

Appendix

Table A1. Complete taxon-specific *t* test results testing for temporal differences (1979–80 vs. 2004) in %cover-based depth distribution, by 0.25-m depth intervals, for total vegetation and the species in Figure 4. Data were pooled across sampling stations and arcsine transformed before analysis. For all *t* tests, d.f. = $n_{1979-80} + n_{2004} - 2$; “—” = species absent in both sampling periods. Species abbreviations as genus initial plus first three letters of species name.

Depth (m)	Total vegetation	E.can	M.alt	P.ber	N.fle	C.glo
0.50–0.74						
$n_{1979-80} = 14$	$t = -2.470$	$t = 0.177$	$t = 0.119$	—	—	$t = 0.262$
$n_{2004} = 4$	$P = 0.03$	$P = 0.86$	$P = 0.91$			$P = 0.08$
0.75–0.99						
$n_{1979-80} = 40$	$t = -3.837$	$t = -1.859$	$t = -2.945$	$t = -0.562$	$t = 0.566$	$t = 0.545$
$n_{2004} = 13$	$P < 0.01$	$P = 0.07$	$P < 0.01$	$P = 0.58$	$P = 0.57$	$P = 0.59$
1.00–1.24						
$n_{1979-80} = 65$	$t = -17.105$	$t = -4.531$	$t = -8.587$	$t = 0.654$	$t = 0.877$	$t = -3.831$
$n_{2004} = 28$	$P < 0.01$	$P < 0.01$	$P < 0.01$	$P = 0.51$	$P = 0.38$	$P < 0.01$
1.25–1.49						
$n_{1979-80} = 11$	$t = -6.066$	$t = -1.230$	$t = -5.058$	—	—	$t = -0.326$
$n_{2004} = 27$	$P < 0.01$	$P = 0.23$	$P < 0.01$			$P = 0.75$
1.50–1.74						
$n_{1979-80} = 17$	$t = -5.032$	$t = -2.272$	$t = -4.986$	$t = 0.519$	$t = 1.194$	$t = 1.896$
$n_{2004} = 24$	$P < 0.01$	$P = 0.03$	$P < 0.01$	$P = 0.61$	$P = 0.24$	$P = 0.07$
1.75–1.99						
$n_{1979-80} = 33$	$t = -6.869$	$t = -6.375$	$t = -5.175$	$t = 0.422$	$t = 0.962$	$t = 2.003$
$n_{2004} = 20$	$P < 0.01$	$P < 0.01$	$P < 0.01$	$P = 0.67$	$P = 0.34$	$P = 0.05$
2.00–2.24						
$n_{1979-80} = 42$	$t = -8.530$	$t = -8.373$	$t = -5.543$	$t = -1.043$	$t = 1.451$	$t = 2.984$
$n_{2004} = 47$	$P < 0.01$	$P < 0.01$	$P < 0.01$	$P = 0.30$	$P = 0.15$	$P < 0.01$
2.25–2.49						
$n_{1979-80} = 16$	$t = -5.555$	$t = -9.817$	$t = -0.973$	$t = -0.505$	$t = 2.203$	$t = 3.874$
$n_{2004} = 35$	$P < 0.01$	$P < 0.01$	$P = 0.34$	$P = 0.62$	$P = 0.03$	$P < 0.01$
2.50–2.74						
$n_{1979-80} = 16$	$t = -7.439$	$t = -9.041$	$t = -2.232$	$t = -0.516$	$t = 2.659$	$t = 4.454$
$n_{2004} = 68$	$P < 0.01$	$P < 0.01$	$P = 0.03$	$P = 0.61$	$P < 0.01$	$P < 0.01$
2.75–2.99						
$n_{1979-80} = 33$	$t = -6.253$	$t = -8.628$	$t = -3.117$	$t = -1.526$	$t = 1.965$	$t = 1.682$
$n_{2004} = 45$	$P < 0.01$	$P < 0.01$	$P < 0.01$	$P = 0.13$	$P = 0.05$	$P = 0.10$
3.00–3.24						
$n_{1979-80} = 72$	$t = -8.703$	$t = -19.093$	$t = -3.465$	$t = -3.864$	$t = 5.517$	$t = 2.697$
$n_{2004} = 70$	$P < 0.01$	$P < 0.01$	$P < 0.01$	$P < 0.01$	$P < 0.01$	$P < 0.01$
3.25–3.49						
$n_{1979-80} = 40$	$t = -9.824$	$t = -13.828$	$t = -1.492$	$t = -3.219$	$t = 3.967$	$t = 1.556$
$n_{2004} = 33$	$P < 0.01$	$P < 0.01$	$P = 0.14$	$P < 0.01$	$P < 0.01$	$P = 0.12$
3.50–3.74						
$n_{1979-80} = 28$	$t = -7.304$	$t = -14.081$	$t = -1.422$	$t = -2.790$	$t = 5.312$	—
$n_{2004} = 44$	$P < 0.01$	$P < 0.01$	$P = 0.16$	$P < 0.01$	$P < 0.01$	
3.75–3.99						
$n_{1979-80} = 35$	$t = -8.318$	$t = -19.213$	$t = -1.185$	$t = -2.519$	$t = 2.967$	$t = 0.985$
$n_{2004} = 34$	$P < 0.01$	$P < 0.01$	$P = 0.24$	$P = 0.01$	$P < 0.01$	$P = 0.33$
4.00–4.24						
$n_{1979-80} = 58$	$t = -8.293$	$t = -21.105$	$t = -1.720$	$t = -4.467$	$t = 3.089$	—
$n_{2004} = 56$	$P =$	$P < 0.01$	$P = 0.09$	$P < 0.01$	$P < 0.01$	
4.25–4.49						
$n_{1979-80} = 9$	$t = -3.910$	$t = -4.968$	$t = -1.340$	$t = -1.055$	$t = 2.697$	—
$n_{2004} = 26$	$P < 0.01$	$P < 0.01$	$P = 0.19$	$P = 0.30$	$P = 0.01$	
4.50–4.74						
$n_{1979-80} = 12$	$t = -2.620$	$t = -6.085$	$t = -0.652$	$t = 0.023$	$t = 3.006$	—
$n_{2004} = 47$	$P = 0.01$	$P < 0.01$	$P = 0.52$	$P = 0.98$	$P < 0.01$	
4.75–4.99						
$n_{1979-80} = 8$	$t = -1.911$	$t = -4.739$	—	$t = 0.704$	$t = 4.102$	—
$n_{2004} = 30$	$P = 0.06$	$P < 0.01$		$P = 0.49$	$P < 0.01$	

Table A1. (Contd)

Depth (m)	Total vegetation	E.can	M.alt	P.ber	N.fle	C.glo
5.00–5.24						
$n_{1979-80} = 34$	$t = -0.091$	$t = -7.896$	—	$t = -1.112$	$t = 2.711$	—
$n_{2004} = 37$	$P = 0.93$	$P < 0.01$		$P = 0.27$	$P < 0.01$	
5.25–5.49						
$n_{1979-80} = 13$	$t = -1.093$	$t = -4.014$	$t = -0.764$	$t = -1.414$	$t = 1.315$	—
$n_{2004} = 22$	$P = 0.28$	$P < 0.01$	$P = 0.45$	$P = 0.17$	$P = 0.020$	
5.50–5.74						
$n_{1979-80} = 14$	$t = -5.446$	$t = -2.496$	$t = -0.611$	$t = 1.830$	$t = 3.530$	—
$n_{2004} = 37$	$P < 0.01$	$P = 0.02$	$P = 0.54$	$P = 0.07$	$P < 0.01$	
5.75–5.99						
$n_{1979-80} = 5$	$t = -2.313$	$t = -1.331$	—	$t = -0.351$	$t = 4.282$	—
$n_{2004} = 23$	$P = 0.03$	$P = 0.19$		$P = 0.73$	$P < 0.01$	
6.00–6.24						
$n_{1979-80} = 5$	$t = -2.236$	$t = -4.276$	—	$t = 1.700$	$t = 2.012$	—
$n_{2004} = 13$	$P = 0.04$	$P < 0.01$		$P = 0.11$	$P = 0.06$	
6.25–6.49						
$n_{1979-80} = 3$	$t = -3.911$	$t = -0.945$	—	—	—	—
$n_{2004} = 6$	$P < 0.01$	$P = 0.38$				

Table A2. Complete taxon-specific *t* test results testing for temporal differences (1979–80 vs. 2004) in %cover-based depth distribution, by 0.25-m depth intervals, for the taxa in Figure 5. Data were pooled across sampling stations and arcsine transformed before analysis. For all *t* tests, d.f. = $n_{1979-80} + n_{2004} - 2$; “—” = species absent in both sampling periods. Species abbreviations as genus initial plus first three letters of species name.

Depth (m)	C.her	P.pus	P.per	P.cri	N.opa	filam. algae
0.50–0.74						
$n_{1979-80} = 14$	—	—	—	—	$t = 1.055$	—
$n_{2004} = 4$					$P = 0.31$	
0.75–0.99						
$n_{1979-80} = 40$	$t = 0.795$	—	—	—	$t = 1.050$	$t = -0.159$
$n_{2004} = 13$	$P = 0.43$				$P = 0.30$	$P = 0.87$
1.00–1.24						
$n_{1979-80} = 65$	$t = 1.411$	$t = 1.114$	$t = 0.654$	—	$t = 1.177$	$t = -1.600$
$n_{2004} = 28$	$P = 0.16$	$P = 0.27$	$P = 0.51$		$P = 0.24$	$P = 0.11$
1.25–1.49						
$n_{1979-80} = 11$	$t = 2.295$	$t = 2.256$	$t = 2.058$	—	$t = 2.352$	$t = 2.423$
$n_{2004} = 27$	$P = 0.03$	$P = 0.03$	$P = 0.05$		$P = 0.02$	$P = 0.02$
1.50–1.74						
$n_{1979-80} = 17$	$t = 1.837$	$t = 1.194$	—	—	$t = 1.803$	$t = 1.823$
$n_{2004} = 24$	$P = 0.07$	$P = 0.24$			$P = 0.08$	$P = 0.08$
1.75–1.99						
$n_{1979-80} = 33$	$t = 1.722$	$t = 1.976$	$t = 1.483$	$t = 0.776$	$t = 1.709$	$t = 0.715$
$n_{2004} = 20$	$P = 0.09$	$P = 0.05$	$P = 0.14$	$P = 0.44$	$P = 0.09$	$P = 0.48$
2.00–2.24						
$n_{1979-80} = 42$	$t = 1.898$	$t = 2.485$	$t = 2.291$	$t = 1.059$	$t = 0.643$	$t = 2.041$
$n_{2004} = 47$	$P = 0.06$	$P = 0.01$	$P = 0.02$	$P = 0.29$	$P = 0.52$	$P = 0.04$
2.25–2.49						
$n_{1979-80} = 16$	$t = -0.021$	—	—	—	$t = 0.671$	$t = 3.451$
$n_{2004} = 35$	$P = 0.98$				$P = 0.51$	$P < 0.01$
2.50–2.74						
$n_{1979-80} = 16$	$t = 2.638$	$t = 2.913$	—	—	$t = 1.000$	$t = 1.289$
$n_{2004} = 68$	$P < 0.01$	$P < 0.01$			$P = 0.32$	$P = 0.20$
2.75–2.99						
$n_{1979-80} = 33$	$t = 1.753$	$t = 2.739$	$t = 1.171$	$t = 1.844$	$t = -0.908$	$t = 3.585$
$n_{2004} = 45$	$P = 0.08$	$P < 0.01$	$P = 0.25$	$P = 0.07$	$P = 0.37$	$P < 0.01$
3.00–3.24						
$n_{1979-80} = 72$	$t = 0.481$	$t = 3.045$	$t = 1.359$	$t = 1.540$	$t = 2.062$	$t = 3.667$
$n_{2004} = 70$	$P = 0.63$	$P < 0.01$	$P = 0.18$	$P = 0.13$	$P = 0.04$	$P < 0.01$
3.25–3.49						
$n_{1979-80} = 40$	$t = 2.586$	$t = 2.208$	$t = 1.562$	$t = 0.907$	$t = 2.476$	$t = 1.609$

Table A2. (Contd)

Depth (m)	C.her	P.pus	P.per	P.cri	N.opa	filam. algae
$n_{2004} = 33$	$P = 0.01$	$P = 0.03$	$P = 0.12$	$P = 0.37$	$P = 0.02$	$P = 0.11$
3.50–3.74						
$n_{1979-80} = 28$	$t = 2.041$	$t = 1.350$	$t = 1.150$	$t = -0.458$	$t = -0.407$	$t = 2.370$
$n_{2004} = 44$	$P = 0.04$	$P = 0.08$	$P = 0.25$	$P = 0.65$	$P = 0.68$	$P = 0.02$
3.75–3.99						
$n_{1979-80} = 35$	$t = 1.242$	—	$t = -0.115$	$t = -1.291$	$t = -1.067$	$t = 3.026$
$n_{2004} = 34$	$P = 0.22$		$P = 0.91$	$P = 0.20$	$P = 0.29$	$P < 0.01$
4.00–4.24						
$n_{1979-80} = 58$	—	$t = 1.468$	$t = 1.448$	$t = -0.920$	$t = -1.772$	$t = 6.642$
$n_{2004} = 56$		$P = 0.14$	$P = 0.15$	$P = 0.36$	$P = 0.08$	$P < 0.01$
4.25–4.49						
$n_{1979-80} = 9$	$t = 1.751$	—	$t = -0.190$	$t = -1.305$	$t = -0.998$	$t = -0.187$
$n_{2004} = 26$	$P = 0.09$		$P = 0.85$	$P = 0.20$	$P = 0.33$	$P = 0.85$
4.50–4.74						
$n_{1979-80} = 12$	—	—	$t = -1.026$	$t = -1.312$	$t = -0.458$	$t = 2.020$
$n_{2004} = 47$			$P = 0.31$	$P = 0.19$	$P = 0.65$	$P = 0.05$
4.75–4.99						
$n_{1979-80} = 8$	—	—	$t = -0.918$	$t = -1.267$	$t = -0.511$	$t = 0.703$
$n_{2004} = 30$			$P = 0.36$	$P = 0.21$	$P = 0.61$	$P = 0.49$
5.00–5.24						
$n_{1979-80} = 34$	$t = 1.044$	—	$t = -1.035$	$t = -2.755$	$t = -1.014$	$t = 5.990$
$n_{2004} = 37$	$P = 0.30$		$P = 0.30$	$P < 0.01$	$P = 0.31$	$P < 0.01$
5.25–5.49						
$n_{1979-80} = 13$	—	$t = 1.315$	$t = -0.764$	$t = -0.745$	$t = -0.673$	$t = 0.206$
$n_{2004} = 22$		$P = 0.20$	$P = 0.45$	$P = 0.46$	$P = 0.51$	$P = 0.84$
5.50–5.74						
$n_{1979-80} = 14$	—	—	$t = -0.611$	$t = -0.611$	$t = -0.893$	$t = -0.295$
$n_{2004} = 37$			$P = 0.54$	$P = 0.54$	$P = 0.38$	$P = 0.77$
5.75–5.99						
$n_{1979-80} = 5$	—	—	—	—	$t = -0.459$	$t = -0.643$
$n_{2004} = 23$					$P = 0.65$	$P = 0.53$
6.00–6.24						
$n_{1979-80} = 5$	—	—	—	—	—	$t = -2.179$
$n_{2004} = 13$						$P = 0.04$
6.25–6.49						
$n_{1979-80} = 3$	—	—	—	—	—	$t = -2.399$
$n_{2004} = 6$						$P = 0.05$

Table A3. Complete taxon-specific two-tailed t test results testing for temporal differences (1979–80 vs. 2004) in cover-weighted mean depth (T_i), for the taxa in Figure 6. Sampling stations were treated as replicates and data were log-transformed before analysis. Stations at which taxa were not recorded were excluded from calculations. For all t -tests, d.f. = $n_{1979-80} + n_{2004} - 2$; “—” = species absent in 2004; “nc” = not calculable ($n_{1979-80}$ and/or $n_{2004} < 3$). Negative t values indicate a deeper T_i value in 2004 (temporal comparisons), or a deeper $T_{E.can}$ value (between taxa comparisons). Species abbreviations as genus initial plus first three letters of species name.

Temporal changes (1979–80 vs. 2004)										
E.can	M.alt	P.ber	N.fle	C.glo	C.her	P.pus	P.cri	P.per	N.opa	I.lac
$t = -0.485$	$t = 0.110$	$t = -2.253$		$t = 0.835$			$t = -3.444$	$t = -2.712$	$t = -1.145$	
$P = 0.64$	$P = 0.91$	$P = 0.05$		$P = 0.43$			$P = 0.01$	$P = 0.02$	$P = 0.28$	
$n_{1979-80} = 6$	$n_{1979-80} = 6$	$n_{1979-80} = 6$	nc	$n_{1979-80} = 3$	nc	—	$n_{1979-80} = 3$	$n_{1979-80} = 6$	$n_{1979-80} = 7$	nc
$n_{2004} = 7$	$n_{2004} = 7$	$n_{2004} = 7$		$n_{2004} = 6$			$n_{2004} = 6$	$n_{2004} = 5$	$n_{2004} = 6$	
Comparisons with $T_{E.can}$										
	M.alt	P.ber	N.fle	C.glo	C.her	P.pus	P.cri	P.per	N.opa	I.lac
1979–80	$t = -2.732$	$t = -0.837$	$t = 1.202$	$t = -2.037$	$t = -1.759$	$t = -0.156$	$t = -0.110$	$t = -0.111$	$t = -0.974$	$t = 0.395$
$n_{E.can} = 6$	$P = 0.02$	$P = 0.42$	$P = 0.26$	$P = 0.08$	$P = 0.11$	$P = 0.88$	$P = 0.91$	$P = 0.91$	$P = 0.35$	$P = 0.70$
	$n_{M.alt} = 6$	$n_{P.ber} = 6$	$n_{N.fle} = 5$	$n_{C.glo} = 3$	$n_{C.her} = 5$	$n_{P.pus} = 7$	$n_{P.cri} = 3$	$n_{P.per} = 6$	$n_{N.opa} = 7$	$n_{I.lac} = 3$
2004	$t = -5.710$	$t = 2.450$		$t = -9.445$			$t = 7.370$	$t = 5.061$	$t = 0.102$	
$n_{E.can} = 7$	$P < 0.01$	$P = 0.03$	nc	$P < 0.01$	nc	—	$P < 0.01$	$P < 0.01$	$P = 0.92$	nc
	$n_{M.alt} = 7$	$n_{P.ber} = 7$		$n_{C.glo} = 6$			$n_{P.cri} = 6$	$n_{P.per} = 5$	$n_{N.opa} = 6$	