

Ecological interactions amplify cumulative effects in marine ecosystems

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Supplementary information

Supplementary tables

Supplementary Table 1 | Taxa list. List of taxa included in the assessment with occurrences and absences from biotic data, and assessment of sensitivity, specificity, accuracy and True Skilled Statistics (TSS) of species distribution modeling.

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
Acipenser oxyrinchus	7					
Actinauge sp.	253	1383	0.63	0.96	0.9	0.58
Actinostola sp.	301	1335	0.56	0.95	0.88	0.52
Aega psora	47					
Alcyonidium sp.	13					
Alepocephalus bairdii	5					
Alosa aestivalis	1					
Alosa pseudoharengus	155	1527	0.6	0.98	0.94	0.58
Alosa sapidissima	19					
Aluterus schoepfii	4					
Amblyraja hyperborea	1					
Amblyraja radiata	6105	766	0.99	0.81	0.97	0.8

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
Amicula vestita	3					
Ammodytes sp.	521	1280	0.42	0.89	0.76	0.32
Ampelisca sp.	3					
Amphiura sp.	19					
Anarhichas denticulatus	17					
Anarhichas lupus	1149	1427	0.85	0.94	0.91	0.79
Anarhichas minor	413	1588	0.64	0.98	0.93	0.62
Anguilla rostrata	16					
Anisarchus medius	127	1514	0.57	0.98	0.95	0.55
Anomia sp.	7					
Anonyx sp.	88	1548	0.07	0.99	0.94	0.06
Antalis sp.	1					
Anthoptilum grandiflorum	292	1344	0.7	0.95	0.91	0.65
Aphroditella hastata	129	1507	0.19	0.99	0.92	0.17
Arcoscalpellum michelottianum	16					
Arctica islandica	20					
Arctozenus risso	1403	1056	0.95	0.92	0.93	0.86
Argentina silus	42					
Argis dentata	229	1438	0.82	0.98	0.96	0.8
Argyropelecus aculeatus	37					
Argyropelecus gigas	21					
Aristaeopsis edwardsiana	2					
Arrhoges occidentalis	104	1532	0.41	0.99	0.95	0.4
Artediellus sp.	623	1217	0.6	0.9	0.81	0.5
Ascidacea	1139	777	0.75	0.72	0.74	0.47
Aspidophoroides monopterygius	748	1120	0.7	0.82	0.77	0.52
Aspidophoroides olrikii	110	1527	0.31	0.98	0.94	0.29
Astarte sp.	210	1426	0.23	0.97	0.88	0.2
Asterias sp.	137	1509	0.13	0.98	0.91	0.11
Astropecten duplicatus	11					
Atlantopandalus propinquus	55	1583	0.15	1	0.97	0.14
Atolla wyvillei	21					
Aulacofusus brevicauda	1					
Aurelia aurita	143	1493	0.14	0.97	0.9	0.11
Balaena mysticetus	0					
Balaenoptera acutorostrata	1	-	-	-	-	-
Balaenoptera borealis	1	-	-	-	-	-
Balaenoptera musculus	1	-	-	-	-	-
Balaenoptera physalus	1	-	-	-	-	-
Balanidae	24					
Balistes vetula	1					
Batharca sp.	1					
Bathylagus euryops	4					
Bathypolypus sp.	421	1392	0.56	0.92	0.83	0.48
Bathyraxa spinicauda	574	1613	0.84	0.95	0.92	0.79
Benthodesmus elongatus	1					
Beringius turtoni	2					
Bolocera sp.	392	1244	0.66	0.94	0.87	0.6
Boltenia ovifera	72	1564	0.34	0.99	0.96	0.33
Boreogadus saida	438	1534	0.75	0.94	0.9	0.69

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
Boreomysis sp.	1					
Boreotrophon sp.	47					
Borostomias antarcticus	1					
Bothus ocellatus	4					
Brisaster fragilis	457	1203	0.87	0.95	0.93	0.82
Brosme brosme	15					
Bryozoa	207	1441	0.16	0.98	0.88	0.14
Buccinum sp.	11288	1108	0.98	0.84	0.97	0.83
Caberea ellisii	18					
Calocaris templemani	19					
Cancer borealis	6					
Cancer irroratus	23823	1473	1	0.94	0.99	0.94
Cardium sp.	1					
Careproctus reinhardti	157	1579	0.65	0.98	0.95	0.64
Centrosyllium fabricii	534	1529	0.82	0.94	0.91	0.76
Ceramaster granularis	83	1553	0.28	0.99	0.96	0.27
Ceratias holboelli	2					
Cetorhinus maximus	3					
Chauliodus sloani	6					
Chionoecetes opilio	68291	493	1	0.46	0.99	0.46
Chiridota laevis	1					
Chirona hameri	15					
Chlamys islandica	10821	1461	0.99	0.92	0.98	0.9
Ciliatocardium ciliatum	99	1538	0.26	0.98	0.94	0.25
Clupea harengus	15658	778	0.99	0.48	0.96	0.47
Colga villosa	34					
Colus sp.	84	1553	0.02	0.99	0.94	0.02
Coregonus clupeaformis	1					
Coryphaena hippurus	2					
Coryphaenoides rupestris	320	0	0.94	0.91	0.93	0.86
Cottunculus microps	10					
Cottunculus thomsonii	1					
Crangon septemspinosa	4					
Crenella faba	3					
Crossaster papposus	697	952	0.87	0.91	0.89	0.78
Cryptacanthodes maculatus	394	1574	0.79	0.98	0.94	0.77
Cryptopsaras couesii	3					
Ctenodiscus crispatus	716	958	0.79	0.86	0.83	0.65
Cucumaria frondosa	988	1609	0.97	0.99	0.98	0.96
Cuspidaria sp.	174	1462	0.49	0.98	0.93	0.47
Cyanea capillata	250	1387	0.28	0.92	0.82	0.2
Cyclocardia borealis	8					
Cyclopterus lumpus	607	1480	0.71	0.94	0.88	0.65
Cyrtodaria siliqua	30					
Cystophora cristata	1	-	-	-	-	-
Delphinapterus leucas	1	-	-	-	-	-
Delphinus delphis	1	-	-	-	-	-
Dendronotus sp.	33					
Diplopteraster multipes	9					
Dipturus laevis	4					
Dipturus linteus	27					
Doridoxa ingolfiana	10					

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
Drifa glomerata	65	1571	0.03	0.99	0.95	0.02
Duva florida	89	1547	0.06	0.99	0.94	0.05
Echinarachnius parma	21					
Echiodon dawsoni	1					
Enchelyopus cimbrius	1981	952	0.94	0.89	0.92	0.83
Ensis leei	128	0	0.99	1	1	0.99
Epimeria loricata	32					
Epizoanthus erdmanni	118	1518	0.08	0.99	0.92	0.06
Epizoanthus incrustatus	1					
Erignathus barbatus	0					
Eualus fabricii	73	1563	0.34	0.99	0.96	0.33
Eualus gaimardii	66	1572	0.2	0.99	0.96	0.19
Eualus macilentus	129	1510	0.49	0.98	0.94	0.47
Eubalaena glacialis	1	-	-	-	-	-
Eudistoma vitreum	35					
Eumesogrammus praecisus	355	1379	0.5	0.94	0.85	0.44
Eumicrotremus derjugini	1					
Eumicrotremus spinosus	317	1423	0.48	0.95	0.87	0.43
Eusergestes arcticus	69	1571	0.68	0.99	0.98	0.67
Eusirus cuspidatus	35					
Flabellum sp.	29					
Gadus morhua	22539	500	0.99	0.32	0.98	0.31
Gadus ogac	618	1544	0.83	0.98	0.93	0.8
Gaidropsarus sp.	103	1606	0.57	0.99	0.97	0.56
Gasterosteus aculeatus	115	1548	0.16	0.98	0.93	0.14
Gersemia rubiformis	436	1200	0.54	0.87	0.78	0.4
Globicephala melas	1	-	-	-	-	-
Glyptocephalus cynoglossus	8860	779	0.99	0.84	0.98	0.83
Gonatus fabricii	1					
Gonostomatidae	59	1593	0.08	0.99	0.96	0.08
Gorgonocephalus sp.	622	1091	0.71	0.89	0.82	0.59
Grampus griseus	1	-	-	-	-	-
Gymnelus viridis	67	1569	0.22	0.99	0.97	0.22
Gymnocanthus tricuspis	374	1268	0.48	0.91	0.82	0.4
Halichoerus grypus	1	-	-	-	-	-
Halichondria panicea	78	1558	0.1	0.99	0.95	0.09
Halipterus finmarchica	92	1544	0.39	0.99	0.96	0.38
Hamingia arctica	2					
Helicolenus dactylopterus	7					
Heliometra glacialis	7					
Hemithiris psittacea	30					
Hemitripteris americanus	461	1521	0.63	0.97	0.9	0.6
Henricia sp.	627	1012	0.57	0.79	0.71	0.36
Hiatella arctica	23					
Hippasteria phrygiana	458	1380	0.59	0.91	0.83	0.51
Hippoglossina oblonga	2					
Hippoglossoides platessoides	18677	248	1	0.33	0.99	0.33
Hippoglossus hippoglossus	21086	1267	0.99	0.5	0.96	0.48
Homarus americanus	10671	1499	0.99	0.97	0.99	0.96
Hormathia nodosa	59	1585	0.07	1	0.97	0.07
Howella sherborni	2					

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
<i>Hyas araneus</i>	1688	1250	0.91	0.91	0.91	0.81
<i>Hyas coarctatus</i>	798	934	0.77	0.82	0.8	0.6
<i>Hymenopenaeus debilis</i>	4					
<i>Hyperia galba</i>	30					
<i>Hyperoodon ampullatus</i>	1	-	-	-	-	-
<i>Icelus</i> sp.	208	1437	0.29	0.96	0.88	0.25
<i>Illex illecebrosus</i>	360	1419	0.39	0.92	0.82	0.31
<i>Isurus oxyrinchus</i>	19					
<i>Kajikia albida</i>	1					
<i>Kogia breviceps</i>	1	-	-	-	-	-
<i>Lagenorhynchus acutus</i>	1	-	-	-	-	-
<i>Lagenorhynchus albirostris</i>	1	-	-	-	-	-
<i>Lamna nasus</i>	34					
<i>Lampanyctus</i> sp.	17					
<i>Larus</i> sp.	3					
<i>Lebbeus groenlandicus</i>	58	1578	0.67	1	0.99	0.66
<i>Lebbeus microceros</i>	11					
<i>Lebbeus polaris</i>	243	1393	0.54	0.96	0.9	0.49
<i>Leptagonus decagonus</i>	673	1369	0.76	0.93	0.87	0.69
<i>Leptasterias</i> sp.	410	1236	0.6	0.9	0.83	0.51
<i>Leptoclinus maculatus</i>	869	1025	0.79	0.82	0.8	0.6
<i>Leptychaster arcticus</i>	8					
<i>Leucoraja erinacea</i>	37					
<i>Leucoraja ocellata</i>	331	1623	0.78	0.97	0.94	0.75
<i>Limanda ferruginea</i>	7434	1237	0.98	0.94	0.98	0.92
<i>Liparis atlanticus</i>	2					
<i>Liparis fabricii</i>	28					
<i>Liparis gibbus</i>	268	1405	0.41	0.95	0.86	0.36
<i>Liparis liparis liparis</i>	1					
<i>Liponema multicornis</i>	27					
<i>Lithodes maja</i>	2592	1289	0.96	0.83	0.92	0.79
<i>Lophius americanus</i>	1550	1591	0.89	0.86	0.87	0.75
<i>Lumpenus fabricii</i>	6					
<i>Lumpenus lampretaeformis</i>	645	1413	0.83	0.94	0.91	0.78
<i>Lycenchelys paxillus</i>	129	1626	0.7	0.99	0.97	0.69
<i>Lycenchelys verrillii</i>	69	1585	0.17	1	0.96	0.17
<i>Lycodes lavalaei</i>	345	1343	0.54	0.93	0.85	0.48
<i>Lycodes pallidus</i>	495	0	0.99	0.95	0.97	0.93
<i>Lycodes polaris</i>	20					
<i>Lycodes reticulatus</i>	31					
<i>Lycodes terraenovae</i>	129	1594	0.51	0.98	0.94	0.49
<i>Lycodes turneri</i>	2					
<i>Lycodes vahliei</i>	552	1380	0.81	0.95	0.91	0.76
<i>Macoma</i> sp.	18					
<i>Macrourus berglax</i>	39					
<i>Mactromeris polynyma</i>	959	1632	0.98	1	0.99	0.98
<i>Maera loveni</i>	3					
<i>Malacocephalus occidentalis</i>	1					
<i>Malacoraja senta</i>	1765	1000	0.95	0.87	0.92	0.82
<i>Malacosteus niger</i>	1					
<i>Mallotus villosus</i>	7766	602	0.98	0.63	0.95	0.61

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
Margarites sp.	125	1515	0.12	0.99	0.93	0.11
Maurolicus muelleri	1					
Megaptera novaeangliae	1	-	-	-	-	-
Megayoldia thraciaeformis	92	1544	0.35	0.98	0.95	0.33
Melanogrammus aeglefinus	322	1616	0.78	0.98	0.95	0.76
Melanostigma atlanticum	1014	1289	0.93	0.94	0.93	0.87
Melita dentata	2					
Menidia menidia	2					
Mentodus rostratus	1					
Mercenaria mercenaria	12					
Merluccius bilinearis	1581	1286	0.89	0.83	0.86	0.71
Mesodesma sp.	19					
Metridium senile	2					
Microgadus tomcod	64	0	0.95	0.94	0.94	0.89
Micromesistius poutassou	18					
Modiolus modiolus	5					
Molpadia sp.	10					
Molva dypterygia	1					
Monodon monoceros	0					
Morone saxatilis	3					
Morus bassanus	5					
Mugil cephalus	1					
Munida valida	1					
Munidopsis curvirostra	122	1515	0.58	0.98	0.95	0.57
Musculus sp.	20					
Mustelus canis	1					
Mya arenaria	2					
Mya truncata	9					
Myctophidae	270	1517	0.66	0.96	0.92	0.62
Myoxocephalus sp.	1681	1239	0.87	0.88	0.88	0.75
Mytilus sp.	79	1560	0.18	0.99	0.95	0.17
Myxine glutinosa	3412	1066	0.98	0.91	0.97	0.89
Naticidae	273	1523	0.58	0.99	0.93	0.57
Naucrates ductor	1					
Nealotus tripes	1					
Nemichthys scolopaceus	21					
Neohela monstrosa	19					
Neolithodes grimaldii	20					
Neoscopelus macrolepidotus	9					
Neptunea sp.	114	1522	0.04	0.99	0.92	0.02
Nezumia bairdii	1838	1153	0.97	0.93	0.95	0.9
Novodinia americana	1					
Nucella lapillus	1					
Nuculana sp.	39					
Nymphon sp.	50	1586	0	1	0.97	0
Oceanites sp.	1					
Odobenus rosmarus	0					
Oediceros saginatus	1					
Ommastrephes sp.	1					
Omosudis lowii	1					
Ophiacantha bidentata	113	1523	0.19	0.98	0.93	0.17
Ophiopholis aculeata	187	1454	0.38	0.96	0.89	0.34

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
Ophioscolex glacialis	18					
Ophiura sp.	276	1407	0.55	0.95	0.89	0.5
Orcinus orca	1	-	-	-	-	-
Osmerus mordax mordax	148	1536	0.72	0.99	0.97	0.71
Pagophilus groenlandicus	1	-	-	-	-	-
Pagurus sp.	512	1152	0.7	0.9	0.84	0.6
Palio dubia	1					
Pandalus borealis	48179	895	1	0.88	1	0.88
Pandalus montagui	468	1193	0.77	0.95	0.9	0.71
Panomya norvegica	3					
Paralichthys dentatus	1					
Paraliparis calidus	33					
Paraliparis copei copei	29					
Paramphithoe hystrix	26					
Parvicardium pinnulatum	1					
Pasiphaea multidentata	1282	1136	0.94	0.91	0.92	0.85
Pasiphaea tarda	6					
Pennatula aculeata	412	1224	0.7	0.91	0.86	0.61
Pennatula grandis	504	1437	0.76	0.93	0.89	0.69
Peprilus triacanthus	13					
Periphylla periphylla	187	1449	0.21	0.95	0.87	0.16
Petromyzon marinus	11					
Phascolion strombus	9					
Phoca vitulina	1	-	-	-	-	-
Phocoena phocoena	1	-	-	-	-	-
Pholis gunnellus	1					
Phycis chesteri	399	1439	0.73	0.96	0.91	0.69
Physeter macrocephalus	1	-	-	-	-	-
Plesionika martia	3					
Pleurobrachia pileus	94	1542	0.11	0.98	0.93	0.09
Pollachius virens	250	1627	0.73	0.98	0.95	0.71
Polyipnus clarus	45					
Polynoidae	87	1551	0.02	0.99	0.94	0.02
Pomatomus saltatrix	1					
Pontophilus norvegicus	334	1304	0.7	0.95	0.9	0.65
Poraniomorpha sp.	22					
Porifera	1172	694	0.77	0.6	0.7	0.37
Prionace glauca	12					
Pseudarchaster parelii	60	1576	0	0.99	0.96	-0.01
Pseudopleuronectes americanus	10889	1422	0.99	0.95	0.98	0.94
Psilaster andromeda	79	1557	0.51	0.99	0.97	0.5
Psolus fabricii	135	1501	0.3	0.97	0.92	0.27
Psolus phantapus	54	1582	0.11	1	0.97	0.11
Pteraster militaris	186	1450	0.17	0.97	0.88	0.14
Pteraster obscurus	3					
Pteraster pulvillus	65	1571	0.33	0.99	0.96	0.32
Ptychogena lactea	189	1447	0.17	0.95	0.86	0.13
Pusa hispida	0					
Pycnogonum litorale	8					
Rajella fyllae	21					

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
Reinhardtius hippoglossoides	27772	765	1	0.8	0.99	0.79
Remora remora	1					
Reteporella grimaldii	1					
Rhachotropis aculeata	93	1543	0.32	0.99	0.95	0.3
Rossia sp.	341	1388	0.4	0.91	0.81	0.32
Sabinea sarsii	58	1578	0.38	0.99	0.97	0.37
Sabinea septemcarinata	136	1500	0.69	0.98	0.96	0.67
Salmo salar	19					
Scaphander punctostriatus	106	1530	0.22	0.98	0.93	0.19
Sclerocrangon boreas	95	1570	0.6	0.99	0.97	0.59
Scomber scombrus	9523	1436	0.97	0.89	0.96	0.86
Scomberesox saurus saurus	6					
Scophthalmus aquosus	5612	1603	0.99	0.99	0.99	0.99
Sebastes sp.	15084	614	0.99	0.78	0.98	0.77
Securiflustra securifrons	37					
Sepioloidea sp.	2					
Sergia robusta	8					
Serripes groenlandicus	18					
Serrivomer beanii	10					
Similipecten greenlandicus	29					
Solaster endeca	254	1412	0.3	0.96	0.85	0.25
Somniosus microcephalus	2					
Spirontocaris liljeborgii	144	1492	0.19	0.98	0.91	0.17
Spirontocaris phippisii	13					
Spirontocaris spinus	119	1517	0.62	0.99	0.96	0.61
Spisula solidissima	315	1634	0.99	1	1	0.99
Squalus acanthias	149	1634	0.47	0.98	0.94	0.46
Staurostoma mertensii	59	1608	0.15	0.99	0.96	0.15
Stauroteuthis syrtensis	2					
Stegocephalus inflatus	110	1526	0.15	0.98	0.93	0.13
Stenella coeruleoalba	1	-	-	-	-	-
Stenella frontalis	0					
Stephanasterias albula	13					
Stephanauge sp.	75	1561	0.24	0.99	0.96	0.23
Stichaeus punctatus	14					
Stomias boa ferox	7					
Stomphia coccinea	179	1459	0.41	0.96	0.9	0.37
Strongylocentrotus sp.	2929	841	0.9	0.84	0.87	0.73
Stylocordyla borealis	75	1561	0.05	0.99	0.95	0.04
Symbolophorus veranyi	20					
Synaphobranchus kaupii	3					
Syscenus infelix	264	1377	0.68	0.95	0.9	0.62
Tachyrhynchus erosus	2					
Tautogolabrus adspersus	36					
Tellina sp.	1					
Terebratulina septentrionalis	61	1575	0.11	0.99	0.96	0.11
Teredo navalis	3					
Thuiaria thuja	43					
Thunnus alalunga	1					
Thunnus obesus	1					
Thunnus thynnus	3941	0	0.99	0.99	0.99	0.98

Taxa	Occurrences	Absences	Sensitivity	Specificity	Accuracy	TSS
<i>Thysanoessa longicaudata</i>	2					
<i>Tonicella</i> sp.	6					
<i>Trachyrincus murrayi</i>	7					
<i>Tremaster mirabilis</i>	1					
<i>Triglops</i> sp.	420	1266	0.54	0.93	0.84	0.47
<i>Trigonalampa miriceps</i>	2					
<i>Tritia</i> sp.	2					
<i>Tursiops truncatus</i>	1	-	-	-	-	-
<i>Ulvaria subbifurcata</i>	20					
<i>Urasterias lincki</i>	1					
<i>Urophycis chuss</i>	7					
<i>Urophycis regia</i>	1					
<i>Urophycis tenuis</i>	6242	1120	0.97	0.73	0.93	0.7
<i>Urticina felina</i>	89	1634	0.7	0.99	0.97	0.69
Velutinidae	8					
<i>Wimvadocus torelli</i>	2					
<i>Xenodermichthys copei</i>	14					
<i>Xiphias gladius</i>	1					
<i>Xylophaga atlantica</i>	3					
<i>Yoldia</i> sp.	7					
<i>Ziphius cavirostris</i>	1	-	-	-	-	-
<i>Zoarces americanus</i>	62	1615	0.37	0.99	0.97	0.36

Supplementary Table 2 | Traits. List of traits used to characterize the relative species-specific sensitivity of taxa to stressors and description of each trait category.

Traits	Categories	Description
Body composition	Biogenic silica	Organism with skeleton formed by microscopic particles of silica
	Bone	Organism with solid skeleton made of bones
	Cartilaginous	Organism with solid skeleton made of cartilage
	Chitinous	Organism with solid skeleton made of chitin
	Non-calcifying	Organism devoid of calcifying skeleton
	Soft-bodied, aragonite	Organism with aragonite in soft tissues
	Soft-bodied, calcite	Organism with calcite in soft tissues
	Soft-bodied, calcium phosphate	Organism with calcium phosphate in soft tissues
	Soft-bodied, calcium sulfate	Organism with calcium sulfate in soft tissues
	Skeleton, aragonite	Organism with solid skeleton made of or containing aragonite
	Skeleton, calcite	Organism with solid skeleton made of or containing calcite
	Skeleton, calcium phosphate	Organism with solid skeleton made of or containing calcium phosphate
Environment	Skeleton, high-magnesium calcite	Organism with solid skeleton made of or containing high-magnesium calcite
	Skeleton, phosphatic	Organism with solid skeleton made of or containing phosphates
	Bathydemersal	Living and/or feeding on or near the bottom, below 200 m
	Bathypelagic	Occurring mainly in open water below 200 m, not feeding on benthic organisms
	Benthic	Living and feeding on the bottom
	Benthopelagic	Living and/or feeding on or near the bottom, as well as in midwater, between 0 and 200 m
Feeding type	Demersal	Living and/or feeding on or near the bottom, between 0 and 200 m
	Pelagic	Occurring mainly in the water column between 0 and 200 m, not feeding on benthic organisms
	Deposit feeder	Organism that lives on or in the sediments and consumes organic material on the sea floor
	Selective filter feeder	Organism that actively and selectively filters waters to consume plankton or nutrients suspended in the water
	Grazer	Organism that feeds on plants
	Parasite	Organism that lives in or on another organism, benefiting at the other organism's expense
	Plankton	Organism feeding exclusively on plankton
	Predator	Organism that actively hunts prey
	Scavenger	Organism that feeds on dead plant or animal material, or refuse
Fisheries landings	Suspension feeder	Organism that captures and consumes particules suspended in the water, such as plankton, bacteria, detritus and particulate organic matter
	Xylophagous	Organism feeding on or boring into wood
	Targeted species	Applicable to fisheries only. Taxa targeted by fishing activities.
	Bycatch	Applicable to fisheries only. Taxa bycatch by fishing activities.

Traits	Categories	Description
	Others	Applicable to fisheries only. Taxa not targeted or caught by fishing activities
Mobility	Burrower Crawler Mobile Sessile Swimmer	Organism that lives in a burrow dug in the sediments Organism that crawls slowly on the bottom Free-ranging organism Immobile or fixed organism Organism with limited swimming ability
Phylum	Annelida Arthropoda Brachiopoda Bryozoa Chordata Cnidaria Ctenophora Echinodermata Echiura Mollusca Porifera Sipuncula	- - - - - - - - - - - -
Size	0-100 cm 100-200 cm 200-300 cm 300+ cm	Body length between 0 and 100 cm Body length between 100 and 200 cm Body length between 200 and 300 cm Body length greater than 300 cm

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Supplementary Table 3 | Species-specific sensitivity. Trait matching rules between stressors and traits to assess the relative species-specific sensitivity scores for each stressor.

Stressors	Traits	Category	Sensitivity
Ocean acidification	Environment	Bathydemersal	1.00
		Bathypelagic	0.00
		Benthic	1.00
		Benthopelagic	0.50
		Demersal	1.00
		Pelagic	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75
	Body composition	Biogenic silica	0.00
		Bone	0.00
		Cartilaginous	0.00
		Chitinous	0.00
		Non-calcifying	0.00
		Soft-bodied, aragonite	0.00
		Soft-bodied, calcite	0.00
		Soft-bodied, calcium phosphate	0.00
		Soft-bodied, calcium sulfate	0.00
		Skeleton, aragonite	0.90
		Skeleton, calcite	0.80
		Skeleton, calcium phosphate	0.80
		Skeleton, high-magnesium calcite	1.00
		Skeleton, phosphatic	0.00
	Phylum	Annelida	0.00
		Arthropoda	0.50
		Brachiopoda	0.50
		Bryozoa	1.00
		Chordata	0.00
		Cnidaria	1.00
		Ctenophora	0.00
		Echinodermata	1.00
		Echiura	0.00
		Mollusca	1.00
		Porifera	0.00
		Sipuncula	0.00
Bottom-water temperature anomalies	Environment	Bathydemersal	1.00
		Bathypelagic	0.00
		Benthic	1.00
		Benthopelagic	0.50
		Demersal	1.00
		Pelagic	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75

Stressors	Traits	Category	Sensitivity
	Feeding type	Deposit feeder	1.00
		Selective filter feeder	0.00
		Grazer	1.00
		Parasite	0.00
		Plankton	0.50
		Predator	0.50
		Scavenger	0.50
		Suspension feeder	1.00
		Xylophagous	0.50
Surface-water temperature anomalies	Environment	Bathydemersal	0.00
		Bathypelagic	0.00
		Benthic	0.00
		Benthopelagic	0.50
		Demersal	0.00
		Pelagic	1.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75
	Feeding type	Deposit feeder	1.00
		Selective filter feeder	0.00
		Grazer	1.00
		Parasite	0.00
		Plankton	0.50
		Predator	0.50
		Scavenger	0.50
		Suspension feeder	1.00
		Xylophagous	0.50
Hypoxia	Environment	Bathydemersal	1.00
		Bathypelagic	0.00
		Benthic	1.00
		Benthopelagic	0.50
		Demersal	1.00
		Pelagic	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75
	Feeding type	Deposit feeder	1.00
		Selective filter feeder	0.00
		Grazer	1.00
		Parasite	0.00
		Plankton	0.50
		Predator	0.50
		Scavenger	0.50
		Suspension feeder	1.00
		Xylophagous	0.50
Coastal development	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.50
		Sessile	1.00
		Swimmer	0.75
	Size	0-100 cm	0.25

Stressors	Traits	Category	Sensitivity
Direct human impact		100-200 cm	0.50
		200-300 cm	0.75
		300+ cm	1.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.50
		Sessile	1.00
		Swimmer	0.75
	Size	0-100 cm	0.25
		100-200 cm	0.50
		200-300 cm	0.75
		300+ cm	1.00
Inorganic pollution	Feeding type	Deposit feeder	0.75
		Selective filter feeder	0.00
		Grazer	0.00
		Parasite	0.00
		Plankton	0.00
		Predator	0.00
		Scavenger	0.50
		Suspension feeder	1.00
		Xylophagous	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75
Nutrient input	Feeding type	Deposit feeder	0.75
		Selective filter feeder	0.00
		Grazer	0.00
		Parasite	0.00
		Plankton	0.00
		Predator	0.00
		Scavenger	0.50
		Suspension feeder	1.00
		Xylophagous	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75
Organic pollution	Feeding type	Deposit feeder	0.75
		Selective filter feeder	0.00
		Grazer	0.00
		Parasite	0.00
		Plankton	0.00
		Predator	0.00
		Scavenger	0.50
		Suspension feeder	1.00
		Xylophagous	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75

Stressors	Traits	Category	Sensitivity
Demersal destructive fisheries For <i>Others</i> only	Landings	Targeted species	1.00
		Bycatch	0.75
		Others	0.25
	Environment	Bathydemersal	1.00
		Bathypelagic	0.00
		Benthic	1.00
		Benthopelagic	0.50
		Demersal	1.00
		Pelagic	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75
Demersal non-destructive high-bycatch fisheries	Landings	Targeted species	1.00
		Bycatch	0.75
		Others	0.00
Demersal non-destructive low-bycatch fisheries	Landings	Targeted species	1.00
		Bycatch	0.75
		Others	0.00
Pelagic high-bycatch fisheries	Landings	Targeted species	1.00
		Bycatch	0.75
		Others	0.00
Pelagic low-bycatch fisheries	Landings	Targeted species	1.00
		Bycatch	0.75
		Others	0.00
Marine pollution	Feeding type	Deposit feeder	0.75
		Selective filter feeder	0.00
		Grazer	0.00
		Parasite	0.00
		Plankton	0.00
		Predator	0.00
		Scavenger	0.50
		Suspension feeder	1.00
		Xylophagous	0.00
	Mobility	Burrower	0.75
		Crawler	0.75
		Mobile	0.25
		Sessile	1.00
		Swimmer	0.75
Shipping	Environment	Bathydemersal	0.00
		Bathypelagic	0.00
		Benthic	0.00
		Benthopelagic	0.50
		Demersal	0.00
		Pelagic	1.00
	Size	0-100 cm	0.00
		100-200 cm	0.50
		200-300 cm	0.75
		300+ cm	1.00