The following supplement accompanies the article

Wasted effort: recruitment and persistence of kelp on algal turf

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Table S1. Classification function coefficients for each substrate of kelp attachment (turf, rock) from discriminant function analysis based on 6 holdfast characteristics.

Holdfast Characteristic	Substrate	
	Turf	Rock
Constant	-21.471	-23.352
Holdfast length	3.012	1.399
Average holdfast width	1.934	2.957
Number of primary haptera	1.449	1.809
Bifurcations per primary hapteron	1.711	3.589
Holdfast fresh weight	-1.246	-1.613
Holdfast-to-total biomass ratio	13.601	4.175

Table S2. Mean density (± SD) of 3 kelp species (*Saccharina latissima*, *Laminaria digitata*, *Agarum clathratum*) in 1-m^2 quadrats (n = number of quadrats) and percentage of thalli attached to turf (n = total individuals pooled over quadrats) at 3 sites (TL, The Lodge; PH, Paddy's Head;
FP, Fox Point).

Species	Site	Density (no. m^{-2})	Percent on turf
Saccharina latissima	TL	6.8 ± 12.44 (n = 18)	61.5 (n = 122)
	PH	15.4 ± 37.17 (n = 17)	78.2 (n = 262)
	FP	6.0 ± 2.83 (n = 6)	52.8 (n = 36)
Laminaria digitata	TL	0 (n = 18)	0 (n = 0)
	PH	1.3 ± 1.85 (n = 17)	22.7 (n = 22)
	FP	0.5 ± 0.62 (n = 6)	0 (n = 3)
Agarum clathratum	TL	1.2 ± 3.70 (n = 18)	19.0 (n = 21)
	PH	5.3 ± 12.27 (n = 17)	11.1 (n = 90)
	FP	1.8 ± 2.39 (n = 6)	0 (n = 11)

Table S3. ANOVA of effects of attachment substrate (turf vs. rock) and location (wave-exposed vs. wave-protected) on kelp (*Saccharina latissima*) blade surface area at Duncan's Cove at the beginning (24 August 2017), middle (5 October 2017), and end (5 November 2017) of the manipulative experiment.

Response	df	MS	*F*	*P*
August				
Location	1	430644	1.45	0.236
Substrate	1	34130	0.115	0.736
Location x Substrate	1	43257	0.146	0.705
Residual	36	296445		
October				
Location	1	164066	2.65	0.114
Substrate	1	40851	0.660	0.423
Location x Substrate	1	103723	1.68	0.206
Residual	29	61888		
November				
Location	1	12216	0.687	0.420
Substrate	1	12960	0.729	0.407
Location x Substrate	1	11600	0.653	0.432
Residual	15	17772		

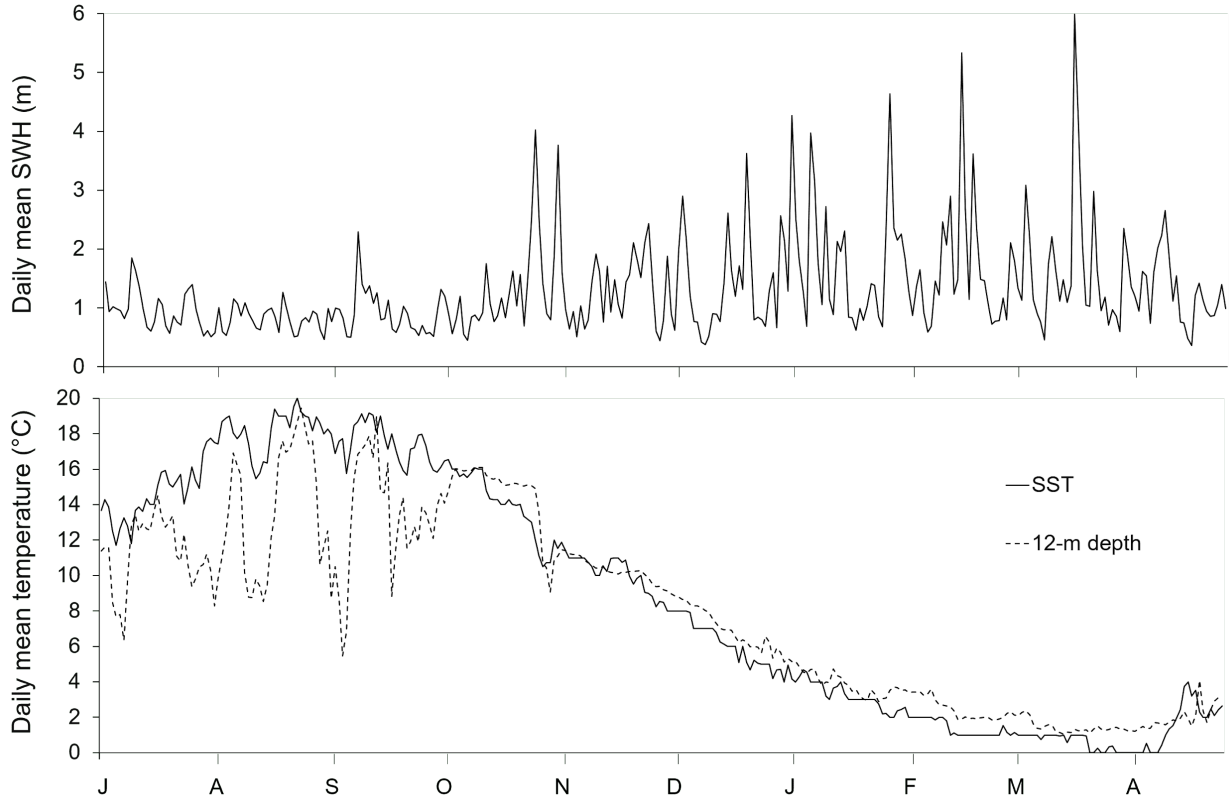

Fig. S1. Daily mean significant wave height (SWH; m) and sea surface temperature (SST, °C) at Halifax Harbour, and temperature at 12-m depth at TL, from 1 July 2016 to 24 April 2017.

Fig. S2. Drift kelp (*Saccharina latissima*) re-suspended from a depositional area at Duncan's Cove, NS with a holdfast morphology resembling turf-attached kelp.

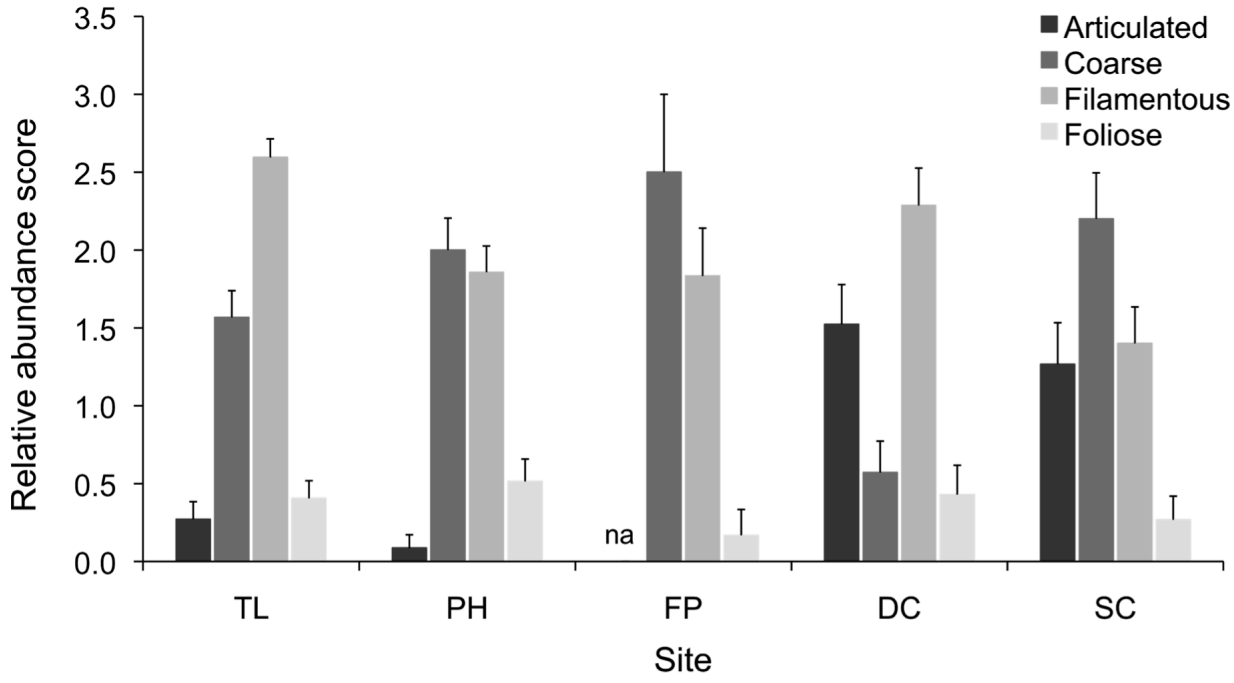

Fig. S3. Mean (± SE) rank abundance of articulated coralline, coarsely-branched, filamentous/delicately branched, and foliose algal turf removed from turf-attached holdfasts sampled at 5 sites (TL, The Lodge, n = 37; PH, Paddy's Head, n = 35; FP, Fox Point, n = 6; DC, Duncan's Cove, n = 21; SC, Sandy Cove, n = 15) from July to September 2016.

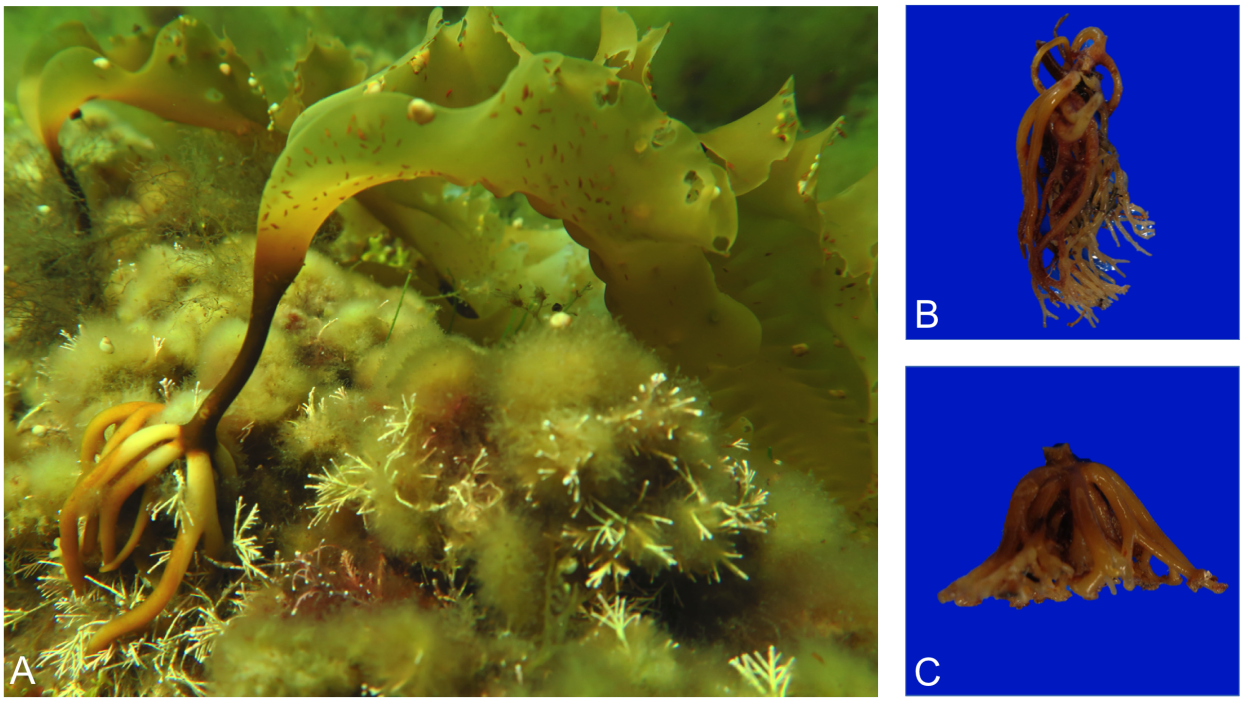

Fig. S4. (A) Kelp (*Saccharina latissima*) attached to turf algae at TL in July 2017. (B) Elongated holdfast from a turf-attached kelp collected from PH in July 2017. (C) Wide holdfast from a rock-attached kelp collected from PH in July 2017. Photographs by R.E. Scheibling and K. E. Burek.

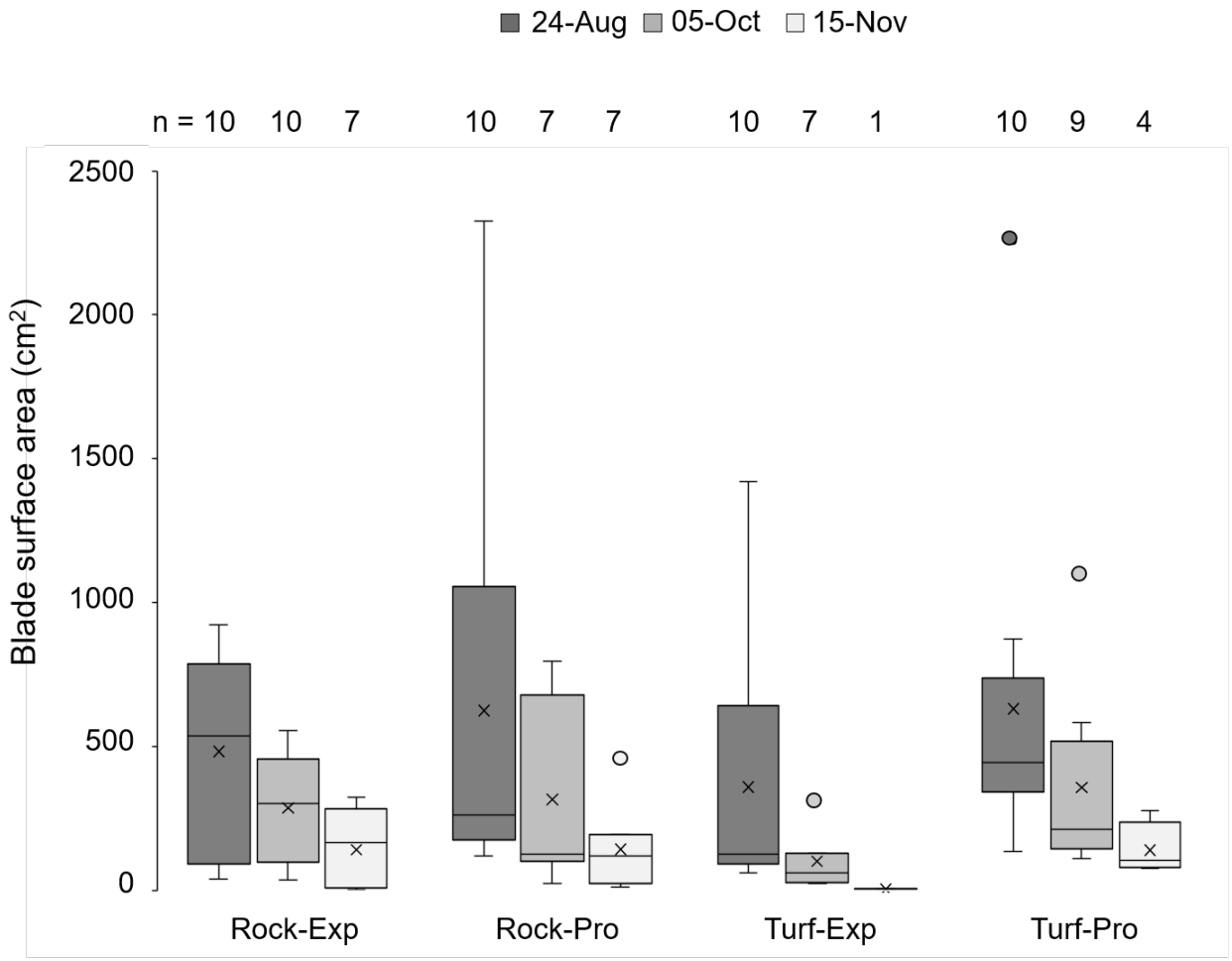

Fig. S5. Box plots of the distribution of blade surface area (cm^2) for turf- or rock-attached transplants of *Saccharina latissima* at DC in a wave-exposed (Exp) or wave-protected (Pro) location on 24 August, 5 October, 15 November. The lower and upper box indicate the first and third quartile respectively with the 'x' marked within denoting the mean, horizontal line is the median, whiskers indicate the lowest and highest values within 1.5 interquartile range of the 1st and 3rd quartiles, circles are outliers. The total number of kelp transplants (n) over time for each attachment substrate and location combination are denoted above the bars.