

Unrecognized loss of seagrass communities based on molluscan death assemblages: historic baseline shift in tropical Gulf of Aqaba, Red Sea

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Table S1. Complete list of bivalve taxa and abundance of living and dead specimens based on summing across all seasons and all sites. 125 could be identified to the species level and 36 to genus- or family-level. Data were used in SIMPER analysis to identify the species most responsible for live-dead differences in the study area, which are indicated by *. NB Taylor & Glover (2005) consider lucinids commonly identified as *Anodontia edentula* in the northern Red Sea to be *Pegophysema kora*.

	Total dead individuals	Total live individuals
<i>Abra aegyptiaca</i> *	506	4
<i>Abra fragillima</i> *	2515	248
<i>Acrosterigma maculosum</i>	6	1
<i>Acrosterigma</i> sp.	2	0
<i>Afrocardium richardi</i>	54	7
<i>Amphilepida</i> sp.	3	0
<i>Amygdalum striatum</i>	38	98
<i>Anadara antiquata</i>	1	1
<i>Anadara formosa</i>	3	1
<i>Anadara pygmaea</i>	7	1
<i>Anadara</i> sp.	20	0
<i>Anodontia edentula</i> *	2394	9
<i>Anomia achaeus</i>	9	0
<i>Aphrodora yerburyi</i>	5	1
<i>Arca navicularis</i>	32	3
<i>Arcopagia isseli</i> *	1014	183
<i>Arcuatula arcuatula</i>	1	0
<i>Arcuatula perfragilis</i>	1	0
<i>Atactodea striata</i>	1	0
<i>Basterotia borbonica</i>	0	1
<i>Barbatia</i> sp.	1	0
<i>Botula cinnamomea</i>	1	0
<i>Callista florida</i>	46	6
<i>Cardiolumina semperiana</i>	62	7
<i>Cardiomya singaporensis</i>	12	5
<i>Cardita variegata</i>	1	0
<i>Cardites rufus</i>	4	1
<i>Centrocardita akabana</i>	18	2
<i>Chama</i> sp.	6	0
<i>Chamelea gallina</i>	300	10
<i>Chavania erythraea</i>	1	0
<i>Circe rugifera</i>	0	9
<i>Circe quoyi</i>	134	17
<i>Circe</i> sp.	151	4
<i>Circenita callipyga</i>	1	1
<i>Clementia papyracea</i>	5	1

	Total dead individuals	Total live individuals
<i>Corbula erythraeensis</i> *	126	69
<i>Corbula</i> sp.	0	1
<i>Corbula sulculosa</i>	38	5
<i>Cryptopecten nux</i>	2	0
<i>Ctena divergens</i> *	9763	21
<i>Ctenocardia fornicata</i>	35	0
<i>Dendostrea rosacea</i>	2	0
<i>Diplodonta raveyensis</i>	0	2
<i>Diplodonta</i> sp.	17	1
<i>Divalinga arabica</i>	2	0
<i>Donacilla</i> sp.	1	0
<i>Donax</i> sp.	1	0
<i>Dorisca amica</i>	7	0
<i>Dosinia caelata</i>	14	25
<i>Dosinia erythraea</i>	13	1
<i>Dosinia hepatica</i>	30	2
<i>Dosinia histrio</i>	11	7
<i>Dosinia labiosa</i>	2	0
<i>Dosinia</i> sp.	8	1
<i>Electroma</i> sp.	0	1
<i>Ensiculus cultellus</i> *	7	54
<i>Fragum</i> sp.	1	0
<i>Fragum sueziense</i> *	259	1
<i>Frigidocardium</i> sp.*	49	52
<i>Fulvia australis</i> *	79	80
<i>Fulvia fragilis</i>	13	6
<i>Fulvia laevigata</i>	0	1
<i>Fulvia</i> sp.	3	1
<i>Funafutia crosseana</i>	11	1
<i>Galeommatoidea</i>	24	0
<i>Gari pallida</i>	3	0
<i>Glycymeris arabica</i>	2	0
<i>Glycymeris livida</i>	2	2
<i>Gouldiopa australis</i>	6	0
<i>Gouldiopa</i> spp.*	946	17
<i>Gregariella ehrenbergi</i>	1	6
<i>Huxleyia diabolica</i>	112	7
<i>Hytissa numisma</i>	2	0
<i>Hytissa</i> sp.	16	0
<i>Iacra seychellarum</i>	91	9
<i>Irus irus</i>	1	0
<i>Juxtamusium maldivense</i>	478	77
<i>Kelliidae</i>	1	0
<i>Laevicardium biradiatum</i>	1	0
<i>Laevichlamys andamanica</i>	3	4
<i>Laevichlamys superficialis</i>	1	0
<i>Lajonkairia</i>	52	4
<i>Lamellolucina dentifera</i>	30	5
<i>Laternula anatina</i>	1	8
<i>Leptomyaria etesiaca</i>	29	3
<i>Limaria viali</i>	2	0
<i>Limatula pusilla</i>	74	5
<i>Limea pectinata</i>	68	14
<i>Lioberus ligneus</i>	13	43
<i>Lioconcha ornata</i>	12	0
<i>Lioconcha philippinarum</i> *	346	234
<i>Lioconcha polita</i>	1	13
<i>Lioconcha</i> sp.	4	2
<i>Loxoglypta secunda</i>	5	0

	Total dead individuals	Total live individuals
<i>Loxoglypta subpallida</i>	5	0
<i>Lunulicardia orlini</i>	45	5
<i>Lyrocardium anaxium</i>	1	1
<i>Mactra achatina</i>	1	0
<i>Mactra lilacea</i>	12	0
<i>Mactra olorina</i>	1	0
<i>Mactra</i> sp.	7	0
<i>Malleus regula</i>	0	8
<i>Marikellia pustula</i>	5	0
<i>Modiolus auriculatus</i>	2	0
<i>Modiolus</i> sp.	5	2
<i>Moerella lactea</i>	120	1
<i>Moerella philippinarum</i>	0	1
<i>Monia nobilis</i>	3	0
<i>Montaguia lamellifera</i>	61	0
<i>Musculus coenobitus</i>	3	0
<i>Musculus viridulus</i>	99	13
<i>Nucula inconspicua</i>	3	0
<i>Nucula</i> sp.	1	0
<i>Ostreid</i>	4	0
<i>Pandora</i> sp.	1	0
<i>Papillicardium papillosum</i>	3	0
<i>Periglypta</i> sp.	1	0
<i>Pillucina vietnamica</i>	1	0
<i>Pinctada imbricata radiata</i>	13	6
<i>Pinctada</i> sp.	1	0
<i>Pinna bicolor*</i>	1	68
<i>Pinna muricata</i>	0	1
<i>Pinna</i> sp.	1	0
<i>Pitar hebraeus</i>	100	12
<i>Pitar</i> sp.	3	1
<i>Pteria aegyptiaca</i>	12	3
<i>Pteria hirundo</i>	0	1
<i>Pteria penguin</i>	0	1
<i>Pteria</i> sp.	76	6
<i>Rasta lamyi</i>	1	0
<i>Redicirce sulcata*</i>	1642	96
<i>Rochefortina sandwichensis</i>	56	0
<i>Saccostrea cucullata</i>	2	0
<i>Samarangia lewinoehni</i>	1	0
<i>Scintilla</i> sp.	2	0
<i>Septifer cumingii</i>	314	16
<i>Solamen striatissima</i>	4	0
<i>Solecurtus subcandidus</i>	1	0
<i>Solemya</i> sp.	248	7
<i>Tapes sulcarius</i>	5	0
<i>Tellinid</i>	14	0
<i>Tellina flacca*</i>	1461	857
<i>Tellina perna</i>	1	0
<i>Tellina pinguis*</i>	482	2
<i>Tellina sericata</i>	10	0
<i>Tellina triradiata</i>	182	8
<i>Tellina valtonis</i>	2	0
<i>Tellina vernalis</i>	42	2
<i>Thracia adenensis</i>	1	0
<i>Timoclea costellifera</i>	1	0
<i>Timoclea marica</i>	3	0
<i>Timoclea roemeriana</i>	8	0
<i>Tucetona audouini</i>	9	0

	Total dead individuals	Total live individuals
<i>Tucetona pectunculus</i>	2	0
<i>Tugonia decurtata</i>	18	0
<i>Tugonia nobilis</i>	2	0
<i>Tugonia</i> sp.	7	0
<i>Vasticardium</i>	1	0
Veneridae	9	1
<i>Vitracar sulcata</i>	3	1
Total N individuals	25301	2526
Count S taxa (161 total)	150	86

Table S2. Statistical analyses of site-level data using PRIMER v.6 (Clarke & Warwick 1994). (red=significant). (a) Analysis of seasonal variation in composition (abundance data) at each site using the non-parametric SIMPROF (Similarity Profile permutation) test (variation was not normally distributed at Fish Farm sites). Seasonal variation was not significant except at DAN 15. Fall1 = fall 2012, Fall2 = fall 2013, winter1 = winter 2013, winter2 = winter 2014. LA = living assemblage. (b) ANOSIM shows that living assemblages differ significantly among sites: Global Test, Global R = 0.616; p value << 0.01. (c) ANOSIM shows that death assemblages differ significantly among sites: Global Test, Global R = 0.656; p value << 0.01

(a) SIMPROF done on standardized abundance data for all seasons at each station	Pi	p
Seasonal LAs at FF15	2.0	0.10
Seasonal LAs at FF30	1.95	0.09
Seasonal LAs at DAN15	3.0	0.008
Seasonal LAs at DAN30	1.62	0.07

(b) Pairwise tests		
Groups	R statistic	Significance level %
FF15, DAN30	0.437	1.1
FF15, DAN15	0.63	0.4
FF15, FF30	0.341	0.4
DAN30, DAN15	0.639	0.4
DAN30, FF30	0.607	0.2
DAN15, FF30	0.957	0.2

(c) Pairwise tests		
Groups	R statistic	Significance level %
FF15, DAN30	0.83	0.2
FF15, DAN15	0.244	6.1
FF15, FF30	0.537	0.2
DAN30, DAN15	0.787	0.4
DAN30, FF30	0.893	0.2
DAN15, FF30	0.702	0.2

LITERATURE CITED

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