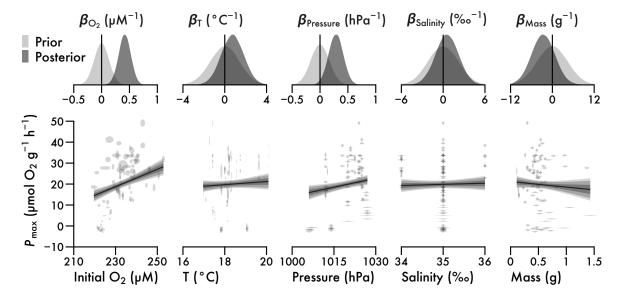
## Supplement to

## Only macroalgal detritus remains viable for months

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**Figure 1**. Effect of confounding variables associated with incubation on light-saturated net seagrass photosynthesis ( $P_{max}$ ) per gram of blotted mass. Distributions are kernel density estimates of priors and posteriors for slopes of the multiple linear regression.  $P_{max}$ , initial oxygen ( $O_2$ ) and temperature (T) are measured with error. Ellipses and violins are bi- and univariate posterior probability distributions for observations. Lines and intervals are means and the central 50, 80 and 90% of posterior probability for the mean prediction of  $P_{max}$ .

**Table S1**. Species included in the meta-analysis. Phyla are given in bold and orders are underlined. Seaweeds are comprised of Chlorophyta and Heterokontophyta. Seagrasses are marked with an asterisk. All remaining Alismatales are freshwater plants and the rest of Streptophyta is terrestrial. The longest experimental durations and largest numbers of studies and observations in each non-taxonomic group are highlighted in bold.

	Species	Days	Studies	Observations
Chlorophyta	-			
<u>Ulvales</u>				
Ulvaceae	Ulva clathrata	30	1	6
	Ulva intestinalis	30	1	6
	Ulva reticulata	30	1	6
Heterokontophyta				
<u>Desmarestiales</u>				
Desmarestiaceae	Desmarestia anceps	313	1	65
<u>Fucales</u>	·			
Durvillaeaceae	Durvillaea antarctica	14	2	448
Sargassaceae	Sargassum fallax	14	1	84
	Sargassum spinuligerum	14	1	159
Seirococcaceae	Scytothalia dorycarpa	14	1	48
Laminariales	, ,			

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Laminariaceae	Laminaria digitata	46	3	162
	Laminaria hyperborea	168	6	533
	Laminaria ochroleuca	56	4	416
	Macrocystis pyrifera	55	3	363
	Saccharina latissima	39	1	42
Lessoniaceae	Ecklonia radiata	119	2	11 <i>7</i>
<u>Tilopteridales</u>				
Phyllariaceae	Saccorhiza polyschides	39	1	38
Streptophyta				
<u>Alismatales</u>				
Cymodoceaceae	Amphibolis antarctica*	34	1	39
Hydrocharitaceae	Elodea densa	16	2	43
	Halophila ovalis*	34	1	42
	Hydrilla verticillata	12	7	506
	Thalassia testudinum*	52	1	14
	Vallisneria americana	104	1	5
	Vallisneria spiralis	9	6	59
Potamogetonaceae	Potamogeton sp.	104	1	5
	Stuckenia pectinata	9	5	55
Zosteraceae	Zostera marina*	85	1	10
	Zostera muelleri*	16	1	58
<u>Apiales</u>				
Apiaceae	Coriandrum sativum	9	1	24
•	Petroselinum crispum	7	1	7
<u>Asterales</u>	·			
Asteraceae	Chrysanthemum × morifolium	12	1	30
	Helianthus annuus	0.024	1	36
	Helianthus tuberosus	0.026	1	36
	Inula racemosa	0.025	1	36
	Smallanthus connatus	0.026	1	36
<u>Brassicales</u>				
Brassicaceae	Arabidopsis thaliana	6	2	60
	Brassica napus	1. <i>7</i>	1	125
	Brassica oleracea	10	1	22
	Nasturtium officinale	5	2	39
	Raphanus raphanistrum	6	1	20
	Sinapis alba	6	1	20
Tropaeolaceae <u>Caryophyllales</u>	Tropaeolum majus	8	2	27
Amaranthaceae	Amaranthus cruentus	0.026	1	36
	Celosia argentea	0.024	1	36
	Chenopodium berlandieri	0.27	1	26
	Gomphrena serrata	0.024	1	36
	Spinacia oleracea	10	3	85
Polygonaceae	Koenigia weyrichii	0.028	1	36
<u>Cucurbitales</u>	,			
Cucurbitaceae	Cucumis sativus	13	2	13
	Sicyos edulis	10	1	48
<u>Ericales</u>	,	-		_
Theaceae	Camellia sinensis	4	1	11
<u>Fabales</u>				
Fabaceae	Cercis canadensis	0.0052	1	576

Phaseolus vulgaris   2.1   1   10		Lathyrus oleraceus	1 <i>7</i>	2	42
Trifolium subterraneum					
Pagales					
Part					
Betulaceae         Betula pendula         0.029         1         36           Fagaceae         Quercus rolba         0.01         1         24           Quercus robur         0.024         2         228           Quercus robur         0.01         1         24           Lamicales         Uglans nigra         0.01         1         24           Lamicales         Salvia officinalis         11         1         8           Lauraceae         Cinnamomum tamala         21         1         36           Finales         Finaceae         Larix sibirica         0.025         1         36           Pinaceae         Larix sibirica         0.023         1         33           Pinaceae         Larix sibirica         0.023         1         33           Pinaceae         Bolboschoenus fluviatilis         104         1         5           Poales         Vaperaceae         Bolboschoenus fluviatilis         104         1         5           Cyperaceae         Bolboschoenus fluviatilis         104         1         5         1           Cyperaceae         Bolboschoenus fluviatilis         104         1         5         2         1         1 <td>Fagales</td> <td>3</td> <td></td> <td></td> <td></td>	Fagales	3			
Fagaceae         Quercus alba Quercus muehlenbergii         0.0052 1         1 192 192 192 192 192 192 192 192 192 19	-	Betula pendula	0.029	1	36
Quercus muchlenbergii	Fagaceae		0.01	1	24
Quercus rubra   Quercus rub	-	Quercus muehlenbergii	0.0052	1	192
Juglandaceae   Juglans nigra   0.01   1   24   24   24   25   24   25   24   25   24   25   24   25   25		Quercus robur	0.024	2	228
Lamiaceae         Salvia officinalis         11         1         8           Lauracles         Lauraceae         Cinnamomum tamala         21         1         36           Pinaceae         Larix sibirica         0.025         1         36           Pinaceae         Larix sibirica         0.023         1         33           Poales         Pinus sylvestris         0.022         1         33           Poales         Poales         8         8         161           Cyperaceae         Bolboschoenus fluviatilis         104         1         5           Poaceae         Avena sativa         8         8         161           Hordeum vulgare         11         13         466           Lolium multiflorum         5         1         44           Lolium pratense         7         5         112           Oryza sativa         27         11         327           Panicum miliaceum         5         2         69           Secale cereale         5         2         69           Secale cereale         5         2         102           Iriticum vulgare         6         1         4           Ze		Quercus rubra	0.01	1	24
Lauraceae   Salvia officinalis   11   1   8   Lauraceae   Salvia officinalis   11   1   36   7   36   36   36   36   36   36	Juglandaceae	Juglans nigra	0.01	1	24
Lauraceae         Cinnamomum tamala         21         1         36           Pinales         Pinaceae         Larix sibirica         0.025         1         36           Pinaceae         Larix sibirica         0.023         1         33           Poales         O.022         1         33           Cyperaceae         Bolboschoenus fluviatilis         104         1         5           Poaceae         Avena sativa         8         8         161           Hordeum vulgare         11         13         466           Lolium multiflorum         5         1         44           Lolium pratense         7         5         112           Oryza sativa         27         11         327           Panicum miliaceum         5         2         102           Panicum miliaceum         5         2         102           Panicum miliaceum         5         2         102           Friticum vulgare         5         2         102           Typha ceae         Typha angustifolia         104         1         5           Typhaceae         Typha angustifolia         104         1         5 <th< td=""><td><u>Lamiales</u></td><td></td><td></td><td></td><td></td></th<>	<u>Lamiales</u>				
Cinnamomum tamala   21	Lamiaceae	Salvia officinalis	11	1	8
Pinaceae         Larix sibirica         0.025         1         36           Pinus sibirica         0.023         1         33           Poales         33         1         33           Cyperaceae         Bolboschoenus fluviatilis         104         1         5           Poaceae         Avena sativa         8         8         161           Hordeum vulgare         11         13         466           Lolium multiflorum         5         1         44           Lolium pratense         7         5         112           Oryza sativa         27         11         327           Panicum miliaceum         5         2         69           Secale cereale         5         2         102           Triticum austivum         10         13         646           Triticum tulgare         6         1         7           Zea mays         6         3         58           Typha angustifolia         104         1         5           Polypodiales         Nephrolepis exaltata         10         1         24           Rosaceae         Fragaria × ananassa         0.0056         1         663	<u>Laurales</u>				
Pinaceae         Larix sibirica Pinus sibirica         0.025         1         36 Pinus sibirica         0.023         1         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         33 33         34 34         34 34	Lauraceae	Cinnamomum tamala	21	1	36
Pinus sibirica   0.023   1   33   33   33   33   33   33   3	<u>Pinales</u>				
Poales           Cyperaceae         Bolboschoenus fluviatilis         104         1         5           Poaceae         Avena sativa         8         8         161           Poaceae         Avena sativa         11         13         466           Lolium rulifilorum         5         1         44           Lolium pratense         7         5         112           Oryza sativa         27         11         327           Panicum miliaceum         5         2         69           Secale cereale         5         2         102           Triticum turgidum         6         1         7           Triticum vulgare         6         1         7           Zea mays         6         3         58           Typha cage         Typha angustifolia         104         1         5           Polypodiales         Nephrolepis exaltata         10         1         24           Rosaceae         Fragaria × ananassa         0.0056         1         663           Malus domestica         21         3         150           Malus hupehensis         15         1         18           Sapindaceae<	Pinaceae		0.025	1	36
Poales		Pinus sibirica		1	
Cyperaceae         Bolboschoenus fluviatilis         104         1         5           Poaceae         Avena sativa         8         8         161           Hordeum vulgare         11         13         466           Lolium multiflorum         5         1         44           Lolium pratense         7         5         112           Oryza sativa         27         11         327           Panicum miliaceum         5         2         69           Secale cereale         5         2         102           Triticum aestivum         10         13         646           Triticum turgidum         6         1         7           Triticum vulgare         6         1         7           Zea mays         6         3         58           Typha angustifolia         104         1         5           Polypodiales         Nephrolepis exaltata         10         1         24           Rosaceae         Fragaria × ananassa         0.0056         1         663           Malus domestica         21         3         150           Malus hupehensis         15         1         18           Sap		Pinus sylvestris	0.022	1	33
Poaceae					
Hordeum vulgare				<del>-</del>	
Lolium multiflorum	Poaceae				
Lolium pratense		•			
Oryza sativa   27				-	
Panicum miliaceum   5					
Secale cereale   5					
Triticum aestivum					
Triticum turgidum					
Triticum vulgare					
Zea mays         6         3         58           Typhaceae         Typha angustifolia         104         1         5           Polypodiales         Nephrolepidaceae         Nephrolepis exaltata         10         1         24           Rosacles         Rosaceae         Fragaria × ananassa         0.0056         1         663           Malus domestica         21         3         150           Malus hupehensis         15         1         18           Sapindales         Rutaceae         Citrus × aurantium         10         1         5           Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum tuberosum         0.026         1         36		•		-	
Typhaceae         Typha angustifolia         104         1         5           Polypodiales         Nephrolepis exaltata         10         1         24           Rosales         Rosaceae         Fragaria × ananassa         0.0056         1         663           Malus domestica         21         3         150           Malus hupehensis         15         1         18           Sapindales         Rutaceae         Citrus × aurantium         10         1         5           Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36		<u> </u>		=	
Nephrolepidaceae	T .1	<u>-</u>			
Nephrolepidaceae         Nephrolepis exaltata         10         1         24           Rosales         Rosaceae         Fragaria × ananassa         0.0056         1         663           Malus domestica         21         3         150           Malus hupehensis         15         1         18           Sapindales         Rutaceae         Citrus × aurantium         10         1         5           Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36	* *	Typna angustitolia	104	ı	3
Rosales           Rosaceae         Fragaria × ananassa         0.0056         1         663           Malus domestica         21         3         150           Malus hupehensis         15         1         18           Sapindales           Rutaceae         Citrus × aurantium         10         1         5           Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36	, ·	Nambralania avaltata	10	1	24
Rosaceae         Fragaria × ananassa Malus domestica         0.0056         1         663           Malus domestica         21         3         150           Malus hupehensis         15         1         18           Sapindales         Rutaceae         Citrus × aurantium         10         1         5           Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36		Nephrolepis exaliaia	10	'	24
Malus domestica       21       3       150         Malus hupehensis       15       1       18         Sapindales       Rutaceae       Citrus × aurantium       10       1       5         Sapindaceae       Acer saccharinum       0.25       1       36         Acer truncatum       0.0052       1       192         Solanales       Convolvulaceae         Ipomoea batatas       3       1       24         Solanaceae       Nicotiana rustica       10       1       180         Nicotiana tabacum       9       1       24         Solanum lycopersicum       5       1       192         Solanum melongena       16       1       24         Solanum tuberosum       0.026       1       36		Fragaria X ananassa	0.0056	1	663
SapindalesMalus hupehensis15118RutaceaeCitrus × aurantium1015SapindaceaeAcer saccharinum0.25136Acer truncatum0.00521192SolanalesConvolvulaceaeConvolvulaceaeIpomoea batatas3124SolanaceaeNicotiana rustica101180Nicotiana tabacum9124Solanum lycopersicum51192Solanum melongena16124Solanum tuberosum0.026136Vitales	Rosucede	•			
Sapindales           Rutaceae         Citrus × aurantium         10         1         5           Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36					
Rutaceae         Citrus × aurantium         10         1         5           Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36	Sapindales	Maios hopenensis	10	•	10
Sapindaceae         Acer saccharinum         0.25         1         36           Acer truncatum         0.0052         1         192           Solanales         Convolvulaceae           Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36           Vitales	· · · · · · · · · · · · · · · · · · ·	Citrus × aurantium	10	1	5
Acer truncatum   0.0052   1   192				<del>-</del>	
Solanales           Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36					
Convolvulaceae         Ipomoea batatas         3         1         24           Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36	Solanales				
Solanaceae         Nicotiana rustica         10         1         180           Nicotiana tabacum         9         1         24           Solanum lycopersicum         5         1         192           Solanum melongena         16         1         24           Solanum tuberosum         0.026         1         36           Vitales		Ipomoea batatas	3	1	24
Nicotiana tabacum 9 1 24 Solanum lycopersicum 5 1 192 Solanum melongena 16 1 24 Solanum tuberosum 0.026 1 36  Vitales	Solanaceae	•	10	1	180
Solanum melongena 16 1 24 Solanum tuberosum 0.026 1 36  Vitales		Nicotiana tabacum	9	1	24
Solanum melongena 16 1 24 Solanum tuberosum 0.026 1 36  Vitales		Solanum lycopersicum	5	1	192
Solanum tuberosum 0.026 1 36 Vitales		•	16	1	24
		_	0.026	1	36
Vitaceae Vitis vinifera 0.0052 1 1280	<u>Vitales</u>				
	Vitaceae	Vitis vinifera	0.0052	1	1280

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