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Trophic effects of fishing southern rock lobster *Jasus edwardsii* shown by combined fatty acid and stable isotope analyses

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Table S1. Mean percentage fatty acid composition (\pm SE) of *Jasus edwardsii* and potential prey items for fished and reserve treatments. As general linear models showed no significant differences between Maria and Governor Island bioregions (except for brown algae), fatty acid values have been pooled across bioregions for each species. SFA: saturated fatty acids; MUFA: monounsaturated fatty acids; PUFA: polyunsaturated fatty acids. All double bonds are cis geometry unless otherwise indicated. Asterisks indicate those fatty acids whose identity could not be separated due to chromatographic overlap

Fatty acids	<i>Jasus edwardsii</i>	<i>Haliotis rubra</i>	<i>Turbo undulatus</i>	<i>Heliocidaris erythrogramma</i>	<i>Centrostephanus rodgersii</i>	<i>Herdmania momus</i>
Fished	n=44	n=74	n=20	n=27	n=9	n=26
14:0	1.0 \pm 0.1	1.9 \pm 0.1	1.0 \pm 0.0	3.3 \pm 0.2	3.9 \pm 0.2	2.5 \pm 0.3
i15:0	0.1 \pm 0.0	0.1 \pm 0.0	0.0 \pm 0.0	0.0 \pm 0.0	0.2 \pm 0.0	1.2 \pm 0.1
15:0	0.6 \pm 0.0	1.0 \pm 0.0	1.0 \pm 0.0	0.1 \pm 0.0	0.5 \pm 0.1	1.0 \pm 0.1
16:0	12.9 \pm 0.2	19.9 \pm 0.1	23.5 \pm 0.4	9.1 \pm 0.2	7.8 \pm 0.3	13.1 \pm 0.9
17:0	1.2 \pm 0.0	1.9 \pm 0.0	1.8 \pm 0.1	0.1 \pm 0.0	0.3 \pm 0.0	1.1 \pm 0.0
18:0	6.4 \pm 0.1	6.2 \pm 0.1	6.5 \pm 0.2	5.0 \pm 0.1	2.6 \pm 0.1	4.3 \pm 0.1
20:0	0.7 \pm 0.0	0.4 \pm 0.0	0.5 \pm 0.0	0.5 \pm 0.0	0.6 \pm 0.1	3.3 \pm 0.2
21:0	0.2 \pm 0.0	0.0 \pm 0.0	0.0 \pm 0.0	0.0 \pm 0.0	0.0 \pm 0.0	1.3 \pm 0.1
22:0 + OH20:0*	0.7 \pm 0.0	0.2 \pm 0.0	0.3 \pm 0.0	0.0 \pm 0.0	0.1 \pm 0.0	2.0 \pm 0.2
Sum SFA	24.0 \pm 0.4	31.4 \pm 0.3	34.6 \pm 0.8	18.1 \pm 0.6	16.1 \pm 0.8	29.8 \pm 1.9
16:1n-7	3.9 \pm 0.1	1.5 \pm 0.0	1.0 \pm 0.1	0.2 \pm 0.0	0.6 \pm 0.1	3.4 \pm 0.3
16:1n-5	0.2 \pm 0.0	0.3 \pm 0.0	0.3 \pm 0.0	1.5 \pm 0.1	0.2 \pm 0.0	0.5 \pm 0.0
18:1n-9	16.1 \pm 0.4	6.8 \pm 0.1	6.3 \pm 0.2	1.6 \pm 0.0	1.6 \pm 0.1	5.1 \pm 0.2
18:1n-7	3.5 \pm 0.1	7.6 \pm 0.1	1.8 \pm 0.1	3.5 \pm 0.1	2.3 \pm 0.1	5.9 \pm 0.3
20:1n-7,9,11 + 20:3n-3*	2.4 \pm 0.1	2.7 \pm 0.1	1.9 \pm 0.1	13.6 \pm 0.6	19.5 \pm 0.4	1.8 \pm 0.1
22:1n-7,9,11,13*	0.3 \pm 0.0	0.8 \pm 0.0	0.0 \pm 0.0	4.9 \pm 0.3	3.1 \pm 0.2	0.9 \pm 0.1
Sum MUFA	26.4 \pm 0.8	19.7 \pm 0.4	11.2 \pm 0.4	25.3 \pm 1.2	27.3 \pm 0.9	17.6 \pm 0.9
18:2n-6	1.2 \pm 0.0	1.1 \pm 0.0	3.4 \pm 0.2	0.0 \pm 0.0	0.2 \pm 0.0	1.9 \pm 0.1
18:4n-3	0.5 \pm 0.0	0.4 \pm 0.0	0.3 \pm 0.0	0.1 \pm 0.0	0.2 \pm 0.0	1.4 \pm 0.1
20:2n-6	1.2 \pm 0.0	0.0 \pm 0.0	0.0 \pm 0.0	1.5 \pm 0.1	1.2 \pm 0.3	0.4 \pm 0.0
20:3n-6 + 20:2 NMI*	0.6 \pm 0.1	0.5 \pm 0.0	0.3 \pm 0.0	11.9 \pm 0.3	15.1 \pm 0.4	0.4 \pm 0.0
20:4n-6	11.1 \pm 0.2	11.5 \pm 0.1	12.3 \pm 0.3	18.5 \pm 0.4	14.6 \pm 0.6	6.8 \pm 0.5
20:5n-3	13.2 \pm 0.3	6.1 \pm 0.2	3.4 \pm 0.2	10.1 \pm 0.3	6.2 \pm 0.3	9.5 \pm 0.5
22:2NMI + C22PUFA*	0.3 \pm 0.0	4.6 \pm 0.1	1.2 \pm 0.0	0.4 \pm 0.0	0.4 \pm 0.0	0.2 \pm 0.0
22:2NMI2 + 22:4n-3*	0.2 \pm 0.0	0.1 \pm 0.0	2.9 \pm 0.2	0.7 \pm 0.1	0.3 \pm 0.1	0.1 \pm 0.0
22:4n-6	1.4 \pm 0.1	2.4 \pm 0.0	5.4 \pm 0.2	0.0 \pm 0.0	0.9 \pm 0.1	0.4 \pm 0.0
22:5n-3*	2.0 \pm 0.1	9.4 \pm 0.1	9.7 \pm 0.4	0.0 \pm 0.0	0.5 \pm 0.1	0.6 \pm 0.1
22:6n-3	8.7 \pm 0.4	0.2 \pm 0.0	0.8 \pm 0.1	0.0 \pm 0.0	1.9 \pm 0.3	6.7 \pm 0.5
Sum PUFA	40.5 \pm 1.3	36.3 \pm 0.6	39.7 \pm 1.5	43.2 \pm 1.2	41.4 \pm 2.2	28.5 \pm 2.0
Sum Other >1 %^a	4.4 \pm 0.2	7.9 \pm 0.2	9.6 \pm 0.3	6.7 \pm 0.2	8.7 \pm 0.4	9.6 \pm 0.9
Sum Other <1 %^b	4.8 \pm 0.3	4.7 \pm 0.2	4.8 \pm 0.4	6.7 \pm 0.7	6.5 \pm 1.0	12.6 \pm 1.2
Reserve	n=47	n=35	n=7	n=19	n=9	n=5
14:0	1.3 \pm 0.1	1.8 \pm 0.1	1.1 \pm 0.0	3.7 \pm 0.3	3.1 \pm 0.3	2.2 \pm 0.5
i15:0	0.1 \pm 0.0	0.1 \pm 0.0	0.0 \pm 0.0	0.0 \pm 0.0	0.3 \pm 0.0	1.0 \pm 0.2
15:0	0.6 \pm 0.0	0.7 \pm 0.0	1.0 \pm 0.1	0.1 \pm 0.0	0.6 \pm 0.0	0.8 \pm 0.1
16:0	12.0 \pm 0.2	19.8 \pm 0.2	23.2 \pm 0.4	8.9 \pm 0.2	7.3 \pm 0.2	12.7 \pm 1.5

Table S1 (continued)

Fatty acids	<i>Jasus edwardsii</i>	<i>Haliotis rubra</i>	<i>Turbo undulatus</i>	<i>Heliocidaris erythrogramma</i>	<i>Centrostephanus rodgersii</i>	<i>Herdmania momus</i>
17:0	1.2 ± 0.0	1.6 ± 0.0	1.5 ± 0.0	0.1 ± 0.0	0.4 ± 0.0	1.0 ± 0.0
18:0	6.6 ± 0.1	6.6 ± 0.1	6.6 ± 0.2	5.3 ± 0.1	2.7 ± 0.1	4.7 ± 0.2
20:0	0.7 ± 0.0	0.8 ± 0.3	0.5 ± 0.0	0.5 ± 0.0	0.7 ± 0.0	3.6 ± 0.4
21:0	0.2 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	1.2 ± 0.3
22:0 + OH20:0*	0.6 ± 0.0	0.2 ± 0.0	0.3 ± 0.1	0.0 ± 0.0	0.2 ± 0.0	2.0 ± 0.5
Sum SFA	23.3 ± 0.5	31.5 ± 0.7	34.3 ± 0.8	18.7 ± 0.6	15.2 ± 0.7	29.2 ± 3.6
16:1n-7	4.1 ± 0.1	1.4 ± 0.1	0.9 ± 0.1	0.2 ± 0.0	0.6 ± 0.1	2.9 ± 0.5
16:1n-5	0.3 ± 0.0	0.3 ± 0.1	0.2 ± 0.0	1.7 ± 0.1	0.2 ± 0.0	0.4 ± 0.0
18:1n-9	15.7 ± 0.4	7.7 ± 0.2	6.2 ± 0.1	1.7 ± 0.1	1.5 ± 0.1	6.1 ± 0.3
18:1n-7	3.6 ± 0.1	7.8 ± 0.1	1.9 ± 0.1	3.6 ± 0.1	2.3 ± 0.1	4.2 ± 0.3
20:1n-7,9,11 + 20:3n-3*	2.9 ± 0.2	2.8 ± 0.1	2.0 ± 0.1	13.7 ± 0.3	19.7 ± 0.4	1.3 ± 0.1
22:1n-7,9,11,13*	0.4 ± 0.0	0.8 ± 0.0	0.0 ± 0.0	4.1 ± 0.2	3.4 ± 0.2	0.7 ± 0.1
Sum MUFA	26.9 ± 0.9	20.8 ± 0.5	11.2 ± 0.5	25.0 ± 0.8	27.6 ± 0.8	15.7 ± 1.3
18:2n-6	1.1 ± 0.0	1.1 ± 0.0	2.8 ± 0.3	0.1 ± 0.0	0.2 ± 0.0	1.9 ± 0.1
18:4n-3	0.5 ± 0.0	0.4 ± 0.0	0.2 ± 0.0	0.1 ± 0.0	0.2 ± 0.0	1.2 ± 0.2
20:2n-6	1.1 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	1.5 ± 0.2	1.3 ± 0.3	0.2 ± 0.1
20:3n-6 + 20:2 NMI*	1.0 ± 0.1	0.4 ± 0.0	0.4 ± 0.1	11.7 ± 0.3	14.2 ± 0.4	0.4 ± 0.0
20:4n-6	11.4 ± 0.3	11.9 ± 0.2	11.7 ± 0.7	19.0 ± 0.4	15.4 ± 0.6	8.4 ± 1.1
20:5n-3	13.3 ± 0.3	5.0 ± 0.2	4.9 ± 0.5	9.2 ± 0.3	5.9 ± 0.3	9.6 ± 0.9
22:2NMI + C22PUFA*	0.3 ± 0.0	4.8 ± 0.1	1.1 ± 0.1	0.4 ± 0.0	0.4 ± 0.0	0.1 ± 0.0
22:2NMI2 + 22:4n-3*	0.2 ± 0.0	0.1 ± 0.0	2.1 ± 0.5	0.7 ± 0.1	0.3 ± 0.1	0.2 ± 0.0
22:4n-6	1.5 ± 0.1	2.8 ± 0.1	5.1 ± 0.5	0.0 ± 0.0	1.0 ± 0.0	0.5 ± 0.1
22:5n-3*	2.0 ± 0.1	8.9 ± 0.2	11.4 ± 0.4	0.0 ± 0.0	0.6 ± 0.0	0.6 ± 0.2
22:6n-3	8.2 ± 0.4	0.2 ± 0.0	0.6 ± 0.1	0.0 ± 0.0	2.3 ± 0.2	8.3 ± 0.9
Sum PUFA	40.6 ± 1.5	35.6 ± 0.8	40.5 ± 3.1	42.6 ± 1.3	41.7 ± 2.0	31.4 ± 3.6
Sum Other >1 %^a	4.5 ± 0.3	8.0 ± 0.3	9.7 ± 1.6	6.3 ± 0.3	8.3 ± 0.5	10.3 ± 1.9
Sum Other <1 %^b	4.8 ± 0.3	4.0 ± 0.3	4.3 ± 1.0	7.3 ± 0.7	7.1 ± 0.8	11.9 ± 1.6
Fatty acids	<i>Pyura gibbosa</i>	<i>Cnemidocarpa radicata</i>	<i>Ecklonia radiata</i>	<i>Phyllospora comosa</i>	<i>Plocamium angustum</i>	
Fished	n=6	n=5	n=36	n=24	n=25	
14:0	3.9 ± 0.8	2.7 ± 0.5	6.9 ± 0.3	5.2 ± 0.2	9.5 ± 0.5	
i15:0	0.8 ± 0.2	0.6 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	
15:0	1.8 ± 0.2	0.8 ± 0.1	0.8 ± 0.0	0.5 ± 0.0	1.1 ± 0.1	
16:0	21.4 ± 1.6	16.4 ± 1.0	20.6 ± 0.7	22.3 ± 0.5	55.9 ± 1.1	
17:0	1.0 ± 0.2	1.4 ± 0.1	0.3 ± 0.0	0.5 ± 0.2	0.3 ± 0.0	
18:0	4.5 ± 0.4	8.0 ± 0.6	1.4 ± 0.2	0.9 ± 0.1	1.2 ± 0.0	
20:0	3.9 ± 0.2	1.0 ± 0.1	1.3 ± 0.1	0.6 ± 0.0	0.3 ± 0.0	
21:0	1.1 ± 0.4	0.2 ± 0.1	0.0 ± 0.0	0.4 ± 0.1	0.0 ± 0.0	
22:0 + OH20:0*	1.1 ± 0.5	0.7 ± 0.1	0.0 ± 0.0	0.3 ± 0.0	3.9 ± 0.3	
Sum SFA	39.4 ± 4.3	31.8 ± 2.7	31.4 ± 1.4	30.8 ± 1.1	72.3 ± 2.0	
16:1n-7	5.4 ± 0.4	8.0 ± 0.9	6.0 ± 0.4	5.0 ± 0.2	3.1 ± 0.1	
16:1n-5	0.6 ± 0.2	0.9 ± 0.2	0.5 ± 0.0	0.6 ± 0.1	0.0 ± 0.0	
18:1n-9	8.1 ± 0.8	7.4 ± 0.5	22.4 ± 0.7	17.6 ± 0.3	1.8 ± 0.1	
18:1n-7	3.4 ± 0.4	5.9 ± 0.7	0.3 ± 0.1	0.2 ± 0.0	2.1 ± 0.1	
20:1n-7,9,11 + 20:3n-3*	1.5 ± 0.3	0.7 ± 0.1	1.0 ± 0.1	0.8 ± 0.1	1.3 ± 0.1	
22:1n-7,9,11,13*	0.7 ± 0.3	0.6 ± 0.1	0.0 ± 0.0	0.2 ± 0.0	0.0 ± 0.0	
Sum MUFA	19.7 ± 2.4	23.4 ± 2.4	30.1 ± 1.2	24.3 ± 0.7	8.3 ± 0.3	
18:2n-6	2.1 ± 0.2	2.5 ± 0.1	3.7 ± 0.1	6.2 ± 0.2	0.7 ± 0.0	
18:4n-3	2.1 ± 0.5	1.8 ± 0.2	7.3 ± 0.6	4.0 ± 0.3	0.0 ± 0.0	
20:2n-6	0.1 ± 0.1	0.5 ± 0.0	0.0 ± 0.0	0.7 ± 0.1	0.7 ± 0.0	
20:3n-6 + 20:2 NMI*	0.2 ± 0.1	0.5 ± 0.1	0.8 ± 0.0	1.5 ± 0.0	3.6 ± 0.2	
20:4n-6	7.4 ± 0.7	4.4 ± 1.0	15.9 ± 0.4	17.7 ± 0.6	6.8 ± 0.6	
20:5n-3	8.2 ± 1.3	12.6 ± 1.5	5.3 ± 0.2	5.0 ± 0.3	6.3 ± 0.6	
22:2NMI + C22PUFA*	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	
22:2NMI2 + 22:4n-3*	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	
22:4n-6	1.3 ± 1.0	0.3 ± 0.1	0.0 ± 0.0	0.4 ± 0.0	0.0 ± 0.0	
22:5n-3	0.2 ± 0.1	0.4 ± 0.1	0.0 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	
22:6n-3	1.4 ± 0.6	6.9 ± 1.0	0.0 ± 0.0	0.2 ± 0.0	0.0 ± 0.0	
Sum PUFA	23.1 ± 4.5	29.8 ± 4.3	33.0 ± 1.4	36.0 ± 1.6	18.1 ± 1.4	
Sum Other >1 %^a	9.1 ± 1.6	5.3 ± 1.5	0.2 ± 0.1	3.6 ± 0.3	0.2 ± 0.0	
Sum Other <1 %^b	8.7 ± 3.2	9.1 ± 2.0	5.2 ± 0.6	5.3 ± 0.7	1.1 ± 0.2	
Reserve	n=6	n=5	n=24	n=18	n=15	
14:0	4.5 ± 0.6	1.0 ± 0.4	7.5 ± 0.4	5.2 ± 0.2	9.9 ± 0.5	
i15:0	0.9 ± 0.1	0.6 ± 0.1	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	

Fatty acids	<i>Pyura gibbosa</i>	<i>Cnemidocarpa radicata</i>	<i>Ecklonia radiata</i>	<i>Phylospora comosa</i>	<i>Plocamium angustum</i>
15:0	2.0 ± 0.1	0.5 ± 0.1	0.8 ± 0.1	0.5 ± 0.1	1.1 ± 0.1
16:0	18.4 ± 0.5	10.3 ± 1.4	22.3 ± 0.3	23.1 ± 0.4	55.4 ± 2.6
17:0	1.2 ± 0.2	1.4 ± 0.1	0.3 ± 0.0	0.2 ± 0.0	0.3 ± 0.0
18:0	4.0 ± 0.5	8.8 ± 0.6	1.1 ± 0.1	0.8 ± 0.1	1.3 ± 0.1
20:0	4.1 ± 0.3	1.8 ± 0.4	1.3 ± 0.1	0.6 ± 0.1	0.3 ± 0.0
21:0	1.8 ± 0.2	0.3 ± 0.1	0.1 ± 0.0	0.4 ± 0.1	0.0 ± 0.0
22:0 + OH20:0*	2.3 ± 0.3	1.1 ± 0.3	0.0 ± 0.0	0.4 ± 0.0	3.4 ± 0.4
Sum SFA	39.4 ± 2.6	25.9 ± 3.5	33.4 ± 1.0	31.3 ± 0.9	71.7 ± 3.7
16:1n-7	4.8 ± 0.4	3.7 ± 1.3	6.3 ± 0.3	4.5 ± 0.3	2.6 ± 0.2
16:1n-5	0.6 ± 0.0	1.1 ± 0.7	0.5 ± 0.0	0.8 ± 0.1	0.0 ± 0.0
18:1n-9	7.8 ± 0.5	8.6 ± 0.5	22.1 ± 0.4	18.0 ± 0.4	2.1 ± 0.1
18:1n-7	2.5 ± 0.2	6.1 ± 1.2	0.4 ± 0.1	0.3 ± 0.0	1.6 ± 0.1
20:1n-7,9,11 + 20:3n-3*	1.9 ± 0.1	1.3 ± 0.6	1.2 ± 0.1	0.7 ± 0.1	1.1 ± 0.1
22:1n-7,9,11,13*	1.3 ± 0.1	0.7 ± 0.4	0.1 ± 0.0	0.3 ± 0.0	0.0 ± 0.0
Sum MUFA	19.0 ± 1.4	21.6 ± 4.7	30.6 ± 0.8	24.5 ± 0.9	7.5 ± 0.5
18:2n-6	2.1 ± 0.1	1.6 ± 0.2	3.5 ± 0.1	6.1 ± 0.3	0.6 ± 0.0
18:4n-3	1.5 ± 0.2	1.3 ± 0.1	6.3 ± 0.5	3.9 ± 0.3	0.0 ± 0.0
20:2n-6	0.2 ± 0.1	0.2 ± 0.1	0.0 ± 0.0	0.5 ± 0.0	0.5 ± 0.0
20:3n-6 + 20:2 NMI*	0.2 ± 0.1	0.7 ± 0.3	0.8 ± 0.0	1.5 ± 0.0	3.4 ± 0.3
20:4n-6	7.1 ± 0.5	8.4 ± 1.2	14.8 ± 0.3	18.5 ± 0.7	6.2 ± 0.8
20:5n-3	5.8 ± 0.7	7.6 ± 1.3	4.5 ± 0.2	4.8 ± 0.3	8.5 ± 1.3
22:2NMI + C22PUFA*	0.2 ± 0.1	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
22:2NMI2 + 22:4n-3*	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.1 ± 0.0	0.0 ± 0.0
22:4n-6	0.5 ± 0.1	0.4 ± 0.1	0.0 ± 0.0	0.5 ± 0.0	0.0 ± 0.0
22:5n-3	0.3 ± 0.1	0.2 ± 0.1	0.0 ± 0.0	0.1 ± 0.0	0.0 ± 0.0
22:6n-3	2.8 ± 0.4	3.7 ± 0.9	0.0 ± 0.0	0.3 ± 0.0	0.0 ± 0.0
Sum PUFA	20.7 ± 2.3	24.2 ± 4.3	29.9 ± 1.1	36.5 ± 1.6	19.1 ± 2.5
Sum Other >1 %^a	8.3 ± 1.3	13.0 ± 2.4	0.4 ± 0.1	2.7 ± 0.2	0.5 ± 0.1
Sum Other <1 %^b	12.6 ± 2.9	14.5 ± 3.9	5.6 ± 0.8	5.0 ± 0.8	1.2 ± 0.3

^aOther >1%: ·OH16:0 (OH denotes hydroxyl), ·OH21:0, ·OHbranched22:0, 3 fatty aldehydes (derived from plasmalogens; identified by a base peak at m/z 75)

^bOther <1%: i14:0, 14:1n-7, 14:1n-5, 4,812TMTD (trimethyl tetradecanoic acid), a15:0, 15:1n-6, C16PUFA, i16:0, 16:1n-9, 16:1, 16:2, 16:1n-13t, 7Methyl17:1, i17:0, ·OHbranched15:0, ·OHbranched15:0, a17:0, 17:1n-8, 17:1n-6, 5 fatty aldehydes, 18:3n-6, C18PUFA, i18:0, 18:1n-9, 18:3n-3, 18:1n-7t, ·OH16:1, 18:1n-5, ·OH16:0, i19:0, ·OHbranched17:0, ·OH17:0, ·OHa17:0, 19:1, ·OH17:0, C20PUFA, 20:2Non Methylene Interrupted (NMI), 20:4n-3, ·OH18:0, 20:1, C21PUFA, 21:5n-3, 21:1, 22:5n-6, 22:3n-6, 23:0, C24PUFA, ·OH22:1, 22:1, 24:1, ·OH22:0, 24:0