**Supplementary Tables (Table S1-S5)**

**Table S1. Main characteristics of the monitored sites**

**Table S2**. **Percentage of cover (mean ± SD) of each of the species identified in this study.**

**Table S3.** **One-way PERMANOVA results from the temporal changes of functional identity (*FI*)across the multidimensional trait space for each of the monitored assemblages.**

**Table S4. Trait characteristics of the 8 clusters (functional groups) obtained from the Partition Around Medoids (PAM) clustering analysis**

**Table S5. Source references (N=236) for species trait information used to code the coarsely categorized (nominal / ranked) trait values of the 111 coralligenous taxonomic units included in the analyses**

**Table S1**. Main characteristics of the monitored sites; location, site, type of assemblage, depth, longitude, latitude, period of temperature monitoring and years of biological surveys.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Location** | **Site** | **Assemblage type** | **Depth**  **(m)** | **Longitude** | **Latitude** | **Temp.**  **monitoring period** | **Years of Biological surveys** |
| Scandola MPA | Pzzu\_cor | *C. rubrum* | 18 m | 8° 32' 46.19" E | 42° 22' 47.5" N | 2003-2018 | 2003, 2011, 2018 |
| Passe\_cor | *C. rubrum* | 29 m | 8° 32' 46.19" E | 42° 22' 47.5" N | 2006-2018 | 2006, 2011, 2018 |
| Pzzu\_par | *P. clavata* | 18 m | 8° 32' 46.19" E | 42° 22' 47.5" N | 2006-2018 | 2006, 2011, 2018 |
| Pzzinu\_par | *P. clavata* | 25 m | 8° 33' 0" E | 42° 22' 47.5" N | 2006-2016 | 2006, 2011, 2016 |
| Port-Cros MPA | Gabin\_par | *P. clavata* | 25 m | 6° 23' 70.4" E | 42° 59' 28.5" N | 1999-2009 | 1999, 2007, 2009 |

**Table S2**. **Percentage of cover (mean ± SD) of each of the species identified in this study.** 24 quadrats of 25 cm\* 25 cm were sampled for each site and temporal point.

|  |
| --- |
| ***Corallium rubrum* - dominated habitats** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Passe\_cor** | | |
| **Taxa** |
| 2006 | 2011 | 2018 |
| **Bryozoa** |  |  |  |
| *Adeonella calveti* | 1.22 ± 2.22 | 0.83 ± 1.99 | 0.61 ± 1.18 |
| *Caberea boryi* | 0.06 ± 0.19 | 0.03 ± 0.14 | 0.06 ± 0.19 |
| *Cellaria sp.* | 0.58 ± 0.86 | 0.67 ± 1.51 | 0.39 ± 0.81 |
| *Chartella tenella* | 3.53 ± 4.53 | 2.94 ± 5.38 | 0.17 ± 0.69 |
| *Crisia sp.* | 0.11 ± 0.26 | 0.03 ± 0.14 | 0.03 ± 0.14 |
| *Disporella hispida* | 0.08 ± 0.3 | 0.03 ± 0.14 | - |
| *Encrusting Bryozoa no.id. orange* | 1.03 ± 1.32 | 0.81 ± 0.94 | 0.22 ± 0.61 |
| *Gregarinidra gregaria* | 11.58 ± 10 | 14.1 ± 9.18 | 10.4 ± 6.76 |
| *Idmidronea sp.* | 0.08 ± 0.3 | - | - |
| *Reteporella grimaldii* | 6.72 ± 4.19 | 3.92 ± 2.86 | 3.53 ± 5.65 |
| *Scrupocellaria sp.* | 0.03 ± 0.14 | 0.08 ± 0.4 | 0.11 ± 0.37 |
| *Turbicellopora sp.* | 0.14 ± 0.68 | 0.03 ± 0.13 | 0.03 ± 0.14 |
| **Cnidaria** |  |  |  |
| *Caryophyllia inornata* | 0.06 ± 0.19 | 0.08 ± 0.3 | 0.06 ± 0.19 |
| *Corallium rubrum* | 9.99 ± 3.16 | 10.5 ± 3.97 | 10.78 ± 3.9 |
| *Hoplangia durotrix* | 0.06 ± 0.19 | 0.03 ± 0.14 | 0.06 ± 0.19 |
| *Leptopsammia pruvoti* | 10.25 ± 3.5 | 7.17 ± 2.38 | 7.36 ± 2.66 |
| **Foraminifera** |  |  |  |
| *Miniacina miniacea* | 0.77 ± 0.85 | 1.55 ± 1.12 | 1.5 ± 1.13 |
| **Hydrozoa** |  |  |  |
| *Dynamena laomedea* | 1.39 ± 2.12 | - | 0.11 ± 0.55 |
| *Hydrozoa turf* | 0.44 ± 0.99 | 0.22 ± 0.47 | 0.39 ± 0.70 |
| **Polychaeta** |  |  |  |
| *Filograna implexa / Salmacina dysteri* | 0.42 ± 0.98 | 0.16 ± 0.45 | 0.16 ± 0.35 |
| *Protula sp./ Serpula vermicularis* | 0.08 ± 0.23 | 0.11 ± 0.26 | 0.22 ± 0.38 |
| *Serpulidae* | 0.89 ± 0.92 | 2.25 ± 1.68 | 1.53 ± 1.58 |
| **Porifera** |  |  |  |
| *Agelas oroides* | 0.64 ± 1.66 | 0.36 ± 1.38 | 0.11 ± 0.56 |
| *Axinella damicornis* | 0.5 ± 0.91 | 0.47 ± 0.93 | 0.81 ± 1.32 |
| *Clathrina clathrus* | 0.08 ± 0.41 | 0.03 ± 0.14 | - |
| *Clathrina coriacea* | - | 0.19 ± 0.5 | 0.06 ± 0.19 |
| *Dendroxea lenis* | 0.55 ± 1.54 | 1.64 ± 2.25 | 2.47 ± 4.41 |
| *Haliclona mucosa* | 0.06 ± 0.27 | 0.28 ± 0.62 | 0.42 ± 1.21 |
| *Hexadella pruvoti* | 1.06 ± 3.99 | 1.86 ± 5.66 | 2.11 ± 7.33 |
| *Hexadella racovitzai* | 2.78 ± 13.6 | 2.53 ± 12.4 | 2.92 ± 14.3 |
| *Inv. mix. sponge thin layers* | 2.33 ± 3.4 | 5.8 ± 4.89 | 7.14 ± 5.74 |
| *Ircinia variabilis* | 0.11 ± 0.32 | 0.14 ± 0.56 | 0.17 ± 0.49 |
| *Other sponge yellow encr.* | 0.03 ± 0.14 | 0.33 ± 0.92 | 1.14 ± 1.52 |
| *Petrosia ficiformis* | 0.56 ± 1.22 | 0.64 ± 1.52 | 0.97 ± 1.74 |
| *Pleraplysilla spinifera* | 0.83 ± 1.29 | 1.72 ± 1.95 | 2.95 ± 3.23 |
| *Spongosorites intrincatus* | 1.08 ± 2.17 | 0.92 ± 1.3 | 5.45 ± 5.3 |
| **Tunicata** |  |  |  |
| *Didemnum vexillum* | 0.64 ± 2.34 | 0.06 ± 0.19 | 0.14 ± 0.67 |
| *Halocynthia papillosa* | 0.03 ± 0.14 | 0.03 ± 0.14 | 0.03 ± 0.14 |
| **Mixture complex \*** | 38.6 ± 12.8 | 36.3 ± 8.1 | 35 ± 11.1 |
| **Rhodophyta** |  |  |  |
| *Encrusting calcareous no id.* | 0.36 ± 0.94 | 0.75 ± 1.37 | 0.39 ± 0.81 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Pzzu\_cor** | | |
| **Taxa** |
| 2003 | 2011 | 2018 |
| **Bryozoa** |  |  |  |
| *Adeonella calveti* | 0.17 ± 0.58 | 0.1 ± 0.29 | 0.03 ± 0.16 |
| *Caberea boryi* | - | - | 0.02 ± 0.08 |
| *Celleporina sp.* | - | 0.02 ± 0.08 | 0.07 ± 0.19 |
| *Chartella tenella* | - | 0.6 ± 2.9 | - |
| *Crisia sp.* | 0.18 ± 0.29 | 0.13 ± 0.30 | 0.03 ± 0.16 |
| *Disporella hispida* | 0.05 ± 0.25 | 0.1 ± 0.24 | 0.14 ± 0.26 |
| *Encrusting Bryozoa no.id. orange* | 0.62 ± 1.04 | 1.95 ± 1.13 | 0.12 ± 0.27 |
| *Gregarinidra gregaria* | 3.03 ± 3.88 | 3.38 ± 3.26 | 9.88 ±4.53 |
| *Idmidronea sp.* | - | - | 0.05 ± 0.25 |
| *Reteporella grimaldii* | 0.58 ± 0.98 | 0.03 ± 0.11 | 0.2 ± 0.82 |
| *Scrupocellaria sp.* | 0.15 ± 0.5 | - | 0.35 ± 1.32 |
| *Turbicellopora sp.* | - | - | 0.05 ± 0.25 |
| **Cnidaria** |  |  |  |
| *Caryophyllia inornata* | 0.08 ± 0.17 | 0.15 ± 0.28 | 0.12 ± 0.28 |
| *Corallium rubrum* | 14.98 ± 9.4 | 9.1 ± 6.5 | 1.12 ± 1.44 |
| *Hoplangia durotrix* | 1.8 ± 1.20 | 2.45 ± 2 | 0.97 ± 1.21 |
| *Leptopsammia pruvoti* | 6.08 ± 3.56 | 6.5 ± 3.17 | 6.73 ± 4.20 |
| **Foraminifera** |  |  |  |
| *Miniacina miniacea* | 0.48 ± 0.44 | 0.22 ± 0.33 | 1.37 ± 1.17 |
| **Hydrozoa** |  |  |  |
| *Eudendrium sp.* | - | 0.02 ± 0.08 | 0.15 ± 0.47 |
| **Polychaeta** |  |  |  |
| *Filograna implexa / Salmacina dysteri* | 0.37 ± 1.11 | 0.93 ± 1.08 | 3.16 ± 4.59 |
| *Protula sp./ Serpula vermicularis* | 0.23 ± 0.35 | 0.4 ± 0.43 | 0.73 ± 0.84 |
| *Serpulidae* | 0.57 ± 0.51 | 1.48 ± 0.75 | 3.28 ± 2.54 |
| **Porifera** |  |  |  |
| *Acanthella acuta* | - | - | 0.05 ± 0.25 |
| *Agelas oroides* | 0.76 ± 1.91 | 1.05 ± 2.22 | 1.13 ± 3.43 |
| *Axinella damicornis* | 0.03 ± 0.11 | 0.07 ± 0.19 | 0.11 ± 0.36 |
| *Clathrina clathrus* | 0.04 ± 0.17 | 0.05 ± 0.17 | 0.03 ± 0.16 |
| *Cliona sp.* | 0.08 ± 0.28 | 0.03 ± 0.16 | - |
| *Corticium candelabrum* | 0.05 ± 0.25 | 0.07 ± 0.32 | - |
| *Dendroxea lenis* | 1.6 ± 3.5 | 5.23 ± 7.15 | 2.43 ± 4.60 |
| *Haliclona fulva* | 0.82 ± 1.73 | 0.87 ± 1.94 | 0.95 ± 1.8 |
| *Haliclona mediterranea* | 0.1 ± 0.29 | 0.93 ± 1.99 | 0.45 ± 0.89 |
| *Haliclona mucosa* | 0.63 ± 1.23 | 0.26 ± 0.65 | 0.2 ± 0.35 |
| *Inv. mix. sponge thins layers* | 0.58 ± 1.22 | 1.11 ± 1.74 | 0.63 ± 1.62 |
| *Ircinia variabilis* | 1.25 ± 2.77 | 0.88 ± 1.92 | - |
| *Oscarella balibaloi* | - | 0.23 ± 0.92 | - |
| *Other sponge grey/white enc.* | 0.35 ± 0.58 | 1.02 ± 1.30 | 0.16 ± 0.33 |
| *Other sponge grey/white massv.* | 0.23 ± 0.79 | 0.05 ± 0.18 | - |
| *Other sponge orange encr.* | - | 0.32 ± 1.55 | - |
| *Other sponge yellow encr.* | 0.27 ± 0.84 | 0.03 ± 0.16 | 0.26 ± 0.48 |
| *Petrosia ficiformis* | 3.9 ± 5.78 | 2.58 ± 4.01 | 1.35 ± 1.94 |
| *Phorbas tenacior* | 0.08 ± 0.4 | 0.91 ± 2.48 | 0.95 ± 2.48 |
| *Plakina sp.* | 0.06 ± 0.32 | 0.12 ± 0.57 | - |
| *Pleraplysilla spinifera* | 1.47 ± 1.75 | 1.41 ± 2.33 | 0.7 ± 0.81 |
| *Prosuberites longispinus* | - | - | 0.18 ± 0.62 |
| *Spongosorites intrincatus* | - | 0.18 ± 0.44 | 0.28 ± 0.67 |
| **Tunicata** |  |  |  |
| *Aplidium fuscum* | 0.32 ± 0.65 | 1.65 ± 2.02 | 0.8 ± 0.93 |
| *Halocynthia papillosa* | 0.02 ± 0.16 | 0.02 ± 0.17 | 0.02 ± 0.16 |
| **Mixture complex \*** | 57.7 ± 9.59 | 52.9 ± 12.2 | 56.3 ± 7.6 |
| **Rhodophyta** |  |  |  |
| *Encrusting calcareous no id.* | 0.23 ± 0.7 | 0.1 ± 0.4 | 0.08 ± 0.4 |

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| --- |
| ***Paramuricea clavata* – dominated habitats** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Pzzinu\_par** | | |
| **Taxa** |
| 2006 | 2011 | 2016 |
| **Bryozoa** |  |  |  |
| *Adeonella calveti* | - | 0.22 ± 0.54 | 0.08 ± 0.3 |
| *Caberea boryi* | - | - | 0.02 ± 0.08 |
| *Cellaria sp.* | 0.03 ± 0.14 | - | - |
| *Celleporina sp.* | 0.06 ± 0.27 | - | 0.03 ± 0.14 |
| *Chartella tenella* | 3.8 ± 4.55 | 2.7 ± 4.87 | 0.22 ± 0.77 |
| *Crisia sp.* | 0.06 ± 0.18 | 0.08 ± 0.40 | 0.30 ± 0.80 |
| *Disporella hispida* | 0.06 ± 0.18 | 0.03 ± 0.14 | 0.06 ± 0.19 |
| *Encrusting Bryozoa no.id. orange* | 0.17 ± 0.45 | 0.06 ± 0.19 | 0.03 ± 0.14 |
| *Idmidronea sp.* | 0.03 ± 0.14 | - | 0.14 ± 0.68 |
| *Lichenophora radiata* | - | 0.03 ± 0.14 | - |
| *Reteporella grimaldii* | 3.89 ± 3.66 | 3.36 ± 3.26 | 2.44 ± 1.91 |
| **Cnidaria** |  |  |  |
| *Caryophyllia inornata* | 0.22 ± 0.38 | 0.14 ± 0.28 | 0.08 ± 0.22 |
| *Corynactis viridis* | 12.1 ± 7.63 | 14.5 ± 6.35 | 7.69 ± 5.64 |
| *Hoplangia durotrix* | 0.39 ± 0.79 | 0.80 ± 1 | 0.47 ± 0.75 |
| *Leptopsammia pruvoti* | 0.25 ± 0.68 | 0.08 ± 0.22 | 0.17 ± 0.35 |
| *Paramuricea clavata* | 19.2 ± 11.2 | 20.4 ± 9.32 | 20 ± 10.94 |
| **Foraminifera** |  |  |  |
| *Miniacina miniacea* | 0.86 ± 0.93 | 1.11 ± 1.11 | 1.36 ± 1.25 |
| **Hydrozoa** |  |  |  |
| *Aglaophenia sp.* | - | - | 0.13 ± 0.68 |
| *Eudendrium sp.* | 0.25 ± 1.1 | 0.06 ± 0.19 | - |
| *Hydrozoa turf* | 0.48 ± 1.49 | 0.3 ± 0.71 | 0.41 ± 1.08 |
| **Polychaeta** |  |  |  |
| *Filograna implexa / Salmacina dysteri* | 0.11 ± 0.32 | 0.08 ± 0.30 | 0.11 ± 0.42 |
| *Protula sp./ Serpula vermicularis* | 0.11 ± 0.25 | 0.14 ± 0.34 | 0.08 ± 0.22 |
| *Serpulidae* | 0.33 ± 0.52 | 0.16 ± 0.35 | 0.06 ± 0.19 |
| **Porifera** |  |  |  |
| *Aplysina cavernicola* | 6.56 ± 7.31 | 5.33 ± 5.96 | 5.91 ± 5.26 |
| *Axinella damicornis* | 0.17 ± 0.35 | 0.25 ± 0.55 | 0.28 ± 0.48 |
| *Cacospongia scalaris* | 13.9 ± 6.78 | 7.58 ± 5.55 | 8.86 ± 6.83 |
| *Chondrosia reniformis* | 0.31 ± 1.5 | 0.25 ± 1.22 | 0.72 ± 2.64 |
| *Clathrina clathrus* | 0.27 ± 0.7 | 0.11 ± 0.26 | 0.25 ± 0.78 |
| *Clathrina coriacea* | 0.03 ± 0.14 | 0.03 ± 0.14 | 0.25 ± 0.7 |
| *Crella pulvinar* | 0.44 ± 1.41 | 1.14 ± 1.87 | 0.44 ± 1.22 |
| *Dendroxea lenis* | 0.03 ± 0.57 | 0.11 ± 0.26 | 0.28 ± 0.98 |
| *Fasciospongia cavernosa* | 0.03 ± 0.14 | 0.19 ± 0.61 | 0.03 ± 0.14 |
| *Haliclona fulva* | 0.52 ± 1.17 | 0.52 ± 0.96 | 1.11 ± 1.97 |
| *Haliclona mediterranea* | 2.86 ± 2.94 | 4 ± 2.65 | 2.5 ± 2.55 |
| *Inv. mix. sponge thin layers* | 6.19 ± 4.52 | 4.25 ± 3.42 | 4.41 ± 3.16 |
| *Ircinia oros type* | 1.69 ± 3.87 | 1.69 ± 4.38 | 0.94 ± 3.26 |
| *Ircinia variabilis* | 0.25 ± 0.67 | 0.97 ± 1.55 | 0.41 ± 0.78 |
| *Oscarella balibaloi* | - | 0.11 ± 0.54 | 0.13 ± 0.44 |
| *Other sponge grey/white massv.* | - | - | 0.25 ± 0.65 |
| *Other sponge orange encr.* | 0.5 ± 0.99 | 0.11 ± 0.32 | - |
| *Other sponge yellow encr.* | 0.22 ± 0.67 | 0.3 ± 0.7 | 0.22 ± 0.51 |
| *Petrosia ficiformis* | 1.89 ± 3.32 | 1.36 ± 1.90 | 2.44 ± 3.16 |
| *Phorbas tenacior* | 2.13 ± 5.34 | 2.97 ± 3.07 | 1.66 ± 2.88 |
| *Plakina sp.* | - | 0.14 ± 0.39 | 0.31 ± 0.62 |
| *Pleraplysilla spinifera* | 4.06 ± 3.98 | 3.41 ± 3.24 | 3.8 ± 2.88 |
| *Prosuberites longispinus* | - | 0.28 ± 0.76 | 0.14 ± 0.48 |
| *Spongosorites intrincatus* | - | - | 0.33 ± 0.34 |
| **Tunicata** |  |  |  |
| *Aplidium fuscum* | 0.25 ± 0.85 | 0.03 ± 0.14 | 0.42 ± 1.10 |
| *Clavelina dellavalei* | - | 0.06 ± 0.27 | - |
| **Mixture complex \*** | 11.9 ± 5.75 | 11.6 ± 5.17 | 18.75 ± 7.8 |
| **Algal turf** | 0.05 ± 0.27 | 0.78 ± 1.68 | 0.08 ± 0.40 |
| **Chlorophyta** |  |  |  |
| *Bryopsis sp.* | - | 0.11 ± 0.38 | - |
| *Palmophyllum crassum* | 0.08 ± 0.3 | 0.14± 0.39 | 0.47 ± 0.84 |
| *Valonia macrophysa* | - | 0.25 ± 0.47 | 0.14 ± 0.34 |
| **Rhodophyta** |  |  |  |
| *Encrusting calcareous no id.* | 1.89 ± 2.56 | 5.25 ± 3.67 | 8.5 ± 4.59 |
| *Erect corallinacea no id.* |  |  |  |
| *Erythroglossum sandrianum* | 0.14 ± 0.43 | 0.11 ± 0.32 | 0.03 ± 0.14 |
| *Hildebrandia rubra* | 0.44 ± 0.85 | 1.52 ± 1.61 | 1.44 ± 2.16 |
| *Lithophyllum stictaeforme* | 0.03 ± 0.14 | 0.03 ± 0.14 | 0.06 ± 0.19 |
| *Mesophyllum alternans* | 0.03 ± 0.14 | 0.03 ± 0.14 | 0.11 ± 0.32 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Pzzu\_par** | | |
| **Taxa** |
| 2006 | 2011 | 2016 |
| **Bryozoa** |  |  |  |
| *Adeonella calveti* | 0.02 ± 0.1 | - | - |
| *Cellaria sp.* | - | 0.29 ± 1.43 | - |
| *Chartella tenella* | 6.67 ± 7.5 | 2.48 ± 3.79 | 0.06 ± 0.22 |
| *Crisia sp.* | 0.1 ± 0.42 | 0.02 ± 0.1 | 0.18 ± 0.72 |
| *Disporella hispida* | 0.56 ± 0.81 | 0.31 ± 0.35 | 0.16 ± 0.35 |
| *Encrusting Bryozoa no.id. orange* | 0.33 ± 0.79 | 0.10 ± 0.29 | 0.08 ± 0.28 |
| *Idmidronea sp.* | 0.02 ± 0.1 | - | - |
| *Reteporella grimaldii* | 3.19 ± 3.57 | 0.81 ± 1.74 | 0.27 ± 0.8 |
| *Scrupocellaria sp.* | - | - | 0.08 ± 0.28 |
| *Turbicellopora sp.* | 0.06 ± 0.31 | - | - |
| **Cnidaria** |  |  |  |
| *Caryophyllia inornata* | 0.06 ± 0.17 | 0.04 ± 0.14 | 0.04 ± 0.14 |
| *Corallium rubrum* | 4.06 ± 8.18 | 3.38 ± 6.34 | 0.89 ± 2.74 |
| *Eunicella cavolinii* | 0.87 ± 1.55 | 0.5 ± 0.93 | 0.06 ± 0.31 |
| *Hoplangia durotrix* | 0.25 ± 0.66 | 0.21 ± 0.39 | 0.06 ± 0.22 |
| *Leptopsammia pruvoti* | 6.73 ± 6.05 | 6.38 ± 4.79 | 7.89 ± 7.71 |
| *Paramuricea clavata* | 6.37 ± 8.28 | 2.85 ± 6.25 | 0.88 ± 3.37 |
| *Parazoanthus axinellae* | 15.5 ± 18.9 | 10.4 ± 10.48 | 9.1 ± 9.95 |
| **Foraminifera** |  |  |  |
| *Miniacina miniacea* | 0.21 ± 0.41 | 0.42 ± 0.5 | 0.69 ± 0.95 |
| **Hydrozoa** |  |  |  |
| *Eudendrium sp.* | 0.19 ± 0.92 | 0.09 ± 0.24 | 0.04 ± 0.2 |
| *Hydrozoa turf* | 0.83 ± 1.3 | 0.21 ± 0.64 | 0.46 ± 1.09 |
| **Polychaeta** |  |  |  |
| *Filograna implexa / Salmacina dysteri* | 0.04 ± 0.2 | - | 0.02 ± 0.1 |
| *Protula sp./ Serpula vermicularis* | 0.06 ± 0.17 | - | 0.04 ± 0.14 |
| *Serpulidae* | 0.72 ± 0.9 | 0.33 ± 0.45 | 0.35 ± 0.67 |
| **Porifera** |  |  |  |
| *Axinella damicornis* | 0.23 ± 0.49 | 0.17 ± 0.38 | 0.27 ± 0.51 |
| *Cacospongia scalaris* | 3.18 ± 7.25 | 1.92 ± 3.5 | 0.17 ± 0.56 |
| *Clathrina clathrus* | 0.43 ± 1.42 | 0.13 ± 0.3 | - |
| *Clathrina coriacea* | - | 0.08 ± 0.4 | - |
| *Crella pulvinar* | - | 0.43 ± 1.5 | 0.38 ± 1.28 |
| *Dendroxea lenis* | 0.88 ± 3.87 | 0.69 ± 2.21 | 0.17 ± 0.46 |
| *Haliclona fulva* | 0.1 ± 0.29 | 0.17 ± 0.43 | 0.21 ± 0.38 |
| *Haliclona mediterranea* | 0.94 ± 1.37 | 1.38 ± 1.43 | 0.14 ± 0.27 |
| *Haliclona mucosa* | - | 0.02 ± 0.1 | - |
| *Inv. mix. sponge thin layers* | 5.1 ± 3.72 | 12.4 ± 8.98 | 4.39 ± 3.79 |
| *Ircinia oros type* | 2.5 ± 4.6 | 0.64 ± 1.98 | 0.64 ± 3.16 |
| *Ircinia variabilis* | 0.5 ± 1 | 1.06 ± 2.19 | 1.14 ± 2.10 |
| *Other sponge green encr.* | 0.13 ± 0.61 | 0.65 ± 2.25 | 0.42 ± 1.27 |
| *Other sponge grey/white enc.* | 0.13 ± 0.51 | 0.1 ± 0.36 | 0.02 ± 0.1 |
| *Other sponge orange encr.* | 0.21 ± 1.02 | 0.31 ± 0.93 | - |
| *Other sponge red encr.* | - | 0.13 ± 0.37 | 0.08 ± 0.41 |
| *Other sponge yellow encr.* | 0.27 ± 0.96 | 0.06 ± 0.22 | 0.27 ± 0.51 |
| *Petrosia ficiformis* | 0.19 ± 0.38 | 0.44 ± 0.8 | 0.21 ± 0.49 |
| *Phorbas tenacior* | 0.58 ± 2.02 | 0.81 ± 2.73 | 1.42 ± 4.65 |
| *Plakina sp.* | 0.48 ± 0.99 | 1.08 ± 1.78 | 1.54 ± 2.57 |
| *Pleraplysilla spinifera* | 1.44± 2.35 | 2.08 ± 2.33 | 1.06 ± 2.21 |
| *Prosuberites longispinus* | - | 0.56 ± 0.92 | 1.48 ± 2.18 |
| *Spongia virgultosa* | 0.02 ± 0.1 | 0.17 ± 0.43 | 0.06 ± 0.22 |
| *Spongosorites intrincatus* | - | 0.04 ± 0.2 | 0.9 ± 2.56 |
| **Tunicata** |  |  |  |
| *Aplidium fuscum* | 0.77 ± 1.33 | 0.42 ± 0.83 | 0.08 ± 0.28 |
| *Clavelina dellavalei* | - | 0.04 ± 0.2 | 0.04 ± 0.14 |
| *Clavelina lepadiformis* | 0.1 ± 0.36 | - | - |
| **Mixture complex \*** | 19.2 ± 9.26 | 10.37 ± 8.9 | 13.6 ± 13.4 |
| **Algal turf** | 8.6 ± 15.1 | 8.95 ± 14.9 | 13.88 ± 12.8 |
| **Chlorophyta** |  |  |  |
| *Bryopsis sp.* | 0.375 ± 1 | 0.98 ± 3.2 | 5.88 ± 5.5 |
| *Chondria sp.* | - | - | 0.02 ± 0.1 |
| *Flabellia petiolata* | 0.6 ± 1.2 | 1.46 ± 2.96 | 2.13 ± 3.15 |
| *Halimeda tuna* | 0.02 ± 0.1 | 0.04 ± 0.2 | 0.08 ± 0.32 |
| *Valonia macrophysa* | - | 0.02 ± 0.1 | 0.04 ± 0.14 |
| **Phaeophyta** |  |  |  |
| *Brown macroalgae erect no.id* | 0.08 ± 0.41 | 0.04 ± 0.2 | - |
| *Dictyopteris membranacea* | 0.17 ± 0.82 | - | 0.73 ± 3.57 |
| **Rhodophyta** |  |  |  |
| *Encrusting calcareous no id.* | 2.89 ± 3.73 | 18.81 ± 12.35 | 21.39 ± 12.39 |
| *Erect corallinacea no id.* | 0.08 ± 0.41 | 0.25 ± 0.78 | 0.81 ± 1.56 |
| *Erythroglossum sandrianum* | - | 0.02 ± 0.1 | - |
| *Filamentous Falkenbergia type* | 0.46 ± 1.37 | .004 ± 0.14 | 0.13 ± 0.37 |
| *Haliptilon virgatum* | - | - | - |
| *Hildebrandia rubra* | 0.44 ± 0.85 | 1.52 ± 1.61 | 1.44 ± 2.16 |
| *Liagora sp.* | - | .004 ± 0.01 | - |
| *Lithophyllum stictaeforme* | 0.19 ± 0.72 | 0.13 ± 0.27 | 0.02 ± 0.1 |
| *Mesophyllum alternans* | 0.08 ± 0.32 | 0.1 ± 0.33 | 0.08 ± 0.24 |
| *Peysonnellia squamarina.* | 0.88 ± 1.38 | 2.19 ± 2.25 | 3.42 ± 4.82 |
| *Red macroalgae laminar no. id* | 0.02 ± 0.1 | 0.25 ± 0.66 | 0.54 ± 1.12 |
| *Rhodymenia ardissone* | - | 0.23 ± 1.12 | - |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Gabin\_par** | | |
| **Taxa** |
| 2006 | 2011 | 2016 |
| **Bryozoa** |  |  |  |
| *Adeonella calveti* | 0.17 ± 0.48 | 0.15 ± 0.62 | - |
| *Crisia sp.* | 0.08 ± 0.4 | - | - |
| *Dentiporella sardonica* | 0.08 ± 0.4 | - | 0.08 ± 0.4 |
| *Disporella hispida* | 0.04 ± 0.2 | - | - |
| *Encrusting Bryozoa no.id. orange* | 0.04 ± 0.2 | - | 0.04 ± 0.2 |
| *Myriapora truncata* | 0.04 ± 0.2 | - | - |
| *Pentapora fascialis* | 0.75 ± 2.09 | 1.4 ± 3.95 | 0.5 ± 1.56 |
| *Schizomavella linearis* | 0.04 ± 0.2 | - | - |
| *Schizomavella mamillata* | 1.08 ± 1.09 | - | - |
| *Scrupocellaria sp.* | 0.04 ± 0.2 | - | 0.08 ± 0.28 |
| *Smittoidea sp.* | - | 0.04 ± 0.2 | - |
| **Cnidaria** |  |  |  |
| *Paramuricea clavata* | 55.8 ± 21.3 | 21.6 ± 16 | 19.6 ± 17.4 |
| *Parazoanthus axinellae* | 0.88 ± 3.49 | 2.98 ± 6.28 | 2.46 ± 4.63 |
| **Foraminifera** |  |  |  |
| **Hydrozoa** |  |  |  |
| *Aglaophenia sp.* | - | 0.27 ± 0.79 | 0.38 ± 1.28 |
| *Dynamena laomedea* | - | 4.79 ± 7.02 | 0.20 ± 1.02 |
| *Eudendrium sp.* | - | 0.17 ± 0.81 | - |
| *Hydrozoa turf* | 0.29 ± 1.08 | 1.72 ± 4.20 | 0.08 ± 0.4 |
| **Polychaeta** |  |  |  |
| *Filograna implexa / Salmacina dysteri* | 3.04 ± 5.6 | 0.21 ± 0.64 | 0.04 ± 0.2 |
| *Serpulidae* | 0.08 ± 0.28 | - | - |
| **Porifera** |  |  |  |
| *Axinella damicornis* | 0.25 ± 0.74 | 0.02 ± 0.1 | - |
| *Cacospongia scalaris* | 3.18 ± 7.25 | 1.92 ± 3.5 | 0.17 ± 0.56 |
| *Crambe crambe* | 1.12 ± 2.33 | 2.04 ± 2.86 | 4.63 ± 5.06 |
| *Dysidea avara* | 0.75 ± 2.89 | 0.13 ± 0.61 | 0.21 ± 1.02 |
| *Haliclona fulva* | - | - | 0.5 ± 1.62 |
| *Hemymicale columella* | 0.04 ± 0.2 | - | 0.13 ± 0.34 |
| *Inv. mix. sponge thin layers* | 0.58 ± 2.06 | 0.23 ± 0.83 | 0.21 ± 0.66 |
| *Ircinia oros type* | 2.75 ± 13.4 | 0.66 ± 3.27 | - |
| *Other sponge black encr.* | 8 ± 15.74 | 2.88 ± 5.96 | 0.88 ± 4.29 |
| *Other sponge grey/white enc.* | - | 0.17 ± 0.82 | 0.04 ± 0.2 |
| *Other sponge orange encr.* | 0.08 ± 0.28 | 0.08 ± 0.31 | - |
| *Other sponge red encr.* | 0.21 ± 1.02 | 0.31 ± 0.93 | 0.17 ± 0.48 |
| *Other sponge yellow encr.* | 0.04 ± 0.2 | - | 0.04 ± 0.2 |
| *Phorbas tenacior* | 0.46 ± 2.24 | - | - |
| *Pleraplysilla spinifera* | 1.21 ± 2.02 | 0.04 ± 0.2 | - |
| **Tunicata** |  |  |  |
| *Aplidium conicum* | 0.04 ± 0.2 | 0.25 ± 0.78 | - |
| *Pycnoclavella sp.* | 0.08 ± 0.4 | 22.9 ± 13.2 | 12 ± 10.1 |
| **Mixture complex \*** | 11.1 ± 12.6 | 10.37 ± 8.9 | 13.6 ± 13.4 |
| **Algal turf** | 1.88 ± 4.75 | 14.1 ± 18.7 | 17.1 ± 14.2 |
| **Chlorophyta** |  |  |  |
| *Bryopsis sp.* | - | 0.02 ± 0.1 | - |
| *Caulerpa cylindracea* | - | 9.17 ± 14.27 | 16.17 ± 15.2 |
| **Phaeophyta** |  |  |  |
| *Brown macroalgae erect no.id* | 0.70 ± 3.47 | 0.1 ± 0.51 | - |
| *Dictyota dichotoma var. intr.* | - | - | 1.38 ± 3.35 |
| *Dictyota sp.* | 0.92 ± 2.48 | 0.52 ± 1.13 | 6.58 ± 8.55 |
| *Dictyopteris membranacea* | 0.17 ± 0.82 | - | 0.73 ± 3.57 |
| *Padina pavonica* | 0.33 ± 0.92 | - | 0.17 ± 0.82 |
| *Sargassum vulgare* | - | - | 6.83 ± 13.05 |
| **Rhodophyta** |  |  |  |
| *Corallina elongata* | - | 1.41 ± 3.53 | 0.04 ± 0.2 |
| *Encrusting calcareous no id.* | 3.04 ± 7.11 | 5.46 ± 7.69 | 4.2 ± 5.62 |
| *Erect corallinacea no id.* | - | 0.61 ± 1.13 | - |
| *Filamentous Falkenbergia type* | 0.62 ± 3.06 | 0.25 ± 0.86 | - |
| *Haliptilon virgatum* | - | 0.02 ± 0.1 | 0.13 ± 0.61 |
| *Lithophyllum stictaeforme* | 0.13 ± 0.45 | 0.15 ± 0.5 | - |
| *Mesophyllum alternans* | - | 0.02 ± 0.1 | - |
| *Peysonnellia squamarina* | 0.04 ± 0.2 | 0.46 ± 1.26 | 0.58 ± 1.1 |
| *Red macroalgae laminar no. id* | 0.13 ± 0.61 | - | - |

\* Mixture complex refers to an arbitrary category that correspond to basal invertebrates and algae that due to their small size cannot be separated from other species co-occurring in the same complex and thus neither identified by usual macroscopic means.

**Table S3.** **One-way PERMANOVA results from the temporal changes of functional identity (*FI*)across the multidimensional trait space for each of the monitored assemblages, and considering time as a fixed factor**. Df: degrees of freedom, SumSq: sum of squares, Pseudo-F: pseudo F statistic and P: PERMANOVA p-value. Significance levels: \*\*\*: p-value < 0.001, \*\*: p-value < 0.01, \*: p-value < 0.05 and **n.s**: not significant.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Corallium rubrum* - dominated habitats** | | | | | | | |
|  |  |  |  |  |  |  |  |
| **Passe\_cor** |
| **Factor** | **Factor levels** | **Df** | **SumSq** | **R^2** | **Pseudo-F** | **P** | **Significance** |
| Time (Fixed) | Time 1, Time 2, Time 3 | 2 | 0.1018 | 0.028 | 1.0055 | 0.437 | **(n. s)** |
| Res |  | 69 | 3.4932 | 0.971 |  |  |  |
| Total |  | 71 | 3.5950 | 1 |  |  |  |

|  |
| --- |
|  |
| **Pzzu\_cor** |
| **Factor** | **Factor levels** | **Df** | **SumSq** | **R^2** | **Pseudo-F** | **P** | **Significance** |
| Time (Fixed) | Time 1, Time 2, Time 3 | 2 | 4.4247 | 0.3234 | 16.487 | **0.001** | \*\*\* |
| Res |  | 69 | 9.259 | 0.6767 |  |  |  |
| Total |  | 71 | 13.6837 | 1 |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Paramuricea clavata* – dominated habitats** | | | | | | | |
|  |  |  |  |  |  |  |  |
| **Pzzinu\_par** |
| **Factor** | **Factor levels** | **Df** | **SumSq** | **R^2** | **Pseudo-F** | **P** | **Significance** |
| Time (Fixed) | Time 1, Time 2, Time 3 | 2 | 0.2065 | 0.045 | 1.6209 | 0.139 | **(n. s)** |
| Res |  | 69 | 4.3952 | 0.955 |  |  |  |
| Total |  | 71 | 4.6016 | 1 |  |  |  |

|  |
| --- |
| **Pzzu\_par** |
| **Factor** | **Factor levels** | **Df** | **SumSq** | **R^2** | **Pseudo-F** | **P** | **Significance** |
| Time (Fixed) | Time 1, Time 2, Time 3 | 2 | 4.1207 | 0.2223 | 9.745 | **0.001** | \*\*\* |
| Res |  | 69 | 14.5884 | 0.7798 |  |  |  |
| Total |  | 71 | 18.7091 | 1 |  |  |  |

|  |
| --- |
| **Gabin\_par** |
| **Factor** | **Factor levels** | **Df** | **SumSq** | **R^2** | **Pseudo-F** | **P** | **Significance** |
| Time (Fixed) | Time 1, Time 2, Time 3 | 2 | 3.4688 | 0.2384 | 10.8 | **0.001** | \*\*\* |
| Res |  | 69 | 11.081 | 0.7616 |  |  |  |
| Total |  | 71 | 14.5498 | 1 |  |  |  |

**Table S4. Trait characteristics of the 8 clusters (functional groups) obtained from the Partition Around Medoids (PAM) clustering analysis.** Only the percentage of the two most common trait values in a given cluster and trait are shown, unless a 100% is reached with the first three trait values, in which the three most common are shown. Abbreviations used: For morphology; **M-Hem**. = Massive-Hemispheric, **M-Encr**. = Massive-Encrusting. For feeding strategy: **F.F. by pumping** = Filter Feeder by pumping, **A. F. F. Ciliated** = Active Filter Feeder Ciliated, **P. F. F**. = Passive Filter Feeder. For physical defences: **No-Calc. Spic**. = Non-Calcareus Spicules, **Calc. Spi/Scl** = Calcareus Spicules/Sclerites, **Carb. Cont.** = Carbonate Continuous, **Carb. Disc.** = Carbonate Discontinuous. See **Table S1** for further information on the traits ranks and categories.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Functional cluster** | **Cluster 1** | **Cluster 2** | **Cluster 3** | **Cluster 4** | **Cluster 5** | **Cluster 6** | **Cluster 7** | **Cluster 8** |
| **N. *Sp*** | 40 | 25 | 10 | 14 | 15 | 3 | 4 | 3 |
| **Morphology** | M-Hem (34%)  M-Enc. (33%)  *Others (33%)* | Corymbose (50%)  Encrusting (42%)  Tree (8%) | Encrusting (75%)  Articulated (25%) | Encrusting (50%)  M.-Enc. (25%)  *Others (25%)* | Foliose Erect (38%)  Filaments (37%)  *Others (25%)* | Stolonial (100%) | Cup (75%)  Corymbose (25%) | Tree (100%) |
| **Coloniality** | Colonial (100%) | Colonial (83%)  Solitary (17%) | Solitary (100%) | Colonial (75%)  Solitary (25%) | Solitary (88%)  Colonial (12%) | Colonial (100%) | Solitary (75%)  Colonial (25%) | Colonial (100%) |
| **Longevity** | High (67 %)  Very High (33%) | High (58.%)  Medium (25%)  Low (17%) | High (75%)  Medium (25%) | Low (38%)  Medium (37%)  Very Low (25%) | Low (62%)  Medium (25%)  Very Low (13%) | Medium (67%)  High (33%) | Very High (75%)  High (25%) | Very High (100%) |
| **Height** | Very Low (33%)  Medium (25%)  *Others (42%)* | Very Low (50%)  Low (25%)  *Others (25%)* | Low (50%)  Very Low (50%) | Very Low (50%)  Low (37%)  Medium (13%) | Low (50%)  Medium (25%)  *Others (25%)* | Medium (100 %) | Low (100 %) | Very High (50%)  High (50%) |
| **Width** | Moderate (58%)  High (25%)  Very High (18%) | Low (42%)  High (25%)  *Others (33%)* | Medium (50%)  Low (25%)  High (25%) | Very Low (38%)  Low (37%)  *Others (25%)* | Low (88%)  Medium (12%) | Medium (67%)  Low (33%) | Low (75%)  Medium (25%) | Very High (50%)  High (50%) |
| **Epibiosis** | Never (59%)  Facultative (41%) | Facultative (75%)  Never (17 %)  Obligate (8 %) | Never (50%)  Facultative (50%) | Facultative (50%)  Never (38%)  Obligate (12%) | Facultative (88%)  Never (12%) | Facultative (100%) | Never (75%)  Facultative (25%) | Never (100%) |
| **Energetic resource** | Heterotroph (75%)  Mixed (25%) | Heterotroph (100%) | Autotroph (100%) | Heterotroph (75%)  Autotroph (13 %)  Mixed (12 %) | Autotroph (100%) | Autotroph (100%) | Heterotroph (100%) | Heterotroph (100%) |
| **Major photosynt. pigment** | None (75%)  Cyanobacteria (17%)  Dinoflagellate (8%) | None (100%) | Red pigment (75%)  Green pigment (25%) | None (75%)  Red pigment (13%)  Mixture (12%) | Brown pigment (38%)  Red pigment (25%)  Others (37%) | Green pigment  (100%) | None  (100%) | None  (100%) |
| **Feeding strategy** | F.F by pumping (100%) | A.F.F ciliated (92%)  P.F.F (8.%) | None (100%) | F.F by pumping (50%)  A.F.F ciliated (12%)  *Others (38%)* | None (100%) | None (100%) | P.F.F (100%) | P.F.F (100%) |
| **Age at reproduction** | Moderate (100 %) | Moderate (58%)  Low (42%) | Low (100%) | Low (63%)  Very Low (25 %)  Moderate (12%) | Low (88%)  Very Low (12%) | Moderate (67%)  Low (33%) | Moderate (100%) | High (100%) |
| **Growth rates** | Moderate (75%)  High (8%)  *Others (17 %)* | Moderate (75%)  High (17%)  Extreme slow (8%) | High (75 %)  Moderate (25%) | High (50 %)  Very High (38%)  Moderate (12%) | Very High (88%)  Moderate (12%) | Moderate (67%)  Very High (33%) | Slow (50%)  Extreme Slow (25%)  High (25%) | Extreme Slow (50%)  Moderate (50%) |
| **Physical defenses** | No-Calc. Spic (83%)  Calc. Spi/Scl (17%) | Carb. Cont. (92%)  No phys. defense (8%) | Carb. discount. (50%)  Carb. Cont. (2 %)  None (25%) | None (63%)  Carb. discount. (25%)  Mixture (13%) | None (100%) | Carb. discount. (67%)  None (33%) | Carb. Cont. (75%)  None (25%) | Calc. Spi/Scler (100%) |

**Table S5. Source references (N=236) for species trait information used to code the coarsely categorized (nominal / ranked) trait values of the 111 coralligenous taxonomic units included in the analyses. NA;** Not applicable**. ETM;** Expertise of Team Member**.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Morphology | Coloniality | Maximum longevity | Height | Width | Epibiosis | Energetic resource | Major photos.  pigment | Feeding strategy | Age at rep. maturity | Growth rates | Physical defenses |
| **Bryozoa** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Adeonella calveti* | 1,2, 3, 4,5, 11 | 11,14 | 12 | 2,4,5, 11,15 | 2,6,5,11,15 | ETM | 6, 7 | NA | 6, 7 | 12, | 9 | 5,8,10,11,13 |
| *Caberea boryi* | 2,3,11,16,17 | 11,14 | 12 | 2,3,4,11,17 | 2,3,4,11,17 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11,13,17 |
| *Cellaria sp.* | 6,7,9,18,19 | 11,14 | 12 | 2,3,4,11,19 | 2,3,4,11,19 | ETM | 6,7 | NA | 6,7 | 12, | 20,21 | 10, 11, 13,19 |
| *Celleporina sp.* | 22,23,24,25, 26 | 11,14,26 | 12,26 | 11,24,25,26 | 11,24,25,26 | ETM | 6,7, | NA | 6,7 | 12, | 9,26 | 10,11,13,24,26 |
| *Chartella tenella* | 2, 8, 27,28 | 11,14 | 12 | 11,28, 29 | 11,28,29 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 8,10,  11, 28 |
| *Crisia sp.* | 11, 30 | 11,14 | 12 | 11 | 11 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10, 11 |
| *Dentiporella sardonica* | 2,11, 31,32,33 | 11,14 | 12 | 11 | 11 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 2,8,10,32,33 |
| *Disporella hispida* | 2,3,4,23,33,34, 35 | 11,14 | 12 | 35 | 35 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 2,3,4,10,11,33,35 |
| *Encrusting Bryozoa no.id. orange* | ETM | 11,14 | 12 | ETM | ETM | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11 |
| *Gregarinidra gregaria* | 23,36 | 11,14 | 12 | ETM | ETM | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11 |
| *Idmidronea sp.* | 2,37, 38,39,40 | 11,14 | 12 | 11,40 | 11,40 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11,38,39,40 |
| *Lichenophora radiata* | 11,26 | 11,14 | 12 | 26 | 26 | ETM, 26 | 6,7 | NA | 6,7 | 12, | 9 | 10,11,26 |
| *Myriapora truncata* | 2,3,4, 11,23, 41,42,43 | 11,14 | 12 | 15,43 | 15,43 | ETM | 6,7 | NA | 6,7 | 12, | 9,44 | 10,11,42,43 |
| *Pentapora fascialis* | 2,3,4,11,45,46 | 11,14 | 12,47 | 15,47,48 | 15,47,48 | ETM | 6,7 | NA | 6,7 | 12, | 9,50 | 10,11,46 |
| *Reteporella grimaldii* | 2,3,4,11,51,52 | 11,14 | 12 | 15 | 15 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11,52 |
| *Schizomavella linearis* | 2,23,  53,54 | 11,14 | 12 | 54 | 54 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11,54 |
| *Schizomavella mamillata* | 2,11,  55 | 11,14 | 12 | 11,55 | 11,55 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11,55 |
| *Scrupocellaria sp.* | 2,11,  56,57 | 11,14 | 12 | 11 | 11 | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11,57 |
| *Smittoidea sp.* | 11, 58 | 11,14 | 12 | ETM | ETM | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11 |
| *Turbicellopora sp.* | 11,26,  59 | 11,14 | 12 | ETM | ETM | ETM | 6,7 | NA | 6,7 | 12, | 9 | 10,11 |
| **Cnidaria** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Caryophyllia inornata* | 4,23,  60,61,  62 | 60,  62,63 | 60,64 | 60,61 | 60,61 | ETM | 62, 65 | NA | 62,  65 | 60 | 60,61,64, 66 | 61,62,  63 |
| *Corallium rubrum* | 26,68,69 | 4,69 | 68,69,  70 | 68 | 68 | ETM | 4,71 | NA | 4, 71 | 72,73 | 64,68,69,72,74,73,,70 | 75,76 |
| *Corynactis viridis* | 4,77 | 4,77 | ETM | 77 | 77 | ETM | 4,77 | NA | 4,77 | ETM | ETM | 77 |
| *Eunicella cavolinii* | 4,23,  78,79 | 4,80 | 79,81 | 79,80,  82,83 | 79,80,82,83 | ETM | 4,84 | NA | 4,84 | 79 | 79,81,85 | 84 |
| *Hoplangia durotrix* | 86,87 | 87, | 88 | 87 | 87 | ETM | 87 | NA | 87 | ETM | 88 | 88 |
| *Leptopsammia pruvoti* | 4,23,  89,90 | 4,90 | 64,91 | 90,91 | 90,91 | ETM | 90 | NA | 90 | 92 | 64,91 | 4,91 |
| *Paramuricea clavata* | 23,93 | 94,95 | 96 | 96 | 96 | ETM | 97 | NA | 97 | 99  100 | 94  95 | 4,98 |
| *Parazoanthus axinellae* | 23,  101,  102 | 3,4,  102 | 69,  102 | 102 | 102 | ETM | 102 | NA | 102 | ETM | 102 | 3,4,  102 |
| **Foraminifera** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Miniacina miniacea* | 4,23,  103 | 4,104,  105 | ETM | 4,105 | 4,105 | ETM | 105 | NA | 105 | ETM | ETM | 4,105 |
| **Hydrozoa** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Aglaophenia sp.* | 106,  ETM | 106 | 106 | 106 | 106 | ETM | 106 | NA | 106 | 106 | 106 | 106 |
| *Dynamena laomedea* | 106,  ETM | 106 | 106 | 106 | 106 | ETM | 106 | NA | 106 | 106 | 106 | 106 |
| *Eudendrium sp.* | 106,  ETM | 106 | 106 | 106 | 106 | ETM | 106 | NA | 106 | 106 | 106 | 106 |
| *Hydrozoa turf* | 106,  ETM | 106 | 106 | 106 | 106 | ETM | 106 | NA | 106 | 106 | 106 | 106 |
| **Polychaeta** |  |  |  |  |  | ETM |  |  |  |  |  |  |
| *Filograna implexa / Salmacina dysteri* | 107 | 108 | ETM | 4,108 | 4,108 | ETM | 108,109 | NA | 108,109 | 108 | 108 | 108 |
| *Protula sp./ Serpula vermicularis* | 3,4,23,111 | 3,4,109,110 | 112 | 3,4,  111 | 3,4,  111 | ETM | 109,  111 | NA | 109,  111 | 112 | 113 | 110,  111 |
| *Serpulidae* | 23 | 110 | ETM | ETM | ETM | 6 | 109 | NA | 109 | ETM | ETM | 110 |
| **Porifera** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Acanthella acuta* | 3,4,23,114,  115,  116 | 116,  117 | 118 | 115 | 115 | ETM | 119,  120 | NA | 119,  120 | ETM | 118 | 115,  121 |
| *Agelas oroides* | 3,4,23,122,  123 | 116,  117 | 124 | 123 | 123 | ETM | 119,  120 | NA | 119,  120 | ETM | 121 | 121,  123 |
| *Aplysina cavernicola* | 4,23,  125 | 116,  117 | 64 | 126 | 126 | ETM | 119,  120 | NA | 119,  120 | ETM | 64,  127 | 121,  126 |
| *Axinella damicornis* | 4,23,  128,  129 | 116,  117 | 118 | 129 | 129 | ETM | 119,  120 | NA | 119,  120 | ETM | 118 | 121,  129 |
| *Cacospongia mollior type* | 130,  131,  132 | 116,  117 | 26,64,  118 | 26,  131 | 26,  131 | ETM | 119,  120 | NA | 119,  120 | ETM | 26,64,  118 | 121,  132 |
| *Chondrosia reniformis* | 3,4,  133,  134 | 116,  117 | 26,64 | 26,  134 | 26,  134 | ETM | 119,  120 | NA | 119,  120 | 26 | 26,64,  135 | 121,  134 |
| *Clathrina clathrus* | 3,4,23,136,  137 | 116,  117 | 135 | 137 | 137 | ETM | 119,  120 | NA | 119,  120 | ETM | 135 | 121,  137 |
| *Clathrina coriacea* | 3,4,23,138,  140 | 116,  117 | 139 | 140 | 140 | ETM | 119,  120 | NA | 119,  120 | 141 | 139 | 121,  140 |
| *Cliona sp.* | 3,4,23,141,  142,  143 | 116,  117 | ETM | 143 | 143 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  144 |
| *Corticium candelabrum* | 23,116,145,  146 | 116,  117 | 147 | 146,  147 | 146,  147 | ETM | 119,  120 | NA | 119,  120 | ETM | 147 | 121,  146 |
| *Crambe crambe* | 3,4,23,26,  148,  149 | 116,  117 | 26,  64 | 26,  149,  150 | 26,  149,  150 | ETM | 119,  120 | NA | 119,  120 | 26,  150 | 26,  150,  151,  152 | 121,  149 |
| *Crella pulvinar* | 23,  116,  153,  154 | 116,  117 | 118 | 154 | 154 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  154 |
| *Dendroxea lenis* | 23,  116,  155,  156 | 116,  117 | ETM | ETM | ETM | ETM | 119,120 | NA | 119,120 | ETM | ETM | 121,  156 |
| *Dysidea avara* | 23,  157,  159 | 116,  117 | 118 | 131 | 131 | ETM | 119,  120,  123 | NA | 119,  120,  123 | 118 | 160,  161 | 121,  159 |
| *Fasciospongia cavernosa* | 23,  131,  162,  162 | 116,  117 | ETM | 163 | 163 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  163 |
| *Haliclona fulva* | 23,  164,  165 | 116,  117 | 64,  118,  166 | 165 | 165 | ETM | 119,  120 | NA | 119,  120 | 64,  118 | 64,  118 | 121,  165 |
| *Haliclona mediterranea* | 23,26  166,  167,  168, | 116,  117 | 26 | 26,  168 | 26,  168 | ETM | 119,  120 | NA | 119,  120 | 26 | 26 | 26,  121,  168 |
| *Haliclona mucosa* | 23,116,166,169,  170 | 116,  117 | 166 | 170 | 170 | ETM | 119,  120 | NA | 119,  120 | ETM | 64 | 121,  170 |
| *Hemymicale columella* | 23,  171,  173,  176 | 116,  117 | 175 | 176 | 176 | ETM | 119,  120 | NA | 119,  120 | 172,  175 | 135,  174 | 121,  173 |
| *Hexadella pruvoti* | 23,  177,  178 | 116,  117 | ETM | 178 | 178 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  178 |
| *Hexadella racovitzai* | 23,  116,  179,  180 | 116,  117 | ETM | 180 | 180 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  180 |
| *Inv. mix. sponge thin layers* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Ircinia oros type* | 23,  181,  182 | 116,  117 | 118 | 182 | 182 | ETM | 119,  120 | NA | 119,  120 | EMT | 183 | 121,  182 |
| *Ircinia variabilis* | 23,  184,  185 | 116,  117 | 118 | 185 | 185 | ETM | 119,  120 | NA | 119,  120 | ETM | 183 | 121,  185 |
| *Oscarella balibaloi* | 23,  186,  187 | 116,  117 | 118 | 187 | 187 | ETM | 119,  120 | NA | 119,  120 | ETM | 118,  135 | 121,  187,  188 |
| *Other sponge black encr.* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Other sponge green encr.* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Other sponge grey/white enc.* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Other sponge grey/white massv.* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Other sponge orange encr.* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Other sponge red encr* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Other sponge yellow encr.* | ETM | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Petrosia ficiformis* | 23,26,189,  190,  191 | 116,  117 | 26,64 | 26,  190 | 26,  190 | ETM | 119,  120 | NA | 119,  120 | 26 | 26,  124 | 26,  121,  190,  191 |
| *Phorbas tenacior* | 4,23,  192,  193 | 116,  117 | ETM | 193 | 193 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  193 |
| *Plakina sp.* | 23,  194 | 116,  117 | ETM | ETM | ETM | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121 |
| *Pleraplysilla spinifera* | 23,84,116,  195,  196 | 116,  117 | 118 | 4,  196 | 4,  196 | ETM | 119,  120 | NA | 119,  120 | 118 | 118 | 121,  196 |
| *Prosuberites longispinus* | 23,  116,  197,  198 | 116,  117 | ETM | 198 | 198 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  198 |
| *Spongia virgultosa* | 131,  199,  200 | 116,  117 | ETM | 131,  200 | 131,  200 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  131,  200 |
| *Spongosorites intrincatus* | 201 | 116,  117 | ETM | 201 | 201 | ETM | 119,  120 | NA | 119,  120 | ETM | ETM | 121,  201 |
| **Tunicata** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Aplidium conicum* | 4,  202 | 202 | 204, 205 | 202 | 202,  204 | ETM | 202,  204 | NA | 202,  204 | 205 | 206 | 202,  203 |
| *Aplidium fuscum* | 207 | 207 | 205 | 207 | 207 | ETM | 204,  207 | NA | 204,207 | 205 | ETM | 203,  207 |
| *Clavelina dellavalei* | 4,208,209 | 209 | 205 | 205 | 205 | ETM | 204,  209 | NA | 204,  209 | 205 | ETM | 203,  209 |
| *Clavelina lepadiformis* | 3,4,  210,  211 | 211 | 205 | 211 | 211 | ETM | 204,205,211 | NA | 204,  205,  211 | 205 | 150 | 203,  211 |
| *Didemnum vexillum* | ETM | ETM | 205 | ETM | ETM | ETM | 205 | NA | 205 | 205 | ETM | 203 |
| *Halocynthia papillosa* | 3,4,  23,  212,  213 | 213 | 214 | 213,  214 | 213,  214 | ETM | 204,  213,  214,  215 | NA | 204,  213,  214,  215 | 214 | 215 | 203,  214 |
| *Pycnoclavella sp.* | ETM | ETM | 205 | ETM | ETM | ETM | 204 | NA | 204 | 205 | ETM | 203 |
| **Mixture complex** | ETM | ETM | ETM | ETM | ETM | ETM | ETM | ETM | ETM | ETM | ETM | ETM |
| **Algal turf** | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| **Chlorophyta** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Bryopsis sp.* | 26,  216 | 26,  216 | 26 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26 | 26,  216 |
| *Caulerpa cylindracea* | 26,  217 | 26,  216 | 26 | 26,  217 | 26,  217 | 26,  217 | 26,  217 | 26,  217 | 26,  217 | 26,  216 | 26 | 26,  217 |
| *Chondria sp.* | 26,  216 | 26,  216 | 26 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 218 | 26,  216 |
| *Flabellia petiolata* | 2,26,216,  220 | 26,  216,  220 | 26 | 26,  216,  220 | 26,  216,  220 | 26,  216,  220 | 26,  216,  220 | 26,  216,  220 | 26,  216,  220 | 26,  216 | 26 | 26,  216,  220 |
| *Halimeda tuna* | 4,26,  216,  221,  222 | 26,  216,  222 | 26 | 26,  216,  222 | 26,  216,  222 | 26,  216,  222 | 26,  216,  222 | 26,  216,  222 | 26,  216,  222 | 26,  222 | 26 | 26,  216,  222 |
| *Palmophyllum crassum* | 216,  223,  224,  225 | 216,  218,  224,  225 | 216,  224 | 216,  224,  225 | 216,  224 | 216,  224 | 216,  224,  225 | 216,  224,  225 | 216,  224,  225 | 216,  224 | 218 | 216,  224,  225 |
| *Valonia macrophysa* | 26,  216,  218,  226,  227 | 26,  216,  218,  227 | 26,  216,  227 | 26,  216,  227 | 26,  216,  218,  227 | 26,  216,  218,  227 | 26,  216,  218,  227 | 26,  216,  218,  227 | 26,  216,  218,  227 | 26,  216, | 26 | 26,  216,  218,  227 |
| **Phaeophyta** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Brown macroalgae erect no.id* | 216 | 216 | 216,  218 | ETM | ETM | 216,  218 | 216,  218 | 216,  218 | 216,  218 | 218 | 218 | 216,  218 |
| *Dictyota dichotoma var. intr.* | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26 | 26 | 26,  216 |
| *Dictyota sp.* | 4,26,  216,  218,  228 | 26,  216,  218,  228 | 26,  216,  218,  228 | 26,  216,  228 | 26,  216,  228 | 26,  216,  218,  228 | 26,  216,  218,  228 | 26,  216,  218,  228 | 26,  216,  218,  228 | 26,  218,  228 | 26,  218 | 26,  216,  218,  228 |
| *Dictyopteris membranacea* | 216 | 216,  218 | 216,  218 | 216 | 216 | 216,  218 | 216,  218 | 216,  218 | 216,  218 | 218 | 218 | 216,  218 |
| *Padina pavonica* | 3,4,  26,  216,  229 | 26,  216,  229 | 26,  216,  229 | 26,  216,  229 | 26,  216,  229 | 26,  216,  229 | 26,  216,  229 | 26,  216,  229 | 26,  216,  229 | 26 | 26 | 26,  216,  229 |
| *Sargassum vulgare* | 216 | 216,  218 | 216,  218 | 216 | 216 | 216,  218 | 216,  218 | 216,  218 | 216 | 218 | 218 | 216 |
| **Rhodophyta** |  |  |  |  |  |  |  |  |  |  |  |  |
| *Corallina elongata* | 4,26,  216,  230 | 26,  216,  230 | 26,  216,  230 | 26,  216,  230 | 26,  216,  230 | 26,  216,  230 | 26,  216,  230 | 26,  216,  230 | 26,  216,  230 | 26 | 26 | 26,  216,  230 |
| *Encrusting calcareous no id.* | 216 | 216 | 216,  218 | 216 | 216 | 216,  218 | 216,  218 | 216,  218 | 216,  218 | 218 | 231 | 216 |
| *Erect corallinacea no id.* | 216 | 216 | 216,  218 | 216 | 216 | 216,  218 | 216,  218 | 216,  218 | 216,  218 | 218 | ETM | 216 |
| *Erytroglossum sandrianum* | 216,  232 | 216,  232 | 216,  218 | 216,  232 | 216,  232 | 216,  232 | 216,  232 | 216,  232 | 216,  232 | 218 | ETM | 216,  232 |
| *Filamentous Falkenbergia type* | 216 | 216 | 216,  218 | 216 | 216 | 216 | 216 | 216 | 216 | 216 | ETM | 216 |
| *Haliptilon virgatum* | 26,  216 | 26,  216 | 26 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26 | 26 | 26,  216 |
| *Hildebrandia rubra* | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 216,  225,  233 | 26 | 26,  216,  225,  233 |
| *Liagora sp.* | 216 | 216 | 216,  218 | 216 | 216 | 216,  218 | 216,  218 | 216,218 | 216,218 | 218 | ETM | 216 |
| *Lithophyllum stictaeforme* | 4,216,225,234 | 216,  234 | 216,  225,  234 | 216,  225,  234 | 216  ,225,  234 | 216,  225,  234 | 216,  225,  234 | 216,  225,  234 | 216,  225,  234 | 225,  234 | 225,  235 | 216,  225,  234 |
| *Mesophyllum alternans* | 216,  231 | 216,  231 | 231 | 216,  231 | 216,  231 | 216 | 216 | 216 | 216 | 231 | 231 | 216 |
| *Peysonnellia squamarina* | 4,26,  216,  225,  236 | 26,  216,  236 | 26 | 26,  216,  225,  236 | 26,  216,  225,  236 | 26,  216,  225,  236 | 26,  216,  225,  236 | 26,  216,  225,  236 | 26,  216,  236 | 26 | 26 | 26,  216,  236 |
| *Red macroalgae laminar no. Id* | 216 | 216 | 216,  218 | 216 | 216 | 216 | 216 | 216 | 216 | 218 | ETM | 216 |
| *Rhodymenia ardissone* | 26,  216 | 26,  216 | 26 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26,  216 | 26 | 26 | 26,  216 |

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