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Seasonal and plant-part isotopic and biochemical variation in Posidonia oceanica

PIERRE CRESSON, CHARLES FRANÇOIS BOUDOURESQUE, SANDRINE RUITTON, LAURIE CASALOT, MARC VERLAQUE, MIREILLE HARMELIN-VIVIEN

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Table S1: Results of ANOVA mean comparison tests for seasonal variation of biochemical and isotopic parameters in each plant part and leaf epibionts (*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ns $p > 0.05$). Results of post-hoc tests are provided, with letters standing for the season (Sp: Spring, Su: Summer, A: Autumn, W: Winter). For leaves and rhizome, protein is calculated as %N × 4.28.

Plant part	$\delta^{13}C$	$\delta^{15}N$	%C	%N / Proteins	C/N	IC	SC	Lipids
Rhizomes	F = 16.6 ** A < Sp <W = Su	F = 10.9 ** Sp < W = Su < A	F = 2.2 ns	F = 39.6 *** W < A = Su < Sp	F = 207.8 *** Sp < Su < A < W	F = 0.7 ns	F = 4.2 * Sp = W < Su = A	F = 15.1 ** W = A < Sp = Su
Juveniles	F = 298.5 *** W < A < Su = Sp	F = 183.6 *** W < A = Sp < Su	F = 2.3 ns	F = 8.6 ** Sp = A < W = Su	F = 209.2 *** W < Su < Sp < A	F = 1.4 ns	F = 5.6 * Sp < W = Su < A	F = 0.1 ns
Intermediate	F = 42.0 *** W < Sp < Su = A	F = 108.1 *** Sp < W < A < Su	F = 2.3 ns	F = 98.1 *** A < Sp = W < Su	F =461.1 *** Sp = W < Su < A	F = 6.3 * Sp < W = Su = A	F = 5.8 * Su = Sp = W < A	F = 38.0 *** W < A = Sp < Su
Adult	F = 381.0 *** Su < Sp < A < W	F = 146.1 *** Sp = W < A < Su	F = 3.8 ns	F = 161.4 *** W < A < Su < Sp	F = 5051.7 *** Sp = E < A < W	F = 17.1 *** W = Su = Sp < A	F = 17.3 *** Su = W = Sp < A	F = 8.7 ** W = A = Sp < Su
Senescent	F = 56.2 *** Su < Sp < A < W	F = 79.1 *** Sp = Su < A = W	F = 41.5 *** A < Sp < W < Su	F = 633.4 *** A < W < Sp < Su	F = 1136.8 *** Su < Sp < A < W	F = 4.9 * Sp < Su = W = A	F = 7.2 * W < Sp = A = Su	F = 47. 8 *** A = W < Sp < Su
Drifting	F = 12.9 ** Su < Sp = W	F = 8.2 ** Su < Sp = W	F = 0.3 ns	F = 3.6 ns	F = 141.7 *** Sp = Su < W	F = 34.6 *** Sp < Su < W	F = 6.1 * Su = W < Sp	F = 15.7 ** W < Su < Sp

Leaf epibionts	F = 2.4 ns	F = 336.8 *** Sp < E < A = W	F = 0.9 ns	F =1.1 ns	F = 13.2 *** E = Sp < W < A	F = 114.3 *** E = W = A < Sp	F = 5.1 * E = W < Sp = A	F = 1.3. ns	F = 20.6 *** A = W < E < Sp

Table S2: Ash, lipid, nitrogen, protein and carbohydrate compositions of *Posidonia oceanica* leaves and rhizomes. Values in percentage of the dry mass.

Ash	Lipid	Nitrogen	Protein	Soluble carbohydrate	Insoluble carbohydrate	Remarks	Locality or country	Reference
Leaves								
-	-	2.18	13.6 [k]	-	-	?	Provence? France	Molinier and Pellegrini, 1966
23.9[f]	1.2[g]	-	14.3	-	-	February-April, 4 m depth	Western Italy	Gallarati Scotti, 1969
31.0[f]	0.7[g]	-	10.5	-	-	June-July, 4 m depth	Western Italy	Gallarati Scotti, 1969
34.5[f]	0.5[g]	-	9.9	-	-	August-September, 4 m depth	Western Italy	Gallarati Scotti, 1969
-	-	1.65-2.18	-	-	-	October, shallow, short (young?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	1.33-1.36	-	-	-	October, shallow, long (old?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	2.54-3.76	-	-	-	December-Febr., shallow, short (young?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	2.20-2.84	-	-	-	December-Febr., shallow, long (old?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	2.32-2.48	-	-	-	May-June, shallow, short (young?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	1.69-2.32	-	-	-	May-June, shallow, long (old?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	2.12-2.32	-	-	-	August, shallow, short (young?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	1.37-2.07	-	-	-	August, shallow, long (old?) leaves	Le Brusc, France	Pellegrini, 1971
-	-	1.55-1.95	-	-	-	January-April, 10 m depth	Calvi, Corsica	Bay, 1978
-	-	1.08-1.55	-	-	-	August-November, 10 m depth, young leaves	Calvi, Corsica	Bay, 1978
-	-	0.71-0.95	-	-	-	August-November, 10 m depth, old leaves	Calvi, Corsica	Bay, 1978
-	-	1.89-2.51	-	-	-	January, 20-38 m depth	Calvi, Corsica	Bay, 1978
5.5	-	1.31	6.6	-	-	June? ([e]). 10 m depth	Port-Cros, France	Augier and Santimone, 1979
4.0	-	1.48	7.0	-	-	June? ([e]). 20 m depth	Port-Cros, France	Augier and Santimone, 1979
5.1	-	1.30	5.6	-	-	June? ([e]). 30 m depth	Port-Cros, France	Augier and Santimone, 1979
-	-	0.62	-	-	-	July, 3 m depth, base	Mallorca, Spain	Mouriño *et al.*, 1981
-	-	1.71-1.85	-	-	-	July, 3 m depth, 5-15 cm above the base	Mallorca, Spain	Mouriño *et al.*, 1981
-	-	-	-	10-11	-	April, 5 m depth, leaf base	Ischia, Italy	Velimirov *et al.*, 1981
-	-	-	-	1.9-2.9	-	April, 5 m depth, leaf limb	Ischia, Italy	Velimirov *et al.*, 1981
-	-	-	-	8-13	-	April, 15 m depth, leaf base	Ischia, Italy	Velimirov *et al.*, 1981
-	-	-	-	2.5-6.3	-	April, 15 m depth, leaf limb	Ischia, Italy	Velimirov *et al.*, 1981
-	-	-	-	9-17	-	April, 30 m depth, leaf base	Ischia, Italy	Velimirov *et al.*, 1981
-	-	-	-	2.8-7.0	-	April, 30 m depth, leaf limb	Ischia, Italy	Velimirov *et al.*, 1981
5.5	-	1.31	6.6	-	-	June, 10 m depth	Port-Cros, France	Augier *et al.*, 1982
5.9	-	1.30	5.6	-	-	June, 30 m depth	Port-Cros, France	Augier *et al.*, 1982
-		956:39:1[i]	-	-	-	36 m depth	Corsica	Atkinson and Smith, 1983
31[f]	-	-	-	-	-	November, 9-10 m depth	Côte Bleue, France	Maubert and Le Goff, 1984

Ash	Lipid	Nitrogen	Protein	Soluble carbohydrate	Insoluble carbohydrate	Remarks	Locality or country	Reference
23[f]	-	-	-	-	-	July, 10-12 m depth	El Dabaa, Egypt	Maubert and Le Goff, 1984
18-21	2.3-2.4	-	4.1-4.3	15-19	55-60	July, 2 m depth	Port Cros, France	Lawrence *et al.*, 1989
19-22	1.9-3.2	-	3.7-4.3	13-15	58-60	July 10 m depth	Port Cros, France	Lawrence *et al.*, 1989
12	3.9[a]	1.14[a]	-	-	-	Spring, 10 m depth	Corsica	Gobert et al., 1995
12	4.7[a]	1.02[a]	-	-	-	Summer, 10 m depth	Corsica	Gobert et al., 1995
12	4.3[a]	1.25[a]	-	-	-	Autumn, 10 m depth	Corsica	Gobert et al., 1995
12	4.4[a]	2.05[a]	-	-	-	Winter, 10 m depth	Corsica	Gobert et al., 1995
-	-	1.35	-	-	-	Sept, 10 m fish farm, 22 m depth	Italy	Pérez *et al.*, 2008
-	-	1.50	-	-	-	Sept, 1 000 m fish farm, 22 m depth	Italy	Pérez *et al.*, 2008
-	-	1.75	-	-	-	June, 15 m fish farm, 16 m depth	Greece	Pérez *et al.*, 2008
-	-	1.40	-	-	-	June, 1 200 m fish farm, 16 m depth	Greece	Pérez *et al.*, 2008
-	-	1.50	-	-	-	Sept, 10 m fish farm, 28 m depth	Spain	Pérez *et al.*, 2008
-	-	1.40	-	-	-	Sept, 1 000 m fish farm, 28 m depth	Spain	Pérez *et al.*, 2008
-	-	0.9-1.3 [a]	-	-	-	Sept, 7 m depth, polluted and pristine	Balearic Islands	Terrados and Medina Pons, 2008
-	-	0.7-1.0 [a]	-	-	-	Sept, 17 m depth, polluted and pristine	Balearic Islands	Terrados and Medina Pons, 2008
-	4.05	2.90[j]	60.7 [j]	-	-	Summer, 40 and 68 m ([j])	Egypt (Mediterra-nean coast)	Shams el Din and El-Sherif, 2013

Rhizomes								
Ash	Lipid	Nitrogen	Protein	Soluble carbohydrate	Insoluble carbohydrate	Remarks	Locality or country	Reference
-	-	1.02	-	-	-	October, shallow	Le Brusc, France	Pellegrini, 1971
-	-	3.06-3.72	-	-	-	December-February, shallow	Le Brusc, France	Pellegrini, 1971
-	-	2.63-2.76	-	-	-	May-June, shallow	Le Brusc, France	Pellegrini, 1971
-	-	1.79	-	-	-	August, shallow	Le Brusc, France	Pellegrini, 1971
18.5	-	0.51	2.5	-	-	June? ([e]). 20 m depth	Port-Cros, France	Augier and Santimone, 1979
-	-	1 749:40:1[i]	-	-	-	38 m depth	Corsica	Atkinson and Smith, 1983
52[f]	-	-	-	-	-	November, 9-10 m depth	Côte Bleue, France	Maubert and Le Goff, 1984
7.8[d]	-	3.03	-	-	-	August, 15 m depth, 5 last years	Corsica	Calmet *et al.*, 1986
10.4[d]	-	1.06-1.11	-	-	-	August, 15 m depth, 10-15 years ago	Corsica	Calmet *et al.*, 1986
18.9[d]	-	0.78-0.84	-	-	-	August, 15 m depth, 30-35 years ago	Corsica	Calmet *et al.*, 1986
5.4	1.3	-	4.5	40	49	July, 2 m	Port Cros, France	Lawrence *et al.*, 1989
4.8	1.6	-	4.8	47	42	July 10 m	Port Cros, France	Lawrence *et al.*, 1989
5.9-6.0	-	3.63	-	-	-	March, 10 m depth, last year	Côte Bleue, France	Carlotti et al., 1992
6.4-8.4	-	0.83-3.03	-	-	-	March, 10 m depth, 2-10 years ago	Côte Bleue, France	Carlotti et al., 1992

Ash	Lipid	Nitrogen	Protein	Soluble carbohydrate	Insoluble carbohydrate	Remarks	Locality or country	Reference
5.0-5.2	-	1.78	-	-	-	May, 10 m depth, last year	Corsica	Carlotti et al., 1992
5.3-7.7	-	0.63-1.60	-	-	-	May, 10 m depth, 2-10 years ago	Corsica	Carlotti et al., 1992
-	-	1.25-1.35	-	-	-	March-July, 10 m depth	Catalonia, Spain	Pérez *et al.*, 2007
-	-	1.75-1.80	-	-	-	May-July, org. matter enriched, 10 m depth	Catalonia, Spain	Pérez *et al.*, 2007
-	-	1.55-2.00	-	-	-	May-July, org. matter and N enriched, 10 m depth	Catalonia, Spain	Pérez *et al.*, 2007
-	-	1.35	-	-	-	Sept, 10 m fish farm, 22 m depth	Italy	Pérez *et al.*, 2008
-	-	1.25	-	-	-	Sept, 1 000 m fish farm, 22 m depth	Italy	Pérez *et al.*, 2008
-	-	2.60	-	-	-	June, 15 m fish farm, 16 m depth	Greece	Pérez *et al.*, 2008
-	-	0.75	-	-	-	June, 1 200 m fish farm, 16 m depth	Greece	Pérez *et al.*, 2008
-	-	2.30	-	-	-	Sept, 10 m fish farm, 28 m depth	Spain	Pérez *et al.*, 2008
-	-	1.20	-	-	-	Sept, 1 000 m fish farm, 28 m depth	Spain	Pérez *et al.*, 2008
-	-	-	-	0 .4-0.5[b]	-	Oct, 7 m depth, within a MPA	French Catalonia	Ferrari *et al*., 2008
-	-	-	-	0.5-0.6[b]	-	Oct, 7 m depth, outside a MPA	French Catalonia	Ferrari *et al*., 2008
-	-	-	-	0.5-5.0	4-5[c]	April, 3-5 m depth, beach replenishment	Andalusia, Spain	González-Correa *et al.*, 2008

[a] Calculated from authors' figure
[b] Nonstructural carbohydrate content
[c] Starch
[d] Calculated from authors' figure
[e] Extrapolated from another article of the same authors
[f] Ash mass putatively over-evaluated, possibly due to the non-removing of leaf calcareous epibiota
[g] Possibly under-evaluated, due to the over-evaluation of ash (see [f])
[i] C:N:P ratio
[j] Obviously erroneous values. The authors may have inverted the values of the proteins and total carbohydrates.
[k] The authors calculated protein content from total nitrogen, according to an Atwater coefficient of 6.25

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