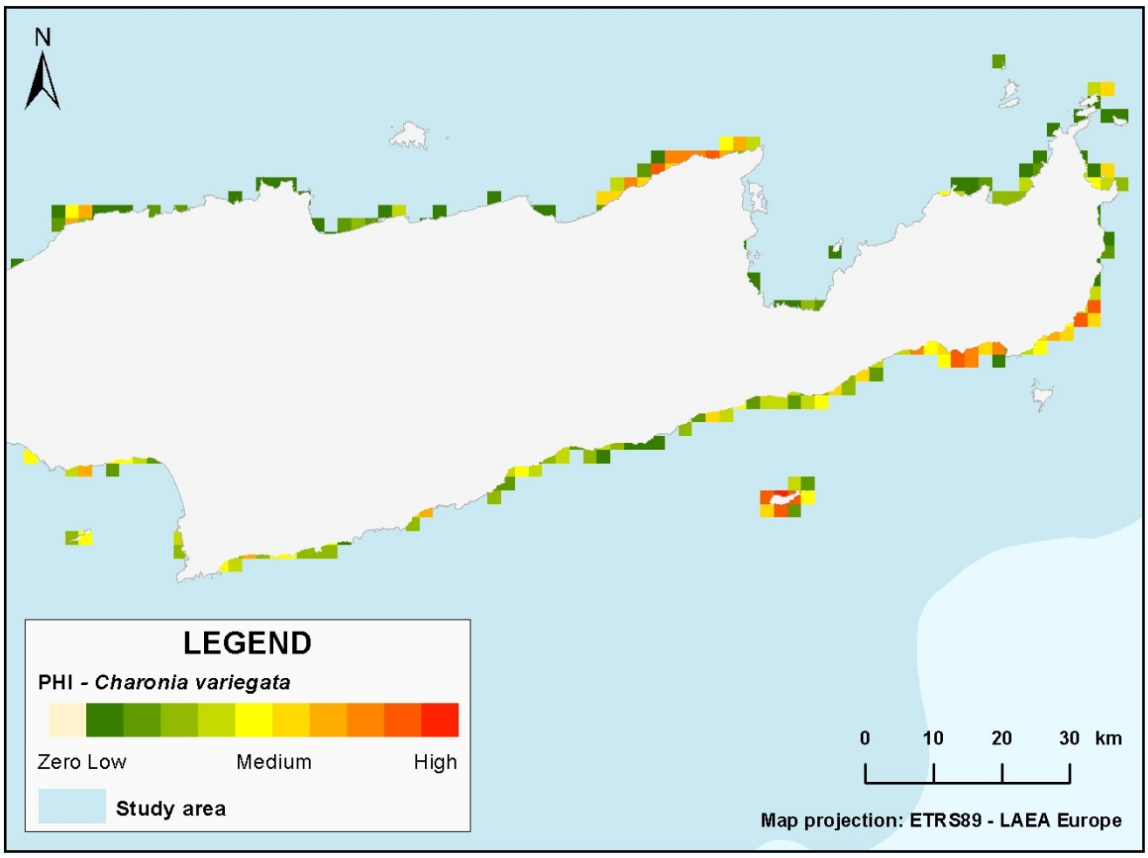

Fig S13.9: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

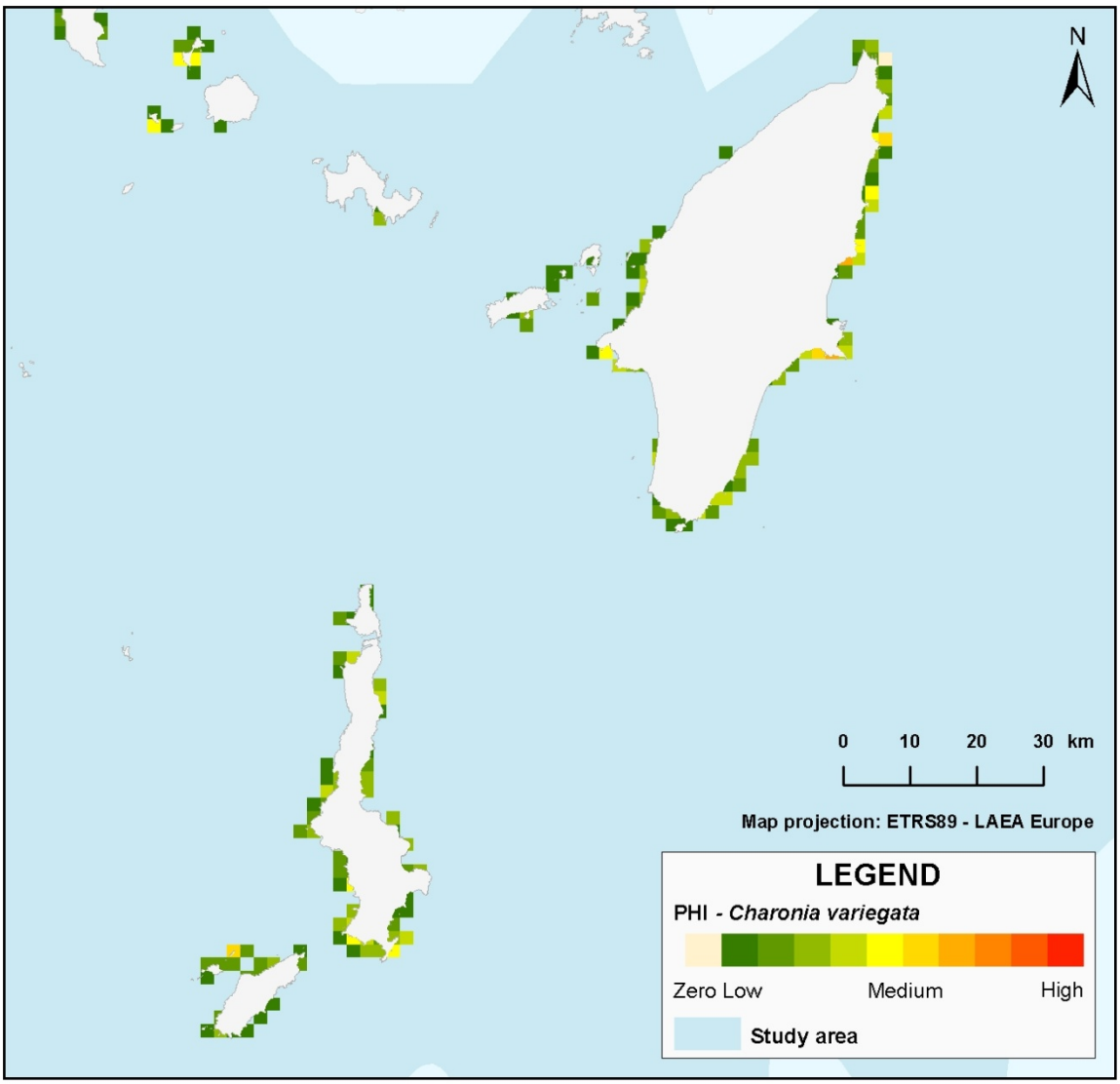

Fig S13.10: Identification of priority areas for the conservation of populations of ***Charonia variegata*** based on the Potential Habitat Index (PHI).

Supplement 5: Cost-Effort Analysis of the applied approach

Logistics

The field survey can be implemented by two divers, since the occupancy model requires a minimum of two observers simultaneously searching the target species for replication. Three are recommended, however, to allow for resting days under a rotation scheme, and ensure continuous workflow in the event of sickness or minor mishaps. Apart from the personal diving equipment, at least two cylinders are needed for each diver to allow daily repetitive dives without the need for refill. The ideal size is 15-liter single tanks, allowing both portability and sufficiency of breathing gas. Additional gear is minimal and consists of writing slates fitted with waterproof sheets (e.g. Xerox NeverTear™), bottom timers, and underwater cameras. Refilling of cylinders is an important concern, especially when a commercial facility is not within easy reach. A portable compressor can be useful to this end, if its size and weight are not prohibitive for transportation.

The first leg of the expedition covered the Cyclades archipelago, comprising a dense and diverse network of numerous small islands. For this part, operation from a sailboat was selected as optimal, since this allowed easy transportation of personnel and equipment from one diving location to another, while also providing full accommodation and sufficient working space. The selected sailboat was fully equipped to support diving operations, including a gas-powered air compressor for the refilling of cylinders, as well as emergency first-aid provisions.

For the second leg of the expedition, covering mainland locations and larger islands, transportation by car was selected. This was the optimal in terms of flexibility and speed, since diving locations were often separated by hundreds of kilometers. A conventional vehicle provided room for the three divers and the supporting equipment, however it did not allow the inclusion of a portable air compressor. Hence, support from local diving centers was required for the refilling of cylinders. For instances where diving sites were not accessible by car, motorboat rental was required, and was usually provided from local diving centers.

Effort

Specific effort parameters, for the expedition presented herein are given below, presuming that they are indicative for any survey performed with the proposed methodology at a comparable scale.

A total of 47 dive sites were covered, over 31 working days in the field (extending over a total time span of 49 days including days off and traveling between locations). A team of 3 diving scientists were implementing the surveys, two of which were diving simultaneously for each occupancy record under a rotation scheme allowing two days of diving and one-day surface interval for each.

A total of 47 dives, out of which 32 were repetitive dives performed in the same day, and 15 were single dives. Maximum depth was 30 m, as required by the field protocol for occupancy assessment. Average duration was 68 minutes per dive. Normally, occupancy assessment took approximately 30 minutes (6 depth zones, 5 minutes spent for each). The remaining time was spent to explore the site, record additional information, and take photographs of typical species

and seascape features. In all, a total of 53 hours were spent underwater during the survey. Due to the intense diving schedule requiring repetitive dives over consecutive days, all dives were within no-decompression bottom time limits.

The field expedition was supported by an eco-sailing & diving tour operator for the first leg of the expedition, which covered the Cyclades archipelago, and 12 diving operators along the surveyed mainland locations for the second leg. Usually, support included refilling of cylinders and transportation to the dive location by motorboat. Occasionally, the diving operator provided a dive guide to assist with underwater navigation to the proposed site. All diving operators provided information regarding the topographic features of the diving locations, along with location-specific safety recommendations.

Traveling distances between surveyed sites were covered either by sailboat, during the first leg of the expedition, or by car for the second leg (continental Greece) and the larger islands (Crete, Chios, Lesvos). In the first case, total distance traveled was 253 nautical miles over the course of 12 days. In the latter, 3,550 km in total were traveled, excluding transportation by ferries.

A team of experts on remote sensing imagery were hired for a total of two man-months to analyze satellite images for the acquisition of information on habitat distribution.

Cost

Table S3. Breakdown of expenses during the present expedition. Expenses refer to running costs and do not include maintenance and consumables. These are the actual costs of the survey and reflect standard prices in Greece – they will be different in other countries. Prices are in Euros.

A. Joint Expenses*				
		Days	**Price per day**	**Total cost (€)**
Sailboat hiring		12	395	4740
Motorboat rental		15	200	3000
Car fuel				532
Ferry (car transportation)				381
Tolls				70
Tank refills (47 stations x 2 divers - 12€ per refill)				1128
Joint Expenses Total				**9851**
B. Personnel Expenses				
	Persons	**Days**	**Price per person/day**	**Total cost (€)**
Accommodation during fieldwork	3	28	50	4200

Reimbursement for fieldwork	3	40	40	4800
Ferry (passenger)	3			412
Salaries for diving surveys	3	60		7500
Salaries for remote sensing	2	30		3000
Salaries for modelling	1	20		2000
Personnel Expenses Total				**21912**
GRAND TOTAL				**31763**

* The above expenses refer to the running costs and do not include maintenance of the diving equipment and the car, as well as small consumables, hardware, and spare gear.

Comparison with strip or line transect surveys

If instead of occupancy we had aimed to estimate the population densities of the target species, strip or line transects would have had to be surveyed. Assuming 100 m long transects at each depth, a team of two divers would be able to survey two depths (two transects) during each dive. Hence, a team of six divers would be needed (+1 diver for backup) in order to jointly survey all six depths in one diving occasion. Increasing the number of divers would be the best alternative in order to avoid tripling the number of field days. Table S4 reflects the increase of the number of divers from 3 to 7 and the corresponding increases in salaries, accommodation and transportation costs. It is assumed that a larger sailboat would be needed, three cars instead of one, and either renting two motorboats instead of one or a larger vessel that could carry 7 divers with their diving equipment. The cost estimate is almost double (98% increase) to the actual cost of the occupancy survey.

Table S4. Breakdown of estimated expenses if the same number of sampling stations would have been surveyed by strip or line transect sampling for the estimation of population densities of the target species. Expenses refer to running costs and do not include maintenance and consumables. These costs reflect standard prices in Greece – they will be different in other countries. Prices are in Euros.

A. Joint Expenses*				
		Days	**Price per day**	**Total cost (€)**
Sailboat hiring		12	500	6000
Motorboat rental		15	400	6000

Car fuel				1596
Ferry (car transportation)				1143
Tolls				210
Tank refills (47 stations x 6 divers - 12€ per refill)				3384
Joint Expenses Total				**18333**
B. Personnel Expenses				
	Persons	**Days**	**Price per person/day**	**Total cost (€)**
Accommodation during fieldwork	7	28	50	9800
Reimbursement for fieldwork	7	40	40	11200
Ferry (passenger)	7			961
Salaries for diving surveys	7	60		17500
Salaries for remote sensing	2	30		3000
Salaries for modelling	1	20		2000
Personnel Expenses Total				**44461**
GRAND TOTAL				**62794**

* The above expenses refer to the running costs and do not include maintenance of the diving equipment and the car, as well as small consumables, hardware, and spare gear.