

Supporting Information

Vaquer-Sunyer and Duarte 10.1073/pnas.0803833105

SI References: Experiments

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Table S2. Overview of the use of thresholds of hypoxia in the published literature

mg O ₂ /liter	Reference
0.29	Fiadeiro and Strickland 1968
0.71	Weeks et al 2002
1.00	Vismann 1990
1.14	Normant and Szaniawska 2000
0.5–2	Gray <i>et al.</i> 2002
1.50	Baker and Mann 1994
2.00	Grantham <i>et al.</i> 2004
2.00	Steimle and Sindermann 1978
2.00	Díaz 2001
2.00	Eden <i>et al.</i> 2003
2.00	U.S. EPA Environmental Monitoring and Assessment Program for Estuaries
2.00	Tyson and Pearson 1991
2.00	Engle <i>et al.</i> 1999
2.00	Breitburg 1994
2.00	Condon <i>et al.</i> 2001
2.00	Llanso 1992
2.00	Llanso 1991
2.00	Miller <i>et al.</i> 2002
2.00	Pihl <i>et al.</i> 1991
2.00	Renaud 1986
2.00	Sagasti <i>et al.</i> 2001
2.00	Scavia <i>et al.</i> 2002
2.00	Stickle <i>et al.</i> 1989
2.00	Suzuki 2001
2.00	Tallqvist <i>et al.</i> 1999
2.00	Uzaki <i>et al.</i> 2003
2.00	Yin <i>et al.</i> 2004
2.05	Eriksson and Baden 1997
2.12	Tankersley <i>et al.</i> 2000
2.30	U.S. EPA
2.40	Yokoyama 2002
2.50	Karim <i>et al.</i> 2003
2.80	Ruthenford and Thuesen 2005
2.80	Wu and Or 2005
2.86	Diaz and Rosenberg 1995
2.86	Karlson <i>et al.</i> 2005
2.86	Baden <i>et al.</i> 1990
2.86	Josefson and Hansen 2004
2.86	Widbom
2.86	Marcus <i>et al.</i> 2004
2.86	Rosenberg <i>et al.</i> 1990
2.86	Rosenberg <i>et al.</i> 1991
2.86	Rosenberg <i>et al.</i> 1992
2.86	Rosenberg <i>et al.</i> 2001
2.86	Diaz and Rosenberg 2008
3.40	Kang and Matsuda 1994
3.60	Yanagi 1989
3.60	Sekine <i>et al.</i> 1995
3.60	Karim <i>et al.</i> 2002
4.00	Paerl 2006
2.28	Overall mean

For references, refer to [SI References](#).

Table S4. Median sublethal oxygen concentrations of benthic marine organisms reported in experimental assessments.

Taxa	Group	Sp.	Sublethal threshold O ₂ , mg O ₂ /liter	Ref.
Algae	Eelgrass	<i>Zostera marina</i>	2.96	Pedersen <i>et al.</i> 2004
Hydrozoa	Anthomedusae	<i>Euphysa falmmea</i>	1.73	Rutherford and Thuesen 2005
Hydrozoa	Anthomedusae	<i>Halitholus sp.</i>	1.34	Rutherford and Thuesen 2005
Hydrozoa	Anthomedusae	<i>Polyorchis penicillatus</i>	0.43	Rutherford and Thuesen 2005
Hydrozoa	Anthomedusae	<i>Sarsia sp.</i>	0.53	Rutherford and Thuesen 2005
Hydrozoa	Leptomedusae	<i>Aequorea victoria</i>	0.38	Rutherford and Thuesen 2005
Hydrozoa	Leptomedusae	<i>Clytia gregaria</i>	0.63	Rutherford and Thuesen 2005
Hydrozoa	Leptomedusae	<i>Eutonina indicans</i>	1.00	Rutherford and Thuesen 2005
Hydrozoa	Limnomedusae	<i>Proboscoidactyla flavicirrata</i>	0.49	Rutherford and Thuesen 2005
Hydrozoa	Calycophora	<i>Mugiaea atlantica</i>	0.22	Rutherford and Thuesen 2005
Hydrozoa	Limnomedusae	<i>Proboscoidactyla flavicirrata</i>	0.55	Rutherford and Thuesen 2005
Hydrozoa	Limnomedusae	<i>Proboscoidactyla flavicirrata</i>	0.43	Rutherford and Thuesen 2005
Hydrozoa	Calycophora	<i>Muggiaea atlantica</i>	0.19	Rutherford and Thuesen 2005
Hydrozoa	Calycophora	<i>Muggiaea atlantica</i>	0.24	Rutherford and Thuesen 2005
Scyphozoa	Sematostomae	<i>Aurelia labiata</i>	0.41	Rutherford and Thuesen 2005
Scyphozoa	Sematostomae	<i>Cyanea capillata</i>	0.57	Rutherford and Thuesen 2005
Scyphozoa	Sematostomae	<i>Phacellophora camtschatica</i>	0.40	Rutherford and Thuesen 2005
Anemone		<i>Cerianthopsis americanus</i>	0.71	Diaz, unpublished data
Anemone		<i>Bunodosoma cavernata</i>	1.43	Ellington 1981
Anemone		<i>Metridium savene</i>	1.43	Sassaman and Mangum 1972
Polychaeta	Amphictenidae	<i>Pectinaria koreni</i>	1.00	Nilsson and Rosenberg 1994
Polychaeta	Spionidae	<i>Streblospio benedicti</i>	0.57	Llansó 1991
Polychaeta	Spionidae	<i>Streblospio benedicti</i>	1.00	Llansó 1991
Polychaeta	Terebellidae	<i>Loimia medusa</i>	1.00	Llansó and Díaz 1994
Polychaeta	Capitellidae	<i>Capitella sp.</i>	1.14	Warren 1977; Forbes and Lopez 1990
Polychaeta	Capitellidae	<i>Capitella sp.</i>	1.14	Warren 1977
Polychaeta		<i>Paraprionospio pinnata</i>	1.14	Diaz <i>et al.</i> 1992
Polychaeta		<i>Scoloplos armiger</i>	0.86	Schöttler and Grieshaber 1988
Polychaeta	Spionidae	<i>Malacoceros fuliginosus</i>	3.43	Tyson and Pearson 1991
Polychaeta	Spionidae	<i>Malacoceros fuliginosus</i>	0.71	Tyson and Pearson 1991
Mollusca	Bivalva	<i>Mysella bidentata</i>	1.00	Ockelmann and Muus 1978, Nilsson and Rosenberg 1994
Mollusca	Bivalva	<i>Mya arenaria</i>	0.57	Jorgensen 1980
Mollusca	Bivalva	<i>Abra alba</i>	0.57	Jorgensen 1980
Mollusca	Bivalva	<i>Cerastoderma edule</i>	0.57	Jorgensen 1980
Mollusca	Gastropoda	<i>Hydrobia ulvae</i>	0.57	Jorgensen 1980
Mollusca	Bivalva	<i>Theora fragilis</i>	1.29	Tamai 1996
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.35	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	1.48	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.66	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	1.84	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	1.26	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.56	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	3.54	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.22	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	3.14	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	1.17	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	1.72	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.51	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.46	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.34	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	1.80	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.82	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.50	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.61	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.48	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.19	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.87	Cerezo and García 2005
Mollusca	Cephalopoda	<i>Octopus vulgaris</i>	2.62	Cerezo and García 2005
Crustacea	Malacostraca	<i>Squilla empusa</i>	2.14	Pihl <i>et al.</i> 1991
Crustacea	Decapoda	<i>Penaeus setiferus</i>	2.14	Renaud 1986
Crustacea	Decapoda	<i>Penaeus aztecus</i>	2.86	Renaud 1986
Crustacea	Decapoda	<i>Callinectes sapidus</i>	2.14	Pihl <i>et al.</i> 1991

Table S4. (Continued)

Taxa	Group	Sp.	Sublethal threshold O ₂ , mg O ₂ /liter	Ref.
Crustacea	Decapoda	<i>Penaeus aztecus</i>	2.86	Renaud 1986
Crustacea	Decapoda	<i>Penaeus setiferus</i>	2.86	Renaud 1986
Crustacea	Decapoda	<i>Carcinus maenas</i>	1.43	Hill et al. 1991
Crustacea	Decapoda	<i>Munida quadrispina</i>	0.29	Burd and Brinkhurst 1984
Crustacea	Decapoda	<i>Penaeus schmitti</i>	1.29	MacKay 1974
Crustacea	Decapoda	<i>Penaeus schmitti</i>	1.71	MacKay 1974
Crustacea	Amphipoda	<i>Monoporeia affinis</i>	3.90	Johansson 1997
Crustacea	Amphipoda	<i>Sanduria entomon</i>	1.25	Johansson 1997
Crustacea	Decapoda	<i>Penaeus schmitti</i>	4.50	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus schmitti</i>	4.50	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus schmitti</i>	4.00	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus schmitti</i>	4.50	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus schmitti</i>	4.50	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	5.20	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	5.00	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	5.00	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	5.00	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	4.50	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	5.00	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	4.50	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus setiferus</i>	4.00	Rosas et al. 1997
Crustacea	Decapoda	<i>Penaeus vannamei</i>	1.91	Seidman and Lawrence 1985
Crustacea	Decapoda	<i>Penaeus monodon</i>	2.22	Seidman and Lawrence 1985
Crustacea	Thalassinidea	<i>Calocaris macandreae</i>	0.09	Anderson et al. 1994
Crustacea	Decapoda	<i>Crangon crangon</i>	2.58	Sandberg et al. 1996
Echinodermata		<i>Holothuria forskali</i>	0.86	Astall and Jones 1991
Echinodermata		<i>Ophiura albida</i>	0.79	Dethlefsen and von Westernhagen 1983, Baden et al. 1990
Echinodermata		<i>Echinocardium cordatum</i>	1.00	Niermann et al. 1990, Nilsson and Rosenberg 1994
Echinodermata		<i>Amphiura filiformis</i>	1.21	Rosenberg et al. 1991
Echinodermata		<i>Amphiura chiaje</i>	0.77	Rosenberg et al. 1991
Echinodermata	Amphiuridae	<i>Micropholis atra</i>	0.71	Diaz et al. 1992
Echinodermata		<i>Ophiura albida</i>	2.00	Baden et al. 1990
Echinodermata	Platyasteridae	<i>Luidia clathrata</i>	2.40	Diehl et al. 1978
Chordata	Osteichthyes	<i>Fish</i>	4.00	Karim et al. 2002
Chordata	Osteichthyes	<i>Rhacochilus vacca</i>	4.56	Webb and Brett 1972
Chordata	Osteichthyes	<i>Squalus suckleyi</i>	6.69	Lenfant and Johansen 1966
Chordata	Osteichthyes	<i>Scyliorhinus canicula</i>	4.33	Hughes and Umezawa 1968
Chordata	Osteichthyes	<i>Callionymus lyra</i>	7.05	Hughes and Umezawa 1968
Chordata	Osteichthyes	<i>Callionymus lyra</i>	5.63	Hughes and Umezawa 1968
Chordata	Osteichthyes	<i>Hydrolagus colliel</i>	8.54	Hanson 1967
Chordata	Osteichthyes	<i>Gadus morhua</i>	10.20	Saunders 1963
Chordata	Osteichthyes	<i>Oncorhynchus nerka</i>	8.85	Brett 1964
Chordata	Osteichthyes	<i>Oncorhynchus nerka</i>	6.74	Davis 1973
Chordata	Osteichthyes	<i>Oncorhynchus nerka</i>	5.07	Randall and Smith 1967
Chordata	Osteichthyes	<i>Oncorhynchus kisutch</i>	4.50	Whitmore et al. 1960
Chordata	Osteichthyes	<i>Oncorhynchus kisutch</i>	9.00	Hicks and DeWitt 1971
Chordata	Osteichthyes	<i>Oncorhynchus kisutch</i>	6.00	Hermann 1958
Chordata	Osteichthyes	<i>Oncorhynchus tshawytscha</i>	4.50	Whitmore et al. 1960
Chordata	Osteichthyes	<i>Oncorhynchus tshawytscha</i>	4.50	Whitmore et al. 1960
Chordata	Osteichthyes	<i>Salmo salar</i>	4.50	Kuttly and Saunders 1973
Chordata	Osteichthyes	<i>Alosa sapidissima</i>	2.75	Chittenden 1973
Chordata	Osteichthyes	<i>Alosa sapidissima</i>	4.00	Chittenden 1973
Chordata	Osteichthyes	<i>Esox lucius</i>	3.22	Siefert et al. 1973
Chordata	Osteichthyes	<i>Fundulus heteroclitus</i>	4.50	Voyer and Hennekey 1972
Chordata	Osteichthyes	<i>Gadus macrocephalus</i>	2.50	Alderdice and Forrester 1971
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.14	Cerezo and García 2004
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.79	Cerezo and García 2004
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.80	Cerezo and García 2004
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.70	Cerezo and García 2004
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.41	Cerezo and García 2004
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.25	Cerezo and García 2004
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.91	Cerezo and García 2004

Table S4. (Continued)

Taxa	Group	Sp.	Sublethal threshold O ₂ , mg O ₂ /liter	Ref.
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	2.05	Cerezo and García 2004
Chordata	Osteichthyes	<i>Diplodus puntazzo</i>	1.94	Cerezo and García 2004
Chordata	Osteichthyes	<i>Gadus morhua</i>	1.74	Schurmann and Stefenses 1997
Chordata	Osteichthyes	<i>Gadus morhua</i>	2.17	Schurmann and Stefenses 1997
Chordata	Osteichthyes	<i>Gadus morhua</i>	2.55	Schurmann and Stefenses 1997

For references, refer to [SI References](#).

Other Supporting Information Files

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